Front Matter: Volume 10914
Optical Components and Materials XVI

Shibin Jiang
Michel J. F. Digonnet
Editors

4–6 February 2019
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 10914
# Contents

<table>
<thead>
<tr>
<th>vii</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>xi</td>
<td>Conference Committee</td>
</tr>
</tbody>
</table>

## RARE-EARTH DOPED MATERIALS I

10914 03  1.5μm persistent luminescence of Er³⁺ in Gd₃Al₅₋ₓGaₓO₁₂ (GAGG) garnets via persistent energy transfer (Invited Paper) [10914-2]

10914 05  High-power fiber laser materials: influence of fabrication methods and codopants on optical properties [10914-4]

10914 06  405-nm pumped Ce³⁺-doped silica fiber for broadband fluorescence from cyan to red [10914-5]

## METAMATERIALS

10914 09  Nanoimprinted nanocomposite membrane-type metamaterials [10914-8]

10914 0A  Arsenic selenide dielectric metasurfaces [10914-9]

## SILICON PHOTONICS

10914 0B  Si photonics using micron-size waveguides (Invited Paper) [10914-10]

## SENSORS

10914 0F  Substrate requirements to enable durability and accuracy in structured-light-based 3D sensing [10914-14]

## GRATINGS

10914 0J  Low-loss and robust DWDM Echelle grating (de-)multiplexers in SOI technology [10914-18]

10914 0K  Bloch surface wave excitation using a maximum length sequence grating structure [10914-19]
NANOMATERIALS

Analysis of upconversion nanoparticles as an active medium for upconversion light sources [10914-26]

Phase-dependent emission of KLaF₄:Nd³⁺ nanocrystals in oxyfluoride glass-ceramics [10914-27]

Site symmetry and host sensitization-dependence of Eu³⁺ real-time luminescence in tin dioxide nanoparticles (Invited Paper) [10914-28]

OPTICAL GLASSES, FIBERS, AND WAVEGUIDES

Optical glass: refractive index homogeneity from small to large parts - an overview [10914-30]

Fabrication of high optical quality Ge-As-Se glasses for the development of low-loss microstructured optical fibers [10914-32]

Novel approach for high-performance optical fibers: multiple-doped silica powders with plasma-enhanced processes [10914-33]

Optical properties and long-term stability of unclad single crystal sapphire fiber in harsh environments [10914-34]

Flexible waveguides with amorphous photonic materials [10914-35]

RARE-EARTH DOPED MATERIALS II

SiO₂-SnO₂ transparent glass-ceramics activated by rare earth ions (Invited Paper) [10914-36]

Small short-wavelength optical isolator using Tb³⁺-rich magneto-optical glass [10914-37]

DETECTORS

Linearity characterization of high performance SWIR photodetectors from various materials [10914-40]

Advances on photoconductive InAs/GaSb type-II superlattice long-wavelength infrared detectors for high operating temperature [10914-41]
### DEVELOPMENT OF OPTICAL COMPONENTS

| 10914 1B | Super broadband achromatic lenses extending from the visible to the mid-infrared [10914-46] |
| 10914 1E | Automated sprue removal from injection moulded micro-optics with ultrasonic cutting [10914-50] |
| 10914 1F | Optics with diamond-like-carbon overcoat (DOC) provide improved optical performance over traditional DLC films and better cleanability than standard PVD coatings [10914-51] |

### POSTER SESSION

<p>| 10914 1H | Compositional dependence of the emission color of sodium borate glasses embedded with inorganic ions under diode laser excitation [10914-53] |
| 10914 1I | First-principle calculations of Debye temperature of optoelectronic LiGaS2 and LiGaSe2 semiconductors under different pressures [10914-54] |
| 10914 1J | Numerical investigation on local confinement of infrared light in chalcogenide transversely disordered optical fibers [10914-57] |
| 10914 1K | Diamond gratings used for high-power laser system [10914-58] |
| 10914 1M | Structure optimization of KTa1−xNbxO3 varifocal lens [10914-60] |
| 10914 1N | Monitoring the purification of tobacco smoke in air assisted by ZnO nanowires and using MEMS-FTIR spectrometer for online continuous analysis of volatile organic compounds (VOCs) [10914-61] |
| 10914 1O | Tailoring bandgap transmission spectra of new neodymium-doped tellurite all-solid photonic bandgap fibers with double cladding layers [10914-62] |
| 10914 1R | Single-mode large-mode-area Er-Yb fiber [10914-65] |
| 10914 1S | 3D printing optical devices based on silicone optical technology (SOT) and its application on analytical chemistry [10914-66] |</p>
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>10914U</td>
<td>Optical properties of partially hydrogenated graphene using first-principle calculations [10914-70]</td>
</tr>
<tr>
<td>10914V</td>
<td>Coating geometry measurement of specialty fiber with dark-field illumination technique [10914-71]</td>
</tr>
<tr>
<td>10914W</td>
<td>Diffractive optical elements investigation in the phase domain [10914-72]</td>
</tr>
<tr>
<td>10914X</td>
<td>Novel optical gas sensor based on photonic crystal fiber [10914-73]</td>
</tr>
<tr>
<td>10914Z</td>
<td>Design of long-range hybrid plasmonic waveguides [10914-77]</td>
</tr>
<tr>
<td>1091420</td>
<td>Multi-wavelength erbium-doped fiber ring lasers based on an optical fiber tip interferometer [10914-78]</td>
</tr>
<tr>
<td>1091423</td>
<td>The sealed, the athermaled, and the rugged: the wild west of modified opto-mechanical design [10914-82]</td>
</tr>
<tr>
<td>1091424</td>
<td>High-efficiency Ge-on-Si SPADs for short-wave infrared [10914-84]</td>
</tr>
<tr>
<td>1091425</td>
<td>Temperature cross-sensitivity compensation in liquid level sensor using Mach-Zehnder interferometers [10914-56]</td>
</tr>
</tbody>
</table>
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.

Aalto, Timo, 0B
Abramov, Alexey N., 1R
Ahmed, Kaleem, 1Z
Aleshkina, Svetlana S., 1R
Amrithanath, Abhishek K., 20
André, Paulo S. B., 25
Antunes, Paulo F. C., 25
Anusziewicz, Alicja, 0L
Aras, Mehmet Sirin, 10
Arnellini, Cristina, 11
Bacon, Jim, 1F
Baeva, M., 0Y
Baierl, H., 0Y
Balda, Rolindes, 0S, 0T
Bartelt, H., 0Y
Bekele, Robel Y., 0A
Bera, S., 0Z
Berger, M., 1E
Bennesi, Simone, 11
Bhardwaj, Priyanka, 1Z
Bhat, Srivathsa, 0B
Bobkov, Konstantin K., 1R
Bond, David, 15
Boulard, Brigitte, 11
Bourouina, Tarik, 1N
Brecher, C., 1E
Brilland, Laurent, 0X
Bubnov, Mikhail M., 1R
Buczynski, Ryszard, 0L
Buller, Gerald S., 24
Buric, M., 0Z
Cabral, A. A., 0S
Caillaud, Céline, 0X
Cao, Mingxuan, 19
Carpentiero, Alessandro, 11
Cascales, Concepción, 0T
Chahat, Radwan, 0X
Chandra, S., 11
Che, Yongli, 19
Chen, Zhiliang, 18, 19
Cherchi, Matteo, 08
Chiappini, Andrea, 11
Chiasera, Alessandro, 11
Chichkov, Nikolay B., 06
Chorpening, B., 0Z
Clabeau, Anthony, 0A
Daumer, Volker, 16
Davis, Gregg, 1F
Dellith, J., 0Y
Dhawan, Anuj, 1Z
Dianov, Evgeny M., 06
Diaz, Camilo A. R., 25
Dorosz, Dominik, 11
Dumas, Derek C. S., 24
Durán, A., 0S
Eberhardt, R., 0S
Edwards, Vernessa M., 1H
Eisenblätter, L., 0J
Erdil, Mertcan, 10
Erfan, Mazen, 1N
Fan, Shuwei, 1K
Fathy, Alia, 1N
Fedotov, A., 0R
Fernández, Joaquin, 0S, 0T
Ferrari, Maurizio, 11
Filipkowski, Adam, 0L
Foest, R., 0Y
Franczyk, Marcin, 0L
Frantz, Jesse A., 0A
Frizera, Anselmo, 25
Fujita, Naoki, 12
García-Revilla, Sara, 0T
Gates, James, 11
Ghosh, Rajib Ratan, 1Z
Gnambodoe-Capo-Chichi, Martine, 1N
Gorni, G., 0S
Gumenyuk, Regina, 06, 0R
Guo Xin, Tina, 1A
Guyanov, Aleksey N., 1R
Haapalinna, Atte, 0B
Haarlammert, N., 0S
Hameed, Mohamed Farhat O., 1X
Hanninen, Adam, 1B
Harjanne, Mikko, 0B
Harris, Lori, 15
Hedges, Alan R., 1F
Heikal, Ahmed M., 1X
Hein, S., 0S
Hemmati, Hafez, 09
Hempel, F., 0Y
Hermeschmidt, Andreas, 1W
Himelinski, Stan, 1F
Hoeren, M., 1E
Hokkanen, Ari, 0B
Holmberg, Heikki, 0B
Hupel, C., 0S
Conference Committee

Symposium Chairs

Connie J. Chang-Hasnain, University of California, Berkeley (United States)
Graham T. Reed, Optoelectronics Research Center (United Kingdom)

Symposium Co-chairs

Sailing He, KTH Royal Institute of Technology (Sweden) and Zhejiang University (China)
Yasuhiro Koike, Keio University (Japan)

Program Track Chairs

James G. Grote, Photonics Consultant (United States)
Shibin Jiang, AdValue Photonics, Inc. (United States)

Conference Chairs

Shibin Jiang, AdValue Photonics, Inc. (United States)
Michel J. F. Digonnet, Stanford University (United States)

Conference Program Committee

Jean-Luc Adam, Université Rennes 1 (France)
Joel Bagwell, Edmund Optics Inc. (United States)
Rolindes Balda, Universidad del País Vasco (Spain)
Robert P. Dahlgren, NASA Ames Research Center (United States)
Angel Flores, Air Force Research Laboratory (United States)
Jesse A. Frantz, U.S. Naval Research Laboratory (United States)
Leonid B. Glebov, CREOL, The College of Optics and Photonics, University of Central Florida (United States)
Seppo K. Honkanen, University of Eastern Finland (Finland)
Jacques Lucas, Université de Rennes 1 (France)
Yasutake Ohishi, Toyota Technological Institute (Japan)
Aydogan Ozcan, University of California, Los Angeles (United States)
Giancarlo C. Righini, Istituto di Fisica Applicata “Nello Carrara” (Italy)
Setsuhisa Tanabe, Kyoto University (Japan)
John M. Zavada, Polytechnic Institute of New York University (United States)
Jun Zhang, U.S. Army Research Laboratory (United States)
Session Chairs

1. Rare-Earth Doped Materials I
   Shibin Jiang, AdValue Photonics, Inc. (United States)

2. Metamaterials
   Michel J. F. Digonnet, Stanford University (United States)

3. Silicon Photonics
   Shibin Jiang, AdValue Photonics, Inc. (United States)

4. Sensors
   Rolindes Balda, Universidad del País Vasco (Spain)

5. Gratings
   Jun Zhang, U.S. Army Research Laboratory (United States)

6. Modulators and Filters
   Jesse A. Frantz, U.S. Naval Research Laboratory (United States)

7. Nanomaterials
   Angel Flores, Air Force Research Laboratory (United States)

8. Optical Glasses, Fibers, and Waveguides
   Leonid B. Glebov, CREOL, The College of Optics and Photonics, University of Central Florida (United States)

9. Rare-Earth Doped Materials II
   Jian Xu, Kyoto University (Japan)

10. Detectors
    Joel Bagwell, Edmund Optics Inc. (United States)

11. Development of Optical Components
    Michel J. F. Digonnet, Stanford University (United States)