



LIGHTWAVE LOGIC™

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From the Desk of Jim Marcelli

## Lightwave Logic, Inc. CEO Issues Update Letter to Shareholders

**Newark, DE, May 26, 2010:** Lightwave Logic, Inc. (OTC Bulletin Board: LWLG) a technology company focused on the development of the ‘Next Generation Electro-Optic Polymer Material Platform’ for applications in high speed fiber-optic telecommunications and optical computing, announced today that Jim Marcelli, its chief executive officer sent the following Company update open letter to its shareholders:

### Open Letter to Lightwave Logic, Inc. Shareholders

Fellow Shareholders,

I want to update you on the progress we have made toward reaching the goals that I detailed in my January 29, 2010 letter, and explain the process for our “Next Generation Electro-Optic Material Platform” technology development and how our Application Specific Electro-Optic Polymers (ASEOP) are created.

Over the past few months, we have moved our Electro-Optic Material discussions forward with a number of key target companies and organizations. We are at different levels of engagement with these potential customers. For example, we are now in the evaluation stage by a major company in its field of one of our patent pending Perkinamine electro-optic materials for use in one of its proprietary devices. Evaluations such as these include time consuming tests that are driven by “applications-specific” (ASEOP) needs, which may evolve and change over time as the customer learns how we can really “tune” our material platform for his unique application.

We continue to engage other top companies in the Micro-electronic components, Telecommunications/Data communications, computer and Military Aerospace markets as well as government agencies. Together these are multi-billion dollar markets, an enormous opportunity for our company.

On the government agency front we are working with DARPA, the Defense Advance Research Project Agency, by sharing the technical data and test results on our ‘Next Generation Electro-Optic Polymer Material Platform’. Lightwave has previously worked with DARPA and believe our technology provides solutions to some of their current and future challenging projects.

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We expect the company to report initial revenues in the 3<sup>rd</sup> and 4<sup>th</sup> quarter of 2010 ramping to more meaningful revenues in 2011. We believe the Company's initial revenue will be in System engineering, Application, non-recurring engineering and prototype charges along with our patent pending application specific electro-optic materials for specialty electro-optical devices.

I believe it is instructive to provide additional perspective on and explain the complexities of our application and technology development process, while illustrating the amount of time and effort the process takes on a continual and ongoing basis.

We work directly with interested companies from micro-electronic component firms to large-scale suppliers to engineer specific individual product materials and/or device designs. It is important to remember that the process is primarily customer driven, as our material is particular for and being evaluated to enable each specific application solution.

We engineer our polymers (our proprietary Perkinamine material) with the intent to have temporal, thermal, chemical and photochemical stability within our patent pending molecular architectures. Our polymer materials are engineered and optimized to create a system in which unique surface, electrical, chemical and electro-optic characteristics can be controlled. Lightwave's electro-optic polymers (plastics) are proprietary-engineered at the molecular level (nanotechnology level) to meet the exacting performance specifications demanded by our prospective customers for their electro-optic devices. The process is as follows:

- First, we develop novel polymer materials utilizing our patent pending technology to meet certain performance specifications, and subsequently develop methods to synthesize larger quantities of such material.
- We then conduct a full battery of tests at the completion of the synthesis of each new polymer material to evaluate its characteristics. We also create development strategies to optimize materials to meet specifications for specific applications.
- We integrate data from this material characterization and test the results in order to design and fabricate devices.
- We analyze device-testing results to refine and improve fabrication processes and methods. In addition, we investigate alternative material and design variations to possibly create more efficient fabrication processes.
- We repeat this process again and again for each new iteration of our material as the needs within each market for specific applications are quite different and will evolve and change as more information is gained from the process.

This process is not unusual for a distinctive disruptive solution.



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A solid intellectual property portfolio is the critical cornerstone of any technology company, and Lightwave is no exception. We have worked diligently to ensure its continued growth, and the Company holds an extensive amount of internally developed intellectual property in the field of electro-optic molecular design. We believe our pending patent applications describe broad, highly unique techniques for novel paradigms in molecular design.

We have current Office Actions (U.S. Patent Office) pending on two of Lightwave's six (U.S.) patent applications. We are aggressively continuing our patent prosecution along with our representatives. In a past Office Action, the Examiner indicated that our elected species is "free of the prior art." Additionally we filed our sixth patent application late last year. Lightwave continues to work through the patent process and believe that our first patent or patents will be issued this year. This will enable Lightwave to further build and protect a strong, viable patent estate helping to ensure its business future and value.

Additional details on Lightwave's latest technology progress and test results are:

- The development of three prototype modulator concepts of which one is completed. 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 had planned on completing the development and building of functional prototype 40 Gb/s and 100 Gb/s modulators during the second quarter of 2010. However, with the current application driven projects and evaluations we may incur delays in this development. The completion of these two modulator designs will most likely be pushed out into the third or fourth quarter in order for us the focus on the applications that will generate revenue quicker for Lightwave.
- Our first amplitude modulator which has been in development and which we anticipated would be completed by the time of this update is still not completed and tested. We continue to work with our strategic partner on this device and are hopeful we will have an announcement shortly.
- Recent testing on new polymer composites of our proprietary Perkinamine chromophore with loading levels (the amount of Perkinamine in relationship to the host polymer) of only 10% give r33 values of 60 pm/V at 1550 nm. The results reflect the company's development of polymer material in a host material



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known as amorphous polycarbonate (APC). As we continue our testing and material profiling we believe we can achieve r33 values north of 100pm/V at 1550 nm with loading levels of less than 15%. These lower loading percentages are important to achieve overall stability in the selected host material.

- Our most recent independent laboratory results completed by Micron, Inc. that confirmed the thermal stability of our Perkinamine electro-optic materials. 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 320 degrees Celsius, as determined by Thermo-Gravimetric Analysis (TGA). The temperature range across our Perkinamine materials tested was between 270 and 320 degrees Celsius.
- The thermal stability of electro-optic devices must meet the minimum Telcordia GR-468 operating temperature range (-40 degrees Celsius to +85 degrees Celsius). We believe our Perkinamine electro-optic material based devices will meet the more harsh MILSPEC 883D (military specification) range of -55 degrees Celsius to 150 degrees Celsius.
- 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. We are pleased with the direction of our relationship. In fact we entered into another important but shorter twelve-week project with the University of Alabama for the characterization of one of our novel Perkinamine electro-optic materials. We should see the results of that project by the end of the third quarter.

Our management team and I look forward to meeting you and updating you further at our annual shareholder meeting, which is planned for Thursday, July 8, 2010.

Sincerely,



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Jim Marcelli  
Chief Executive Officer  
May 26, 2010

### **“Powered by Lightwave Logic”™**

Lightwave Logic, Inc. is a development stage company that is producing prototype electro-optic demonstration devices and is moving toward commercialization of its high-activity, high-stability organic polymers for applications in electro-optical device markets. Electro-optical devices convert data from electric signals into optical signals for use in high-speed fiber-optic telecommunications systems and optical computers. Please visit the Company's website, [www.lightwavelogic.com](http://www.lightwavelogic.com), for more information.

### *Safe Harbor Statement*

*The information posted in this release may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. You can identify these statements by use of the words "may," "will," "should," "plans," "explores," "expects," "anticipates," "continue," "estimate," "project," "intend," and similar expressions. Forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those projected or anticipated. These risks and uncertainties include, but are not limited to, general economic and business conditions, effects of continued geopolitical unrest and regional conflicts, competition, changes in technology and methods of marketing, delays in completing various engineering and manufacturing programs, changes in customer order patterns, changes in product mix, continued success in technological advances and delivering technological innovations, shortages in components, production delays due to performance quality issues with outsourced components, and various other factors beyond the Company's control.*

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