Lightwave Logic, Inc.
Form 10-K
April 15, 2010

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

[X] **ANNUAL REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2009

[ ] **TRANSITION REPORT UNDER SECTION 13 OR 15 (D) OF THE EXCHANGE ACT**

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.)
121 Continental Drive Suite 110 Newark, DE	**19713**
(Address of principal executive offices)	(Zip Code)

(Registrant s Telephone Number, including Area Code): **302-356-2717**

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 x

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 x

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 ý

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 ý

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. ý

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	x

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 x

On April 9, 2009 there were 41,139,542 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. These statements relate to future events or future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our Company or its industry's actual results, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terminology such as may, will, should, expects, p anticipates, believes, estimates, predicts, potential, or the negative of these terms or other comparable termin These statements are only predictions. Actual events or results may differ materially. Although our Company believes that the expectations reflected in the forward-looking statements are reasonable, our Company cannot guarantee future results, levels of activity, performance or achievements. The forward-looking statements are based on our beliefs, assumptions and expectations of our future performance, taking into account information currently available to us. These beliefs, assumptions and expectations can change as a result of many possible events or factors, including those events and factors described by us in Item 1.A Risk Factors, not all of which are known to us.

Further, this report on Form 10-K contains forward looking statements that involve substantial risks and uncertainties. Such statements include, without limitation, all statements as to expectation or belief and statements as to our future results of operations, the progress of any research and product development, the need for, and timing of, additional capital and capital expenditures, partnering prospects, the protection of and the need for additional intellectual property rights, effects of regulations, the need for additional facilities and potential market opportunities. Our Company's actual results may vary materially from those contained in such forward-looking statements because of risks to which our Company is subject, such as lack of available funding, competition from third parties, intellectual property rights of third parties, regulatory constraints, litigation and other risks to which our Company is subject.

You should not place undue reliance on these forward-looking statements. Statements regarding the following subjects are forward-looking by their nature:

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Our business

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Our business strategy

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Our future operating results

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Our ability to obtain external financing

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Our understanding of our competition

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Industry and market trends

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Future capital expenditures

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The impact of technology on our products, operations and business

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. PSI-TEC was founded in Upland, Pennsylvania by Dr. Frederick J. Goetz 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 our Company whereby (i) our Company changed its name from Eastern Idaho Internet Services, Inc. to PSI-TEC Holdings, Inc.; (ii) our Company acquired all of the issued and outstanding shares of PSI-TEC stock; (iii) PSI-TEC became our Company s wholly-owned operating subsidiary; and (iv) our Company's then sole officer and director resigned, PSI-TEC's nominees were elected to our Company's 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 our Company. As a result, the historical financial statements of PSI-TEC became the historical financial statements of our Company.

Immediately prior to the time of the reorganization transaction, our Company was a non-reporting development stage company whose stock was traded on the OTC: Pink Sheets and that was seeking other business opportunities; it had no substantive business operations. Our Company was originally incorporated under the laws of the State of Nevada on June 24, 1997 as Eastern Idaho Internet Services, Inc. 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, survived and 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 me
Lightwave Logic, Inc., a Nevada corporation.

Our principal executive office is located at 121 Continental Drive, Suite 110, Newark, Delaware 19713, and our telephone number is (302)-356-2717. Our website address is www.lightwavelogic.com. No information found on our website is part of this 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 research and development company. We have developed and are continuing to develop Application Specific Electro-Optic Polymers (ASEOP) which has high electro-optic activity and are thermally and photo-chemically stable, which we believe could have a broad range of applications in the electro-optic device market.

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 patent-pending technologies when completed and tested 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.

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

Our 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 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-optic devices is expected to include all-optical transistors.

All-optical transistors. All-optical transistors are devices currently underdevelopment 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 high-speed generation of computers that operate on light instead of electricity, which in turn should significantly improve computation speeds.

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

CLD-1. An electro-optic material based upon unstable polyene molecular architectures. Unlike our own molecular designs, CLD-1 is not a CSC model molecule and exhibits thermal degradation at low temperatures (~250 C) which makes 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 materials. 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.

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 crystallisation, 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 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 electro-optic plastics that convert high-speed electronic signals into optical (light) signals. Electro-optic material is the core active ingredient in high-speed fiber-optic telecommunication systems. Utilizing our proprietary technology, we are in the process of engineering advanced electro-optic plastics which 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.

In order to transmit digital information over long or intermediate distances at extremely high-speeds (wide bandwidth), electrical signals, such as those produced by a computer or telephone, must be converted into optical signals for transmission over long-distance fiber-optic cable. Within the infrastructure of the Internet, a device known as an electro-optic modulator performs the electric-to-optic conversion. Within the electro-optic modulator, an electro-optic material performs the actual conversion of electricity to an optical signal. These materials change their optical properties in the presence of an electric field at extremely high frequencies (wide bandwidths).

Currently, the core electro-optic material contained in most modulators is a crystalline material, such as lithium niobate or gallium arsenide, which must be manufactured in strict dust-free conditions since even slight contamination can render them inoperable. As a result, these crystalline materials are expensive to produce. Current electro-optic crystals are limited to telecommunication speeds that are less than 40Gb/s (40 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. Additionally, it is important to note that these crystalline-based electro-optic modulators require expensive mechanical packaging (housings) generally comprised of materials, such as gold-plated Kovar, in order to assure operational integrity over required time and operating temperature ranges.

Unlike crystals, electro-optic plastics appear to be capable of being tailored at the molecular level for optimal performance characteristics. Additionally, electro-optic plastics are less expensive to manufacture and demand significantly lower power requirements (modulation voltages). The electro-optic plastics have demonstrated the ability to perform many times faster (>100Gb/s) than existing crystalline technology.

We consider electro-optic plastics 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 plastics, as well as their capacity to foster component size reduction, we believe electro-optic plastics have the potential to replace existing high-speed fiber-optics components that are used today in many commercial and military applications.

We also believe that the extreme miniaturization provided by advanced electro-optic plastics 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 plastics may include phased array radar, cable television (CATV), 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

For the past two decades, diverse corporate interests, including, to our knowledge, IBM, Lockheed Martin, DuPont, AT&T Bell Labs, Corning, Honeywell and 3M, as well as numerous universities and U.S. Government Agencies, have been attempting to produce high-performance, high-stability electro-optic plastics 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 plastics.

As a result, high frequency modulators engineered with electro-optic plastics designed on the BLA model or any other polyene chain design model 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 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

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the more harsh MILSPEC 883D (military specification) range of -55 degrees Celsius to 150 degrees Celsius.

None of our molecular designs rely on the BLA polyene chain design model. Our proposed solution lies in a far 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. To our knowledge, no one has previously been able to demonstrate molecular designs that could effectively exploit aromaticity in the design of a high-performance electro-optic plastic.

Our research and findings in this area resulted in our Company being the sole recipient of 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. Our Company did not actively elicit consideration or apply to receive this award. Frost & Sullivan independently contacted our Company and conducted several interviews which included chemical and technical experts in the field of electro-optics who were supplied with detailed public information regarding our Company's technological innovations.

Our Patents

We filed a new provisional patent application covering stable free radical Chromophores. We have thirty pending patent applications (consisting of five patent applications in each of Australia, Canada, China, European Patent Convention, Japan and the U.S. based on the PCT applications below) in the field of nonlinear optic chromophore design as follows:

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.

Our Latest Tests and Results

Prior to our recent experimental results, in 2004, quantum mechanical calculations were independently performed on our novel electro-optic plastic designs at government laboratories located at the Naval Air Warfare Center Weapons Division in China Lake, California. The results of these calculations suggest 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 plastics. Logical extensions of this novel molecular design paradigm further suggest even greater performance improvements. Subsequently, top scientists and engineers at Wright-Patterson Air Force Base reviewed these calculations and concluded that our molecular designs show promise of a five to ten times improvement over existing commercial polymeric architectures. Our conclusion is that performance improvements of this magnitude indicate a significant breakthrough in the field of fiber-optic telecommunication.

In May and June of 2006, we initiated performance evaluations of one of our first extremely high-performance electro-optic materials. The initial tests were performed by electro-optic expert, Dr. C.C. Teng, co-inventor of the renowned Teng-Man test, the industry-wide standard method of evaluating the material performance of electro-optic plastics, and subsequently confirmed by the University of Arizona's College of Optical Sciences, one of the most respected and fastest growing optical sciences departments in the world. Under identical laboratory conditions at low molecular loadings, one of our recent molecular designs outperformed one of the industry's highest performance

electro-optic systems by a factor as high as 650%.

We believe results of the Teng-Man test have established the validity of our novel, patent pending molecular design paradigm known as CSC (Cyclical Surface Conduction) theory. We believe 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 Perkinamine electro-optic materials. Thermal stability as high as 350 degrees Celsius was confirmed, significantly exceeding many other commercially available high performance electro-optic materials, such as CLD-1 which 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 Perkinamine material base was exposed to temperatures as high as 350 degrees Celsius, as determined by Thermo-Gravimetric Analysis (TGA).

The test results supported our Company's progress to introduce our materials into commercial applications such as optical interconnections, high-speed telecom and datacom modulators, and military/aerospace components.

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

In March 2008, we commenced production of our first prototype photonic chip, which we delivered to Photon-X, LLC to fabricate a prototype polymer optical modulator and measure its technical properties. As a result of delays caused by engineering setbacks related to our material production, the production of our first prototype photonic chip was temporarily halted, along with the completion of our proof of concept tests that were being administered by Dr. Robert Norwood at the University of Arizona Photonics Department. In order to address this issue, Dr. David Eaton s role and responsibilities with the Company were significantly expanded, and we added two veteran synthetic chemists to our science and technology team. We have since overcome a majority of these engineering setbacks and we are currently in the continual process of extensive testing for material performance, including, among other tests, the (r33) Teng-Man testing protocol. In June 2009 we released test results conducted by Dr. C.C. Teng that re-confirmed our previous test results, and we intend to deliver completed independent validated material performance test results, including the (r33) Teng-Man testing protocol, as they become ripe for release.

In August 2009, Photon-X, LLC commenced a compatible study, process sequences, and fabricated wafers/chips containing arrays of phase modulators. The first

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one hundred plus modulators 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 Perkinamine material 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 Perkinamine material can successfully withstand each step of the fabrication process without damage. We anticipate completing the development and building of functional prototype 40 Gb/s and 100 Gb/s modulators during the second quarter of 2010. However, we may incur delays in this process due to slower than expected material production within our laboratories and/or delays caused by the production of the modulator and testing procedures.

In August 2009, we retained Perdix, Inc. 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 expect our initial prototype amplitude modulator to be completed by the end of the second quarter 2010.

In November 2009 we introduced our new prototype phase modulator to the Gilder/Forbes Telecosm Conference in Tarrytown, New York and discussed how Lightwave s material could be spun onto silicon chips prior to stacking and used for input, output, and interconnect due to the stability of Lightwave s electro-optic polymer and Lightwave s recent demonstration that its proprietary Perkinamine material can survive all of the rigors of standard commercial manufacturing processes. Other applications discussed with the conference attendees included low cost modulators for fiber optic communications, multi-channel modulators for ultra dense wavelength division multiplex systems, and optical computing.

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 January 2010 we entered into an agreement with the University of Alabama at Tuscaloosa to conduct cooperative development, analytical testing, optimization, and scale-up of our proprietary materials platform, which should help shorten the time to market for our new Polymeric Electro-Optic materials.

In March 2010 we successfully concluded the 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.

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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 up-and-coming technology, involves the exploitation of electro-optic plastics.

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. Six of the largest inorganic fiber-optic component manufactures hold approximately 85% of the electro-optic modulator component market. They are JDS Uniphase, Sumitomo, Avanex, Covega, Fujitsu, and Bookham. 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 Plastics

Our developing technology that translates electric signals into optical signals relies upon organic electro-optic materials, such as electro-optic plastics. Electro-optic plastics 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.

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

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Costs.

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Size and versatility.

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Modulating/switching speed.

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Optical transmission properties.

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Lower operating voltages.

Other than our own Company, we are aware of only one other company, Gigoptix, Inc. who reorganized with Lumera Corporation ("Lumera") in December 2008, which has designed and patented potentially commercially feasible electro-optic plastics.

Prior to our own technological developments, Lumera held an exclusive monopoly on this area of technology because Lumera holds an exclusive present and future license to all electro-optic polymeric technology developed within the University of Washington. Lumera has yet, to our knowledge, to publicly demonstrate a robust, stable commercial modulator capable of low cost volume production.

As a result, no significant commercial market developments have occurred with electro-optic plastic devices. This is because all previously known electro-optic polymer design strategies incorporate molecular structures that adversely react to the requisite polymerization processes that thermally-stabilize the material matrix. This inherent design flaw causes the polymer to melt at unreasonably low temperatures, which corrupts the polymer's electro-optic performance.

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 plastic.

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 plastics 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 used in fiber-optic ground, wireless and satellite communication networks. We believe our electro-optic plastics may have broad applications in civilian and military telecommunications and advanced computational systems. Potential future applications may include: (i) telecommunications; (ii) backplane optical interconnects; (iii) entertainment; (iv) medical applications; (iv) satellite reconnaissance; (vi) navigational systems; (vii) radar applications; and (viii) all-optical transistors.

Telecommunications

Telecommunications is the primary initial target application for electro-optic plastics. Electro-optic plastics could not only simplify the device design of key components, such as modulators, significantly reducing packaging costs, but could also

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provide for higher speed devices with greater system miniaturization. Current crystalline (e.g. lithium niobate) fiber-optic modulators are difficult and expensive to manufacture 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. Plastics 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

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 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. In the future, all-optical (light switching light) signal processing could become possible using an advanced version of our chemistry.

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.

Medical Applications

Medical Applications for electro-optic plastics 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 plastics 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 bandwidths.

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 plastics 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.

Navigational Systems

Navigational 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 plastics 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.

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 "plastic" computers that operate on light instead of electricity, which in turn should significantly improve computation speeds.

Our Business Strategy

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:

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Develop electro-optic product devices.

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Continue to develop proprietary intellectual property.

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Streamline our product development process.

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Develop a comprehensive marketing plan.

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Maintain/develop strategic relationships with government agencies, private firms, and academic institutions.

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Attract seasoned executives and science and technology personnel to our Company.

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Expand into a state-of-the-art development, testing and manufacturing facility.

Develop Electro-Optic Product Devices

We intend to utilize our proprietary technology to create an initial portfolio of commercially feasible electro-optic plastic 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 plastic 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 plastic devices in order to position our Company to take advantage of emerging market opportunities.

Develop a Comprehensive Marketing Plan

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

In 2008 we retained TangibleFuture, Inc., a San Francisco based technology analysis and business development consulting company, to generate an independent assessment of our business opportunities in the fiber-optic telecommunications and optical computing sectors and develop strategies to penetrate those potential markets.

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

Almost since our inception, we have had beneficial strategic relationships with various government agencies that have provided us with funding and access to important technology. We intend to re-establish our relationship with DARPA, the Defense Advance Research Project Agency (the agency in the Intelligence Community credited with the origination of the Internet), by sharing the technical data and test results on our aromatic molecular materials. DARPA

previously provided our Company with funding in order to advance of our technologies and to bring them to the public market, but due to a change in focus at DARPA our funding was not renewed.

As we advanced towards the commercialization phase of our strategic plan, we commenced discussions with several potential strategic alliance partners ranging from micro-electronic component firms to large-scale computer companies, as well as petrochemical companies having very large volume production capabilities. We believe strategic alliances and/or technology licensing will be a crucial step in commercializing our novel technologies and achieving competitive advantages. We entered into a strategic

relationship with Photon-X, LLC, a technology solutions provider for polymer waveguides that works in conjunction with various government agencies.

We have also developed an excellent relationship with the University of Delaware, an institution well known for excellence in chemical engineering, which we intend to maintain and strengthen.

Attract seasoned executives and 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. 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 Guru. 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 August 2008, we retained Mr. James S. Marcelli as our Chief Executive Officer. Mr. Marcelli has served as the president and/or chief executive officer of multiple start-up and growth companies in high tech development and manufacturing businesses with a core focus on business and market development and building strong management teams.

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.

Expand Into A State-Of-The-Art Development, Testing and Manufacturing Facility

We plan to expand into a state-of-the-art development, testing and manufacturing facility in order to advance our technology platforms, attract additional key industry talent, streamline our product development processes and minimize our time to market. We have already begun to integrate our operations with respect to streamlining our product development process and minimizing the time to market for our potential products through a multifaceted approach to material development. We are able to

accomplish this because our technology provides us with the flexibility to create tailored material properties for a multitude of specific applications, and also to allow for the specific tailoring of materials for compatibility with silicon, glass, metals or many plastics.

In August 2006, we executed a co-location agreement with a New Jersey-based micro-optics company, InPlane Photonics that allowed our scientists to advance our organic material development. The agreement with InPlane was terminated in early 2007 in favor of a strategic alliance formed in December, 2006 with Photon-X, LLC, a Pennsylvania-based company that has significant experience in polymer waveguide production. Photon-X is working as a strategic ally with our Company to establish a pre-production line in order to test and integrate our organic materials into waveguide devices and system prototypes as a first step toward product commercialization. The agreement affords our Company access to a full suite of fabrication facilities capable of producing commercial quantities of precision micro-optic devices such as high-speed 40Gb/s telecom modulators, optical filters, and optical interconnects important to military and civilian global information movement and management markets.

Our Research and Development Process

Our research and development process consists of the following steps:

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We develop novel polymer materials utilizing our patent pending technology to meet certain performance specifications. We then develop methods to synthesize larger quantities of such material.

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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.

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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.

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We create an initial device design using simulation software. Following device fabrication, we run a series of optical and electronic tests on the device.

Our Current Strategic Partners

Photon-X, LCC

We entered into a strategic relationship with Photon-X, LLC, a technology solutions provider for polymer waveguides that works in conjunction with various government agencies. In connection therewith, we will provide Photon-X with our unique polymeric material to be tested and used on certain niche devices for anticipated military and commercial applications. If the tests are successful, our management believes that our alliance with Photon-X will serve to simultaneously lead its commercialization as well as publicly validate its scientific findings, creating a new standard in electro-optic polymers.

TangibleFuture, Inc.

In 2008 we retained TangibleFuture, Inc., a San Francisco based technology analysis and business development consulting company, to generate an independent assessment of our business opportunities in the fiber-optic telecommunications and optical computing sectors. TangibleFuture, Inc. has substantial expertise in photonics and fiber optic telecommunications; and their team has experience in running and developing photonics related companies.

Perdix

In August 2009, we retained Perdix, Inc. to help us identify and build prototype products for high growth potential target markets in fiber optic telecommunications systems. Perdix, Inc. provides engineering, research, and development services for government and industry in the optics and optics related industries. In addition to optical design, science, and technology, its specific strength is materials science as applied toward novel optical device design and development. They have significant expertise in the liquid crystal, polymer, nanocomposite, and nonlinear optical materials field. 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 expect our initial prototype amplitude modulator to be completed by the end of the second quarter 2010.

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.

National Reconnaissance Office (NRO)

During 1998 and 1999, we worked with the NRO to advance the development of extremely high performance electro-optic polymers pursuant to an unclassified Director's Innovative Initiative. The NRO is a member of the Department of Defense Agency and plays a primary role in achieving information superiority for the U.S. Government and Armed Forces. The NRO designs, builds, and operates reconnaissance satellites, assists in military operation preparedness, and monitors the environment. NRO products are paramount to national security and are provided to an expanding list of users including the Central Intelligence Agency and the Department of Defense.

Army Research Laboratory (ARL)

During 1998 through 2000, we were provided strong support for our electro-optic materials development by the Process and Properties Branch of the Army Research Laboratory on the Aberdeen Proving Grounds in Aberdeen, Maryland. This support was

in cooperation with other government agencies and included the advisory support of the Army Missile Command at Redstone Arsenal. The Army Research Laboratory provided us with access to its highly advanced organic chemical development laboratories and state-of-the-art analytic equipment. PSI- TEC operated out of more than five laboratories at the Army Research Laboratory. During the nascent stages of our technological development, this support provided us with the strong foundations we needed to progress electro-optic technology into its second generation. The technically skilled members at Army Missile Command provided our engineers instruction on the latest advancements of the military's research and development in the area of polymeric materials and device fabrication. Much of our initial work at the Army Research Laboratory was based upon revolutionary advancements of our Chief Technical Officer's (Dr. Frederick J. Goetz) highly unique electro-optic polymeric design as exhibited in our U.S. Patent #6,041,157: "Environmentally sensitive compositions of matter based on 3H-fluoren-3-ylidenes and process for making same."

Defense Advance Research Project Agency (DARPA)

DARPA, the agency in the Intelligence Community credited with the origination of the Internet, provided our Company with funding for the advancement of our technologies and bridging these technologies to the public market. Under the auspices of DARPA initiatives, the MORPH (Molecular Photonics) and C2OI (Chip-to-Chip Optical Interconnects) programs, our advanced technologies were reviewed by the Naval Air Warfare Center Weapons Division (NAVAIR) and the Air Force Research Laboratory (AFRL). DARPA works to maintain the technological superiority of the U.S. military and to prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their military use.

Naval Air Warfare Center Weapons Division (NAVAIR)

Under the auspices of the Defense Advance Research Projects Agency (DARPA), high-level scientists at the Naval Air Warfare Center Weapons Division in China Lake, California reviewed our electro-optic molecular design paradigms in 2004. Computer calculations regarding the quantum mechanical performance of our electro-optic molecular designs were repeated and verified by NAVAIR staff. These calculations suggest an improvement in electro-optic performance over the current state-of-the-art.

Our unique, proprietary technology was demonstrated through detailed computer calculations to improve existing approaches in the production of ultra fast frequencies (wide bandwidths). Calculations performed at NAVAIR regarding our preliminary, first-stage next-generation molecular architectures indicate an improvement of hyperpolarizability (electro-optic character) of several times existing state-of-the-art molecular designs.

These computer calculations have been validated by independent tests performed on our recently developed electro-optic materials at the University of Arizona.

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Air Force Research laboratory (AFRL)

In cooperation with the Defense Advance Research Projects Agency (DARPA), our molecular design technologies were reviewed by top-level and senior engineers and scientists at the Air Force Research Laboratory at Wright-Patterson Air Force Base in Dayton, Ohio. An Air Force Research Laboratory senior scientist and engineer, in connection with a National Science Foundation proposal and as a result of reviews conducted under the Defense Advance Research Projects Agency's C2OI (Chip-to-Chip Optical Interconnects) and MORPH (Molecular Photonics), concluded that, "[our] molecular designs show promise of a five to ten times improvement over existing commercial polymeric architectures." In review of detailed calculations performed on our future material designs, Air Force Research Laboratory personnel further note, "Computer simulations and modeling indicate that [our] approach to materials synthesis has the potential for realizing high nonlinearity (i.e., high electro-optic performance). This, in turn, could result in five to ten times lower drive voltages for devices." "Synthesis of [our] materials to verify the properties predicted by the computer models is essential for new NLO (electro-optic) polymer material development.... This is a very novel and promising approach that has the potential for high payoff."

These predictions were validated in 2006 by independent tests performed on our patent pending electro-optic materials at the University of Arizona, which performed approximately seven times better than other competitive technologies.

In regards to applications of our materials, an Air Force Research Laboratory senior scientist states, "Highly active NLO (electro-optic) polymer materials are key for the realization of next generation electro-optic devices and render high application potential for high-speed fiber-optic telecommunication (i.e., Internet, HDTV), satellite reconnaissance (i.e., homeland security), and navigation and guidance systems."

Our Competition

The markets we are targeting for our electro-optic polymer technology are intensely competitive. Among the largest fiber-optic component manufactures are JDS Uniphase, Avanex, Sumitomo, Fujitsu, Mitsubishi, Corning, Bookham, OpNext and FiBest. Additional significant domestic component manufacturers include Covega, Apogee, Multiplex, and CyOptics. All of 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.

Other than our own Company, we are aware of only one other company, Gigoptix, Inc. who reorganized with Lumera Corporation ("Lumera") in December 2008, which has designed and patented potentially commercially feasible electro-optic plastics. Prior to our own technological developments, Lumera held an exclusive monopoly on this area of technology because Lumera holds an exclusive present and future license to all electro-optic polymeric technology developed within the University of Washington. Lumera has yet, to our knowledge, to publicly demonstrate a robust, stable commercial modulator capable of low cost volume production.

As one of only two companies known to us that are actively pursuing the development of high-performance electro-optic materials for application and

development in the high-speed telecommunication markets, we believe that upon the commercialization of our technology, that we will be poised to obtain a significant portion of the component manufacturing market. Electro-optic plastics demonstrate several advantages over other technologies, such as crystalline-based technologies, due to their reduced manufacturing and processing costs, higher performance and lower power requirements. Our electro-optic plastics are CSC model molecules that have demonstrated significant stability advantages over our sole known competitor's materials. In the expectation of becoming the sole producer of high-performance, high-stability electro-optic materials, we hope to capture all or some of this potential electro-optic component market.

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

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The ability to develop and commercialize highly stable polymer-based products, including obtaining appropriate patent and proprietary rights protection.

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Lower cost, high production yield for these products.

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The ability to enable integration and implement advanced technologies.

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Strong sales and marketing 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:

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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.

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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.

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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.

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Take advantage of acquisition or other opportunities more readily than we can.

Our Laboratory Facilities

Our Company operates an organic synthesis and thin-films laboratory in Wilmington, Delaware. These facilities include state-of-the-art equipment including NMR, IR, UV/VIS and HPLC analytical systems, profilometry evaluation and electro-optic (r33) materials characterization necessary to produce next generation fiber-optic organic materials. We also utilize an electro-optic test facility in conjunction with local universities to perform critical evaluation tests (eg. R33) on our polymer material films and future electro-optic devices, such as our waveguides, modulators, and all-optical transistors.

Item 1A.

Risk Factors.

Not Applicable

Item 1B.

Unresolved Staff Comments.

Not Applicable

Item 2.

Properties.

Our executive and business office headquarters are located at 121 Continental Drive, Suite 110, Newark, Delaware 19713. We coordinate our operations and market our services from this space. Our lease expires on June 30, 2011 and our annual rent for this space is $9,142.

We also lease approximately 1,400 square feet of laboratory space at 41A Germay Drive, Wilmington, Delaware 19804-1100. We operate an organic synthesis and thin-films laboratory from this facility, which has state-of-the-art

equipment including NMR, IR, UV/VIS and HPLC analytical systems, profilometry evaluation and electro-optic (r33) materials characterization necessary to produce next generation fiber-optic organic materials. We lease this space at fair market value rates from a third party. The lease expires on June 30, 2011 and annual rent for the space is $9,393.60.

Item 3.

Legal Proceedings.

During the spring of 2005, we raised $1,000,000 through the sale of 4,000,000 shares of our common stock in a limited offering to persons considered to be accredited investors. Our Company received a legal opinion from outside counsel as to the availability of an exemption from registration with the Securities and Exchange Commission (the "SEC" or "Commission") with respect to the limited offering.

In December 2005, we were informed by the Commission that it is investigating the circumstances surrounding the $1,000,000 offering described above including the

subsequent public resale of certain shares originally sold in the offering, along with related matters. Our Company has further been informed that the original issuance of the stock and subsequent resale thereof may have been done, in the opinion of the Commission, in violation of the registration provisions of the Securities Act of 1933, as amended. These matters could lead to enforcement action by the Commission. Our Company has committed to cooperate fully with the Commission with the intention that all issues will be resolved as quickly as possible. During fiscal year 2009, we had no contact with the Commission regarding these matters.

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

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 currently traded under the symbol LWLG on the on the over-the-counter bulletin board ("**OTCBB**").

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

		High		Low	
		Bid	Ask	Bid	Ask
2008	1st Quarter	$2.15	$2.20	$0.70	$0.73
	2nd Quarter	$2.66	$2.70	$1.21	$1.23
	3rd Quarter	$2.03	$2.05	$0.53	$0.62
	4th Quarter	$1.08	$1.03	$0.26	$0.30

2009	1st Quarter	$0.76	$0.85	$0.28	$0.38
	2nd Quarter	$1.06	$1.20	$0.35	$0.40
	3rd Quarter	$0.97	$0.99	$0.60	$0.66
	4th Quarter	$2.57	$2.65	$0.96	$0.99

Holders

As of the date of this annual report, we have a total of 41,139,542 shares of common stock outstanding, held of record by approximately 2,449 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, 2009.

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)	2,619,450	$1.29	-0-
Equity compensation plans not approved by security holders (2)	3,792,917	$0.51	1,392,450
Total	6,412,367	$0.83	1,392,450

1.

Reflects our 2007 Employee Stock Plan for the benefit of our directors, officers, employees and consultants. We initially reserved 3,500,000 shares of common stock for such persons pursuant to that plan.

2.

Comprised of common stock purchase warrants we issued to consultants and additional securities issued to our directors, officers, employees and consultants pursuant to our 2007 Employee Stock Plan pursuant to an amendment to that plan not yet approved by our security holders.

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

During June 2009, pursuant to a private placement memorandum, we issued 2,479,500 shares of common stock at $0.345 per share for aggregate proceeds of $855,000.

Securities issued for services

Date	Security

January 2009	100,000 shares of common stock for $25,000 in legal services.
June 2009	261,000 shares of common stock for $90,000 in professional services.
	Warrant - 464,000 shares of common stock at $0.345 per share for professional services.
July 2009	100,000 shares of common stock for $75,000 in professional services.

Securities issued pursuant to our Employee Stock Plan

Date	Security
January 2009	Stock option - 25,000 shares of common stock at $.25 per share.
	Common stock - 100,000 shares for $58,000 in services rendered.
	Right to buy 400,000 shares at $.25 per share, of which 180,550 shares were purchased for total proceeds of $45,138.
February 2009	Stock option - 25,000 shares of common stock at $.25 per share.
June 2009	Stock option - 25,000 shares of common stock at $.34 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

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

We are a developmental stage company that has developed and continues to develop Application Specific Electro-Optic Polymers (ASEOP) which has high electro-

optic activity and are thermally and photo-chemically stable, which we believe could have a broad range of applications in the electro-optic device market. We engineer our proprietary electro-optic plastics at the molecular level for superior performance, stability, cost-efficiency and ease of processability. We expect our electro-optic plastics to broadly replace more expensive, lower-performance materials that are currently used in fiber-optic ground, wireless and satellite communication networks.

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. The actual conversion of electricity to an optical signal may be performed by a molecularly-engineered material known as an electro-optic plastic.

We are currently developing electro-optic plastics 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 300 degrees Celsius is necessary for vertical integration into many semi-conductor production lines. Recent results, independently confirmed by the University of Arizona, have demonstrated that the molecular performance of some of our Company's molecular designs perform 650% better than competitive electro-optic compounds.

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

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Satellite Reconnaissance

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Navigational Systems

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Radar Applications

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Telecommunications

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Optical Interconnects

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Optical Computing

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Entertainment

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Medical Applications

To be successful, we must, among other things:

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Develop and maintain collaborative relationships with strategic partners;

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Continue to expand our research and development efforts for our products;

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Develop and continue to improve on our manufacturing processes and maintain stringent quality controls;

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Produce commercial quantities of our products at commercially acceptable prices;

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Rapidly respond to technological advancements;

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Attract, retain and motivate qualified personnel; and

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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 material products.

Plan of Operation

Since our inception, we have been engaged primarily in the research and development of our polymer materials technologies and potential products. We are devoting significant resources to engineer next-generation electro-optic plastics 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 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 vendor, we expect that our financial condition and results of operations will undergo substantial change. In particular, we expect to record both revenue and expense from product sales, to incur increased costs for sales and marketing and to increase general and administrative expense. Accordingly, the financial condition and results of operations reflected in our historical financial statements are not expected to be indicative of our future financial condition and results of operations.

On August 8, 2006, we contracted with Triple Play Communications Corporation, a design and market consulting company, to deliver a comprehensive market opportunity assessment report for high speed 40G (commercial) & 100G+ (military/aerospace) modulators and system applications.

In August, 2006 we entered into a co-location agreement with InPlane Photonics, a New Jersey-based micro-optics company that allowed our scientists to establish a pre-production line in order to test and integrate our organic materials into waveguide devices and system prototypes as a first step toward product commercialization. This agreement was terminated at the end of January 2007 so that we could focus on pursuing a strategic relationship with Photon-X LLC, a Pennsylvania-based firm with extensive experience in polymer waveguide processing. We entered into a non-binding memorandum of understanding with Photon-X, LLC in December 2006 to work towards creating a fee for services agreement with Photon-X, LLC to design, develop, produce and market electro-optic components based upon our polymer technology, which we ultimately finalized in March 2007. This agreement with Photon-X, LLC enables our Company access to a full suite of fabrication facilities capable of producing commercial quantities of precision micro-optic devices such as high-speed (40GHz) telecom modulators, optical filters, and optical interconnects important to military and civilian global information movement and management markets.

On September 25, 2006 we obtained independent laboratory results that confirmed the thermal stability of our Perkinamine electro-optic materials. Thermal stability as high as 350 degrees Celsius was confirmed, significantly

exceeding many

other commercially available high performance electro-optic materials, such as CLD-1 which 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 Perkinamine material base was exposed to temperatures as high as 350 degrees Celsius, as determined by Thermo-Gravimetric Analysis (TGA). The test results supported our Company's progress to introduce our materials into commercial applications such as optical interconnections, high-speed telecom and datacom modulators, and military/aerospace components.

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

In January 2008, we retained TangibleFuture, Inc., a San Francisco based technology analysis and business development consulting company, to generate an independent assessment of our business opportunities in the fiber-optic telecommunications and optical computing sectors and develop strategies to penetrate those potential markets.

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. As a result of delays caused by engineering setbacks related to our material production, the production of our first prototype photonic chip was temporarily halted, along with the completion of our proof of concept tests that were being administered by Dr. Robert Norwood at the University of Arizona Photonics Department. In order to address this issue, Dr. David Eaton s role and responsibilities with the Company were significantly expanded, and we added two veteran synthetic chemists to our science and technology team. We have since overcome a majority of these engineering setbacks and we are currently in the continual process of extensive testing for material performance, including, among other tests, the (r33) Teng-Man testing protocol. In June 2009 we released test results conducted by Dr. C.C. Teng that re-confirmed our previous test results, and we intend to deliver completed independent validated material performance test results, including the (r33) Teng-Man testing protocol, as they become ripe for release.

In August 2009, Photon-X, LLC commenced a compatible study, process sequences, and fabricated wafers/chips containing arrays of phase modulators. The first one hundred plus modulators 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 Perkinamine material to

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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 Perkinamine material can successfully withstand each step of the fabrication process without damage. We anticipate completing the development and building of functional prototype 40 Gb/s and 100 Gb/s modulators during the second quarter of 2010. However, we may incur delays in this process due to slower than expected material production within our laboratories and/or delays caused by the production of the modulator and testing procedures.

In August 2009, we retained Perdix, Inc. 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 expect our initial prototype amplitude modulator to be completed by the end of the second quarter 2010.

In November 2009 we introduced our new prototype phase modulator to the Gilder/Forbes Telecosm Conference in Tarrytown, New York and discussed how Lightwave s material could be spun onto silicon chips prior to stacking and used for input, output, and interconnect due to the stability of Lightwave s electro-optic polymer and Lightwave s recent demonstration that its proprietary Perkinamine material can survive all of the rigors of standard commercial manufacturing processes. Other applications discussed with the conference attendees included low cost modulators for fiber optic communications, multi-channel modulators for ultra dense wavelength division multiplex systems, and optical computing.

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 January 2010 we entered into an agreement with the University of Alabama at Tuscaloosa to conduct cooperative development, analytical testing, optimization, and scale-up of our proprietary materials platform, which should help shorten the time to market for our new Polymeric Electro-Optic materials.

In March 2010 we successfully concluded the 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.

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

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Satellite Reconnaissance

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Navigational Systems

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Radar Applications

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Telecommunications

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Optical Interconnects

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Optical Computing

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Entertainment

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Medical Applications

In an effort to maximize our future revenue stream from our electro-optic polymer products, we are currently evaluating each of or some combination of the following approaches:

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Licensing our technology for individual specific applications;

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Entering into collaborative or joint venture agreements with one or a number of partners; or

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Selling our products directly to commercial customers.

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

We have incurred substantial net losses since inception. We have satisfied our capital requirements since inception primarily through the issuance and sale of our common stock. During 2004 we raised approximately $529,000 from the issuance of convertible promissory notes, of which $30,000 was converted into common stock of the company during 2004 and the remaining $499,000 converted in 2005. Also, during 2005, we raised an aggregate of $1,000,000 from the private sale of our common stock. During 2006, we raised approximately $425,000 from the private sale of

our common stock, of which $200,000 was rescinded during 2007. During 2007, we raised approximately $2,301,524 from the private sale of our common stock. During 2008, we raised approximately $414,000 from the private sale of our common stock and $375,270 upon the exercise of existing warrant holder s warrants. Through June 30, 2009, we raised approximately $855,000 from the sale of our private stock. We have also issued shares of our common stock and warrants to purchase shares of our common stock in exchange for services rendered to our company, including professional services. During October 2009 we obtained proceeds of $455,000 from the exercise of existing warrant holder s warrants.

Award

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.

Results of Operations

Comparison of fiscal 2009 to fiscal 2008

Revenues

We had no revenues during the years ended December 31, 2009 and 2008 since we are a development stage company that has yet to commence revenue creating operations.

Operating Expenses

Our operating expenses were $2,720,884 and $4,242,353 for the years ended December 31, 2009 and 2008, respectively, for a decrease of $1,521,469. This decrease in operating expenses was due primarily to a decrease in management fees and consulting expenses.

Included in our operating expenses for the year ended December 31, 2009 was $1,306,642 for research and development expenses compared to $1,421,955 for the year ended December 31, 2008, for a decrease of $115,313. This is primarily due to a reduction in consulting fees offset by an increase in laboratory electro-optic device prototype, development and testing expenses.

Research and development expenses currently consist primarily of compensation for employees engaged in internal research and product development activities; laboratory operations, outsourced prototype electro-optic device development and processing work; material 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 could increase as a result of continued development and commercialization of our electro-optic materials technology; subcontracting work to build prototypes; expanding and equipping in-house laboratories; hiring additional technical and support personnel; pursuing other potential business opportunities; and incurring related operating expenses.

Consulting expenses decreased $210,448 from $210,448 for the year ended December 31, 2008 to $0 for the year ended December 31, 2009. Wages and salaries decreased $40,115 from $1,051,558 for the year ended December 31, 2008 to $1,011,443 for the year ended December 31, 2009.

Laboratory material development, production and testing expense and electro-optic device development prototyping increased $166,668 from ($15,931) for the year ended December 31, 2008 to $150,737 for the year ended December 31, 2009. The ($15,931) for the year ending December 31, 2008 was due to a ($35,145) adjustment in accounts payable in 2008.

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

General and administrative expenses decreased $1,406,156 to $1,414,242 for the year ended December 31, 2009 compared to $2,820,398 for the year ended December 31, 2008. This decrease is primarily due to warrant agreements for consulting services during the year ending December 31 2008 valued at $976,193. There were also decreases in management fees, executive compensation, legal fees and market research fees, which were offset by an increase in accounting fees and travel expenditures.

Management fees decreased $376,007 to $55,330 from $431,337 for the year ended December 31, 2008 since the Company decided not to renew its management contract on February 28, 2009.

Executive compensation decreased $181,084 to $702,733 from $883,817 mostly due to the stock award issued in 2008 to the Chief Executive Officer.

Legal fees decreased $73,970 to $101,438 for the year ended December 31, 2009 compared to $175,408 for the year ended December 31, 2008.

Market research fees were $2,790 and $75,519 for the years ended December 31, 2009 and 2008.

Accounting including administrative fees increased $47,207 to $132,765 from $85,558 since the operations for the year ended December 31, 2009 included fees associated with startup, preparation of the 2008 Form 10-K, resolution of prior payroll tax filing issues primarily associated with the October 2006 reorganization and other accounting issues. Included in results of operations for the year ended December 31, 2009 is amortization of warrants of $177,883 for accounting and administrative services.

Travel expenses increased $26,356 to $59,060 in 2009 compared to $32,704 in 2008.

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, management, sales and marketing of our products and services.

Net Loss

Net loss was $2,721,871 and $4,340,607 for the year ended December 31, 2009 and 2008, respectively, for a decrease of $1,618,736, primarily resulting from the reduction in management fees and consulting expense in the year ended

December 31, 2009.

Critical Accounting Policies

The 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 about future events that affect the amounts reported in the financial statements and

accompanying notes. Future events and their effects cannot be determined with absolute certainty. Therefore, the determination of estimates requires the exercise of judgment. Actual results inevitably will differ from those estimates, and such differences may be material to the financial statements. The Company believes that, of its significant accounting policies, the following may involve a higher degree of judgment, estimation, or complexity than other accounting policies.

Merger

On July 14, 2004, the Company acquired PSI-TEC. Under the terms of the merger agreement, the stockholders of PSI-TEC received 15,600,000 shares of common stock in exchange for its 2,206,280 shares. Following the merger, the Company changed its name to PSI-TEC Holdings, Inc. Under accounting principles generally accepted in the United States, the share exchange is considered to be a capital transaction in substance rather than a business combination. That is, the share exchange is equivalent to the issuance of stock by PSI-TEC Holdings, Inc. for the net monetary assets of PSI-TEC, accompanied by a recapitalization, and is accounted for as a change of capital structure. Accordingly, the accounting for the share exchange will be identical to that resulting from a reverse acquisition, except no goodwill will be recorded. Under reverse takeover accounting, the post-reverse acquisition comparative historical financial statements of the legal acquirer, PSI-TEC Holdings, Inc., are those of the legal acquiree, PSI-TEC, which is considered to be the accounting acquirer. On October 20, 2006, PSI-TEC Holdings, Inc. and PSI-TEC merged and changed its name to Third-Order Nanotechnologies, Inc. On March 10, 2008, Third-Order Nanotechnologies, Inc. changed its name to Lightwave Logic, Inc.

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 2009 and 2008: no dividend yield in both years, expected volatility between 127% and 141% in 2009 and between 114% and 151% in 2008, risk-free interest rate between 0.03% and 2.81% in 2009 and between 2.46% and 3.41% in 2008 and expected option life of one month to five years in 2009 and five years in 2008.

As of December 31, 2009, there was $1,603,189 of unrecognized compensation expense related to non-vested market-based share awards that is expected to be recognized through November 2011.

Liquidity and Capital Resources

During 2009, net cash used in operating activities was $1,107,975 and net cash used in investing activities was $108,132, which was due primarily to the Company s research and development activities and general and administrative expenditures. Net cash provided by financing activities during 2009 was $1,587,872. At December 31, 2009, our cash and cash equivalents totaled $459,989, our assets totaled $878,664, our liabilities totaled $131,676, and

we had stockholders equity of $746,988.

During 2008, net cash used in operating activities was $1,248,318 and net cash provided by investing activities was $80,322, which was primarily for the assignment and

sale of note receivable. Net cash provided by financing activities during 2008 was $776,770. At December 31, 2008, our cash and cash equivalents totaled $88,225, our assets totaled $374,565, our liabilities totaled $168,027, and we had stockholders' equity of $206,538.

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 plastic 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 in excess of $1,500,000 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 plastic technology during the latter portion of 2010.

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 August 2010, 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. If adequate funds are not available to satisfy either short-term or long-term capital requirements, or if planned revenues are not generated, we may be required to substantially limit our operations. This limitation of operations may include reductions in capital expenditures and reductions in staff and discretionary costs.

We expect that our cash used in operations will increase during 2010 and beyond as a result of the following planned activities:

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The addition of management, sales, marketing, technical and other staff to our workforce;

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Increased spending for the expansion of our research and development efforts, including purchases of additional laboratory and production equipment;

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Increased spending in marketing as our products are introduced into the marketplace;

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Developing and maintaining collaborative relationships with strategic partners;

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Developing and improving our manufacturing processes and quality controls; and

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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, 2009

Net cash used in operating activities was $1,107,975 for the year ended December 31, 2009, consisting of payments for research and development, legal, professional and consulting expenses, rent and other expenditures necessary to develop our business infrastructure, offset by $55,330 in deferred charges, $177,881 in warrants issued for services, $1,009,051 in options issued for services, $128,000 in common stock issued for services, $132,058 in purchase right agreement amortization, $37,500 in amortization of prepaid expenses, ($3,675) in prepaid expenses, and $60,779 in accounts payable and accrued expenses.

Net cash used by investing activities was $108,132 for the year ended December 31, 2009, consisting of the purchase of intangibles (patents) for $48,799 and for the purchase of equipment in the amount of $59,333.

Net cash provided by financing activities was $1,587,872 for the year ended December 31, 2009 and consisted of $855,000 proceeds from common stock and $675,234 proceeds from the exercise of warrants, $45,138 from the exercise of purchase right agreements and $12,500 of proceeds from subscription receivable.

For the year ended December 31, 2008

Net cash used in operating activities was $1,248,318 for the year ended December 31, 2008, consisting of payments for management, legal, professional and consulting expenses, rent and other expenditures necessary to develop our business infrastructure, offset by $443,732 in deferred charges, $1,228,474 in warrants issued for services, $963,774 in options issued for services, $435,000 in common stock issued for services, $1,244 in assets receivable, and $7,172 in related party accounts payable.

Net cash provided by investing activities was $80,322 for the year ended December 31, 2008, consisting of $100,000 from the assignment and sale of a note receivable and $28,524 from sale of securities, offset by the purchase of intangibles (patents) for $37,995 and for the purchase of equipment in the amount of $10,207.

Net cash provided by financing activities was $776,770 for the year ended December 31, 2008 and consisted of $414,000 of proceeds from the sale of our common stock, and $362,770 of proceeds from exercise of 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.

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 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, 2009.

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. We did not include in this annual report an attestation report of our registered

public accounting firm regarding internal control over financial reporting because our management's report was not subject to attestation by our registered public accounting firm pursuant to temporary rules of the Securities and Exchange Commission that permit our Company to provide only management's report in this annual report.

Limitations on Controls

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.

Changes to company internal controls

In our opinion, there were no material changes in our Company's internal controls over financial reporting during our fourth fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal controls 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/Period Served
James S. Marcelli	62	Director, Chief Executive Officer, President	1 yr./Since 2008
Frederick J. Goetz, Jr.	34	Director, Chief Science Officer	1 yr./Since 2004
David F. Eaton	63	Chief Technology Officer	
Andrew J. Ashton	33	Director, Senior Vice President, Treasurer, Secretary	1 yr./Since 2004
Terry Turpin	67	Optical Computing Guru(1)	Since March 2008
Philips W. Smith	72	Non-Executive Chair Of The Board Of Directors	1 yr./Since 2010
Ross Fasick	77	Director	1 yr./Since 2008
William C. Pickett, III	66	Director	1 yr./Since 2008
Thomas E. Zelibor	55	Director	1 yr./Since 2008

(1)

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

Business experience of directors, executive officers, and significant employees

Mr. James S. Marcelli. Mr. Marcelli has served as an officer and director of our Company since August 2008. Mr. Marcelli is in charge of the day-to-day operations of our Company and its movement to a fully functioning commercial corporation. 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. Frederick J. Goetz, Jr. Mr. Goetz has served as an officer and director of our Company since July 2004. He is a leader in the corporate coding and operation of electrostatic simulation software for nonlinear optic materials development and aids in the development of novel molecular designs and quantum mechanical interpretation at our Company. Prior to joining our Company, Mr. Goetz began his career at Lawrence Berkeley Laboratory and the Army Research Laboratory on Aberdeen Proving Grounds

after graduating first in his class in physics from the University of Delaware in 1997. He holds a degree in physics and currently serves as technical advisor on the board of Universal Capital Management.

Dr. David F. Eaton. Mr. Eaton has served as an officer of our Company since May 2007. For over 30 years, Mr. Eaton was employed in DuPont's chemical division, with his most recent appointment being its technology director. Most recently, from September 2003 to present, Mr. Eaton founded and is the principal of Light Insights, LLC, a consulting firm, and from March 2005 to present, Mr. Eaton has served as vice president of technology for software company Precision Cure, LLC. Mr. Eaton has a bachelor's degree in chemistry from Wesleyan University and a Ph.D. in chemistry from the California Institute of Technology.

Mr. Andrew J. Ashton. Mr. Ashton has served as an officer and director of our Company since July 2004. Since that time 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. At that time he joined PSI-TEC Corporation as a financial manager and was responsible for day to day administrative duties. He was instrumental in securing government funding, PSI-TEC's sole financial source, until 2003.

Mr. Terry Turpin. Mr. Turpin has served as our Optical computing Guru 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 Essex Corporation was acquired by Northrop Grumman Space & Mission Systems Corp., 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, Mr. Turpin was employed by the National Securities Agency (NSA). He was Chief of the Advanced Processing Technologies Division for ten years. He holds patents for optical computers and adaptive optical components. Mr. Turpin represented NSA on the Tri-Service Optical Processing Committee organized by the Under Secretary of Defense for Research and Engineering. He received a Bachelor of Science degree in Electrical Engineering from the University of Akron in 1966 and a Master of Science degree in Electrical Engineering from Catholic University in Washington, D.C. in 1970.

Dr. Philips W. Smith. Dr. Smith has served as Non-Executive Chair of the Board of Directors of our Company since January 2010. Dr. Smith is the father of Thomas P. Smith, who in January 2010, resigned as board member. In 2001, Dr. Smith brought TASER International, Inc. public through an IPO and most recently served as Chairman of TASER International, Inc. (NasdaqGS: TASR) until his retirement from that position in December 2004. Dr. Smith subsequently resigned his TASER board seat in October

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2006. Since then, Dr. Smith has been actively involved as an investor in start-up companies. Dr. Smith s educational experience includes a B.S. from West Point, an M.B.A. from Michigan State University and a PhD from St. Louis University.

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

Mr. William C. Pickett, III. Mr. Picket 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. Since February 2005 Mr. Pickett has been serving as a member of the Board of Directors, Executive Committee, Treasurer and Chair of the Finance Committee of the Ronald McDonald House of Delaware; and since December 2004, Mr. Picket has been serving as Chair of Audit Committee and Chief Compliance Officer of the Operation Warm charity. Mr. Pickett received his MBA from Harvard Business School and a BA from Trinity College.

Thomas E. Zelibor, Rear Admiral, USN (Ret). RADM Zelibor has served as a director of our Company since July 2008. RADM Zelibor has over twenty years of strategic planning and senior leadership experience. Currently, RADM Zelibor serves 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 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.

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.

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Section 16(a) Beneficial Ownership Reporting Compliance

To the best of our knowledge, no officer, director and/or beneficial owner of more than 10% of our Common Stock, failed to file reports as required by Section 16(a) of the Exchange Act during the period covered by this report.

Code of Ethics

The Company has not yet adopted a code of ethics for its principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions or any other position due to its development stage, the small number of executive officers involved with the Company, and the fact that the Company operates with few employees. Our board of directors will continue to evaluate, from time to time, whether a code of ethics should be developed and adopted.

Audit Committee

During the period covered by this report, the Company did not have a separately designated standing audit committee in place; the Company s entire board of directors served, and currently serves, in that capacity. 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. Our board of directors will continue to evaluate, from time to time, whether a separately designated standing audit committee should be put in place. Mr. William C. Pickett, III serves as our audit committee financial expert as that term is defined by the rules promulgated by the Securities and Exchange Commission.

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, 2009 and 2008.

Summary Compensation Table

Name and Principal Position	Year	Salary	Bonus	Stock Awards	Option Awards	Non-Equity Incentive Plan Compensation	Nonqualified Deferred Compensation Earnings	All Other Compensation	Total
		($)	($)	($)	($)	($)	($)	($)	($)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
James S. Marcelli	2009	174,000	14,500	0	516,233	0	0	7,200	711,933
CEO, President	2008	73,100	0	360,000	215,555	0	0	9,350	658,005
Director(1)									
Harold R. Bennett	2008	100,000	0	0	48,738	0	0	0	148,738
Director									
CEO(2)									
Frederick J. Goetz, Jr.,	2009	96,000	0	0	13,206	0	0	0	109,206
	2008	96,000	0	0	0	0	0	0	96,000
Chief Science Officer, Director(3)									
Andrew J. Ashton,	2009	96,000	0	0	13,206	0	0	0	109,206
Treasurer, Sr. VP,	2008	96,000	0	0	0	0	0	0	96,000
Secretary									
Director(4)									
David F. Eaton,	2009	48,250	0	58,000	99,617	0	0	13,206	219,073

Chief Technology officer (5)	2008	26,400	0	0	99,889	0	0	31,444	157,733

(1)

Mr. Marcelli was appointed to serve as our Chief Executive Officer in August 2008. Pursuant to his employment agreement, Mr. Marcelli receives a salary of $14,500 per month, a $600 per month offsite car allowance, 200,000 shares of restricted stock in 2008, and an option to purchase up to 1,050,000 shares of common stock at an exercise price of $1.75 per share. In 2009 Mr. Marcelli received a bonus of $14,500 and the right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share. 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.

(2)

Mr. Bennett served as our Chief Executive Officer from March 2007 to August 2008. Mr. Bennett received $12,000 per month for his services as the Company s chief executive officer. On April 17, 2007, Mr. Bennett received a warrant to purchase up to 300,000 shares of common stock at a purchase price of $0.25 per share. The values described in column (f) reflect vested Options.

(3)

Mr. Goetz receives an annual salary of $96,000. In January 2009 Mr. Goetz received a right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share.

(4)

Mr. Ashton receives an annual salary of $96,000. In January 2009, Mr. Ashton received a right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share.

(5)

Dr. Eaton was named as our Chief Technology Officer on January 1, 2008 pursuant to an employment agreement dated January 1, 2008 whereby Dr. Eaton received $400 per day, which was increased to $500 per day on November 1, 2008. Additionally, on February 5, 2008, Dr. Eaton was awarded an option to purchase up to 501,000 shares of common stock at an exercise

price of $.72 per share. In January 2009 Dr. Eaton received a right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share and 100,000 shares of restricted stock. The values described in column (f) and (i) reflect vested options and warrants.

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).

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.

The table below summarizes all of the outstanding equity awards for our named executive officers as of December 31, 2009, 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 Unearned 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 ($)
	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
James S. Marcelli CEO, President Director(1)	437,500	612,500	---	1.75	07/31/2013	---	---	---	---
Frederick J. Goetz, Jr., Chief Science Officer,	---	---	---	---	---	---	---	---	---

Director									
Andrew J. Ashton, Treasurer, Sr. VP, Secretary Director	---	---	---	---	---	---	---	---	---
David F. Eaton, Chief Technology Officer	334,000	167,000	---	0.72	11/17/2012	---	---	---	---
	150,000	---		0.25	04/17/2010				

(1)

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.

(2)

On February 5, 2008, Dr. Eaton was awarded an option to purchase up to 501,000 shares of common stock at an exercise price of $.72 per share which vest as follows: 41,750 shares vest at the end of every three month period commencing November 17, 2007. On April 17, 2007 Dr. Eaton received a warrant to purchase up to 150,000 shares of company stock, 12,500 of which vested on April 17, 2007, and the remaining vested in 11 equal monthly installments thereafter.

Compensation of Directors

Set forth below is a summary of the compensation of our directors during our December 31, 2009 fiscal year.

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)	Option Awards ($)(5)	Non-Equity Incentive Plan Compensation ($)	Non-Qualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
Ross Fasick (1)	--	--	75,386	--	--	13,206	88,592
William C. Pickett, III (2)	--	--	43,470	--	--	13,206	56,676
Thomas P. Smith (3)	--	--	61,346	--	--	13,206	74,552
Thomas E. Zelibor (4)	--	--	71,579	--	--	13,206	84,785

(1)

On July 21, 2008, Mr. Fasick received an option to purchase up to 100,000 shares of company stock at an exercise price of $1.75 that vest pursuant to the following schedule: 25,000 shares vested immediately; and the remaining options vest in 3 equal annual installments of 25,000 options per year commencing on July 21, 2009. On August 29, 2008, Mr. Fasick received an option to purchase up to 150,000 shares of company stock at an exercise price of $1.42 that vest pursuant to the following schedule: 37,500 shares vest immediately and 37,500 shares vest at the end of every 12 month period commencing August 29, 2008. In January 2009, Mr. Fasick received a 22 day right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share.

(2)

On January 8, 2008, Mr. Picket 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 August 29, 2008, Mr. Picket 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. Mr. Picket was awarded 250,000 options instead of 150,000 options on August 29, 2008 in recognition of the additional assistance he provided to the Company during his initial tenure as a director. In January 2009, Mr. Pcket received a 22 day right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share.

(3)

On November 6, 2008 Mr. Smith received an option to purchase up to 250,000 shares of company stock at an exercise price of $.65 that vest pursuant to the following schedule: 62,500 options vested immediately; and the remaining options vest in 3 equal annual installments of 62,500 options per year commencing on November 6, 2009. In January

2009, Mr. Smith received a 22 day right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share.

(4)

On July 11, 2008, Mr. Zelibor received an option to purchase up to 100,000 shares of company stock at an exercise price of $1.75 that vest pursuant to the following schedule: 25,000 shares vested immediately; and the remaining options vest in 3 equal annual installments of 25,000 options per year commencing on July 11, 2009. On August 29, 2008, Mr. Zelibor received an option to purchase up to 150,000 shares of company stock at an exercise price of $1.42 that vest pursuant to the following schedule: 37,500 shares vested immediately and 37,500 shares vest at the end of every 12 month period commencing August 29, 2008. In January 2009, Mr. Zelibor received a 22 day right to purchase 40,000 shares of restricted stock at an exercise price of $0.25 per share.

(5)

The values described in this column reflect vested Options.

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.

Item 12.

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

The following table sets forth, as of April 9, 2010, 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(3)	% of Class Owned (5)
Frederick J. Goetz, Jr. (2)	3,371,667	8.19%
Frederick J. Goetz (2)	6,496,667 (4)	15.79%
Mary Goetz (2)	6,496,667 (4)	15.79%
Andrew J. Ashton	2,981,667	7.25%

(1)

In care of our Company at 121 Continental Drive, Suite 110, Newark, Delaware 19713.

(2)

Frederick J. Goetz and Mary Goetz are Husband and wife, and Frederick J. Goetz, Jr. is their son.

(3)

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.

(4)

Consists of (i) 3,365,000 shares of common stock owned by Frederick J. Goetz; and (ii) 3,131,667 shares of common stock owned by Mary Goetz. Each of Frederick J. Goetz and Mary Goetz disclaim any beneficial ownership of their spouse s shares of common stock.

(5)

Based on 41,139,542 shares of common stock outstanding on April 9, 2009. 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 April 9, 2010, 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 of Beneficial Owner (1)	Amount and Nature of Beneficial Ownership (2)	% of Class Owned (3)(4)
James S. Marcelli Director, Chief Executive Officer, President	852,500 (5)	2.07%
Frederick J. Goetz, Jr. Director, Chief Science Officer	3,371,667	8.19%
Andrew J. Ashton Director, Executive Vice President, Treasurer Secretary	2,981,667	7.25%
David F. Eaton, Chief Technology officer	667,500 (6)	1.62%
Ross Fasick Director	489,000 (7)	1.19%
William C. Pickett, III Director	270,550 (8)	*
Philips W. Smith Non-Executive Chair Of The Board Of Directors	162,500 (9)	*
Thomas E. Zelibor Director	165,000 (10)	*
Directors and Officers as a Group (8 Persons)	8,960,384	21.78%

* Less than 1%.

(1)

In care of our Company at 121 Continental Drive, Suite 110, Newark, Delaware 19713.

(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 the date hereof.

(3)

Based on 41,139,542 shares of common stock outstanding on April 9, 2009. 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.

(4)

If a person listed on this table has the right to obtain additional shares of common stock within 60 days from the date hereof, 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 240,000 shares of common stock and an option to purchase up to 612,500 shares of common stock exercisable within 60 days from the date hereof.

(6)

Consists of 100,000 shares of common stock; an option to purchase up to 417,500 shares of common stock exercisable within 60 days from the date hereof; and a warrant to purchase up to 150,000 shares of common stock exercisable within 60 days from the date hereof.

(7)

Consists of 279,000 shares of common stock; an option to purchase up to 125,000 shares of common stock exercisable within 60 days from the date hereof; and a warrant to purchase up to 85,000 shares of common stock exercisable within 60 days from the date hereof.

(8)

Consists of 20,550 shares of common stock; and an option to purchase up to 250,000 shares of common stock exercisable within 60 days from the date hereof.

(9)

Consists of a warrant to purchase up to 162,500 shares of common stock exercisable within 60 days from the date hereof.

(10)

Consists of 40,000 shares of common stock; and an option to purchase up to 125,000 shares of common stock exercisable within 60 days from the date hereof.

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.

On January 8, 2009, Thomas P. Smith resigned as a member of the registrant s board of directors, and on January 8, 2009, the registrant s board of directors invited Mr. Philips W. Smith to be appointed as a member of the registrant s board of directors and as the registrant s full-time non-executive chair of the board of directors, and on January 13, 2010, Mr. Smith accepted the invitation to be appointed to those positions with the registrant. Mr. Philips W. Smith is the father of then board member Thomas P. Smith. In exchange for serving as a member of the registrant s board of directors and as non-executive chair of the board of directors, Mr. Smith received as compensation a warrant to purchase up to 650,000 shares of the Company s common stock at an exercise price of $1.51 per share for a period of up to five years.

Item 14.

Principal Accounting Fees and Services.

Audit Fees.

The aggregate fees billed for the years ended December 31, 2009 and 2008 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-QSB or services that are normally provided by the accountant in connection with statutory and regulatory filings or engagements for the year ended December 31, 2009 was $45,450; and for the year ended December 31, 2008 was $43,000.

Audit-Related Fees.

Fees billed for the year ended December 31, 2009 for assurance and related services by Morison Cogen, LLP was $1,500 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 and no fees were billed for the years ended December 31, 2008.

Tax Fees.

Fees billed for the year ended December 31, 2009 for tax compliance by Morison Cogen, LLP was $6,000; and for the year ended December 31, 2008 was $6,000.

All Other Fees.

No fees were billed for the fiscal years ended December 31, 2009 and 2008 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.

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, 2009 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

Statements of Comprehensive Loss

Statement of Stockholders Equity

Statements of Cash Flows

Notes to Financial Statements

(b)

The following exhibits are filed as part of this report.

3(i).1	Articles of Incorporation (incorporated by reference to Company s Form 10-SB filed April 13, 2007).
3(i).2	Certificate of Amendment to Articles of Incorporation (incorporated by reference to Company s Definitive Schedule 14C Information Statement filed on February 19, 2008).
3(ii).1	Bylaws (incorporated by reference to Company s Form 10-SB filed April 13, 2007).
10.1	Employment Agreement - Frederick J. Goetz, Jr. (incorporated by reference to Company s Form 10-K filed on April 14, 2009).
10.2	Employment Agreement Andrew J. Ashton (incorporated by reference to Company s Form 10-K filed on April 14, 2009).
10.3	Employment Agreement James S. Marcelli (incorporated by reference to the Company s Form 8-K filed August 5, 2008).
10.4	Employment Agreement David F. Eaton (incorporated by reference to the Company s Form 10-KSB filed April 10, 2008).
10.5	Employment Agreement Terry Turpin (incorporated by reference to the Company s Form 10-KSB filed April 10, 2008).
10.6	Employee Agreement Philips W. Smith (incorporated by reference to the Company s Form 8-K filed January 13, 2010).
10.7	Director Agreement William C. Pickett, III (incorporated by reference to the Company s Form 8-K filed March 26, 2008).
10.8	Director Agreement Ross Fasick (incorporated by reference to the Company s Form 8-K filed July 22, 2008).
10.9	Director Agreement Thomas E. Zelibor (incorporated by reference to the Company s Form 8-K filed July 14, 2008).
10.10	Photon-X, LLC Memorandum of Understanding (incorporated by reference to Company s Form 10-SB filed April 13, 2007).
10.11	Triple Play Communications Corporation Agreement (incorporated by reference to Company s Form 10-SB filed April 13, 2007).
10.12	2007 Employee Stock Plan (incorporated by reference to Company s Definitive Schedule 14C Information Statement filed on February 19, 2008).
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 (included herein).
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 (included herein).
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 (included herein).
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 (included herein).

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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.

By: /s/ James S. Marcelli
James S. Marcelli,

Chief Executive Officer, President and Director

Date: April 15, 2010

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

James S. Marcelli

Chief Executive Officer,

April 15, 2010

Director

Frederick J. Goetz, Jr.

Chief Science Officer, Director

April 15, 2010

Andrew J. Ashton

Senior Vice President,

April 15, 2010

Treasurer, Secretary,

Director

Philips W. Smith

Non-Executive Chair of

The Board of Directors

April 15, 2010

Ross Fasick

Director

April 15, 2010

William C. Pickett, III

Director

April 15, 2010

Thomas E. Zelibor

Director

April 15, 2010

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Appendix A

Financial Statements.

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

STATEMENTS OF COMPREHENSIVE LOSS

STATEMENT OF STOCKHOLDERS EQUITY

STATEMENTS OF CASH FLOWS

NOTES TO FINANCIAL STATEMENTS

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

FINANCIAL STATEMENTS

DECEMBER 31, 2009 AND 2008

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

CONTENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors

Lightwave Logic, Inc.

Wilmington, Delaware

We have audited the accompanying balance sheets of Lightwave Logic, Inc., as of December 31, 2009 and 2008 and the related statements of operations, comprehensive loss, 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, 2009. These financial statements are the responsibility of the Company s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company s internal control over financial reporting. Accordingly, we express no such opinion. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes 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, 2009 and 2008 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, 2009 in conformity with accounting principles generally accepted in the United States.

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, 2009. 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 and achieving a level of sales adequate to support the Company s cost structure. 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

April 15, 2010

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

BALANCE SHEETS

	December 31, 2009	December 31, 2008
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$ 459,989	$ 88,225
Prepaid expenses	53,373	12,198
	513,362	100,423
PROPERTY AND EQUIPMENT - NET	104,087	61,726
OTHER ASSETS		
Intangible assets	261,215	212,416
TOTAL ASSETS	$ 878,664	$ 374,565
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable	$ 70,730	$ 62,650
Accounts payable - related party	12,121	7,172
Accrued expenses	48,825	98,205
TOTAL LIABILITIES	131,676	168,027
CONTINGENCY	-	-
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		
41,166,542 and 35,911,156 issued and outstanding at		

December 31, 2009 and December 31, 2008		41,167		35,911
Additional paid-in-capital		17,385,295		14,196,060
Deferred charges		-		(55,330)
Accumulated deficit		(15,827)		(15,827)
Receivable for issuance of common stock		-		(12,500)
Deficit accumulated during development stage		(16,663,647)		(13,941,776)
TOTAL STOCKHOLDERS' EQUITY		746,988		206,538
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$	878,664	$	374,565

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, 2009 AND 2008 AND FOR THE PERIOD

JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2009

	Cumulative Since Inception	For the Year Ending December 31, 2009	For the Year Ending December 31, 2008
NET SALES	$ -	$ -	$ -
COST AND EXPENSE			
Research and development	6,592,214	1,306,642	1,421,955
General and administrative	10,024,963	1,414,242	2,820,398
	16,617,177	2,720,884	4,242,353
LOSS FROM OPERATIONS	(16,617,177)	(2,720,884)	(4,242,353)
OTHER INCOME (EXPENSE)			
Interest income	29,927	493	11,409
Dividend income	1,551	-	24
Realized gain (loss) on investment	3,911	-	(59,276)
Realized gain on disposal of assets	637	-	-
Litigation settlement	(47,500)	-	(47,500)
Interest expense	(34,996)	(1,480)	(2,911)
NET LOSS	$ (16,663,647)	$ (2,721,871)	$ (4,340,607)
Basic and Diluted Loss per Share		$ (0.07)	$ (0.12)
Basic and Diluted Weighted Average Number of Shares		39,431,766	34,726,411

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

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

STATEMENTS OF COMPREHENSIVE LOSS FOR YEARS ENDING

DECEMBER 31, 2009 AND 2008 AND FOR THE PERIOD

JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2009

	Cumulative Since Inception	For the Year Ending December 31, 2009	For the Year Ending December 31, 2008
NET LOSS	$ (16,663,647)	$ (2,721,871)	$ (4,340,607)
OTHER COMPREHENSIVE INCOME (LOSS)			
Realized loss reclassification	-		58,610
COMPREHENSIVE LOSS	$ (16,663,647)	$ (2,721,871)	$ (4,281,997)

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, 2009

	Number of Shares	Common Stock	Paid-in Capital	Subscription Receivable	Deferred Charges	Unrealized Loss on Securities	Accumulated Deficit	Deficit Accumulated During Development Stage	T
D I N G NCE AT EMBER 3	100	1	$ -	$ -	$ -	$ -	$ (15,827)	$ -	$ (
roactive alization reverse tion	706,973	706	(706)	-	-	-	-	-	
NCE AT ARY 1,	707,073	707	(706)	-	-	-	(15,827)	-	(
ommon ssued to rs	13,292,927	13,293	(13,293)	-	-	-	-	-	
ommon ssued for services 2004 at hare	1,600,000	1,600	254,400	-	-	-	-	-	2
ommon ssued at	2,000,000	2,000	(2,000)	-	-	-	-	-	

ommon ssued for services ust 2004 2/share	637,500	638	74,362	-	-	-	-	-	
nversion payable cember 4 at hare	187,500	187	29,813	-	-	-	-	-	
loss for ar ended mber 31,	-	-	-	-	-	-	-	(722,146)	(72
NCE AT EMBER 4	18,425,000	18,425	342,576	-	-	-	(15,827)	(722,146)	(37
ommon ssued in v a t e ment in 2005 at hare	4,000,000	4,000	996,000	-	-	-	-	-	1,0
nversion s payable 2005 at hare	3,118,750	3,119	495,881	-	-	-	-	-	4
scription ble	-	-	-	(6,500)	-	-	-	-	
ommon ssued for services ust 2005, e d a t hare	210,000	210	585,290	-	-	-	-	-	5
ommon ssued for services ust 2005, e d a t hare	200,000	200	583,800	-	-	-	-	-	5
arrants e d f o r s in May vested g 2005,	-	-	37,000	-	-	-	-	-	

ed at hare									
rants for s in ber ested 2005, alued at hare	-	-	24,200	-	-	-	-	-	
rants for s in r 2005, during alued at hare	-	-	15,900	-	-	-	-	-	
rants for future s in ber ested 2005, alued at hare	-	-	435,060	-	-	-	-	-	4
eferred ges for on stock for future ces in 2005, valued at hare	-	-	-	-	(584,000)	-	-	-	(58
ortization ferred	-	-	-	-	265,455	-	-	-	2
ercise of ants in ber 2005 5/share	300,000	300	74,700	-	-	-	-	-	
loss for ar ended mber 31,	-	-	-	-	-	-	-	(1,721,765)	(1,7
NCE AT EMBER	26,253,750	26,254	$ 3,590,407	$ (6,500)	$ (318,545)	$ -	$ (15,827)	$ (2,443,911)	$ 8

05									
ommon ssued in v a t e e m e n t 2006 at hare	850,000	850	424,150	-	-	-	-	-	4
ommon ssued for services bruary valued at hare	300,000	300	269,700	-	-	-	-	-	2
ommon ssued for services y 2006, e d a t hare	400,000	400	619,600	-	-	-	-	-	6
ommon ssued for services e 2006, e d a t hare	25,000	25	36,225	-	-	-	-	-	
ommon ssued for services vember valued at hare	60,000	60	29,340	-	-	-	-	-	
arrants e d f o r c e s i n e m b e r v e s t e d 2006,									
valued at hare	-	-	66,500	-	-	-	-	-	
arrants for future s in June v e s t e d 2006,									
valued at hare	-	-	465,996	-	-	-	-	-	4

ptions ed for ces in ry 2006, during valued at hare	-	-	428,888	-	-	-	-	-	-	4
ntributed related crued	-	-	35,624	-	-	-	-	-		
scription ble	-	-	-	6,500	-	-	-	-		
ortization ferred	-	-	-	-	318,545	-	-	-		3
realzed loss) on es	-	-	-	-	-	(26,000)	-	-		(2
loss for r ending mber 31,	-	-	-	-	-		-	(2,933,809)		(2,9
NCE AT EMBER 6	27,888,750	27,889	$ 5,966,430	$ -	$ -	$ (26,000)	$ (15,827)	$ (5,377,720)	$	5

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, 2009 (CONTINUED)

	Number of Shares	Common Stock	Paid-in Capital	Receivable for Issuance of Common Stock	Deferred Charges	Unrealized Loss On Securities	Accumulated Deficit	Deficit Accumulated During Development Stage	To
ANCE AT EMBER 006	27,888,750	27,889	$ 5,966,430	$ -	$ -	$ (26,000)	$ (15,827)	$ (5,377,720)	$ 574
Common issued in vate cement g 2007 at /share	2,482,000	2,482	1,238,518	-	-	-	-	-	1,241
Common issued in vate cement g 2007 at /share	1,767,540	1,768	1,058,756	-	-	-	-	-	1,060
Common ock cription cinded g 2007 at /share	(400,000)	(400)	(199,600)	-	-	-	-	-	(200
	151,785	152	106,098	-	-	-	-	-	106

Common issued for e services ebruary , valued at /share									
Common issued for e services arch 2007, ued at /share	1,000,000	1,000	579,000	-	-	-	-	-	580
Common issued for ices and ement for ounts le in April									
valued at /share	100,000	100	34,900	-	-	-	-	-	35
Common issued for ices in ber 2007, ued at /share	150,000	150	101,850	-	-	-	-	-	102
Common issued for ices in ber 2007, ued at /share	150,000	150	134,850	-	-	-	-	-	135
Common issued for ices in ember , valued at /share	400,000	400	287,600	-	-	-	-	-	288
Warrants ued for ices in tember , vested ng 2007, ued at /share	-	-	36,370	-	-	-	-	-	36
	-	-	52,180	-	-	-	-	-	52

Warrants ued for ices in ch 2007, ed during , valued at /share									
Warrants ued for ices in il 2007, ed during , valued at /share	-	-	293,476	-	-	-	-	-	293
Warrants ued for ices in il 2007, ed during , valued at /share	-	-	140,490	-	-	-	-	-	140
Warrants ued for ces in May , vested ng 2007, ued at /share	-	-	52,946	-	-	-	-	-	52
Warrants ued for ices in ber 2007, ed during , valued at /share	-	-	61,449	-	-	-	-	-	61
Warrants ued for ices in ber 2007, ed during , valued at /share	-	-	52,292	-	-	-	-	-	52
Warrants ued for ices in ember , vested ng 2007, ued at	-	-	1,159	-	-	-	-	-	1

/share									
Options ued for vices in uary 2006, ed during , valued at /share	-	-	17,589	-	-	-	-	-	17
Options ued for vices in uary 2006, ed during , valued at /share	-	-	43,757	-	-	-	-	-	43
Options ued for vices in ember 7, vested ng 2007, ued at /share	-	-	41,653	-	-	-	-	-	41
Warrants d for future vices in il 2007, ed during , valued at /share	-	-	348,000	-	-	-	-	-	348
eferred es for non stock d for future es in h 2007, valued at /share	-	-	-	-	(928,000)	-	-	-	(928
mortization eferred es	-	-	-	-	773,333	-	-	-	773
nrealized (loss) on ities	-	-	-	-	-	(32,610)	-	-	(32
et loss for ear ending ember 31,	-	-	-	-	-	-	-	(4,223,449)	(4,223

ANCE AT EMBER									
007	33,690,075	33,690	$ 10,449,763	$ -	$ (154,667)	$ (58,610)	$ (15,827)	$ (9,601,169)	$ 653

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, 2009 (CONTINUED)

	Number of Shares	Common Stock	Paid-in Capital	Receivable for Issuance of Common Stock	Deferred Charges	Unrealized Loss On Securities	Accumulated Deficit	Deficit Accumulated During Development Stage	Tot
ANCE AT CEMBER 007	33,690,075	33,690	$ 10,449,763	$ -	$ (154,667)	$ (58,610)	$ (15,827)	$ (9,601,169)	$ 653
Common k issued in ivate cement ng 2008 at /share	690,001	690	413,310	-	-	-	-	-	414
Common k issued for vices in ch 2008, ued at /share	100,000	100	74,900	-	-	-	-	-	75
Common k issued for vices in ust, 2008, ued at /share	200,000	200	359,800	-	-	-	-	-	360
	320,000	320	79,680	-	-	-	-	-	80

xercise of rants at /share									
xercise of nts at /share, ant to mber 2008 adjusted offering	641,080	641	159,629						160
xercise of rants at /share	270,000	270	134,730	-	-	-	-	-	135
arrants d for ces in mber , vested g 2008, valued at /share	-	-	27,014	-	-	-	-	-	27
arrants d for ces in h 2007, d during , valued at /share	-	-	10,885	-	-	-	-	-	10
arrants d for ces in 2007, d during , valued at /share	-	-	121,713	-	-	-	-	-	121
arrants d for ces in 2007, d during , valued at /share	-	-	48,738	-	-	-	-	-	48
arrants d for ces in May , vested	-	-	31,444	-	-	-	-	-	31

g 2008, valued at /share									
arrants d for ces in mber , vested g 2008, valued at /share	-	-	12,487	-	-	-	-	-	12
ptions d for ces in mber , vested g 2008, valued at /share	-	-	286,803	-	-	-	-	-	286
ptions d for ces in ry 2008, d during , valued at /share	-	-	30,750	-	-	-	-	-	30
ptions d for ces in July , vested g 2008, valued at /share	-	-	114,519	-	-	-	-	-	114
ptions d for ces in st 2008, d during , valued at /share	-	-	525,263	-	-	-	-	-	525
ptions d for ces in mber , vested g 2008 valued at	-	-	6,439	-	-	-	-	-	6

/share									
arrants d for future ces in h 2008, d through ember , valued at /share	-	-	332,000	-	(332,000)	-	-	-	
arrants d for ces in May , vested gh ember , valued at /share	-	-	976,193	-	-	-	-	-	976
mortization deferred ges	-	-	-	-	431,337	-	-	-	431
eceivable he issuance common	-	-	-	(12,500)	-	-	-	-	(12
ealized loss ssification	-	-	-	-	-	58,610	-	-	58
et loss for ear ending ember 31,	-	-	-	-	-	-	-	(4,340,607)	(4,340
ANCE AT CEMBER 008	35,911,156	$ 35,911	$ 14,196,060	$ (12,500)	$ (55,330)	$ -	$ (15,827)	$ (13,941,776)	$ 206

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, 2009 (CONTINUED)

	Number of Shares	Common Stock	Paid-in Capital	Receivable for Issuance of Common Stock	Deferred Charges	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	100,000	100	24,900	-	-	-	-	25,000

accounts payable January 2009 valued at $0.25/share								
Exercise of purchase right agreement in January 2009 at $0.25/share	180,550	181	44,957	-	-	-	-	45,138
Exercise of warrants at $0.25/share, pursuant to November 2008 adjusted stock offering	1,279,336	1,279	318,555					319,834
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,	-	-	623,246	-	-	-	-	623,246

vested during 2009, valued at $1.36/share								
Options issued for services in November 2008, vested during 2009, valued at $0.50/share	-	-	61,346	-	-	-	-	61,346
Options issued for services in January 2009, vested during 2009, valued at $0.53/share	-	-	13,136	-	-	-	-	13,136
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	-	-	52,129	-	-	-	-	52,129
Amortization of deferred charges	-	-	-	-	55,330	-	-	55,330
	-	-	-	12,500	-	-	-	12,500

Payment for the issuance of common stock								
Common stock issued for services in June 2009, valued at $0.34/share	116,000	116	39,884	-	-	-	-	40,000
Common stock issued for services & settlement for accounts payable June 2009 valued at $0.34/share	145,000	145	49,855					50,000
Common stock issued in private placement during June 2009 at $0.34/share	2,479,500	2,480	852,520	-	-	-	-	855,000
Common stock issued for services in July 2009, valued at $0.75/share	100,000	100	74,900	-	-	-	-	75,000
Net loss for the year ending December 31, 2009	-	-	-	-	-	-	(2,721,871)	(2,721,871)
BALANCE AT DECEMBER 31, 2009	41,166,542	$ 41,167	$ 17,385,295	$ -	$ -	$ (15,827)	$ (16,663,647)	$ 746,988

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

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

STATEMENTS OF CASH FLOW FOR YEARS ENDING

DECEMBER 31, 2009 AND 2008 AND FOR THE PERIOD

JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2009

	Cumulative Since Inception	For the Year Ending December 31, 2009	For the Year Ending December 31, 2008
CASH FLOWS FROM OPERATING ACTIVITIES			
Net loss	$ (16,663,647)	$ (2,721,871)	$ (4,340,607)
Adjustment to reconcile net loss to net cash used in operating activities			
Amortization of deferred charges	4,392,456	55,330	443,732
Amortization of prepaid expenses	37,500	37,500	-
Warrants issued for services	2,240,317	177,881	1,228,474
Stock options issued for services	2,838,212	1,009,051	963,774
Common stock issued for services	1,093,292	128,000	435,000
Purchase right agreement amortization	132,058	132,058	-
Depreciation	77,867	16,972	15,757
Realized (gain) loss on investments	(3,911)	-	59,276
Realized gain on disposal of assets	(637)	-	-
(Increase) decrease in assets			
Receivables	(30,461)	-	1,244
Prepaid expenses	(15,873)	(3,675)	(4,904)
Increase (decrease) in liabilities			
Accounts payable	203,646	53,081	(40,775)
Accounts payable - related party	12,121	4,949	7,172
Accrued expenses	35,439	2,749	(16,460)
Net cash used in operating activities	(5,651,621)	(1,107,975)	(1,248,318)
CASH FLOWS FROM INVESTING ACTIVITIES			
Cost of intangibles	(261,215)	(48,799)	(37,995)
Proceeds from sale of available for sale securities	203,911	-	28,524

Proceeds from receipt of note receivable	100,000	-	100,000
Purchase of available for sale securities	(200,000)	-	-
Purchase of equipment	(144,704)	(59,333)	(10,207)
Net cash (used in) provided by investing activities	(302,008)	(108,132)	80,322
CASH FLOWS FROM FINANCING ACTIVITIES			
Issuance of common stock, private placement	4,995,524	855,000	414,000
Common stock rescinded, private placement	(200,000)	-	-
Issuance of common stock, exercise of warrants	1,038,004	675,234	362,770
Issuance of common stock, exercise of purchase right agreement	45,138	45,138	-
Repayment of notes payable	(14,970)	-	-
Proceeds from subscription receivable	19,000	12,500	-
Advances to stockholders	(4,933)	-	-
Proceeds from convertible notes	529,000	-	-
Advances from officers	1,498	-	-
Net cash provided by financing activities	6,408,261	1,587,872	776,770
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	454,631	371,764	(391,226)
CASH AND CASH EQUIVALENTS - BEGINNING OF PERIOD	5,358	88,225	479,451
CASH AND CASH EQUIVALENTS - END OF PERIOD	$ 459,989	$ 459,989	$ 88,225

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

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

STATEMENTS OF CASH FLOW FOR YEARS ENDING

DECEMBER 31, 2009 AND 2008 AND FOR THE PERIOD

JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2009

	Cumulative Since Inception	For the Year Ending December 31, 2009	For the Year Ending December 31, 2008
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION			
CASH PAID DURING THE PERIOD FOR:			
Interest	$ 22,387	$ 1,480	$ 2,911
SUPPLEMENTAL DISCLOSURE OF NON-CASH INVESTING AND FINANCING ACTIVITIES			
Common stock issued in exchange for deferred charges	$ 3,142,400	$ -	$ -
Warrants issued in exchange for deferred charges	$ 1,581,056	$ -	$ 332,000
Common stock issued as settlement for accounts payable	$ 74,708	$ 45,000	$ -
Realized loss reclassification	$ -	$ -	$ 58,610
Accrued interest contributed as capital	$ 35,624	$ -	$ -
Common stock issued in the conversion of notes payable	$ 529,000	$ -	$ -

Acquisition of automobile through loan payable	$ 24,643	$ -	$ -
Common stock issued upon exercise of a warrant in exchange for receivable	$ 75,000	$ -	$ -
Insurance company pay off of note payable	$ 9,673	$ -	$ -
Receivable for issuance of common stock	$ 10,000	$ 10,000	$ 12,500
Contribution of officer accrued payroll	$ 52,129	$ 52,129	$ -
Common stock issued for prepaid expense	$ 75,000	$ 75,000	$ -

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

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 2009

NOTE 1- SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

History and Nature of Business

Lightwave Logic, Inc., formerly Third-Order Nanotechnologies, Inc., formerly PSI-Tec Holdings, Inc., formerly Eastern Idaho Internet Service, Inc. (the Company) was organized under the laws of the State of Nevada in 1997. The Company was engaged in the business of marketing internet services until June 30, 1998, at which time the principal assets of the business were sold and operations were discontinued. The Company was inactive until the acquisition of PSI-TEC Corporation (PSI-TEC) on July 14, 2004, at which time the name was changed to PSI-TEC Holdings, Inc.

Development Stage

PSI-TEC was incorporated in 1995 under the laws of the State of Delaware. PSI-TEC primarily conducted research for the United States Government under a contract, which expired in 2003. Beginning January 1, 2004, PSI-TEC was engaged in the development of electro-optic polymers for application in the electro-optic device markets. PSI-TEC is considered a development stage company as defined in FASB ASC 915 Development Stage Entities from the inception of the development stage on January 1, 2004.

Merger

On July 14, 2004, the Company acquired PSI-TEC. Under the terms of the merger agreement, the stockholders of PSI-TEC received 15,600,000 shares of common stock in exchange for its 2,206,280 shares. Following the merger, the Company changed its name to PSI-TEC Holdings, Inc. Under accounting principles generally accepted in the United States, the share exchange is considered to be a capital transaction in substance rather than a business combination. That is, the share exchange is equivalent to the issuance of stock by PSI-TEC Holdings, Inc. for the net monetary assets of PSI-TEC, accompanied by a recapitalization, and is accounted for as a change of capital structure. Accordingly, the accounting for the share exchange was identical to that resulting from a reverse acquisition, except no goodwill was recorded. Under reverse takeover accounting, the post-reverse acquisition comparative historical financial statements of the legal acquirer, PSI-TEC Holdings, Inc., are those of the legal acquiree, PSI-TEC, which is considered to be the accounting acquirer. On October 20, 2006, PSI-TEC Holdings, Inc. and PSI-TEC merged and changed its name to Third-Order Nanotechnologies, Inc. On March 10, 2008, Third-Order Nanotechnologies, Inc.

changed its name to Lightwave Logic, Inc.

Estimates

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 management s best knowledge of current events and actions the Company may undertake in the future, actual results could differ from the estimates.

Cash Equivalents

For the purposes of the statement of cash flows, the Company considers all highly liquid instruments with maturities of three months or less at the time of purchase to be cash equivalents.

Concentration of Credit Risk

Certain financial instruments potentially subject the Company to concentrations of credit risk. These financial instruments consist primarily of cash. At December 31, 2009, the Company did not have deposits with a financial institution that exceed the FDIC deposit insurance coverage of $250,000.

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 2009

NOTE 1- SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Investment

Securities classified as available-for-sale may be sold in response to changes in interest rates, liquidity needs, and for other purposes. Available-for-sale securities are carried at fair value. Unrealized gains and losses on investment securities available for sale are based on the difference between book value and fair value of each security. These gains and losses are credited or charged to other comprehensive income, whereas realized gains and losses are recognized in the Company s net income (loss).

Property and Equipment

Equipment is stated at cost. Depreciation is principally provided by use of straight-line methods for financial and tax reporting purposes over the estimated useful lives of the assets, generally 5 years.

Fair Value of Financial Instruments

The Company s financial instruments consist of cash, accounts payable and accrued expenses. The carrying values of cash, accounts payable and accrued expenses approximate fair value because of their short maturities.

Income Taxes

The Company follows FASB ASC 740, Income Taxes, which requires an asset and liability approach to financial accounting and reporting for income taxes. Deferred income tax assets and liabilities are computed annually for temporary differences between the financial statement and tax bases of assets and liabilities that will result in taxable or deductible amounts in the future based on enacted tax laws and rates applicable to the periods in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized. Income tax expense is the tax payable or refundable for the period plus or minus the change during the period in deferred tax assets and liabilities.

Loss Per Share

The Company follows Financial Accounting Standards Board Accounting Standards Codification (FASB ASC) 260, Earnings per Share , resulting in the presentation of basic and diluted earnings per share. Because the Company reported a net loss in 2009 and 2008, common stock equivalents, including stock options and warrants were anti-dilutive; therefore, the amounts reported for basic and dilutive loss per share were the same.

Recoverability of Long Lived Assets

The Company follows FASB ASC 360 Property, Plant, and Equipment . Long-lived assets to be held and used are reviewed for impairment whenever events or changes in circumstances indicate that the related carrying amount may not be recoverable. When required, impairment losses on assets to be held and used are recognized based on the excess of the asset s carrying amount.

Comprehensive Income

The Company follows FASB ASC 220.10, Reporting Comprehensive Income. Comprehensive income is a more inclusive financial reporting methodology that includes disclosure of certain financial information that historically has not been recognized in the calculation of net income.

Reclassifications

Certain reclassifications were made to the 2008 financial statements in order to conform to the 2009 financial statement presentation.

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 2009

NOTE 1- SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Recently Adopted Accounting Pronouncements

FASB ASC 820-10 establishes a framework for measuring fair value and expands disclosures about fair value measurements. The changes to current practice resulting from the application of this standard relate to the definition of fair value, the methods used to measure fair value, and the expanded disclosures about fair value measurements. This standard is effective for fiscal years beginning after November 15, 2007; however, it provides a one-year deferral of the effective date for non-financial assets and non-financial liabilities, except those that are recognized or disclosed in the financial statements at fair value at least annually. The Company adopted this standard for financial assets and financial liabilities and nonfinancial assets and nonfinancial liabilities disclosed or recognized at fair value on a recurring basis (at least annually) as of January 1, 2008. The Company adopted the standard for nonfinancial assets and nonfinancial liabilities on January 1, 2009. The adoption of this standard in each period did not have a material impact on its financial statements.

In April 2008, FASB ASC 350-30 and 275-10 amend the factors that should be considered in developing renewal or extension assumptions used to determine the useful life of a recognized intangible asset. This standard is effective for financial statements issued for fiscal years beginning after December 15, 2008, and interim periods within those fiscal years. Early adoption is prohibited. The adoption of this standard did not have any impact on the Company s financial statements.

FASB ASC 260-10 provides that unvested share-based payment awards that contain nonforfeitable rights to dividends or dividend equivalents (whether paid or unpaid) are participating securities and shall be included in the computation of earnings per share pursuant to the two-class method. This standard is effective for financial statements issued for fiscal years beginning after December 15, 2008, and interim periods within those fiscal years. The Company does not currently have any share-based awards that would qualify as participating securities. Therefore, adoption of this standard did not have any effect on the Company's financial reporting.

FASB ASC 815-10 and 815-40 are effective for financial statements for fiscal years beginning after December 15, 2008, and interim periods within those fiscal years. The standard addresses the determination of whether an instrument (or an embedded feature) is indexed to an entity s own stock, which is the first part of the scope exception for the purpose of determining whether the instrument is classified as an equity instrument or accounted for as a derivative instrument which would be recognized either as an asset or liability and measured at fair value. The standard shall be applied to outstanding instruments as of the beginning of the fiscal year in which this standard is initially applied. Any debt discount that was recognized when the conversion option was initially bifurcated from the convertible debt instrument shall continue to be amortized. The cumulative effect of the change in accounting principles shall be recognized as an adjustment to the opening balance of retained earnings. The Company adopted this standard as of January 1, 2009, and was not required to reclassify any of its warrants as liabilities.

In April 2009, the FASB issued FASB ASC 825-10 which requires disclosures about the fair value of financial instruments for interim reporting periods. This standard is effective for interim reporting periods ending after June 15, 2009. The adoption of this standard did not have a material impact on the Company s financial statements.

LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 2009

NOTE 1- SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Recently Adopted Accounting Pronouncements (Continued)

In May 2009, the FASB issued FASB ASC 855-10 which is effective for interim or annual financial periods ending after June 15, 2009 and establishes general standards of accounting and disclosure of events that occur after the balance sheet but before financial statements are issued or are available to be issued. However, since the Company is a public entity, management is required to evaluate subsequent events through the date that financial statements are issued and disclose the date through which subsequent events have been evaluated, as well as the date the financial statements were issued. This standard was adopted for its interim period ending June 30, 2009. Subsequent events have been evaluated through the date the financial statements were issued.

In June 2009, the FASB issued Accounting Standards Update No. 2009-01, The FASB Accounting Standards Codification, which establishes the Codification as the source of authoritative GAAP recognized by the FASB to be applied by nongovernmental entities. This standard is effective for financial statements issued for interim and annual periods ending after September 15, 2009. The adoption of this standard changes the referencing of financial standards.

As of December 31, 2009, the FASB has issued Accounting Standards Updates (ASU) through No. 2009-12. None of the ASU s have had an impact on the Company s financial statements.

Recently Issued Accounting Pronouncements Not Yet Adopted

As of December 31, 2009, there are no recently issued accounting standards not yet adopted which would have a material effect on the Company s financial statements.

NOTE 2 GOING CONCERN

The accompanying financial statements have been prepared assuming the Company will continue as a going concern. The Company has incurred significant losses and experienced negative cash flow during the development stage. These conditions raise substantial doubt about the Company s ability to continue as a going concern. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

The Company is in the development stage at December 31, 2009. With the $451,783 of proceeds from exercise of warrants that were exercised in April, 2010, there should be necessary funds to maintain its operations through the middle of September 2010. The Company has developed and completed one of its two prototype modulator concepts in October 2009 and reported successful electrical and optical performance testing of the prototype. The Company continues to develop and test its next generation Electro-Optic material platform and cultivate potential customers and strategic partners. Management believes the Company s business model is attractive enough to investors to raise necessary capital. The successful completion of the Company s prototypes could lead to adequate financing to fulfill its development activities and achieve a level of revenue adequate to support the Company s business model for the foreseeable future. However, there can be no assurances that the Company will be able to secure the necessary financing and/or equity investment or achieve an adequate sales level.

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LIGHTWAVE LOGIC, INC.

(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 2009

NOTE 3 DEFERRED CHARGES

Deferred charges represent the unamortized fair value of the issuance of common stock and warrants for future services to non-employees which was accounted for in accordance with FASB ASC 505.50, as follows with the deferred charge fully amortized at December 31, 2009:

	December 31, 2009	December 31, 2008
Common stock	$ 2,811,400	$ 2,811,400
Warrants	1,581,056	1,581,056
	4,392,456	4,392,456
Less: Accumulated Amortization	4,392,456	4,337,126
	-	55,330
Less: Amount reflected as a contra-equity account for management consulting services provided by related party	-	55,330
	$ -	$ -

NOTE 4 EQUIPMENT

Equipment consists of the following:

	December 31, 2009	December 31, 2008
Office equipment	$ 10,768	$ 7,727
Lab equipment		