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Press Release

PHILADELPHIA, Sep 1st, 2007

The Photonics Group Launches the Next Generation Fiber Optic Telecommunication Modulators, Switches, and Tunable Couplers

Photonics On-Fiber Devices, Inc. is offering innovative fiber optic devices; modulators, switches, and couplers, to overcome all existing limitations in the speed, bandwidth, and performance of fiber optics telecommunication systems (<http://www.photonicsonfiber.com>). Wherein, ordinary optical fibers are used as active devices as well as the transmission link. In this way, telecommunication signals will have the speed of light and enormous bandwidth (in the terra hertz range). The newly developed devices are constructed onto the fiber core surface using advanced nano-technology. **The innovative methodology and devices are disclosed in two newly granted patents; Patent # 7,228,012 awarded on June 5th, 2007; and Patent # 7,149,391 awarded on December 12th, 2006.**

For the past two decades, much effort has been directed to the development of efficient high-speed electrooptic (EO) modulators for communication systems, focusing on lithium niobate (LiNbO(3)) electrooptic modulators to improve the modulation efficiency and to reduce insertion loss associated with these devices. These modulators are constructed of a rectangular waveguide designed on the top of a single crystal LiNbO(3). These devices are polarization dependent, very costly and have shown several drawbacks including high insertion loss.

Also, the recent development of EO polymers has resulted in a new generation of EO modulators, where EO polymers are used as active rectangular waveguides, replacing the single crystal LiNbO(3) modulators. These EO modulators are simpler and less costly than LiNbO(3) modulators; **however, the polarization dependent, insertion loss and coupling techniques are still problems.**

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Along with interest in solving the problems associated with these EO modulators, our company has succeeded in developing a new class of EO devices (modulators, switches, and couplers). These EO devices are constructed of regular optical fibers modified in a small section, by replacing the passive cladding with an active multilayer structure. The active cladding includes a thin layer of an EO material sensitive to electromagnetic fields. In the presence of an external electromagnetic field, optical properties of EO materials will change, as well as transmission characteristics of optical signal propagating within the fiber core. Liquid crystals as well as solid electrooptic materials, such as EO polymer, can be used as the active cladding layer.

The advantages of using this innovative technology are unlimited, ranging from simplicity and cost effectiveness to high efficiency and low signal to noise ratio, and the most important, they are **polarization independent**. The developed On-Fiber EO devices overcome all existing limitations with current devices, resulting in not only dramatically improving the device performance but also in big reduction of the costs too. The problems of polarization dependence, coupling and insertion losses are completely eliminated. The designs and the manufacturing methodology are based on the all-fiber and on-fiber technologies invented and disclosed by Dr. M. El-Sherif in a number of Patents and Patents Pending including the recently granted patents mentioned before (<http://www.photonicsonfiber.com>). The devices can be constructed on the fiber core surface at different location, on the same optical fiber and without any interruption to the fiber link.

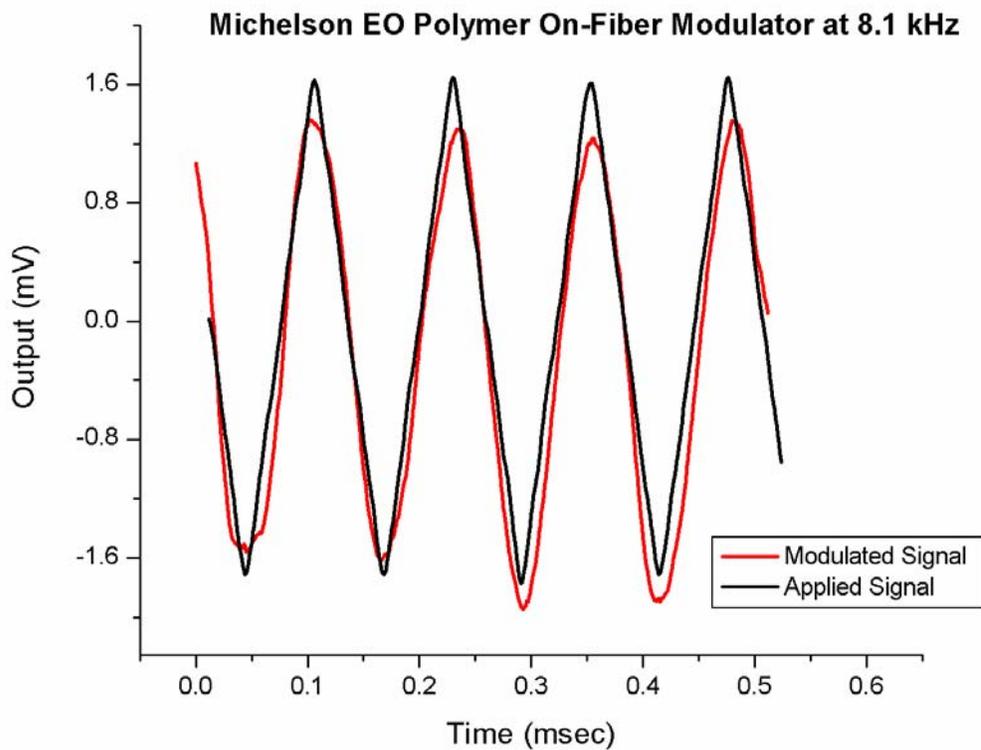
Several devices (modulators, switches, and couplers) have been successfully fabricated and tested. Proof of concept has been completed, and a number of demonstration prototypes have been developed and successfully tested. The electrooptic materials used in testing these devices are pneumatic liquid crystals and electrooptic polymers, however, many other electrooptic materials can be used too. The manufacturing methodology and the devices designs have been developed and disclosed in several patents. As an example, an On-Fiber EO Modulator/switch, using an EO

polymer as the active cladding of the optical fiber, is shown next.

On-Fiber EO Modulator/Switch



- True Speed-of-Light Capacity and Bandwidth too
- Much Less Expensive
- Overcomes All Limitations of Current EO/MW Devices
- Polarization Independent



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Testing Results

To this end, our company is looking to transfer the know-how and license the technology to one of the qualified fiber optic components manufacturing company through a merger or acquisition.

If your company is interested in discussing this opportunity further, please contact the Company CEO, Dr. M. El-Sherif at 215-387-9970, or email at melsherif@photonicslabs.com. Before proceeding forward, a Non-Disclosure Agreement will be signed. Additional information can also be found on <http://www.photonicslabs.com>.