PROCEEDINGS OF SPIE

Front Matter: Volume 10111
Quantum Sensing and Nano Electronics and Photonics XIV

Manijeh Razeghi
Editor

29 January–2 February 2017
San Francisco, California, United States

Sponsored and Published by SPIE

Volume 10111
The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:


ISSN: 0277-786X
ISSN: 1996-756X (electronic)
ISBN: 9781510606630

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time): Fax +1 360 647 1445
SPIE.org

Copyright © 2017, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is $18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/17/$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIEDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B, ..., 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Paper Type</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>KEYNOTE SESSION I</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 04</td>
<td>A recent review of mid-wavelength infrared type-II superlattices:</td>
<td>(Keynote Paper)</td>
<td>[10111-123]</td>
</tr>
<tr>
<td></td>
<td>carrier localization, device performance, and radiation tolerance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>QUANTUM CASCADE LASERS FOR GAS SENSING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 05</td>
<td>Monitoring of short-lived climate pollutants by laser absorption</td>
<td>(Invited Paper)</td>
<td>[10111-5]</td>
</tr>
<tr>
<td></td>
<td>spectroscopy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 06</td>
<td>QCL-based trace gas analyzer for industrial and healthcare applications</td>
<td>(Invited Paper)</td>
<td>[10111-6]</td>
</tr>
<tr>
<td>10111 07</td>
<td>Single-tube on beam quartz-enhanced photoacoustic spectrophones</td>
<td></td>
<td>[10111-7]</td>
</tr>
<tr>
<td></td>
<td>exploiting a custom quartz tuning fork operating in the overtone mode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 08</td>
<td>CW DFB-QCL and EC-QCL based sensor for simultaneous NO and NO₂</td>
<td></td>
<td>[10111-8]</td>
</tr>
<tr>
<td></td>
<td>measurements via frequency modulation multiplexing using multi-pass</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>absorption spectroscopy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 09</td>
<td>Pure amplitude and wavelength modulation spectroscopy for detection</td>
<td>(Invited Paper)</td>
<td>[10111-9]</td>
</tr>
<tr>
<td></td>
<td>of N₂O using a three-section quantum cascade laser</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SENSING APPLICATION OF QUANTUM CASCADE LASERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 08</td>
<td>Stabilizing infrared quantum cascade laser beams for standoff</td>
<td></td>
<td>[10111-11]</td>
</tr>
<tr>
<td></td>
<td>detection applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 0C</td>
<td>Low power consumption quartz-enhanced photoacoustic gas sensor</td>
<td></td>
<td>[10111-12]</td>
</tr>
<tr>
<td></td>
<td>employing a quantum cascade laser in pulsed operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 0D</td>
<td>Nanospectroscopy of single purple membranes by mid-IR resonantly</td>
<td></td>
<td>[10111-13]</td>
</tr>
<tr>
<td></td>
<td>enhanced mechanical photoexpansion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10111 0F</td>
<td>Electromagnetic field confinement in the gap of germanium nanoantennas</td>
<td></td>
<td>[10111-15]</td>
</tr>
<tr>
<td></td>
<td>with plasma wavelength of 4.5 micrometers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## MID-INFRARED INTERBAND LASERS AND APPLICATIONS

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>0G</td>
<td>Interband cascade lasers with longer wavelengths (Invited Paper)</td>
<td>[10111-16]</td>
</tr>
<tr>
<td>0H</td>
<td>Single-frequency infrared tunable lasers with single-angle-facet gain chips for sensing applications</td>
<td>[10111-17]</td>
</tr>
<tr>
<td>0N</td>
<td>Background subtraction in Fourier-domain mobility spectrum analysis for resolving low-mobility carriers (Invited Paper)</td>
<td>[10111-23]</td>
</tr>
</tbody>
</table>

## TERAHERTZ TECHNOLOGY: LASERS, DETECTORS, AND IMAGING

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>0Q</td>
<td>Sub-wavelength THz resonators for ultra-fast THz detection (Invited Paper)</td>
<td>[10111-26]</td>
</tr>
<tr>
<td>0R</td>
<td>Spectroscopy and mapping of resonant fields in terahertz plasmonic resonators (Invited Paper)</td>
<td>[10111-27]</td>
</tr>
</tbody>
</table>

## ADVANCES IN PHOTONICS

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>0X</td>
<td>GaAsP nanowires and nanowire devices grown on silicon substrates (Invited Paper)</td>
<td>[10111-33]</td>
</tr>
<tr>
<td>0Y</td>
<td>Polarization-free integrated gallium-nitride photonics (Invited Paper)</td>
<td>[10111-34]</td>
</tr>
<tr>
<td>0Z</td>
<td>Evolution of phase difference and absolute phase of interacting waves under SHG of high intensive femtosecond pulse (Invited Paper)</td>
<td>[10111-35]</td>
</tr>
</tbody>
</table>

## INFRARED DETECTION I

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>InAs/InAsSb superlattice structure tailored for detection of the full midwave infrared spectral domain</td>
<td>[10111-38]</td>
</tr>
<tr>
<td>13</td>
<td>Long-wavelength interband cascade infrared photodetectors towards high temperature operation</td>
<td>[10111-39]</td>
</tr>
<tr>
<td>14</td>
<td>Extended cut-off wavelength nBn detector utilizing InAsSb/InSb digital alloy absorber</td>
<td>[10111-40]</td>
</tr>
<tr>
<td>15</td>
<td>InGaAs/GaAsSb type-II quantum-well focal plane array with cutoff-wavelength of 2.5 μm</td>
<td>[10111-41]</td>
</tr>
<tr>
<td>16</td>
<td>Type-II InAs/GaSb superlattices for dual color infrared detection</td>
<td>[10111-42]</td>
</tr>
</tbody>
</table>
### KEYNOTE SESSION IV

10111 17  Accelerating technology innovations by early understanding of fundamental and technology limitations of material synthesis and device operation (Keynote Paper) [10111-43]

### INFRARED DETECTION II

10111 19  HgCdTe APDs for low-photon number IR detection (Invited Paper) [10111-44]

10111 1B  Advantages of strained-layer superlattice detectors for high-speed thermal events (Invited Paper) [10111-46]

10111 1C  InAs/(GaSb,AlSb) and HgTe/CdTe superlattices: detector materials with topological properties (Invited Paper) [10111-47]

10111 1D  MTF and FPN measurements to evaluate midwave infrared T2SL focal plane arrays [10111-48]

### QUANTUM DETECTORS

10111 1H  Capacitance voltage profiling to determine doping in InAs/GaSb LWIR SL photodetector structures (Invited Paper) [10111-52]

10111 1I  Toward a 2D high-performance multi-channel system for time-correlated single-photon counting applications (Invited Paper) [10111-53]

### NANOPHOTONICS AND PLASMONICS

10111 1M  Second harmonic generation in AlGaAs nanoantennas (Invited Paper) [10111-57]

### NANOPHOTONICS AND METASURFACES

10111 1O  Linear and nonlinear optical behavior of epsilon near zero metamaterials: opportunities and challenges (Invited Paper) [10111-59]

10111 1Q  Using plasmon-induced resistance changes in a tunable metal grating for all-electronic readout [10111-61]

### NONLINEAR PHOTONICS

10111 1X  GaAs/AlGaAs waveguiding wavelength conversion devices (Invited Paper) [10111-68]

10111 20  Directional quasi-phase matching AlGaAs waveguide microresonators for efficient generation of quadratic frequency combs [10111-71]
### 2D MATERIALS FOR PHOTONICS

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>10111 21</td>
<td>Nonlinear optics, optomechanics, and antibacterial coating by graphene oxide (Invited Paper)</td>
<td>[10111-72]</td>
</tr>
<tr>
<td>10111 25</td>
<td>Low-dimensional materials for optically-assisted microwave applications (Invited Paper)</td>
<td>[10111-76]</td>
</tr>
<tr>
<td>10111 26</td>
<td>Current-injection terahertz lasing in a distributed-feedback dual-gate graphene-channel transistor (Invited Paper)</td>
<td>[10111-77]</td>
</tr>
</tbody>
</table>

### NANO- AND OPTO-MECHANICS

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>10111 28</td>
<td>Control of the electromagnetic field in a cavity by an external perturbation (Invited Paper)</td>
<td>[10111-79]</td>
</tr>
<tr>
<td>10111 2B</td>
<td>Acoustic metamaterials and metasurfaces: a transformative approach for phononic insulators and energy harvesting (Invited Paper)</td>
<td>[10111-82]</td>
</tr>
</tbody>
</table>

### IR LASER/DETECTOR DEVELOPMENT

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>10111 2D</td>
<td>High photoresponse in room-temperature quantum cascade detectors based on a coupled-well design (Invited Paper)</td>
<td>[10111-84]</td>
</tr>
<tr>
<td>10111 2F</td>
<td>Beam steering in quantum cascade lasers with optical feedback (Invited Paper)</td>
<td>[10111-86]</td>
</tr>
<tr>
<td>10111 2G</td>
<td>Real-time spectroscopy enabled by external cavity QCLs with MOEMS diffraction gratings</td>
<td>[10111-87]</td>
</tr>
<tr>
<td>10111 2H</td>
<td>Recent advances on long wave p on n HgCdTe infrared technology (Invited Paper)</td>
<td>[10111-88]</td>
</tr>
</tbody>
</table>

### KEYNOTE SESSION VIII

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>10111 2I</td>
<td>Quantum interference in monolithic nanophotonics (Keynote Paper)</td>
<td>[10111-89]</td>
</tr>
</tbody>
</table>

### FRONTIERS IN QUANTUM TECHNOLOGIES

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>10111 2K</td>
<td>High absorption efficiency and polarization-insensitivity in superconducting-nanowire single-photon detectors (Invited Paper)</td>
<td>[10111-91]</td>
</tr>
<tr>
<td>10111 2L</td>
<td>SUPERTWIN: towards 100kpixel CMOS quantum image sensors for quantum optics applications (Invited Paper)</td>
<td>[10111-92]</td>
</tr>
<tr>
<td>10111 2N</td>
<td>Highly efficient readout integrated circuit for dense arrays of SPAD detectors in time-correlated measurements (Invited Paper)</td>
<td>[10111-94]</td>
</tr>
</tbody>
</table>
QUANTUM DOTS AND NANOSTRUCTURES I

10111 2S Intraband transition in self-doped narrow band gap colloidal quantum dots [10111-100]

QUANTUM DOTS AND NANOSTRUCTURES II

10111 2W Electric and magnetic sensing with NV ensembles in diamonds [10111-103]

ADVANCED OPTICAL SPECTROSCOPY TECHNIQUES

10111 2X Optical parametric sources for gas sensing applications (Invited Paper) [10111-106]
10111 2Y Biomedical application of optical fibre sensors (Invited Paper) [10111-107]
10111 2Z Hypervelocity time-of-flight characterisation of a 14GS/s histogramming CMOS SPAD sensor (Invited Paper) [10111-108]
10111 32 Long time ageing tests of DFB ridge laser diodes emitting at 852nm and 894nm for cesium atomic clocks (Invited Paper) [10111-111]

POSTER SESSION

10111 33 On the Einstein relation under size quantization in heterostructures semiconductor [10111-112]
10111 34 A compact mid-infrared dual-gas CH₄/C₂H₆ sensor using a single interband cascade laser and custom electronics [10111-113]
10111 35 A near-infrared gas sensor system based on tunable laser absorption spectroscopy and its application in CH₄/C₂H₂ detection [10111-114]
10111 36 Filter-free measurements of black carbon absorption using photoacoustic spectroscopy [10111-115]
10111 37 Monitoring of nitrous acid (HONO) by external-cavity quantum cascade laser-based off-beam quartz-enhanced photoacoustic spectroscopy (QEPAS) [10111-116]
10111 38 Detection of prostate specific antigen using silicon photonic crystal nanocavity resonator [10111-117]
10111 39 A low-temperature photoluminescence study of GaAs₁₋ₓNₓ/GaAs multiple quantum wells [10111-118]
10111 3A Fabrication, characterisation, and epitaxial optimisation of MOVPE-grown resonant tunnelling diode THz emitters [10111-119]
10111 3B High contrast grating VCSELs for sensing applications [10111-120]
RGO based nanocomposites with sulphide compounds and their chemical properties

The study of quantum spectral imaging
Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Aagesen, Martin, 0X
Abergel, J., 19
Acconcia, G., 1I, 2N
Aït-Kaci, H., 1H
Al Abbas, Tarek, 2Z
Aleknavičius, Justinas, 0H
Alghannam, Fahad, 2W
Almer, Oscar, 2Z
Amemiya, Yoshiteru, 3B
Andrulionis, Laurynas, 0H
Angelani, Luca, 21
Appugliese, Felice, 0F
Aoust, Guillaume, 2X
Appugliese, Felice, 0F
Aoust, Guillaume, 2X
Aoua, Gamini, 04
Aoust, Guillaume, 2X
Aoua, Gamini, 04
Armougom, Julie, 2X
Asplund, Carl, 16
Assouar, Badreddine, 2B
Aubin, Herve, 2S
Augustin, Patrick, 05
B., Sundararajan, 15
Baba, Razvan, 3A
Badioli, Michela, 0D, 0F
Bajaj, Jagmohan, 17
Baldassarre, Leonetta, 0D, 0F
Balgarkashi, A., 39
Bayram, C., 0Y
Beanland, Richard, 0X
Beaudoin, G., 0Q
Beck, Douglas H., 2W
Bellotti, Enrico, 17
Bertoz, Jocelyn, 2H
Bessire, Bânz, 2L
Bewley, W. W., OG
Behn, Richard, 39
Bi, Siwen, 3D
Biagioli, Paolo, 0F
Bidaux, Yves, 09
Bismuto, Alfredo, 09
Biswas, M., 39
Boiko, Dmitri, 2L
Boskovic, D., 2G
Boulade, O., 19
Bozhevolnyi, Sergey I., 0R
Braidotti, Maria Chiara, 21
Brener, Igali, 0R
Beshike, Christopher J., 0B
Brunner, Alexander, 2H
Bugli, Francesca, 21
Bulgarelli, Gabriele, 2K

Butschek, L., 2G
Cadiou, Erwan, 2X
Caes, Marcel, 1D
Calandrini, Eugenio, 0F
Calvani, P., 0D
Canedy, C. L., 0G
Carletti, L., 1M
Carras, Mathieu, 2F
Cartwright, Alexander, 1Q
Cazier, Fabrice, 05
Celebrano, M.·, 1M
Cerutti, L., 12
Cervera, C., 12
Chakrabarti, Subhananda, 39
Chazelas, J., 25
Chen, Borui, 1Q
Chen, Dong, 05
Chen, Lu, 3D
Chen, Mingrui, 3D
Chen, Weidong, 05, 36, 37
Cheney, Alec, 1Q
Christol, Philippe, 12, 1D, 1H
Ciancico, Carlotta, 21
Clifftoni, Alessandro, 1O
Colombelli, R., 0Q
Combré, S., 25
Cominelli, A., 1I, 2N
Conti, Claudio, 21
Costard, Eric, 16, 1D
Cotruffo, Michele, 2B
Cowen, Vincent M., 04
Crozet, P., 0Q
Cruget, Herve, 2S
Cui, Boya, 0N
Czyszakowski, Tomasz, 3B
Dargent, L., 2H
Davies, G. A., 0Q
De Angelis, C., 1M
De Angelis, Francesco, 0F
de Bomio, E., 19
De Rosa, Maurizio, 20
De Rossi, A., 25
De Spriet, Marco, 21
Degiron, A., 0Q
Deguine, Alexandre, 26, 36
Delacourt, B., 12, 19
Dems, Maciej, 3B
Descloux, Delphine, 2X
Dewaele, Dorothée, 05
Li, Lu, 13
Li, Xin, 10
Li, Yong, 2B
Linfield, E. H., 0Q
Liu, Huifang, 35
Liu, Huiyun, DX
Liu, R., 0Y
Liu, Wangyun, 3D
Liu, Z., 25
Livache, Clément, 2S
Locatelli, A., 1M
Lotfi, Hossein, 13
Lou, Minhan, 08, 34
Lu, Baozhu, 3D
Maamary, Rabih, 05, 36, 37
Machinaga, K., 15
Machi, S., 25
Maekawa, A., 06
Maillard, Magalie, 2H
Makkar, R. L., 39
Manceau, J.-M., 0Q
Manissadjian, A., 2H
Marchildon, Ryan, 2I
Marciniak, Magdalena, 3B
Marcks von Würtemberg, Rickard, 16
Martinez, Bertille, 2S
Martinez, F., 1H
Massengale, Jeremy A., 13
Mattioli Della Rocca, Francescopaolo, 2Z
McGill, R. Andrew, 0B
Melkonian, Jean-Michel, 2X
Merritt, C. D., 0G
Merten, A., 2G
Meyer, J. R., 0G
Migita, M., 15
Mishima, Tetsuya D., 13
Mitrofanov, Oleg, 0R
Mitsushio, J., 26
Muara, K., 15
Monroy, Eva, 2K
Morais, Natália, 20
Morath, Sebastian, 2K
Mroczka, Krzysztof, 04
Morgan, S. P., 2Y
Mosca, Simona, 20
Mukhtarova, Anna, 2K
Mukhto, Toshikazu, 3A
Mukhtarova, Anna, 2K
Naujokaitė, Greta, 0H
Nghiêm, Jean, 1D
Nguyen, Viet, 0B
Nucara, A., 0D
Obi, H., 15
Ofole, Michelle, 0D, 0F
Ostendorf, R., 2G
Otsuji, T., 26
Palmieri, Valentina, 21
Panajotov, Krassimir, 3B
Papi, Massimiliano, 21
Parillaud, O., 32
Paris, Maria, 20
Patimisco, Pietro, 07, 09, 0C
Paulillo, B., 0Q
Perconti, Phillip, 17
Péréd-Laperne, Nicolas, 2H
Perenzoni, Matteo, 2L
Perez, J. P., 12, 1H
Peronio, P., 11, 2N
Petitpréz, Denis, 05, 36
Pierantonio, L., 25
Pietrzyk, Monika, 10
Pirotta, S., 0Q
Pržića, Rade, 2I
Puskár, L., 0D
Qi, Shubiao, 2B
Ratlunde, M., 2G
Raybaut, Myriam, 2X
Rech, I., 11, 2N
Redaelli, Luca, 2K
Reed, Meredith, 17
Reibel, Y., 2H
Reno, John L., 0R
Resneau, P., 32
Rey, Julien M., 36
Reyner, Charles J., 04
Ribet-Mohamed, Isabelle, 1D
Ricciardi, Iolanda, 20
Richards, Austin, 1B
Ritter, E., 0D
Rizza, Carlo, 10
Robert, Y., 32
Robin, Adrien, 2S
Rocca, D., 1M
Rodríguez, Jean-Baptiste, 12, 1D, 1H
Rossignol, R., 12, 1H
Rothman, J., 12, 19
Roy, Sebastien, 2S
Rubaldo, Laurent, 2H
Ryzhii, M., 26
Ryzhii, V., 26
Sagnes, I., 0Q
Sampaolo, Angelo, 07, 09, 0C
Sanchez, Ana M., 0X
Sanchez, Ana M., 0X
Sanchez, Nancy P., 08, 34
Sanguinetti, Maurizio, 21
Santos, Michael B., 13
Satou, A., 26
Scappucci, Giordano, 0F
Schade, U., 0D
Schilling, John E., 04
Schilling, C., 2G
Schuster, Jonathan, 17
Scott, Marshall, 09
Sharma, Sarvagya, 2W
Shen, Fengjiao, 05
Shinde, N., 39
Shiomi, Y., 06
Sigrist, Markus W., 05, 36, 37
Simonytė, Ieva, 0H
Singh, S., 39
Singha Roy, Subhamoy, 33
Soibel, A., 14
Spagnolo, Vincenzo, 07, 09, 0C
Steenbergen, Elizabeth H., 04
Stefanov, André, 2L
Stevens, Benjamin J., 3A
Stoppa, David, 2L
Suemitsu, T., 26
Taalat, Rachid, 2H
Tamamushi, G., 26
Tatam, R., 2Y
Thomay, Tim, 1Q
Ting, D. Z., 14
Tittel, Frank K., 07, 08, 09, 0C, 34, 35
Trinkūnas, Augustinas, 0H
Tripon-Canseliet, C., 25
Trofimov, Vyacheslav A., 0Z
Uchida, M., 06
Unternährer, Manuel, 2L
Venanzi, Tommaso, 0F
Verhagen, Ewold, 28
Vinet, E., 32
Vizbaras, Augustinas, 0H
Vizbaras, Kristijonas, 0H
von Bandel, N., 32
Vurgaftman, I., 0G
Wabnitz, Stefan, 20
Wagner, J., 2G
Walter, Guillaume, 2X
Wang, Gaoxuan, 05, 36
Wang, Guoguo, 3D
Wang, Li, 3D
Wang, Yiding, 35
Warren, M. V., 0G
Watanabe, T., 26
Wu, Hongpeng, 07, 08
Wu, Jiang, 0X
Xu, G., 0Q
Xu, Xiang Zhen, 2S
Yang, Rui Q., 13
Ye, Hao, 13
Ye, Weilin, 34
Yi, Hongming, 05, 36, 37
Yokoyama, Shin, 38
Yu, Yajun, 08
Zerounian, N., 0Q
Zhang, Tianmu, 1Q
Zhang, Yunyan, 0X
Zheng, Chuantao, 08, 34, 35
Zheng, Huadan, 07, 0C
Zwiller, Val, 2K
Conference Committee

Symposium Chairs
  Jean-Emmanuel Broquin, IMEP-LAHC (France)
  Shibin Jiang, AdValue Photonics, Inc. (United States)

Symposium Co-chairs
  Connie J. Chang-Hasnain, University of California, Berkeley (United States)
  Graham T. Reed, Optoelectronics Research Centre, University of Southampton (United Kingdom)

Program Track Chair
  Ali Adibi, Georgia Institute of Technology (United States)

Conference Chair
  Manijeh Razeghi, Northwestern University (United States)

Conference Co-chairs
  Gail J. Brown, Air Force Research Laboratory (United States)
  Jay S. Lewis, Defense Advanced Research Projects Agency (United States)
  Giuseppe Leo, Université Paris 7-Denis Diderot (France)

Conference Program Committee
  Badreddine Assouar, Université de Lorraine (France)
  Sumith Bandara, U.S. Army Night Vision and Electronic Sensors Directorate (United States)
  Steven B. Brown, Space Dynamics Laboratory (United States)
  Joshua D. Caldwell, U.S. Naval Research Laboratory (United States)
  David A. Cardimona, Air Force Research Laboratory (United States)
  Jérôme Faist, E. T. H. Zürich (Switzerland)
  Siamak Forouhar, Jet Propulsion Laboratory (United States)
  Frédéric Grillot, Télécom ParisTech (France)
  Yasar Gurbuz, Sabanci Universitesi (Turkey)
  Sven Höfling, University of St. Andrews (United Kingdom)
  Jean-Pierre Huignard, Jphopto (France)
  Woo-Gwang Jung, Kookmin University (Korea, Republic of)
  Tsukuru Katsuyama, Sumitomo Electric Industries, Ltd. (Japan)
  Michel Krakowski, Thales Research and Technology (France)
Kwok Keung Law, Naval Air Warfare Center Weapons Division (United States)
Amy W. K. Liu, IQE Inc. (United States)
Jerry R. Meyer, U.S. Naval Research Laboratory (United States)
Maya Mikhailova, Ioffe Physico-Technical Institute (Russian Federation)
Jan Misiewicz, Wroclaw University of Technology (Poland)
Oleg Mitrofanov, University College London (United Kingdom)
Ekrem Özbay, Bilkent University (Turkey)
Shanee Pacley, Air Force Research Laboratory (United States)
Dimitris Pavlidis, Boston University (United States)
Narasimha S. Prasad, NASA Langley Research Center (United States)
John P. Prineas, The University of Iowa (United States)
Edward H. Sargent, University of Toronto (Canada)
Elizabeth H. Steenbergen, Air Force Research Laboratory (United States)
Marija Strojnik Scholl, Centro de Investigaciones en Óptica, A.C. (Mexico)
Meimei Tidrow, U.S. Army Night Vision and Electronic Sensors Directorate (United States)
Miriam Serena Vitiello, Consiglio Nazionale delle Ricerche (Italy)
Rui Q. Yang, The University of Oklahoma (United States)
John M. Zavada, National Science Foundation (United States)

2017 Program Track Chair
Yakov Sidorin, Quarles & Brady LLP (United States)

Session Chairs

1 Keynote Session I
   Manijeh Razeghi, Northwestern University (United States)

2 Quantum Cascade Lasers for Gas Sensing
   Jay S. Lewis, Defense Advanced Research Projects Agency (United States)
   Jerry R. Meyer, U.S. Naval Research Laboratory (United States)

3 Sensing Application of Quantum Cascade Lasers
   Jean-Luc Pelouard, Center for Nanoscience and Nanotechnology (France)
   Gail J. Brown, Air Force Research Laboratory (United States)

4 Mid-Infrared Interband Lasers and Applications
   Gaetano Scamarcio, Università degli Studi di Bari Aldo Moro (Italy)
   Carlo Sirtori, Université Paris 7-Denis Diderot (France)

5 Keynote Session II
   Badreddine Assouar, University de Lorraine (France)
6 Terahertz Technology: Lasers, Detectors, and Imaging
Jérôme Faist, ETH Zürich (Switzerland)

7 Advances in Photonics
Gail J. Brown, Air Force Research Laboratory (United States)
Manijeh Razeghi, Northwestern University (United States)

8 Keynote Session III
Miriam S. Vitiello, CNR-NANO, NEST (Italy)

9 Infrared Detection I
Gail J. Brown, Air Force Research Laboratory (United States)

10 Keynote Session IV
Huiyun Liu, University College London (United Kingdom)

11 Infrared Detection II
Gail J. Brown, Air Force Research Laboratory (United States)

12 Keynote Session V
Ashish Jagmohan, IBM Thomas J. Watson Research Center (United States)

13 Quantum Detectors
Philip C. Klipstein, SCD SemiConductor Devices (Israel)

14 Nanophotonics and Plasmonics
Oleg Mitrofanov, University College London (United Kingdom)
Mauro Fernandes Pereira, Sheffield Hallam University (United Kingdom)

15 Nanophotonics and Metasurfaces
Ian T. Ferguson, Missouri University of Science and Technology (United States)
Giuseppe Leo, Université Paris 7-Denis Diderot (France)

16 Keynote Session VI
Anatoly V. Zayats, King’s College London (United Kingdom)

17 Nonlinear Photonics
Andrea Di Falco, University of St. Andrews (United Kingdom)

18 2D Materials for Photonics
Gail J. Brown, Air Force Research Laboratory (United States)

19 Keynote Session VII
Gail J. Brown, Air Force Research Laboratory (United States)
20 Nano- and Opto-Mechanics
   Kwok Keung Law, Naval Air Warfare Center Weapons Division
   (United States)

21 IR Laser/Detector Development
   Gail J. Brown, Air Force Research Laboratory (United States)

22 Keynote Session VIII
   Giuseppe Leo, Université Paris 7-Denis Diderot (France)

23 Frontiers in Quantum Technologies
   Jean-Michel Gérard, Commissariat à l’Énergie Atomique (France)

24 Quantum Dots and Nanostructures I
   Joshua D. Caldwell, U.S. Naval Research Laboratory (United States)

25 Keynote Session IX
   Amr S. Helmy, University of Toronto (Canada)

26 Quantum Dots and Nanostructures II
   Edik U. Rafailov, Aston University (United Kingdom)

27 Advanced Optical Spectroscopy Techniques
   Giuseppe Leo, Université Paris 7-Denis Diderot (France)