Sandia National Laboratories
SPIE Optics + Photonics 2019
Invited Papers

THz Quantum Cascade Lasers

Watt-Level Power from Terahertz Semiconductor Lasers with Phase-Locked Plasmonic Microcavities [11124-1]

11 August 2019	8:00AM	Conv. Ctr. Room 16B

Authors: Sushil Kumar, Yuan Jin, Leigh Univ. (USA); John L. Reno, Sandia National Labs (USA)

Low-D Devices

Three-Dimensional Etching of III-Nitride Structures [11085-19]

12 August 2019	2:00PM	Conv. Ctr. Room 5A

Authors: George T. Wang, Keshab B. Saptoka, Sandia National Labs (USA); Barbara A. Kazanowska, Univ. of Florida (USA); A. Alec Talin, Benjamin Leung, Sandia National Labs (USA); Miao-Chan Tsai, The Univ. of New Mexico (USA); Kevin S. Jones, Univ. of Florida (USA)

Applications II

Development and Testing of Intrinsic Anti-Fogging Plastic Scintillators for Radiation Portal Monitors (RPMs) [11114-15]

12 August 2019	3:30PM	Conv. Ctr. Room 13

Authors: Terence O'Brien, Charles R. Hurlbut, Kyle R. Shipp, Ludlum Measurements, Inc. (USA); Nicholas R. Myllenbeck, Sandia National Labs, Steven A. Payne, Natalia P. Zaitseva, Lawrence Livermore National Lab (USA); Michael J. Lance, Oak Ridge National Lab (USA); Alan Janos, US Dept. of Homeland Security (USA)

2D and Layered Structures I

Photoemission Electron Microscopy as a New Tool to Study the Electronic Properties of Transition Metal Dichalcogenides and Polycrystalline Semiconductors [11085-23]

12 August 2019	4:15PM	Conv. Ctr. Room 5A

Author: Taisuke Ohta, Sandia National Labs (USA)

THz Detectors

Terahertz Detectors Based on All-Dielectric Photoconductive Metasurfaces [111124-36]

12 August 2019	4:50PM	Conv. Ctr. Room 16B

Authors: Oleg Mitrofanov, Thomas Siday, Univ. College London (UK); Polina Vabishchevic, Sandia National Labs (USA); Lucy Hale, Univ. College London (UK); Thomas Harris, Ting Shan Luk, John L. Reno, Igal Brener, Sandia National Labs (USA)

Tunable and Dynamic Photonic Platforms

Semiconductor-Based Passive, Active, and Nonlinear Dielectric Metasurfaces [11081-38]

13 August 2019	1:55PM	Conv. Ctr. Room 1B

Author: Michael B. Sinclair, Sandia National Labs (USA)

Computed Tomography

High-Fidelity Calibration and Characterization of a Hyperspectral Computed Tomography System [11114-54]

14 August 2019	4:00PM	Conv. Ctr. Room 13

Authors: Edward Steven Jimenez, Isabel O. Gallegos, Srivathsan Koundinyan, Julia A. Sakamoto, April Suknot, Crystal Cheung, Sandia National Labs (USA)

Neuromorphic Computing II

Semi-Supervised Learning and Inference in Domain-Wall Magnetic Tunnel Junction (DW-MTJ) Neural Networks [11090-126]

15 August 2019	10:30AM	Conv. Ctr. Room 6D

Authors: Christopher H. Bennett, Sandia National Labs (USA); Jean Anne C. Incorvia, The Univ. of Texas at Austin (USA); Xuan Hu, Naimul Hassan, Joseph S. Friedman, The Univ. of Texas at Dallas (USA); Matthew M. Marinella, Sandia National Labs (USA)

Magnetic Domain Wall Neuron with Intrinsic Leaking and Lateral Inhibition Capability [11090-128]

15 August 2019	11:30AM	Conv. Ctr. Room 6D

Authors: Naimul Hassan, Xuan Hu, Lucian Jiang-Wei, Wesley H. Brigner, The Univ. of Texas at Dallas (USA); Otitoaleke G. Akinola, The Univ. of Texas at Austin (USA); Felipe Garcia-Sanchez, Istituto Nazionale di Ricerca Metrologica (Italy) and Univ. de Salamanca (Spain); Massimo Pasquale, Istituto Nazionale di Ricerca Metrologica (Italy); Christopher H. Bennett, Sandia National Labs (USA); Jean Anne C. Incorvia, Joseph S. Friedman The Univ. of Texas at Austin (USA)

Posters

Broadband, Non-Resonant Platform for Electric Field Enhancement [11081-109]

14 August 2019	5:30PM-7:30PM	Conv. Ctr. Hall A

Authors: Ganapathi S. Subramania, Sandia National Labs (USA); Stavroula Foteinopoulou, The Univ. of New Mexico (USA)

Deterministic Fabrication of Quantum Dots for Quantum Light Sources Using Selective Photoelectrochemical Etching [11081-110]

14 August 2019	5:30PM-7:30PM	Conv. Ctr. Hall A

Authors: Ganapathi S. Subramania, Patrick D. Anderson, Arthur J. Fischer, Daniel D. Koleske, Sandia National Labs (USA)

Presentations

Spectral Detection, Processing, and Applications II

Image Reconstruction for Coded Aperture Snapshot Spectral Imaging Using Deep Convolutional Neural Networks [11130-6]

11 August 2019   10:40AM   Conv. Ctr. Room 18

Author: Dennis J. Lee, Sandia National Labs (USA)

Instrument Design and Characterization

Performance Analysis of a Tiled Array Compressive Sensing Snapshot Imaging Spectrometer [11130-11]

11 August 2019   1:50PM   Conv. Ctr. Room 18

Author: Eric A. Shields, Sandia National Labs (USA)

Advanced Sensing

High-Speed LiDAR by Multi-Order Laser Beam Steering with Digital Micromirror Device [11125-18]

11 August 2019   5:00PM   Conv. Ctr. Room 19

Authors: Joshua M. Rodriguez, The Univ. of Arizona (USA); Braden J. Smith, Sandia National Labs (USA) and The Univ. of Arizona (USA); Brandon Hellman, Heejoo Choi, The Univ. of Arizona (USA); Guanghao Chen, Univ. of California, San Diego (USA); Young Sik Kim, Dae Wook Kim, Yuzuru Takashima, The Univ. of Arizona (USA)

Nonlinear Phenomena

High-Harmonic Generation from an Epsilon-Near-Zero Material [11080-116]

11 August 2019   2:25PM   Conv. Ctr. Room 1A

Authors: Yuanmu Yang, Tsinghua Univ. (China); Jian Liu, SLAC National Accelerator Lab (USA); Alejandro Manjavacas, The Univ. of New Mexico (USA); Ting Shan Luk, Sandia National Labs (USA); Hanzhe Liu, SLAC National Accelerator Lab (USA); Kyle Kelley, Jon-Paul Maria, North Carolina State Univ. (USA); Michael B. Sinclair, Sandia National Labs (USA); Evan Lars Runnerstrom, North Carolina State Univ. (USA); Shambhu Ghimire, SLAC National Accelerator Lab (USA); Igal Brener, Sandia National Labs (USA)

Topology and Symmetry in Photonics IV

Optical Frequency Topological Photonic Structures [11081-27]

12 August 2019   4:35PM   Conv. Ctr. Room 1B

Authors: Ganapathi S. Subramania, Patrick D. Anderson, Sandia National Labs (USA); Stavroula Foteinopoulou, The Univ. of New Mexico (USA); Jason Dominguez, Anthony James, Sandia National Labs (USA)

Machine Vision and Manufacturing

Deep Learning for Automated Defect Detection in High-Reliability Electronic Parts [11139-4]

13 August 2019   9:50AM   Conv. Ctr. Room 7A

Authors: Emily Donahue, Sandia National Labs (USA); Tu-Thach Quach, Christian Turner, Sandia National Labs (USA)

Imaging Technologies and Applications II

Characterization of 3D Printed Computational Imaging Element for Use in Task-Specific Compressive Classification

13 August 2019   3:50PM   Conv. Ctr. Room 17B

Authors: Gabriel C. Birch, Amber L. Dagel, Bryan J. Kaehr, Brian J. Redman, Charles F. LaCasse, Meghan A. Galiardi, Tu-Thach Quach, Sandia National Labs (USA)

Computed Tomography

Reconstruction of Highly Undersampled 3D X-Ray Phase Contrast Datasets Using Deep-Learning and Iterative Algorithms for Material Identification and Classification Applications [11114-56]

13 August 2019   4:45PM   Conv. Ctr. Room 13

Authors: Srivathsan Koundinyan, Edward Steven Jimenez, Kyle R. Thompson, Ryan N. Goodner, Collin J.C. Epstein, Amber L. Dagel, Sandia National Labs (USA)

Remote Sensing

Phenomenological Versus Random Data Augmentation for Hyperspectral Target Detection [11139-15]

13 August 2019   5:10PM   Conv. Ctr. Room 7A

Authors: Joshua Zollweg, Charles LaCasse, Sandia National Labs (USA); Braden J. Smith, The Univ. of Arizona (USA)

Paired Neural Networks for Hyperspectral Target Detection [11139-16]

13 August 2019   5:30PM   Conv. Ctr. Room 7A

Authors: Dylan Z. Anderson, Joshua Zollweg, Braden Smith, Sandia National Labs (USA)

Imaging Diagnostics

Time-Resolved Near-Field (TRNF) Diagnostic Four-Frame Nanosecond Gated Hybrid CMOS Image Sensor [11114-40]

14 August 2019   8:40AM   Conv. Ctr. Room 13

Authors: Emily R. Hurd, Tyler Tate, Matthew S. Dayton, Lawrence Livermore National Lab (USA); Liam D. Claus, Sandia National Labs (USA); Cassandra E. Durand, Matthew Johnston, Jean-Michel G. Di Nicola, Arthur C. Carpenter, Lawrence Livermore National Lab (USA); Marcos O. Sanchez, Sandia National Labs (USA)

Nanostructures for Efficient Photodetectors and Sensors II

The Deeply Depleted Graphene-Insulator-Semiconductor Junction: A Versatile Approach Towards Light Sensing Across the Electromagnetic Spectrum [11088-7]

14 August 2019   11:00AM   Conv. Ctr. Room 18

Authors: Isaac Ruiz, Michael D. Goldflam, Thomas E. Beechem III, Steven W. Howell, Sandia National Labs (USA)

Applications IV

Remote Detection of Ionizing Radiation Using Spectral Content of Inelastically Backscattered Laser Pulses [11114-50]

14 August 2019   2:05PM   Conv. Ctr. Room 13

Authors: Christopher Saltonstall, Richard K. Harrison, Sandia National Labs (USA)

Dielectric Metamaterials

Engineering Perfect Absorption in All-Dielectric Photoconductive Metasurfaces [11080-97]

15 August 2019   4:00PM   Conv. Ctr. Room 1A

Authors: Oleg Mitrofanov, Thomas Siday, Univ. College London (UK); Polina Vabishchevich, Sandia National Labs (USA); Lucy Hale, Univ. College London (UK); Thomas Harris, Ting Shan Luk, John Reno, Igal Brener, Sandia National Labs (USA)