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Explosives (CBRNE) Sensing XVII***

**Augustus W. Fountain III**  
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## Introduction

The 17th meeting of the CBRNE Sensing Conference met as part of the 2016 SPIE Defense + Commercial Sensing (DCS) Symposium in Baltimore, MD. The Conference extended over the course of three days and 10 sessions, one of which for the first time was held jointly with the "Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXI" Conference. This year we initiated two new sessions. The first was "Integrated Photonics Sensing of CBRNE Threats". This session highlighted recent advances in chemical and biological sensing applications of integrated photonics coming out of the American Institute for Manufacturing Integrated Photonics (AIM Photonics). The second new session "Applications of Quantum Sensing" looks to explore how advances in Quantum Optics can help solve key detection challenges for the CBRNE community. We plan to continue these sessions and open up new ones as the Conference travels with the 2017 SPIE DCS Symposium to Anaheim, California.

### Key Papers and Highlights:

Pao Tai Lin of Texas A&M University presented interesting work on decreasing the size of detectors on a chip. The work increased the sensitivity for chemical detection by over 50 times. The device was able to differentiate multiple liquids (n-bromohexane, toluene, isopropanol, etc.) as well as the individual concentrations of multiple liquids (acetonitrile and ethanol) in a solution. A clear summary from the basic science and technology to the nanoengineering of the device was presented, and this research could be transitioned into smaller platforms for chemical and explosive weapon material detection.

Rebecca J. Hopkins of the Defence Science and Technology Laboratory presented a talk on the non-destructive detection and identification of samples spatially offset Raman spectroscopy (SORS). These samples can originate from security and defense applications as well as forensic science applications. Their current SORS methodology can reach up through 3 mm of polyvinyl chloride (PVC) pipe.

Matthew P. Nelson of ChemImage Corporation presented on their work of a real-time, adaptable, compressive sensing short-wave infrared hyperspectral imaging technology. This technology, dubbed Reconfigurable Conformal Imaging Sensor, could be used as a stand-off detector for trace detection of narcotics, explosives, chemical warfare agents, and other contraband on the surfaces of vehicles and walls.

Once again I want to thank my committee who really makes this conference happen. There is no way I could review all the abstracts and proceedings papers or host all the sessions without them. I am confident that this conference remains

the most important means of bringing together the leaders in the field of CBRNE sensing from every sector; government, academia and industry. I am already excited about next year's conference and the new developments it will report on.

**Augustus W. Fountain III**