NEWS

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LIGHTTIME TO UNVEIL NEW LASER TECHNOLOGY FOR MICROPROCESSOR CLOCKING AT PHOTONICS WEST 2006

Major Advance in Passively Mode-Locked Semiconductor Laser Design Opens the Door to High-Volume, Low-Cost Microprocessor Optical Clocking

Oshkosh, WI – January 16, 2006 – LightTime™ LLC, a privately held developer of high-performance optoelectronics technology, today announced that the Company's photonic clocking technology will be presented at Photonics West 2006. Dr. James Siepmann, LightTime's Chief Research Officer, will be presenting "Scalable Passively Mode-locked Semiconductor Lasers for Microprocessor Clocking," which describes LightTime's high performance optical clock technology based on a new internal cavity passively modelocked laser design. Photonics West, the nation's largest exhibition of optics and laser technology, will be held January 21-26 at the San Jose Convention Center in San Jose California.

LightTime's design, based on the Company's LightClock technology (patents pending), is a breakthrough in the development of inexpensive lasers for photonic timing. Until now, available photonic clock options such as external cavity modelocked or modulated lasers were too complex and expensive for most commercial applications. LightTime has developed an internal cavity design using a new experimentally validated approach to saturable absorber implementation and facet coating, overcoming previous problems with this class of lasers such as low average power and high jitter. Furthermore, the design was developed on a material system amenable to low-cost, high volume manufacturing, a basic requirement in microprocessor and other silicon chip applications.

"In order to keep up with ever-increasing clock speeds, microprocessor design is widely expected to incorporate optical clocking in the near future," said Clark Caflisch, president and CEO of LightTime. "While you can use electronic modulation or active modelocking, passively modelocked semiconductor lasers offer a more practical, low cost method that is design scalable for both speed and wavelength as well as being readily adaptable to microprocessor interfaces."

Clock rates can range from 9-100+ GHz, with wavelengths from 800-1100+ nm. LightClocks interface with microprocessors in various formats, including flipchip, fiberoptic, planar waveguide, or customer-specified methods. Processed layer thicknesses and materials are the same for all clock rates and wavelengths, so that no significant changes in manufacturing lines are needed for different rates/wavelengths. By having a version that operates at over 1100 nm, LightTime is also able to offer integration with silicon waveguides that are transparent at these wavelengths.

LightTime's design achieves modelocking passively and monolithically without an external cavity structure, enabling low cost volume production. Compared to conventional electronic clocking, LightClocks have reduced microprocessor skew/jitter and have no RFI/EMI issues. LightClocks also substantially reduce on-chip clocking and signal distribution power consumption and heat generation. The design utilizes internal saturable absorbers to passively modelock a semiconductor laser in single spatial mode operation, with high peak powers. Experimental data show an RF power spectrum signal peak that is at least 40 dB above the noise floor with a -10 dB width <1 MHz. RMS jitter was measured at ~1 ps, and modelocking and pulse width were confirmed by autocorrelation.

Dr. Siepmann's presentation will be held Sunday, January 22 from 1:10 pm – 3:30 pm, as part of "Ultrafast and Mode-Locked Devices," which is Session 1 of Conference 6115, "Physics and Simulation of Optoelectronic Devices XIV." The presentation will feature actual prototype data, in addition to theoretical and extrapolated data with predictions of performance for the different scalable versions. Design and operational considerations for integration as a microprocessor clock will also be presented.

About LightTime

LightTime™ LLC, founded in 2000, is a privately held optoelectronics development company focusing on technologies for microprocessors, LADAR, telecom, and test and measurement equipment. LightTime develops innovative optoelectronic technologies for diverse applications, and promotes the technology through licensing agreements, manufacturing OEM products, and technical consulting services. The Company is presently developing and commercializing optical clocks, modelocked lasers, MEMS-based LADAR imaging systems and multi-wavelength sources, each offering substantial performance advantages over incumbent technologies. LightTime's products are based upon internally developed proprietary technologies with both U.S. and international patents. LightTime is a Wisconsin Limited Liability Company with operations located in Oshkosh, Wisconsin, and sales and marketing offices in Belmont, California. More information about LightTime can be found at www.LightTime.com.