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Augustus W. Fountain III
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Contents

- ix *Conference Committee*
- xi *Introduction*

SESSION 1 CHEMICAL DETECTION I

- 9073 02 **Active FTIR-based standoff detection in the 3-4 micron region using broadband femtosecond optical parametric oscillators (Invited Paper) [9073-1]**
D. T. Reid, Z. Zhang, Heriot-Watt Univ. (United Kingdom); C. R. Howle, Defence Science and Technology Lab. (United Kingdom)
- 9073 03 **Quantitative total and diffuse reflectance laboratory measurements for remote, standoff, and point sensing [9073-2]**
T. A. Blake, T. J. Johnson, R. G. Tonkyn, B. M. Forland, T. L. Myers, C. S. Brauer, Y.-F. Su, Pacific Northwest National Lab. (United States)
- 9073 04 **Development of an ultrahigh-performance infrared detector platform for advanced spectroscopic sensing systems [9073-3]**
M. Jain, Amethyst Research Ltd. (United Kingdom); G. Wicks, Amethyst Research Inc. (United States); A. Marshall, A. Craig, Lancaster Univ. (United Kingdom); T. Golding, Amethyst Research Ltd. (United Kingdom) and Amethyst Research Inc. (United States); K. Hossain, Amethyst Research Inc. (United States); K. McEwan, C. R. Howle, Defence Science and Technology Lab. (United Kingdom)
- 9073 07 **Photoacoustic chemical sensing: ultracompact sources and standoff detection [9073-6]**
L. S. Marcus, E. L. Holthoff, J. F. Schill, P. M. Pellegrino, U.S. Army Research Lab. (United States)

SESSION 2 CHEMICAL DETECTION II

- 9073 09 **A neural network structure for prediction of chemical agent fate [9073-8]**
H. K. Navaz, Kettering Univ. (United States); N. Kehtarnavaz, The Univ. of Texas at Dallas (United States); Z. Jovic, Kettering Univ. (United States)
- 9073 0A **Fate of sessile droplet chemical agents in environmental substrates in the presence of physiochemical processes [9073-9]**
H. K. Navaz, A. L. Dang, T. Atkinson, A. Zand, A. Nowakowski, K. Kamensky, Kettering Univ. (United States)
- 9073 0C **Measurements of Raman scattering in the middle ultraviolet band from persistent chemical warfare agents [9073-11]**
F. Kullander, L. Landström, H. Lundén, S. Mohammed, G. Olofsson, P. Wästerby, Swedish Defence Research Agency (Sweden)

- 9073 0D **Application of a Fourier-transform infrared imaging system to deciphering obliterated writings for forensic purposes** [9073-12]
S. Sugawara, National Research Institute of Police Science (Japan)
- 9073 0E **Acoustic resonance in MEMS scale cylindrical tubes with side branches** [9073-15]
J. F. Schill, E. L. Holthoff, P. M. Pellegrino, L. S. Marcus, U.S. Army Research Lab. (United States)

SESSION 3 EXPLOSIVES DETECTION USING RAMAN SPECTROSCOPY

- 9073 0F **Proximal detection of energetic materials on fabrics by UV-Raman spectroscopy** [9073-16]
R. Chirico, S. Almagiva, F. Colao, L. Fiorani, M. Nuvoli, ENEA (Italy); W. Schweikert, F. Schnürer, Fraunhofer-Institut für Chemische Technologie (Germany); L. Cassioli, S. Grossi, L. Mariani, Aeronautica Militare Italiana (Italy); F. Angelini, I. Menicucci, A. Palucci, ENEA (Italy)
- 9073 0G **Stand-off imaging Raman spectroscopy for forensic analysis of post-blast scenes: trace detection of ammonium nitrate and 2,4,6-trinitrotoluene** [9073-18]
E. Ceco, H. Önnnerud, D. Menning, Swedish Defence Research Agency (Sweden); J. L. Gilljam, Stockholm Univ. (Sweden); P. Bååth, H. Östmark, Swedish Defence Research Agency (Sweden)
- 9073 0H **High-sensitivity explosives detection using dual-excitation-wavelength resonance-Raman detector** [9073-19]
B. Yellampalle, W. McCormick, H.-S. Wu, M. Sluch, R. Martin, R. Ice, B. E. Lemoff, West Virginia High Technology Consortium Foundation (United States)
- 9073 0I **Improved sensing using simultaneous deep-UV Raman and fluorescence detection II** [9073-20]
W. F. Hug, Photon Systems, Inc. (United States); R. Bhartia, Jet Propulsion Lab. (United States); K. Sijapati, Photon Systems, Inc. (United States); L. W. Beegle, Jet Propulsion Lab. (United States); R. D. Reid, Photon Systems, Inc. (United States)
- 9073 0J **Spatially offset hyperspectral stand-off Raman imaging for explosive detection inside containers** [9073-21]
B. Zachhuber, H. Östmark, T. Carlsson, Swedish Defence Research Agency (Sweden)
- 9073 0K **Improving sensitivity and source attribution of homemade explosives with low-frequency/THz-Raman spectroscopy** [9073-22]
J. T. A. Carriere, F. Havermeier, R. A. Heyler, Ondax, Inc. (United States)

SESSION 4 SPECTROSCOPY AND IMAGING FOR EXPLOSIVES DETECTION I

- 9073 0L **Hyperspectral imaging using novel LWIR OPO for hazardous material detection and identification** [9073-23]
K. Ruxton, G. Robertson, B. Miller, G. P. A. Malcolm, G. T. Maker, M Squared Lasers Ltd. (United Kingdom)

- 9073 0M **The challenge of changing signatures in infrared stand-off detection of trace explosives** [9073-24]
R. Furstenberg, C. Kendziora, M. Papantonakis, V. Nguyen, R. A. McGill, U.S. Naval Research Lab. (United States)
- 9073 0N **STARR: shortwave-targeted agile Raman robot for the detection and identification of emplaced explosives** [9073-25]
N. R. Gomer, C. W. Gardner, ChemImage Sensor Systems (United States)
- 9073 0N **Continued development of a portable widefield hyperspectral imaging (HSI) sensor for standoff detection of explosive, chemical and narcotic residues** [9073-26]
M. P. Nelson, C. W. Gardner, O. Klueva, D. Tomas, ChemImage Sensor Systems (United States)

SESSION 5 SPECTROSCOPY AND IMAGING FOR EXPLOSIVES DETECTION II

- 9073 0Q **Detecting explosive substances by the IR spectrography** [9073-28]
J. Kuula, H. Rinta, I. Pölönen, H.-H. Puupponen, Univ. of Jyväskylä (Finland); M. Haukkamäki, Air Force Command Finland (Finland); T. Teräväinen, Central Finland Police Dept. (Finland)

SESSION 6 CONSIDERATIONS OF EXPLOSIVE DETECTION

- 9073 0R **Fate and effects of trace particulate explosives** [9073-29]
V. Nguyen, R. Furstenberg, N. Carr, R. McGill, D. R. Mott, M. Papantonakis, C. Kendziora, R. A. McGill, U.S. Naval Research Lab. (United States)
- 9073 0T **Observation of atomic carbon during photodissociation of nitrotoluenes in the vapor phase** [9073-31]
H. Eilers, H. Diez-y-Riega, Washington State Univ. (United States)
- 9073 0U **Analysis of nonstandard and home-made explosives and post-blast residues in forensic practice** [9073-32]
M. Kotrlý, Institute of Criminalistics Prague (Czech Republic) and Charles Univ. in Prague (Czech Republic); I. Turková, Institute of Criminalistics Prague (Czech Republic)
- 9073 0V **Design and validation of inert homemade explosive simulants for x-ray based inspection systems** [9073-33]
A. A. Faust, Defence Research and Development Canada (Canada); S. Nacson, Visiontec Systems (Canada) and TeknoScan Systems Inc. (Canada); B. Koffler, Visiontec Systems (Canada) and SecureSearch Inc. (Canada); É. Bourbeau, Optosecurity Inc. (Canada); L. Gagne, R. Laing, C. J. Anderson, Defence Research and Development Canada (Canada)

SESSION 7 BIOLOGICAL DETECTION

- 9073 0W **Discriminating bacterial spores from inert airborne particles by classification of optical scattering patterns** [9073-34]
G. F. Crosta, Univ. degli Studi di Milano-Bicocca (Italy); Y. Pan, G. Videen, U.S. Army Research Lab. (United States)
- 9073 0Z **Standoff detection: classification of biological aerosols using laser induced fluorescence (LIF) technique** [9073-37]
A. Hausmann, F. Duschek, T. Fischbach, C. Pargmann, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); V. Aleksejev, L. Poryvkina, I. Sobolev, S. Babichenko, LDI Innovation OÜ (Estonia); J. Handke, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)
- 9073 10 **Consumer of concern early entry program (C-CEEP): protecting against the biological suicidal warfare host** [9073-38]
J. D. Fish, Capella Univ. (United States)
- 9073 11 **A microfluidic platform with integrated arrays for immunologic assays for biological pathogen detection** [9073-39]
R. Klemm, H. Becker, N. Hlawatsch, microfluidic ChipShop GmbH (Germany); S. Julich, Friedrich-Loeffler-Institut (Germany); P. Miethe, Forschungszentrum für Medizintechnik und Biotechnologie GmbH (Germany); C. Moche, S. Schattschneider, microfluidic ChipShop GmbH (Germany); H. Tomaso, Friedrich-Loeffler-Institut (Germany); C. Gärtner, microfluidic ChipShop GmbH (Germany)
- 9073 12 **Detection and monitoring of CWA and BWA using LIBS** [9073-40]
L. Landström, A. Larsson, P.-Å. Gradmark, L. Örebrand, P. O. Andersson, P. Wästerby, T. Tjärnhage, Swedish Defence Research Agency (Sweden)
- 9073 15 **Measurement of 100 B. anthracis Ames spores within 15 minutes by SERS at the US Army Edgewood Chemical Biological Ctr.** [9073-43]
S. Farquharson, C. Shende, W. Smith, H. Huang, Real-Time Analyzers, Inc. (United States); J. Sperry, The Univ. of Rhode Island (United States); T. Sickler, A. Prugh, J. Guicheteau, U.S. Army Edgewood Chemical Biological Ctr. (United States)

SESSION 8 RADIOLOGICAL AND NUCLEAR DETECTION

- 9073 16 **Utilization of advanced clutter suppression algorithms for improved standoff detection and identification of radionuclide threats** [9073-44]
B. R. Cosofret, K. Shokhirev, P. Mulhall, Physical Sciences Inc. (United States); D. Payne, B. Harris, Raytheon Integrated Defense Systems (United States)
- 9073 17 **Image characterization metrics for muon tomography** [9073-45]
W. Luo, Gemini Design, LLC (United States); A. Lehovich, Decision Sciences International Corp. (United States); E. Anashkin, C. Bai, J. Kindem, Gemini Design, LLC (United States); M. Sossong, Decision Sciences International Corp. (United States); M. Steiger, Gemini Design, LLC (United States)

- 9073 18 **Muon tomography imaging improvement using optimized limited angle data** [9073-46]
C. Bai, Gemini Design, LLC (United States); S. Simon, Decision Sciences International Corporation (United States); J. Kindem, W. Luo, Gemini Design, LLC (United States); M. J. Sossong, Decision Sciences International Corp. (United States); M. Steiger, Gemini Design, LLC (United States)
- 9073 1A **Operator based integration of information in multimodal radiological search mission with applications to anomaly detection** [9073-48]
J. Benedetto, A. Cloninger, W. Czaja, T. Doster, Univ. of Maryland, College Park (United States); K. Kochersberger, Virginia Polytechnic Institute and State Univ. (United States); B. Manning, Univ. of Maryland, College Park (United States); T. McCullough, M. McLane, Remote Sensing Lab. (United States)
- 9073 1E **The electrical response of plants under radiation** [9073-52]
M. Islam, Univ. of Maryland, Baltimore County (United States); W. Xi, Thomas Jefferson National Lab. (United States); D. J. Y. Feng, National Univ. of Kaohsiung (Taiwan); F.-S. Choa, Univ. of Maryland, Baltimore County (United States)

Author Index

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Session Chairs

1 Chemical Detection I

Christopher R. Howle, Defence Science and Technology Laboratory (United Kingdom)

- 2 Chemical Detection II
Christopher C. Carter, Johns Hopkins University Applied Physics Laboratory (United States)
- 3 Explosives Detection Using Raman Spectroscopy
Jason A. Guicheteau, U.S. Army Edgewood Chemical Biological Center (United States)
- 4 Spectroscopy and Imaging for Explosives Detection I
Aaron LaPointe, U.S. Army Night Vision & Electronic Sensors Directorate (United States)
- 5 Spectroscopy and Imaging for Explosives Detection II
Aaron LaPointe, U.S. Army Night Vision & Electronic Sensors Directorate (United States)
- 6 Considerations of Explosive Detection
Anna Tedeschi, Strategic Analysis, Inc. (United States)
- 7 Biological Detection
Augustus W. Fountain III, U.S. Army Edgewood Chemical Biological Center (United States)
- 8 Radiological and Nuclear Detection
James Placke Jr., Y-12 National Security Complex (United States)

Introduction

This year the SPIE Defense, Security + Sensing Symposium's, CBRNE Sensing Conference had its 15th annual meeting in Baltimore, MD from 5–9 May 2014. I was especially excited this year because I was actually able to attend as Chair, after last year's ban on conference travel. Although the paper count was about 20% below what it had been the previous few years, the quality was high and the average attendance throughout the conference was on par with the SPIE overall average. This year the conference featured speakers from various government, industry, and academic institutions discussing novel techniques of detecting CBRNE threats. The conference highlighted many novel devices, experimental methods, and computational/modeling approaches, focusing on optical standoff, rather than point detection.

In Chemical Detection I & II, a series of experimentalists and computational experts discussed various laser techniques for proximal and standoff detection of threats. Notably Zhaowei Zhang from the Defense Science and Technology Laboratory (United Kingdom) discussed utilizing optical parametric oscillators (OPO) in Fourier transform infrared (FTIR) spectroscopy-based standoff detection. In addition Logan Marcus from U.S. Army Research Laboratory gave a talk on use of photoacoustic spectroscopy (PAS) ultracompact sources for standoff detection and Anish Goyal from the Massachusetts Institute of Technology Lincoln Laboratories discussed modeling the long wave IR (LWIR) reflectance signals from contaminated surfaces. Fredrik Kullander from the Swedish Defence Research Agency (FOI) discussed their work in using UV-Raman to detect chemical warfare agents.

The Explosive Detection sessions included speakers that discussed both proximal and standoff detection of energetic materials. The talks covered various detection methods and analysis algorithms. Many talks also focused on combining the specificity of Raman spectroscopy with the broad area imaging capabilities of IR HSI and other spectroscopic techniques. William Hug discussed what Photon Systems us doing to improve the sensing capabilities of current DUV Raman systems by fusing the information from fluorescence and Raman signals. James Carrier from Ondax, Inc. presented research on using low frequency Raman or "THz Raman" to obtain both structural and chemical information on explosives threats. Henric Östmark from FOI presented techniques for remote Raman imaging of post- blast scenes. These sessions and others highlighted a number of novel concepts for explosives detection applications.

Other talks focused on biological detection in environmental samples. Notably Yiping Zhao from the University of Georgia presented his research using surface enhanced Raman spectroscopy (SERS) to detect pathogens in food samples. In our smallest session, most of the radiological and nuclear detection talks focused

on development of algorithms and techniques for interpreting and analyzing data collected by detectors.

As in past years, the CBRNE Sensing Conference had a joint session with the Micro/Nanotechnologies for Lasers and Standoff Detection. Notable talks in these sessions were from Chris Kendziora of NRL who gave a talk on the creation of a mobile platform IR system. It uses a photothermal imaging approach, powered by a QCL to detect chemical threats at 30m distance in ambient outdoors conditions. Also, Seonghwan Kim from the University of Calgary (Canada) gave a talk on standoff detection of trace explosives using QCLs based on TiO₂ microcantilever sensors.

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 a viable and important means of bringing 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