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# Sandia National Laboratories

## SPIE Defense Security + Sensing

### *Invited Papers*

#### **Emerging Technologies: Micro- and Nanotechnology Sensors, Systems, and Applications IV (8373)**

##### ***Stimulated Mach-wave phonon emission: toward broadband phonon emitters and phonon lasers (8373-13)***

Mesodynamic Architectures II

Date: Monday, 23 April 2012 Time: 1:30 PM - 1:50 PM

Author(s): Peter T. Rakich, Charles M. Reinke, Ryan M. Camacho, Paul Davids, Ihab El-kady, Roy H. Olsson III, Darren W. Branch, Robert L. Jarecki, Sandia National Labs. (U.S.); Zheng Wang, Massachusetts Institute of Technology (U.S.)

##### ***Closed-loop performance of an actuated deformable carbon fiber reinforced polymer mirror (8373-28)***

Beam Control Systems Using MEMS and Liquid Crystals

Date: Tuesday, 24 April 2012 Time: 1:40 PM - 2:00 PM

Author(s): Christopher C. Wilcox, U.S. Naval Research Lab. (U.S.); Matthew E. L. Jungwirth, David V. Wick, Michael S. Baker, Clinton G. Hobart, Sandia National Labs. (U.S.); Robert C. Romeo, Robert N. Martin, Composite Mirror Applications, Inc. (U.S.)

##### ***Theory and design of a MEMS-enabled diffraction limited adaptive optical zoom system (8373-29)***

Beam Control Systems Using MEMS and Liquid Crystals

Date: Tuesday, 24 April 2012 Time: 2:00 PM - 2:20 PM

Author(s): Matthew E. L. Jungwirth, College of Optical Sciences, The Univ. of Arizona (U.S.); David V. Wick, Sandia National Labs. (U.S.)

##### ***Leveraging scale effects to create next-generation photovoltaic systems through micro- and nanotechnologies (8373-44)***

Systems Engineering for Microsystems: From Research to Applications

Date: Wednesday, 25 April 2012 Time: 1:30 PM - 1:50 PM

Author: Gregory N. Nielson, Sandia National Labs. (U.S.)

##### ***Microsystems: technology enabler for ... (8373-70)***

New Boundaries and Frontiers for MEMS

Date: Thursday, 26 April 2012 Time: 4:30 PM - 4:50 PM

Author: Murat Okandan, Sandia National Labs. (U.S.)

## *Presentations and Posters*

### **IR Sensors and Systems**

#### **Infrared Technology and Applications XXXVIII (8353)**

##### ***Tailored thermal emission from sub-wavelength diffractive optical elements (8353-64)***

IR Optics I 25 April 2012 11:10 - 11:30 AM

Author(s): Adam M. Jones, College of Optical Sciences, The Univ. of Arizona (U.S.) and Sandia National Labs. (U.S.); Shanaly A. Kemme, David A. Scrymgeour, Michael J. Cich, Sally Samora, Sandia National Labs. (U.S.); Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (U.S.)

### ***Nano-antenna-enabled MWIR FPAs (8353-104)***

QWIP and Q-DOT 27 April 2012 9:40 - 10:00 AM

Author(s): David W. Peters, Paul Davids, John F. Klem, Sandia National Labs. (U.S.)

### ***NIR/LWIR dual-band infrared photodetector with optical addressing (8353-109)***

QWIP and Q-DOT 27 April 2012 11:10 - 11:30 AM

Author(s): Oray O. Cellek, Ha Sul Kim, Arizona State Univ. (U.S.); John L. Reno, Sandia National Labs. (U.S.); Yong-Hang Zhang, Arizona State Univ. (U.S.)

## Technologies for Synthetic Environments: Hardware-in-the-Loop XVII (8356)

### **Photonic crystal multiband infrared scene projection technology (8356-8)**

IR Scene Projectors                    25 April 2012    11:20 - 11:40 AM  
 Author(s): Jerry A. Wilson, Cyan Systems (U.S.); B. Burckel, Sandia National Labs. (U.S.); John T. Caulfield, Cyan Systems (U.S.); Scott M. Cogan, Mark A. Massie, Nova Sensors (U.S.); Ronald J. Rapp, Donald R. Snyder, Air Force Research Lab. (U.S.)

## Defense, Homeland Security, and Law Enforcement

### **Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XIII (8358)**

#### **Spectrally resolved fluorescence cross sections of aerosolized live biological agents and simulants (8358-2)**

Bioaerosol Detection Strategies            24 April 2012    8:20 - 8:40 AM  
 Author(s): Yongle Pan, Steven C. Hill, Chatt Williamson, Ronald G. Pinnick, Mark Coleman, Kristan P. Gurton, U.S. Army Research Lab. (U.S.); Kelly Brinkley, The Johns Hopkins Univ. Applied Physics Lab. (U.S.); Joshua Santarpia, Sandia National Labs. (U.S.); Melvin A. Felton, U.S. Army Research Lab. (U.S.); Neal Baker, Jon Eshbaugh, Jerry Hahn, Emily Smith, Ben Alvarez, The Johns Hopkins Univ. Applied Physics Lab. (U.S.); Todd Sickler, Warren Gardner, U.S. Army Edgewood Chemical Biological Ctr. (U.S.)

#### **Investigations into the polymorphs and hydration products of UO<sub>3</sub> (8358-65)**

Radiological and Nuclear Detection            27 April 2012    10:50 - 11:10 AM  
 Author(s): Lucas Sweet, David L. Blanchard, Edgar C. Buck, Charles H. Henager, Jr., Shenyang Hu, David E. Meier, Shane M. Peper, Jon M. Schwantes, Yin-Fong Su, Robert L. Sams, Thomas A. Blake, Timothy J. Johnson, Pacific Northwest National Lab. (U.S.); Thomas J. Kulp, Ricky L. Sommers, Joshua D. Sugar, Sandia National Labs., California (U.S.); Jeffrey D. Chames, Sandia National Labs., California (U.S.)

## Imaging and Sensing

### **Radar Sensor Technology XVI (8361)**

#### **Antenna array devised for amplifier integration (8361-25)**

Components and Technology            24 April 2012    10:50 - 11:10 AM  
 Author: Bernd H. Strassner II, Sandia National Labs. (U.S.)

#### **Radar cross-section statistics of cultural clutter at Ku-band (8361-33)**

Phenomenology                    24 April 2012    4:00 - 4:20 PM  
 Author(s): Ann M. Raynal, Douglas L. Bickel, Armin W. Doerry, Sandia National Labs. (U.S.)

## Posters

24 April 2012                    6:00 - 7:30 PM

#### **A better trihedral corner reflector for low-grazing angles (8361-47)**

Author(s): Armin W. Doerry, Billy C. Brock, Sandia National Labs. (U.S.)

#### **What maritime ISAR designers should know about ship dynamics (8361-48)**

Author: Armin W. Doerry, Sandia National Labs. (U.S.)

## **Designing interpolation kernels for SAR data resampling (8361-49)**

Author(s): Armin W. Doerry, Sandia National Labs. (U.S.); Edward Bishop, John Miller, Volker Horndt, General Atomics Aeronautical Systems, Inc. (U.S.); Donald Small, Sandia National Labs. (U.S.)

#### **An efficient means to mitigate wavefront curvature effects in polar format processed SAR imagery (8361-63)**

Author(s): Robert Linnehan, Mark Yasuda, General Atomics Aeronautical Systems, Inc. (U.S.); Armin W. Doerry, Sandia National Labs. (U.S.)

## Terahertz Physics, Devices, and Systems VI: Advance Applications in Industry and Defense (8363)

### **Resonant bolometric subterahertz detection in a 2D plasmonic cavity (8363-28)**

Advanced Concepts in THz II            24 April 2012    4:50 - 5:10 PM

Author(s): Gregory C. Dyer, Albert D. Grine, John L. Reno, Sandia National Labs. (U.S.); Gregory R. Aizin, Kingsborough Community College (U.S.); Joel M. Hensley, Physical Sciences Inc. (U.S.); S. James Allen, Jr., Univ. of California, Santa Barbara (U.S.); Eric A. Shaner, Sandia National Labs. (U.S.)

## Laser Sensors and Systems

### **Laser Technology for Defense and Security VIII (8381)**

#### **High-efficiency, multilevel, diffractive optical elements for spectral beam combining (8381-26)**

Beam Combining                    24 April 2012    11:40 AM - 12:00 PM

Author(s): Shanaly A. Kemme, David W. Peters, David A. Scrymgeour, Sandia National Labs. (U.S.)

## Active and Passive Signatures III (8382)

### **Neutron detection based on capture-gamma sensing and calorimetry (8382-8)**

Materials Detection Signatures            25 April 2012    4:10 - 4:30 PM

Author(s): Guntram Pausch, Claus-Michael Herbach, FLIR Radiation GmbH (U.S.); Dean Mitchell, Sandia National Labs. (U.S.); Ralf Lentering, Juergen Stein, FLIR Radiation GmbH (U.S.)

## Unmanned, Robotic, and Layered Systems

### **Unmanned Systems Technology XIV (8387)**

#### **A layered control architecture for single-operator control of heterogeneous unmanned system teams (8387-1)**

Multi-Robot Control                    25 April 2012    8:00 - 8:20 AM

Author(s): Stephen Buerger, Jason Neely, Charles Q. Little, Wendy Amai, Rommy Joyce, Sandia National Labs. (U.S.)

## Sensor Data and Information Exploitation

### **Algorithms for Synthetic Aperture Radar Imagery XIX (8394)**

#### **Bistatic SAR imaging of the lunar surface using the Aerocibo Observatory transmitter and the lunar reconnaissance orbiter receiver (8394-12)**

Image Formation                    25 April 2012    11:30 - 11:40 AM

Author(s): Charles V. Jakowitz, Jr., Daniel E. Wahl, Sandia National Labs. (U.S.); David A. Yocky, Sandia National Labs (U.S.)