



OPTRA Inc. Awarded Phase II U.S. Army STTR Contract for Real Time Parallel Channel Spectrometer for 3D Cloud Profiling

Topsfield, MA (September 27, 2007) - OPTRA Inc. was awarded a \$700,000 Small Business Technology Transfer (STTR) Phase II research grant by the U.S. Army to deliver a real time parallel channel spectrometer for 3D cloud profiling. This project is a cooperative effort with the University of North Carolina Chapel Hill, School of Public Health who will perform advanced computed tomography in support of OPTRA's instrument development.

The multichannel spectrometer is being developed as a candidate referee sensor for chemical and biological agent point and standoff sensor test ranges and chambers. The instrument is based on open-path Fourier transform infrared (OP-FTIR) technology and employs a single modulator and a novel optical configuration which projects an array of angularly dispersed IR beams to an array of retroreflector arrays remotely located at the opposite side of the test grid. Each IR beam exhibits comparable radiometric throughput to a single channel OP-FTIR. The return energy is imaged onto an array of detectors that record the spatially resolved interferograms which are subsequently transformed and analyzed for molecular content via multicomponent algorithms. Employing a small number of these instruments around the perimeter of the test grid allows for accurate reconstruction of the agent simulant plume via the computed tomography engine. The measurement is simultaneous which results in better accuracy than the scanning beam approach where the plume's motion results in reconstruction errors. The optical design supports high per-channel radiometric efficiency which results in a noise equivalent concentration below that of the sensors under test. The active measurement allows for detection in the zero temperature contrast scenario where passive IR sensors fail. System cost and weight are further reduced by the use of OPTRA's lightweight, low-cost plastic retroreflector arrays.

The Phase II will produce a working prototype which will be integrated with the computed tomography engine and tested on agent simulant plumes. Potential applications include installation as a referee system at test ranges and chambers as well as homeland security installations where large public venues are monitored for both identity and location of a chemical or biological agent release.

OPTRA is a supplier of ultra precision measurement solutions using state-of-the-art electro-optical technology. OPTRA markets the NanoGrid®, NanoScale®, and NanoGage® nanometer resolution grid and linear encoder products to the semiconductor, disk drive, and general research industries. OPTRA is the sole supplier of spectrometer modules to the JSLSCAD program, a field rated chemical agent detection system. OPTRA has a history of winning leading-edge technical development contracts for both commercial and government related research. OPTRA manufactures products and also licenses certain technologies that have originated from its development work.

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