

# PROCEEDINGS OF SPIE

## ***Optical Sensors 2019***

**Francesco Baldini**  
**Jiri Homola**  
**Robert A. Lieberman**  
*Editors*

**1–4 April 2019**  
**Prague, Czech Republic**

*Sponsored by*  
SPIE

*Cooperating Organisations*  
ELI Beamlines (Czech Republic)  
Laserlab Europe  
European Optical Society  
HiLASE (Czech Republic)

*Published by*  
SPIE

**Volume 11028**

Proceedings of SPIE 0277-786X, V. 11028

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Optical Sensors 2019, edited by Francesco Baldini, Jiri Homola, Robert A. Lieberman, Proc. of SPIE  
Vol. 11028, 1102801 · © 2019 SPIE · CCC code: 0277-786X/19/\$18 · doi: 10.1117/12.2535406

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 [SPIDigitalLibrary.org](http://SPIDigitalLibrary.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:

Author(s), "Title of Paper," in *Optical Sensors 2019*, edited by Francesco Baldini, Jiri Homola, Robert A. Lieberman, Proceedings of SPIE Vol. 11028 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

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

ISBN: 9781510627222  
ISBN: 9781510627239 (electronic)

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](http://SPIE.org)

Copyright © 2019, 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](http://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/19/\$18.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

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

**SPIE. DIGITAL  
LIBRARY**

[SPIDigitalLibrary.org](http://SPIDigitalLibrary.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 first 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

ix *Authors*  
xiii *Conference Committee*

---

## **SESSION 1 COMPONENTS AND DATA PROCESSING METHODS**

---

- 11028 03 **A solid carbon source based high performance mono/bi layer graphene/SiNWs heterojunction NIR photodetector** [11028-2]
- 11028 04 **Laser scanning module with large sending aperture and inherent high angular position accuracy for 3D LiDAR** [11028-3]
- 11028 05 **Optical choppers with spherical shafts: an optomechanical analysis** [11028-4]

---

## **SESSION 2 FIBER OPTIC SENSORS I**

---

- 11028 06 **Design challenges of a birefringent FBG optical sensing system** [11028-6]
- 11028 08 **Comparison of solution approaches for distributed humidity sensing in perfluorinated graded-index polymer optical fibers** [11028-8]
- 11028 0A **Fiber-optic sensor for detecting electric current pulses** [11028-10]

---

## **SESSION 3 FIBER OPTIC SENSORS II**

---

- 11028 0C **Multi-application miniature fiber optic interferometer** [11028-14]
- 11028 0D **Random matrix theory based distributed acoustic sensing** [11028-15]

---

## **SESSION 4 NOVEL APPROACHES IN OPTICAL SENSING I**

---

- 11028 0G **Do you need a tunable laser for resonant cavity optical sensors?** [11028-18]
- 11028 0H **High numerical aperture waveguide absorption filter for fluorescence detection** [11028-19]
- 11028 0I **Enhancing light-matter interaction in all-dielectric photonic crystal metasurfaces** [11028-20]

---

**SESSION 5 NOVEL APPROACHES IN OPTICAL SENSING II**

---

11028 OL **Advances in random lasing sensing** [11028-23]

---

**SESSION 6 OPTICAL BIOSENSORS**

---

11028 OR **Smartphone biosensor for Salmonella and Amitriptyline** [11028-29]

---

**SESSION 7 PLASMONIC SENSING**

---

11028 OW **Surface plasmon resonance imaging for detection of drug metabolites in water** [11028-31]

11028 OX **The main ways of applying nanostructured metasurfaces in rotation angle sensors** [11028-65]

---

**SESSION 8 CHEMICAL SENSORS**

---

11028 IO **NIR transillumination system for in vivo functional imaging** [11028-38]

---

**POSTER SESSION**

---

11028 I2 **An improved dense dark vegetation based algorithm for aerosol optical thickness retrieval from hyperspectral data** [11028-5]

11028 I3 **Functional near infrared spectroscopy (fNIRS) in pigmented subjects: a maneuver to confirm sufficient transcutaneous photon transmission for measurement of hemodynamic change in the anterior cortex** [11028-41]

11028 I5 **Emissivity-free thermometer using hyperspectral camera and multivariate analysis and its application to steel manufacturing processes** [11028-45]

11028 I6 **OPTICAL sensors in IOT** [11028-46]

11028 I8 **Estimation of pore sizes using laser absorption in molecular oxygen gas enclosed in mesoporous alumina** [11028-48]

11028 IA **Impact of surface plasmon resonance on angular spin splitting of light** [11028-50]

11028 IB **High spatial resolution physical and chemical sensing based on BOFDA** [11028-51]

11028 IC **Wide dynamic range laser remote sensing detection chain** [11028-52]

- 11028 1F **Smart Home room's occupancy monitoring using Fiber Bragg grating sensor** [11028-55]
- 11028 1I **Fiber optic Raman distributed temperature sensor based on an ultrashort pulse mode-locked fiber laser** [11028-59]
- 11028 1J **Spectral response filtering by lateral scanning of Silicon NSOM photodetector with subwavelength aperture** [11028-60]
- 11028 1K **Humidity sensor based on optical fiber coated with agarose gel** [11028-61]
- 11028 1L **Golden layer characterization using a phase shift induced by surface plasmon resonance** [11028-62]
- 11028 1M **Noncontact optical distance and speed sensor using novel offsetless spatial frequency filters** [11028-63]
- 11028 1N **Effect of the misalignments of ring confocal resonator on its optical properties** [11028-64]
- 11028 1O **Optical readout of acoustic responses of an external-cavity diode laser** [11028-66]
- 11028 1P **Surface electromagnetic wave sensor utilizing a one-dimensional photonic crystal** [11028-67]
- 11028 1Q **Investigation of parameters of the Bessel beam formed by an axicon** [11028-68]
- 11028 1S **Optical fibre fuse effect based sensor for magnetic field monitoring** [11028-70]
- 11028 1T **Highly sensitive carboxyl-graphene oxide-based SPR immunosensor for the detection of CA19-9 biomarker** [11028-71]
- 11028 1U **Metal coated fiber sensor for laser power measurements with enhanced sensitivity** [11028-72]
- 11028 20 **Low-cost intrinsic optical fiber FPI sensor for knee kinematic gait analysis and e-Health architecture** [11028-79]
- 11028 22 **Hemoglobin detection using a graphene oxide functionalized side-polished fiber sensor** [11028-82]
- 11028 23 **Plasmonic biosensor detected human chorionic gonadotropin with naked eye** [11028-83]
- 11028 28 **Fiber Bragg Gratings strain sensors for deflection estimation of a two-dimensional structure** [11028-88]
- 11028 29 **Semi-automated method for views integration based on alternative color and geometry characteristics** [11028-89]
- 11028 2B **Optical fiber based heterodyne interferometry for non-invasive and non-contact oil viscosity measurement** [11028-91]

- 11028 2C **Matrix of piezoelectric resonators for registration of spatial distribution of laser radiation** [11028-92]
- 11028 2E **Fabrication and characterization of long period gratings in pure-silica fibers** [11028-94]
- 11028 2F **Metallic-Dielectric colloidal photonic crystal on the multimode optical fiber tip: preliminary results as optical fiber SERS probe** [11028-95]
- 11028 2G **Low cost flexible 1.1  $\mu\text{m}$  -1.6  $\mu\text{m}$  photodetector fabricated by hydrothermal grown large area MoSe<sub>2</sub> nanostructures** [11028-97]
- 11028 2H **SPR-based fiber optic sensor in NIR region** [11028-98]
- 11028 2I **Spatial selectivity and sensitivity measurement of optoelectronic devices by scanning microscopy** [11028-99]
- 11028 2K **Perimetric monitoring: A comparison of a classical seismic sensor and fiber-optic interferometric sensor** [11028-101]
- 11028 2L **Adsorption kinetics of proteins to biomaterials measured by reflectometric interference spectroscopy** [11028-102]
- 11028 2M **Bioinspired optical fiber sensor for simultaneous shear and vertical forces monitoring** [11028-103]
- 11028 2O **Coating of modified plastic optical fibers with proteins for chemical sensing and biosensing: preliminary studies** [11028-105]
- 11028 2P **Interferometric scattering (iSCAT) microscopy with optimized reference wave** [11028-106]
- 11028 2Q **Methods of signal averaging for a multimode fiber interferometer: an experimental study** [11028-107]
- 11028 2S **Noise characteristics and localisation precision in ultrafast interferometric scattering (iSCAT) microscopy** [11028-109]
- 11028 2T **Tm-doped fiber laser with control of spectral dynamics** [11028-110]
- 11028 2X **Design and simulation of image nonlinear processing relational preprocessor based on iterational sorting node** [11028-115]
- 11028 2Y **Improvements of the PLD (Pulsed Laser Deposition) method for fabricating photocathodes in ICMOS (Intensified CMOS) sensors** [11028-116]
- 11028 2Z **Hydrogen sensors based on plasmonic nanostructures present on palladium films** [11028-117]
- 11028 30 **Modelling and fabrication of novel SERS sensor chips for chemical and biological sensing applications** [11028-118]
- 11028 31 **Optical sensors based on palladium and polymer-coated optical fiber resonators** [11028-119]

- 11028 33 **Land surface temperature and emissivity retrieval from time-series thermal infrared data** [11028-123]
- 11028 36 **FDTD modelling and simulation of organic photo detector using photonic crystals** [11028-126]
- 11028 37 **Design of encapsulation of fiber Bragg grating for the traffic applications** [11028-127]
- 11028 38 **Growth and characterization of calcium-doped cesium iodide (CsI:Ca) optical crystals for radiation detection** [11028-128]
- 11028 39 **Evaluation of cortical neuroexcitation in urinary urgency using simultaneous near infrared spectroscopy of the brain and bladder with quantification of sensation** [11028-129]





## 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.

Adinolfi, Barbara, 0H  
Agarwal, Neha, 03  
Al-Basheer, Watheq, 18  
Alberto, Nélia J., 1S, 20, 2M  
Aljalal, Abdulaziz, 18  
Al-Saudi, Ahmed, 18  
Alviggi, Mariagrazia, 28  
Amaral, Vitor, 1S  
André, Paulo, 1S, 20, 2M  
Antunes, Paulo, 1S, 20, 2M  
Arrizabalaga, Oskar, 0C  
B.M., Chaya, 36  
Baldini, Francesco, 0H  
Bang, Seoung-Chul, 2Y  
Bavili, N., 31  
Bazarov, Timur O., 2C  
Bello, Valentina, 10  
Belo, João H., 1S  
Berneschi, Simone, 0H  
Bernini, Romeo, 0H, 1B  
Beuth, Thorsten, 2I  
Bierl, Rudolf, 0W  
Bilro, L., 2O  
Bisyarin, Michail, 2Q  
Bodo, Elisabetta, 10  
Bogatscher, Siegwart, 04  
Bozhko, Dmitry, 2Q  
Bronkhorst, Mathijs, 13  
Budarnykh, A. E., 2T  
Bujak, L., 2S  
Bunsch, Eryk, 29  
Cabrini, Stefano, 0I  
Çabuk, Sercan, 2I  
Campopiano, Stefania, 28, 2E, 2F  
Canale, Vincenzo, 28  
Catalano, Ester, 1B  
Catalano, Rachele, 10  
Cavalleri, Stefano, 0L  
Chaliyawala, Harsh A., 03  
Chapalo, Ivan, 2Q  
Chernutsky, Anton O., 1I  
Chiavaoli, Francesco, 0H  
Chiu, Nan-Fu, 1T, 23  
Chlebus, R., 1L  
Choi, Hyeunseok, 2Y  
Choi, Ji Yeon, 2B  
Čičala, M., 2S  
Ciprian, D., 1L, 1P  
Colier, Willy N. J. M., 13  
Cossetta, Agnese, 1B  
Csukas, Eduard-Sebastian, 05  
Danenkov, Iliya S., 16  
Das, Samaresh, 2G  
De Luca, Anna Chiara, 0I  
Della Pietra, Massimo, 28  
Dhawan, Anuj, 2Z, 30  
Dhyani, Veerendra, 2G  
Di Palma, Pasquale, 28, 2F  
Dietzel, A., 0R  
Domingues, Maria Fátima, 1S, 20, 2M  
Duma, Virgil-Florin, 05  
Dvoretzkiy, Dmitriy A., 1I  
Efremova, Ekaterina A., 0X  
Eom, Jonghyun, 2B  
Eom, Joo Beom, 2B  
Eryürek, M., 31  
Esposito, Flavio, 2E  
Fajkus, Marcel, 1F, 37  
Fan, Shi-Yuan, 1T  
Farnan, Martin, 06  
Fedorov, Vladimir V., 2C  
Ferreira, Marta S., 1K  
Filatov, Yuri V., 1N  
Fini, Lorenzo, 0L  
Fischer, Johannes, 0W  
Foryś, Piotr, 29  
Frey, Jochen, 1M  
Gamal, Rania, 0G  
Gao, Caixia, 12, 33  
Gasmi, Khaled, 18, 1C  
Gauglitz, Günter, 0R, 2L  
Ghosh, Rajib R., 2Z, 30  
Giannetti, Ambra, 0H  
Giordano, Michele, 2F  
Gorelaya, Alina V., 1N  
Gryga, M., 1P  
Gubin, Vladimir P., 0A  
Gupta, Govind, 03  
Hasselbach, Jürgen, 04  
Hatano, N., 15  
Hausler, Peter, 0W  
Hecht, L., 0R  
Heckscher, Simon, 0W  
Hirota, S., 15  
Hirsch, Thomas, 0W  
Hlubina, P., 1L, 1P  
Holanova, Kristyna, 2P  
Hossain, Mosaddek, 2I

Hutterer, Johanna, 0R, 2L  
 Iadicicco, Agostino, 28, 2E, 2F  
 Ibrahim, Selwan K., 06  
 Ignesti, Emilio, 0L  
 Iureva, Radda A., 16  
 Jaiswal, Mangesh, 2Z, 30  
 Jalowiczor, Jakub, 2K  
 Janoschek, Peter, 2L  
 Jaros, Rene, 2K, 37  
 Jurdova, Dominika, 2P  
 K., Narayan, 36  
 Kablukov, S. I., 2T  
 Kang, Sung Bok, 2Y  
 Kang, Yong-Woo, 2Y  
 Kaňok, R., 1L  
 Karasik, Valeriy E., 1I  
 Karelits, Matityahu, 1J  
 Karsenty, Avi, 1J  
 Kaur, Baljinder, 2H  
 Kemmochi, M., 15  
 Khramov, Ivan, 1U  
 Kim, Daegil, 22  
 Kim, Yang-Sook, 2Y  
 Kiraz, A., 31  
 Kirk, Andrew, 0G  
 Klausner, Adam, 39  
 Konyashkin, Alexey V., 2C  
 Korolkov, Andrey E., 2C  
 Kotov, Oleg, 2Q  
 Kovalev, Michael S., 1Q  
 Krasilenko, Vladimir G., 2X  
 Krasin, George K., 1Q  
 Krebber, Katerina, 08  
 Kukaev, Alexander S., 1N  
 Kulsum, Umme, 36  
 Kumari, Preeti, 2G  
 Kun, Li, 33  
 Lang, Yaopu, 1A  
 Lara Yépez, Sofía Natalí, 0I  
 Lazarev, Alexander A., 2X  
 Lech, Krzysztof, 29  
 Lee, Dae-Hee, 2Y  
 Li, Chuanrong, 12, 33  
 Liehr, Sascha, 08  
 Liu, Qinggang, 1A  
 Liu, Yaokai, 12, 33  
 Lobach, I. A., 2T  
 Ma, Lingling, 12  
 Macnab, Andrew J., 13, 39  
 Maity, Sarmistha, 2G  
 Malyshev, Alexander, 2Y  
 Markiewicz, Łukasz, 29  
 Marques, Carlos, 1S  
 Martelli, Fabrizio, 0L  
 Martinek, Radek, 1F  
 McCue, Raymond, 06  
 Mec, Pavel, 37  
 Merlo, Sabina, 10  
 Michoński, Jakub, 29  
 Minardo, A., 1B  
 Mocella, Vito, 0I  
 Moon, Bongkon, 2Y  
 Morova, B., 31  
 Morshnev, Sergey K., 0A  
 Mukhankov, Denis M., 2C  
 Mukhopadhyay, Indrajit, 03  
 Mukisa, Ronald, 13  
 Musto, Pellegrino, 2F  
 Najih, Mohamed, 0G  
 Nepomuceno, Ana, 20  
 Nickel, Malte, 1M  
 Nikitovich, Diana V., 2X  
 Nikolaeva, Natalia A., 0X  
 Nogueira, R., 2O  
 Nosov, Pavel A., 1Q  
 Novais, Susana, 1K  
 Novak, Martin, 2K, 37  
 Nuntawong, Noppadon, 38  
 O'Dowd, John A., 06  
 Ölçer, İbrahim, 0D  
 Öncü, Ahmet, 0D  
 Orekhov, Ilya O., 1I  
 Oshige, T., 15  
 Ososkov, Yan Zh., 1I  
 Palumbo, Giovanna, 28  
 Pannico, Marianna, 2F  
 Park, Anjin, 2B  
 Park, Won-Kee, 2Y  
 Park, Youngsik, 2Y  
 Penzo, Erika, 0I  
 Persichetti, Gianluca, 0H  
 Petrov, Alexandr, 2Q  
 Pfab, Christina, 0W  
 Piliarik, Marek, 2P, 2S  
 Pinka, Miroslav, 2K  
 Pinto, João L., 1K  
 Pizzurro, Sara, 10  
 Pniow, Alexey B., 1I  
 Przhivalkovskiy, Yan V., 0A  
 Purohit, Zeel, 03  
 Qari, Samer, 18  
 Qian, Yonggang, 12, 33  
 Qin, Lin, 1O  
 Qin, Zirui, 1A  
 Qiu, Shi, 12, 33  
 Qiu, Yuanyuan, 33  
 Radwan, Ayman, 20  
 Ramos, António, 2M  
 Ray, Abhijit, 03  
 Rembe, Christian, 04  
 Ren, Huan, 1O  
 Rendina, Ivo, 0I  
 Ricklefs, Ubbo, 1M  
 Rocon, Eduardo, 2M  
 Romano, Silvia, 0I  
 Rossi Borghesano, Marco, 10  
 Ryabushkin, Oleg A., 1U, 2C  
 Saengkaew, Phannee, 38  
 Sáez de Ocáriz, Idurre, 0C  
 Sampath, Umesh, 22

Sansone, Lucia, 2F  
 Santos-Silva, T., 2O  
 Savichev, Ilya A., 2C  
 Sazonkin, Stanislav G., 1I  
 Sazonov, Aleksandr I., 0A  
 Schenk, F., 0R  
 Schreier, Andy, 08  
 Sequeira, F., 2O  
 Shaidullin, Renat, 1U  
 Shalymov, Egor V., 0X, 1N  
 Sharma, Anuj K., 2H  
 Sharma, Yashna, 2Z, 30  
 Shen, Qingfeng, 33  
 Shoev, Vladislav, 0X  
 Sill, A., 0R  
 Silva, Hugo, 2M  
 Sitnik, Robert, 29  
 Skvortsov, M. I., 2T  
 Song, Minh, 22  
 Speich, John, 39  
 Srivastava, Anubhav, 2E  
 Starostin, Nikolay I., 0A  
 Stolarik, Martin, 1F, 2K  
 Stothers, Lynn, 13, 39  
 Tang, Lingli, 12, 33  
 Tavares, Cátia, 20, 2M  
 Testa, Genni, 0H  
 Thanachayanont, Chanchana, 38  
 Tiemerding, T., 0R  
 Timko, Andrei S., 16  
 Tombelli, Sara, 0H  
 Tommasi, Federico, 0L  
 Trono, Cosimo, 0H  
 Vala, Milan, 2P, 2S  
 Vanus, Jan, 1F  
 Vasilkov, Sergey D., 16  
 Vedenkin, Nikolay, 2Y  
 Venediktov, Vladimir Yu., 0X, 1N  
 Venediktova, Anastasia V., 0X  
 Villatoro, Joel, 0C  
 Vinogradov, Maxim A., 1Q  
 Vladimirskaia, A. D., 2T  
 Vlasov, Sergey M., 16  
 Wadeng, Imron, 38  
 Wang, Junmin, 1O  
 Wang, Ning, 12, 33  
 Wang, Yanhua, 1O  
 Wasinski, Frank, 1M  
 Weber, P., 0R  
 Witas, Karel, 2K  
 Wolf, A. A., 2T  
 Wosniok, Aleksander, 08  
 Wu, Hua, 33  
 Wunderlich, Lukas, 0W  
 Yen, Yu-Chieh, 23  
 Yilgor, E., 31  
 Yilgor, I., 31  
 Yordsri, Visittapong, 38  
 Yue, Chong, 1A  
 Zabka, Stanislav, 1F, 2K, 37  
 Zeni, Luigi, 1B  
 Zhou, Xinglin, 1A  
 Zito, Gianluigi, 0I  
 Zotov, Kirill V., 2C  
 Zubia, Joseba, 0C  
 Zywiets, Urs, 2I



# Conference Committee

## *Symposium Chairs*

**Bedřich Rus**, ELI Beamlines, Institute of Physics of the CAS, v.v.i.  
(Czech Republic)

**Chris Edwards**, STFC Rutherford Appleton Laboratory  
(United Kingdom)

**Saša Bajt**, Deutsches Elektronen-Synchrotron (Germany)

**Ivo Rendina**, Istituto per la Microelettronica e Microsistemi (Italy)

## *Honorary Symposium Chair*

**Erich Spitz**, French Academy of Sciences, National Academy of  
Technologies (France), Advisor to Thales (France)

## *Conference Chairs*

**Francesco Baldini**, Istituto di Fisica Applicata Nello Carrara (Italy)

**Jiri Homola**, Institute of Photonics and Electronics of the ASCR, v.v.i.  
(Czech Republic)

**Robert A. Lieberman**, Lumoptix, LLC (United States)

## *Conference Programme Committee*

**Loïc J. Blum**, Université Claude Bernard Lyon 1 (France)

**Eduard Brynda**, Institute of Macromolecular Chemistry of the ASCR,  
v.v.i. (Czech Republic)

**Stefania Campopiano**, Università degli Studi di Napoli Parthenope  
(Italy)

**Artur Dybko**, Warsaw University of Technology (Poland)

**Günter G. Gauglitz**, Eberhard Karls Universität Tübingen (Germany)

**Pedro Jorge**, INESC Porto (Portugal)

**Aleksandra Lobnik**, University of Maribor (Slovenia)

**Ramaier Narayanaswamy**, The University of Manchester  
(United Kingdom)

**Terro Soukka**, University of Turku (Finland)

**Reinhardt Willsch**, Institut für Photonische Technologien e.V.  
(Germany)

### *Session Chairs*

- 1 Components and Data Processing Methods  
**Romeo Bernini**, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy)
- 2 Fiber Optic Sensors I  
**Francesco Baldini**, Istituto di Fisica Applicata "Nello Carrara" (Italy)
- 3 Fiber Optic Sensors II  
**Francesco Baldini**, Istituto di Fisica Applicata "Nello Carrara" (Italy)
- 4 Novel Approaches in Optical Sensing I  
**Günter Gauglitz**, Eberhard Karls Universität Tübingen (Germany)
- 5 Novel Approaches in Optical Sensing II  
**Andrew G. Kirk**, McGill University (Canada)
- 6 Optical Biosensors  
**Niko Hildebrandt**, Centre de Nanosciences et de Nanotechnologies (France)
- 7 Plasmonic Sensing  
**Jiří Homola**, Institute of Photonics and Electronics of the CAS, v.v.i. (Czech Republic)
- 8 Chemical Sensors  
**Nongjian Tao**, Arizona State University (United States)