



October 22, 2019, Tucson AZ – Norcon Technologies Awarded USAF SBIR Phase II for Midwave Infrared Interconnect Technology

Norcon Technologies, LLC , with two subcontractors, has been awarded a United States Air Force Phase II Small Business Innovation Research (SBIR) contract entitled, “Low-Cost Innovative Connections for Broadband Photonic Device” (AF181-085). The award is principally for developing technology in the midwave infrared (MWIR) for interconnecting photonic components such as fibers and photonic integrated circuits (PICs). The motivation is to serve the growing demand for photonics connections on military aircraft, as well as a host of commercial applications. Norcon’s subcontractors are AdValue Photonics and the University of Arizona.

Currently, coupling of MWIR components – such as quantum cascade lasers (QCLs) and photonic integrated circuits (PICs) – requires use of esoteric optical fiber waveguides that are brittle and have large bend radii. These limitations increase space and cost, while decreasing reliability. Norcon’s patented technology enables compact, rugged, and economical integration of MWIR components. Norcon is now being funded to integrate these subcomponents into a highly efficient MWIR interconnect solution that will be ruggedized, compact, and increasingly economical.

The MWIR interconnect technology derives from the intellectual property of Norcon’s Chief Technology Officer Robert Norwood, PhD, who is also a Professor at the College of Optical Sciences at the University of Arizona (U of A). One of the fundamental technologies being used to fabricate the interconnect waveguides is chalcogenide hybrid inorganic-organic polymers (CHIPs), which was invented at the U of A. Norwood stated, “CHIPs have a unique set of optical and physical properties in the MWIR. Like chalcogenide glasses, CHIPs have high transparency and high refractive index, as well as low refractive index dispersion. Unlike chalcogenides, CHIPs are lightweight, easy to shape, and far more economical. Conventional optical plastics also have these properties, but are opaque in the MWIR. The unique combination of transparency, high index, and flexibility of CHIPs makes rugged MWIR waveguides with small bend radii possible.” AdValue Photonics specializes in the development of specialty optical glasses and fibers with enhanced performance in the MWIR.

Norcon’s Chief Executive Officer Jay Liebowitz, a thirty-year veteran of the optoelectronics industry, expressed confidence in the commercial prospects for this MWIR interconnect technology, “Eliminating fibers between photonic components reduces size, cost, and fragility. Norcon’s intellectual property in MWIR polymer waveguide technology enables the economic scaling of compact, rugged MWIR photonic subsystems. There are numerous defense needs in aircraft safety and standoff detection. Moreover, there are countless commercial applications, such as in food and drug safety, cancer research, materials production, and process control. We are committed to serving these important needs.”

The Phase II program will take place over the next twenty-four months. The ultimate deliverable will be the demonstration of an end-to-end photonic link in the MWIR region. At that time, Norcon intends to pursue commercialization of the technology.

About Norcon Technologies

Norcon Technologies, LLC is commercializing technologies in infrared (IR) polymer optics and photonics. These innovations increase functionality and improve performance in fields such as imaging, sensing, spectroscopy, night vision, and high-speed communications. Breakthroughs in high index polymers, which target applications from 0.7 μm to 12 μm , dramatically reduce size, weight, and cost, while enabling optic and photonic solutions previously available only at shorter wavelengths. In addition to owning its own intellectual property, Norcon has also exclusively licensed intellectual property from the University of Arizona. The company is based in Tucson, AZ and is privately held.

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