PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 6796

, "Front Matter: Volume 6796," Proc. SPIE 6796, Photonics North 2007, 679601 (12 November 2007); doi: 10.1117/12.771236

SPIE.

Event: Photonics North 2007, 2007, Ottawa, Canada

PROCEEDINGS OF SPIE

Photonics North 2007

John Armitage

Editor

4–7 June 2007

Ottawa, Ontario, Canada

Organized by

Canadian Photonics Consortium (Canada)

Ottawa Photonics Cluster (Canada)

Quebec Photonic Network (Canada)

Carleton University (Canada)

University of Ottawa (Canada)

Sponsored by

Oz Optics Ltd. (Canada)

Ontario Centres of Excellence (Canada)

Cosponsored by

Optoelectronics Industry Development Association (Canada)

OPIN—Ontario Photonics Industry Network (Canada)

Cooperating Organization

SPIE

Published by

SPIE

Part One of Two Parts

Volume 6796

Proceedings of SPIE, 0277-786X, v. 6796

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

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *Photonics North 2007*, edited by John Armitage, Proceedings of SPIE Vol. 6796 (SPIE, Bellingham, WA, 2007) Article CID Number.

ISSN 0277-786X

ISBN 9780819469625

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 © 2007, 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/07/\$18.00.

Printed in the United States of America.

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

SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

Part One

xvii	<i>Conference Committee</i>
xix	<i>Conference Sponsors</i>

BIOPHOTONICS

6796 02	Optical indicators of baseline blood status in dialysis patients [6796-12] N. S. Lagali, Ottawa Health Research Institute and Univ. of Ottawa Eye Institute (Canada); K. D. Burns, D. L. Zimmerman, Ottawa Health Research Institute, Univ. of Ottawa, and The Ottawa Hospital (Canada); R. Munger, Ottawa Health Research Institute and Univ. of Ottawa Eye Institute (Canada)
6796 03	Hartmann-Shack measurements of ferrofluidic mirror dynamics [6796-16] A. Seaman, J. B. Macpherson, Univ. of Waterloo and Guelph-Waterloo Physics Institute (Canada); E. F. Borra, A. M. Ritcey, Univ. Laval (Canada); D. Asselin, H. Jerominek, INO (Canada); S. Thibault, ImmerVision (Canada); M. C. W. Campbell, Univ. of Waterloo and Guelph-Waterloo Physics Institute (Canada)
6796 04	Adaptive optics in ophthalmology: current techniques and new methods of increasing field-of-view of fundus cameras [6796-21] A. Dubinin, Moscow State Univ. (Russia); T. Cherezova, Moscow Lomonosov State Univ. (Russia); A. Kudryashov, Moscow State Open Univ. (Russia); F. Starikov, Russian Federal Nuclear Ctr.-VNIIEF (Russia)
6796 05	Optical surface metrology in 3D for small animal non-contact diffuse optical tomography [6796-96] M. Comtois, Y. Bérubé-Lauzière, Univ. de Sherbrooke (Canada)
6796 06	Ultra-fast time-correlated single photon counting avalanche photodiodes for time-domain non-contact fluorescence diffuse optical tomography [6796-94] V. Robichaud, É. Lapointe, Y. Bérubé-Lauzière, Univ. de Sherbrooke (Canada)
6796 07	Fluorescence diffuse optical tomography measurements for tissue engineering [6796-95] J. Desrochers, P. Vermette, R. Fontaine, Y. Bérubé-Lauzière, Univ. de Sherbrooke (Canada)
6796 08	Mode and polarization state selected guided wave spectroscopy of orientational anisotropy in model membrane cellulosic polymer films: relevance to lab-on-a-chip [6796-04] M. P. Andrews, McGill Univ. (Canada); T. Kanigan, BioTrove, Inc. (USA)
6796 09	Scanning integrated microspectrometer for lab-on-a-chip applications [6796-17] H. Hosseinkhannazer, J. N. McMullin, Univ. of Alberta (Canada)

- 6796 0A **Two-colour microparticle detection in PDMS biochips with integrated optics** [6796-18]
C. L. Bliss, C. J. Backhouse, J. N. McMullin, Univ. of Alberta (Canada)
- 6796 0B **Multilayer biochips with integrated optics replicated in PMMA and PDMS** [6796-19]
H. Hosseinkhannazer, L. Kostjuk, J. N. McMullin, Univ. of Alberta (Canada)
- 6796 0C **Detection of *Staphylococci aureus* cells with single domain antibody functionalized Raman nanoparobes** [6796-05]
L.-L. Tay, National Research Council Canada (Canada); J. Tanha, National Research Council Canada (Canada) and Univ. of Guelph (Canada); S. Ryan, T. Veres, National Research Council Canada (Canada)
- 6796 0D **Optimization of coherent anti-Stokes Raman scattering microscopy using photonic crystal fiber** [6796-06]
S. Murugkar, Y. Logvin, C. Brideau, A. Ridsdale, P. Stys, H. Anis, Univ. of Ottawa (Canada)
- 6796 0E **Methods and applications for marker-free quantitative digital holographic phase contrast imaging in life cell analysis** [6796-09]
B. Kemper, P. Langehanenberg, G. von Bally, Univ. of Muenster (Germany)
- 6796 0F **Sensitivity investigation of instantaneous complex conjugate resolved swept-source OCT using a Mach-Zehnder interferometer with a 3x3 fiber coupler** [6796-01]
Y. Mao, C. Flueraru, S. Sherif, S. Chang, E. Murdock, National Research Council Canada (Canada)
- 6796 0G **Numerical dispersion compensation for optical coherence tomography in the Wigner domain** [6796-02]
S. Sherif, National Research Council Canada (Canada); K. Huff, W. Almuhtadi, Algonquin College (Canada); C. Flueraru, Y. Mao, S. Chang, National Research Council Canada (Canada)
- 6796 0H **S+C+L broadband source based on semiconductor optical amplifiers and erbium-doped fiber for optical coherence tomography** [6796-08]
L. Carrion, École Polytechnique de Montréal (Canada); D. Beitel, McGill Univ. (Canada); K. L. Lee, The Univ. of Melbourne (Australia); A. Jain, L. R. Chen, McGill Univ. (Canada); R. Maciejko, École Polytechnique de Montréal (Canada); A. Nirmalathas, The Univ. of Melbourne (Australia)
- 6796 0I **Speckle size in optical Fourier domain imaging** [6796-14]
G. Lamouche, S. Vergnole, National Research Council Canada (Canada); C.-E. Bisailon, National Research Council Canada (Canada) and Ecole Polytechnique de Montréal (Canada); M. Dufour, National Research Council Canada (Canada); R. Maciejko, Ecole Polytechnique de Montréal (Canada); J.-P. Monchalin, National Research Council Canada (Canada)
- 6796 0J **Design and analysis of tactile optical sensor for endovascular surgery** [6796-97]
M.-A. Qasaimeh, J. Dargahi, M. Kahrizi, M. Packirisamy, Concordia Univ. (Canada)
- 6796 0K **Compressive sampling in photo-acoustic imaging** [6796-122]
J. Provost, F. Lesage, École Polytechnique de Montréal (Canada)

- 6796 OL **Use of optical pharmacokinetics systems (OPS) for non-invasive measurement of Phthalocyanine 4 (Pc 4) concentrations in mice bearing MDA-MB-231 xenografts** [6796-07]
L. Bai, E. Joseph, Univ. of Pittsburgh (USA); N. L. Olenick, J. M. Mulvihill, D. K. Feyes, Case Western Reserve Univ. (USA); J. L. Eiseman, Univ. of Pittsburgh (USA)
- 6796 OM **The optical biomedical sensors for DNA detection and imaging based on two-photon excited luminescent styryl dyes: phototoxic influence on the DNA** [6796-10]
V. M. Yashchuk, Kyiv Taras Shevchenko National Univ. (Ukraine); V. Yu. Kudrya, Kyiv Taras Shevchenko National Univ. (Ukraine) and National Agricultural Univ. of Ukraine (Ukraine); M. Yu. Losytskyy, V. P. Tokar, Kyiv Taras Shevchenko National Univ. (Ukraine) and Institute of Molecular Biology and Genetics of NASU (Ukraine); S. M. Yarmoluk, Institute of Molecular Biology and Genetics of NASU (Ukraine); I. M. Dmytruk, V. M. Prokopets, Kyiv Taras Shevchenko National Univ. (Ukraine); V. B. Kovalska, A. O. Balanda, D. V. Kryvorotenko, Institute of Molecular Biology and Genetics of NASU (Ukraine); T. Yu. Ogul'chansky, SUNY/Buffalo (USA)
- 6796 ON **Intensity fluctuation analysis of cell scattering/imaging with clinical application** [6796-03]
R. Subramaniam, R. Sullivan, P. S. Schneider, T. Holden, G. Tremberger, Jr., E. Cheung, A. Flamholz, D. H. Lieberman, T. D. Cheung, F. Garcia, N. Bewry, N. Pennie, CUNY/Queensborough Community College (USA)
- 6796 OO **Development and application of biological techniques to two-photon photodynamic therapy** [6796-13]
M. Khurana, A. Karotki, E. H. Moriyama, Ontario Cancer Institute/Univ. of Toronto (Canada); M. K. Akens, Ontario Cancer Institute/Univ. of Toronto (Canada) and Sunnybrook Health Sciences Ctr. (Canada); B. C. Wilson, Ontario Cancer Institute/Univ. of Toronto (Canada)
- 6796 OP **New setups for optical coherence tomography** [6796-20]
L. Langevin, D. Gay, M. Piché, COPL, Univ. Laval (Canada)
- 6796 OQ **Towards quantum dot and FRET-based optical DNA biosensor technology: surface chemistry and photoluminescence of CdSe/ZnS and Si quantum dots** [6796-99]
W. R. Algar, Y. Zhou, J. Zeng, U. J. Krull, Univ. of Toronto Mississauga (Canada)
- 6796 OR **The functional nanostructures based on the bipolymers fragments with unidirect excitations energy transfer for nanophotonics** [6796-11]
V. M. Yashchuk, V. Yu. Kudrya, T. Shevchenko National Univ. of Kyiv (Ukraine); I. Ya. Dubey, Institute of Molecular Biology and Genetics of NASU (Ukraine); R. D. Fedorovich, Institute of Physics of NASU (Ukraine); H. Suga, Univ. of Tokyo (Japan); I. O. Savchenko, G. P. Golovach, T. Shevchenko National Univ. of Kyiv (Ukraine)
- 6796 OS **Charge conduction in biomaterials: application to DNA structures** [6796-15]
M. R. Singh, Univ. of Western Ontario (Canada)
- 6796 OT **A wavefront intersection algorithm for time-of-flight non-contact diffuse optical tomography of fluorescent inclusions in thick turbid media** [6796-133]
V. Robichaud, Y. Bérubé-Lauzière, Univ. de Sherbrooke (Canada)

FIBER LASERS AND AMPS

- 6796 0U **Dynamic regimes of Yb-doped fiber laser under influence of third-order dispersion** [6796-124]
Y. Logvin, H. Anis, Univ. of Ottawa (Canada)
- 6796 0V **All-fiber Raman laser tuned over 60nm** [6796-23]
E. Bélanger, COPL, Univ. Laval (Canada) and Univ. Laval Robert-Giffard (Canada);
M. Bernier, COPL, Univ. Laval (Canada); D. Côté, COPL, Univ. Laval (Canada) and Univ.
Laval Robert-Giffard (Canada); R. Vallée, COPL, Univ. Laval (Canada)
- 6796 0W **Narrow bandwidth diode-pumped solid-state laser generated by fiber Bragg grating external cavity** [6796-29]
P. Long, J. Carignan, Y. Zhu, O/E LAND Inc. (Canada)
- 6796 0X **Direct modulation of an ultra-long doped fiber external cavity semiconductor laser at multiples of the cavity resonant frequency** [6796-93]
R. Liu, K. Wu, R. Kashyap, École Polytechnique de Montréal (Canada)
- 6796 0Y **FM laser oscillation in tunable SOA-based fiber ring lasers** [6796-25]
S. L. Girard, COPL, Univ. Laval (Canada); H. Chen, G. W. Schinn, A. Champagne, EXFO
Electro-Optical Engineering Inc. (Canada); M. Piché, COPL, Univ. Laval (Canada)
- 6796 0Z **Fabrication of erbium-ytterbium distributed multi-wavelength fiber lasers by writing the superstructured fiber Bragg grating resonator in a single writing laser scan** [6796-26]
G. Brochu, S. LaRochelle, COPL, Univ. Laval (Canada)
- 6796 10 **Metal cylinder nanoscale photonic crystal fiber** [6796-22]
Z.-X. Lai, Syracuse Univ. (USA); A. C.-L. Wang, SDO Corp. Inc. (USA); J. Flattery, P. Kornreich,
Syracuse Univ. (USA)
- 6796 11 **A tunable erbium doped fiber ring laser without the use of intra cavity filters** [6796-24]
D. Venkitesh, Indian Institute of Technology (India) and VSE College of Arts, Science and
Commerce (India); R. Vijaya, Indian Institute of Technology (India)
- 6796 12 **Stability and linewidth of multiwavelength semiconductor fibre ring laser** [6796-27]
H. Awad, Univ. of Ottawa (Canada) and BTI Photonic Systems (Canada); A. Atieh, T. J. Hall,
BTI Photonic Systems (Canada); H. Farahneh, Univ. of Jordan (Jordan)
- 6796 13 **Dispersion characteristics of fiber Bragg gratings with Gaussian self apodization made with a femtosecond laser in heavily doped erbium and ytterbium fibers** [6796-28]
R. B. Walker, D. Grobnc, P. Lu, S. J. Mihailov, C. W. Smelser, Communications Research Ctr.
(Canada)
- 6796 14 **1.5 cm long single mode fiber laser made by femtosecond exposure of heavily doped erbium-ytterbium fiber** [6796-86]
D. Grobnc, S. J. Mihailov, C. W. Smelser, R. B. Walker, Communications Research Ctr.
Canada (Canada)

GUIDED WAVES DEVICES

- 6796 15 **Optical modulators exploiting a multi-phonon light scattering in TeO₂-structures** [6796-31]
A. S. Shcherbakov, A. Luna Castellanos, S. E. Balderas Mata, National Institute for Astrophysics, Optics & Electronics (Mexico)
- 6796 16 **Analysis of a laser beam-controlled nonlinear directional coupler for optical signal processing** [6796-120]
B. S. Rawat, S. R. Kondagari, M. B. Tayahi, Univ. of Nevada/Reno (USA)
- 6796 17 **Ultra-wide optical frequency comb generator** [6796-32]
Y. Kim, S. LaRochelle, COPL, Univ. Laval (Canada)
- 6796 18 **Noise characteristics of second-harmonic generation in quasi-phase-matched periodically poled lithium niobate** [6796-90]
Y. Wang, J. Fonseca-Campos, W. Liang, C.-Q. Xu, I. Vargas-Baca, McMaster Univ. (Canada)
- 6796 19 **Comparison of photorefractive effects in undoped and MgO-doped PPLN** [6796-33]
J. Fonseca-Campos, Y. Wang, W. Liang, C.-Q. Xu, I. Vargas-Baca, McMaster Univ. (Canada)
- 6796 1A **Simulation of magnetically controllable photonic bandgap structures** [6796-35]
S. V. Chernovtsev, Usikov Institute of Radiophysics and Electronics, NASU (Ukraine) and Kharkov National Univ. of Radioelectronics (Ukraine); A. I. Pavlov, Usikov Institute of Radiophysics and Electronics, NASU (Ukraine); S. I. Tarapov, Usikov Institute of Radiophysics and Electronics, NASU (Ukraine) and Kharkov National Univ. of Radioelectronics (Ukraine)
- 6796 1B **Thermal stability of excimer laser-written fiber Bragg gratings as a function of fiber/phase mask distance** [6796-116]
L. Xiong, J. Albert, Carleton Univ. (Canada)
- 6796 1C **Ion implanted integrated Bragg gratings in SOI waveguides** [6796-34]
M. P. Bulk, A. P. Knights, P. E. Jessop, McMaster Univ. (Canada)
- 6796 1D **Optimization of planar silica-on-silicon photonic devices through cladding material properties** [6796-30]
C. Blanchetière, C. L. Callender, C. J. Ledderhof, P. Dumais, J. P. Noad, Communications Research Ctr. Canada (Canada)
- 6796 1E **Fabrication of femtosecond laser-induced Bragg gratings in amorphous and crystalline dielectric waveguides** [6796-107]
C. W. Smelser, D. Grobnc, S. J. Mihailov, Communications Research Ctr. (Canada)

INDUSTRIAL APPLICATIONS

- 6796 1F **Large area full-field optical coherence tomography using white light source** [6796-36]
S. Chang, Y. Mao, S. Sherif, C. Flueraru, National Research Council Canada (Canada)

- 6796 1G **Micromachining with tailored nanosecond pulses** [6796-37]
H. Herfurth, R. Patwa, T. Lauterborn, S. Heinemann, Fraunhofer USA (USA); H. Pantsar, VTT, Technical Research Ctr. of Finland (Finland)
- 6796 1H **Characterization of thin layered structures using deconvolution techniques in time-domain and Fourier-domain optical coherence tomography** [6796-38]
S. Vergnole, D. Lévesque, G. Lamouche, M. Dufour, B. Gauthier, IMI-NRC (Canada)
- 6796 1I **Calibration of a pulsed ultrasonic source by fiber optic ring interferometer** [6796-39]
V. V. Ivanov, M. Yu. Levitchev, S. S. Ustavshikov, Institute for Physics of Microstructures (Russia); S. G. Lazarev, Russian Federal Nuclear Ctr. VNIIEF (Russia)
- 6796 1J **Study of the sapphire Bragg gratings probed with multimode and single mode signal from fiber collimators and evanescent fiber tapers** [6796-49]
D. Grobncic, S. J. Mihailov, C. W. Smelser, H. Ding, Communications Research Ctr. (Canada)
- 6796 1K **Bragg gratings made with ultrafast radiation in non-silica glasses: fluoride, phosphate, borosilicate and chalcogenide Bragg gratings** [6796-50]
D. Grobncic, S. J. Mihailov, C. W. Smelser, R. Walker, Communications Research Ctr. (Canada)

NEW OPTICAL MATERIALS AND NANOPHOTONICS

- 6796 1L **Optical characterization of thin layers of an azo di-block copolymer** [6796-89]
S. Macko, R. Meinhardt, A. Draude, Univ. of Duisburg-Essen (Germany); Y. Zhao, Univ. de Sherbrooke (Canada); H. Franke, Univ. of Duisburg-Essen (Germany)
- 6796 1M **Research on the dark diffusion transient for a blue-green sensitized holographic photopolymer material** [6796-44]
T. Zhang, S. Tao, Y. Wan, Beijing Univ. of Technology (China); M. Shi, Y. Zhao, F. Wu, Technical Institute of Physics and Chemistry of CAS (China)
- 6796 1N **Nonlinear switching mechanism in nanostructures doped in photonic crystals** [6796-47]
M. R. Singh, Univ. of Western Ontario (Canada)
- 6796 1O **Optical properties of vanadium-doped ZnTe thin cermet films for selective surface applications** [6796-115]
M. S. Hossain, R. Islam, K. A. Khan, Univ. of Rajshahi (Bangladesh)
- 6796 1P **Light-induced self-inscription (LISI) in nanocomposite network glasses** [6796-42]
M. P. Andrews, N. Belanger, N. Duxin, E. Maron, J. Lofgreen, H. Djeghelian, G. Shan, McGill Univ. (Canada); M.-P. Manseau, F. C. J. M. van Veggel, Univ. of Victoria (Canada); S.-W. Fu, Reflex Photonics (Canada)
- 6796 1Q **Optical properties of functionalized polymeric photonic crystals** [6796-43]
R. V. Nair, R. Vijaya, Indian Institute of Technology Bombay (India)
- 6796 1R **Influence of photoinitiator concentration and polymerizing light intensity on conversion of acrylic monomers** [6796-48]
R. Birabassov, O. Pouraghajani, S. Peredereeva, N. Ashurbekov, LumiStor Inc. (Canada)

- 6796 1S **Preparation and luminescence properties of rare earth Eu^{3+} -doped $\text{ZnO-Al}_2\text{O}_3\text{-SiO}_2$ glass-ceramics** [6796-40]
X. L. Duan, D. R. Yuan, Z. Liu, Shandong Univ. (China)
- 6796 1T **Performance investigation on RE^{3+} (Nd^{3+} , Er^{3+}) doped lithium niobate nanocrystals prepared by sol-gel technique** [6796-41]
L. Wang, D. Yuan, X. Duan, X. Wang, F. Yu, Shandong Univ. (China)
- 6796 1U **A fiber-optic temperature sensor with a thermo-reversible compound as a transducer** [6796-45]
L. Men, P. Lu, Q. Chen, Memorial Univ. of Newfoundland (Canada)
- 6796 1V **Organic recording media for 3D bitwise optical memory on optical disks** [6796-46]
V. A. Barachevsky, Yu. P. Strokach, Photochemistry Ctr. of RAS (Russia); Yu. A. Puankov, Moscow Institute of Physics and Technology (Russia); E. P. Grebennikov, JSC Tekhnomash (Russia); V. V. Kiyko, Prokhorov Institute of General Physics (Russia); M. M. Krayushkin, Zelinsky Institute of Organic Chemistry (Russia)
- 6796 1W **$\text{Hg}_3\text{In}_2\text{Te}_6$: a promising material for optoelectronic devices** [6796-102]
P. Gorley, Z. Grushka, Y. Radevych, O. Grushka, I. Zabolotsky, Yuri Fedkovych Chernivtsi National Univ. (Ukraine)
- 6796 1X **Transparent conductive oxides of tin, indium, and cadmium for solar cell applications** [6796-117]
P. Gorley, V. Khomyak, P. Horley, S. Bilichuk, V. Bojko, Chernivtsi National Univ. (Ukraine)

Part Two

OPTICAL SENSORS AND DETECTORS

- 6796 1Y **Predict the pipeline buckling using the broadening factor of Brillouin spectrum width** [6796-113]
C. Zhang, X. Bao, I. F. Ozkan, M. Mohareb, F. Ravet, L. Zou, Univ. of Ottawa (Canada)
- 6796 1Z **Realization of surface plasmon resonance sensor in standard optical fibers** [6796-105]
Y. Y. Shevchenko, A. Ianoul, C. Chen, J. Albert, Carleton Univ. (Canada)
- 6796 20 **Bragg gratings made with ultrafast radiation in crystal waveguides: lithium niobate, sapphire and YAG Bragg gratings** [6796-58]
D. Grobncic, S. J. Mihailov, C. W. Smelser, Communications Research Ctr. (Canada)
- 6796 21 **Perforated Mach-Zehnder interferometer evanescent field sensor in silicon-on-insulator** [6796-51]
K. Yadav, N. G. Tarr, Carleton Univ. (Canada); P. D. Waldron, National Research Council Canada (Canada)
- 6796 22 **Interrogation of a long-period-grating-based fiber sensor based on linear Gaussian function curve fitting** [6796-112]
H. Guo, Univ. of Ottawa (Canada); G. Xiao, National Research Council (Canada); J. Yao, Univ. of Ottawa (Canada)

- 6796 23 **Hybrid modes analysis for cladding mode resonance peaks in tilted fiber Bragg gratings** [6796-109]
C. Chen, J. Albert, Carleton Univ. (Canada)
- 6796 24 **Polarization dependent loss of fiber Bragg gratings and sensing applications** [6796-53]
P. Lu, Q. Chen, Memorial Univ. of Newfoundland (Canada)
- 6796 25 **Emission of carbon nanotube-DNA-GOX bionanohybrid for glucose detection** [6796-54]
V. A. Karachevtsev, A. Yu. Glamazda, M. V. Karachevtsev, B. I. Verkin Institute for Low Temperature Physics and Engineering (Ukraine); O. S. Lytvyn, V. I. Lashkarov Institute of Semiconductor Physics (Ukraine); U. Dettlaff-Weglikowska, Max Planck Institute for Solid State Research (Germany)
- 6796 26 **Temperature insensitive refractometer using TE and TM modes in open top ridge waveguides** [6796-56]
X. Dai, S. J. Mihailov, R. B. Walker, C. L. Callender, C. Blanchetiere, Communications Research Ctr. Canada (Canada)
- 6796 27 **Finite element modeling of intermittent flow molecular sorting system for optical microfluidics-based biodetection** [6796-55]
A. Chandrasekaran, A. Nobahar, M. Packirisamy, Concordia Univ. (Canada)
- 6796 28 **Microchambers flow simulation for immunoassay-based biosensing applications** [6796-57]
A. Acharya, M. Packirisamy, Concordia Univ. (Canada)
- 6796 29 **A compact lightweight Earth horizon sensor using an uncooled infrared bolometer** [6796-59]
L. E. Marchese, INO (Canada); P. Thomas, Topaz Technology Inc. (Canada); T. D. Pope, D. Asselin, H. Jerominek, INO (Canada)
- 6796 2A **Fiber-optic ring interferometry for ultrasonic sensing: a novel approach** [6796-60]
V. V. Ivanov, M. A. Novikov, S. S. Ustavshikov, A. N. Sadkov, Institute for Physics of Microstructures (Russia)
- 6796 2B **Pressure sensitivities of tapered long-period fiber gratings** [6796-103]
J. Chen, W. J. Bock, Univ. du Québec en Outaouais (Canada); T. Eftimov, Plovdiv Univ. (Bulgaria); P. Mikulic, Univ. du Québec en Outaouais (Canada)

OPTICS AND PHOTONICS IN DEFENSE AND SECURITY

- 6796 2C **Optical coherence tomography used for internal biometrics** [6796-61]
S. Chang, S. Sherif, Y. Mao, C. Flueraru, National Research Council Canada (Canada)
- 6796 2D **Detection of explosives using THz time domain spectroscopy** [6796-131]
M. Châteauneuf, J. Dubois, DRDC/Valcartier (Canada); J.-F. Allard, D. Houde, D. Morris, Univ. de Sherbrooke (Canada)

- 6796 2E **The advanced linked extended reconnaissance and targeting technology demonstration project** [6796-123]
J. Cruickshank, Y. de Villers, J. Maheux, Defence R&D Canada/Valcartier (Canada); M. Edwards, D. Gains, General Dynamics Canada (Canada); T. Rea, Engarde! Consulting, Inc. (Canada); S. Banbury, M. Gauthier, CAE Professional Services (Canada)
- 6796 2F **Detecting laser sources on the battlefield** [6796-130]
J. Dubois, F. Reid, Defence Research and Development Canada/Valcartier (Canada)
- 6796 2G **High coupling efficiency, highly robust optical fibre passive alignment** [6796-129]
J. Lauzon, B. Dion, L. Leduc, C. Ledoux, D. Bessette, CMC Electronics Inc. (Canada)
- 6796 2H **InAlAs-InGaAs based avalanche photodiodes for next generation eye-safe optical receivers** [6796-63]
W. R. Clark, OptoGration Inc. (USA); K. Vaccaro, Air Force Research Lab. (USA); W. D. Waters, OptoGration Inc. (USA)
- 6796 2I **Hadamard spectrometer for passive LWIR standoff surveillance** [6796-62]
R. V. Kruzelecky, B. Wong, J. Zou, N. Mohammad, W. Jamroz, MPB Communications Inc. (Canada); M. Soltani, M. Chaker, Institut National de la Recherche Scientifique (Canada); E. Haddad, MPB Communications Inc. (Canada); P. Laou, S. Paradis, Defence R&D Canada/Valcartier (Canada)
- 6796 2J **Portable mid-IR source around 3.7 μm based on temperature-tuned periodically poled lithium niobate (PPLN)** [6796-101]
L. Han, Y. Wang, W. Liang, C.-Q. Xu, McMaster Univ. (Canada)
- 6796 2K **All-optical electrical chirped pulse generation based on nonlinear wavelength-to-time conversion in a chirped fiber Bragg grating** [6796-126]
C. Wang, J. Yao, Univ. of Ottawa (Canada)
- 6796 2L **Tunable optical microwave bandpass filter with negative coefficients using an optical phase modulator and chirped fiber Bragg gratings** [6796-114]
Y. Yan, J. Yao, Univ. of Ottawa (Canada)

PHOTONIC DEVICES

- 6796 2M **All-optical bandpass microwave filter based on a super-structured fiber Bragg grating with equivalent chirp** [6796-65]
S. Blais, J. Yao, Univ. of Ottawa (Canada)
- 6796 2N **Analysis and design of a MEMS micromirror optical switch** [6796-119]
R. Bahuguna, B. S. Rawat, Univ. of Nevada/Reno (USA); S. Kurth, T. Gessner, Chemnitz Univ. of Technology (Germany); M. B. Tayahi, Univ. of Nevada/Reno (USA)
- 6796 2O **Upgrading the frequency resolution of spectrum analyzers for radio-astronomy due to exploiting a multi-phonon light scattering in TeO_2 crystalline modulators** [6796-69]
A. S. Shcherbakov, A. Luna Casellanos, S. E. Balderas Mata, National Institute for Astrophysics, Optics and Electronics (Mexico); J. Maximov, Molecular Technology GmbH (Germany)

- 6796 2P **Resonance splitting and its invariance in coupled optical microring resonators** [6796-98]
O. Schwelb, Concordia Univ. (Canada)
- 6796 2Q **Two different mechanical tuning devices of fiber Bragg gratings** [6796-66]
E. Bélanger, COPL, Univ. Laval (Canada) and Univ. Laval Robert-Giffard (Canada);
M. Bernier, J. P. Bérubé, B. Déry, S. Gagnon, COPL, Univ. Laval (Canada); D. Côté, COPL,
Univ. Laval (Canada) and Univ. Laval Robert-Giffard (Canada); R. Vallée, COPL, Univ.
Laval (Canada)
- 6796 2R **Comparative study of gamma-ray and neutron irradiated laser diodes** [6796-67]
D. Sporea, A. Sporea, National Institute for Lasers, Plasma and Radiation Physics (Romania);
I. Vata, National Institute for Nuclear Engineering (Romania)
- 6796 2S **A new technique of measuring low-power picosecond optical pulse trains** [6796-68]
A. S. Shcherbakov, A. L. Munoz Zurita, National Institute for Astrophysics, Optics and
Electronics (Mexico); J. Campos Acosta, CSIC/Institute for Applied Physics (Spain)
- 6796 2T **Scalability analysis in terms of crosstalk in NZ-DSF ring networks constructed with WSS
based ROADM** [6796-106]
R. Shankar, J. Couturier, K. Hinzer, T. J. Hall, School of Information Technology & Engineering
(Canada)
- 6796 2U **The impact of stale information on the blocking performance of dynamic routing,
wavelength and timeslot assignment schemes for bandwidth on demand in metro agile
all-optical ring networks** [6796-70]
W. Yang, S. A. Paredes, T. J. Hall, Univ. of Ottawa (Canada)
- 6796 2V **Analytic optical eye diagram evaluation for a system of highly mode-coupled PMD/PDL
fiber and lumped sections** [6796-64]
S. Abuzariba, S. Hadjifaradji, L. Chen, Univ. of Ottawa (Canada)
- 6796 2W **Performance characterization of PON technologies** [6796-75]
A. Vukovic, M. Savoie, H. Hua, K. Maamoun, Communications Research Ctr. (Canada)
- 6796 2X **Label-free biosensing using silicon planar waveguide technology** [6796-73]
A. Densmore, D.-X. Xu, P. Waldron, S. Janz, A. Delâge, G. Lopinski, T. Mischki, P. Cheben,
E. Post, J. Lapointe, J. H. Schmid, National Research Council of Canada (Canada)
- 6796 2Y **Monolithically integrated InGaAsP/InP 1x2 SOA optical switch** [6796-74]
R. Millett, Univ. of Ottawa (Canada); T. Hall, Univ. of Ottawa (Canada) and OneChip
Photonics Inc. (Canada); K. Hinzer, Univ. of Ottawa (Canada); V. Tolstikhin, K. Pimenov,
Y. Logvin, OneChip Photonics Inc. (Canada); B. Robinson, Z. Peng, McMaster Univ.
(Canada); H. Schriemer, Univ. of Ottawa (Canada)
- 6796 2Z **Nanocrystal coated beads for optical coding and whispering gallery modes** [6796-108]
C. N. Allen, COPL, Univ. Laval (Canada); N. Lequeux, Lab. Physicochimie des Polymères et
Milieux Dispersés, CNRS, ESPCI (France); C. Chassenieux, Univ. du Maine (France); G. Cyr,
COPL, Univ. Laval (Canada); G. Tessier, B. Dubertret, Lab. de Spectroscopie en Lumière
Polarisée, CNRS, ESPCI (France)

- 6796 30 **The statistics of PMD for an optical pulse and its relationship to pulse broadening** [6796-71]
P. Lu, S. J. Mihailov, Communications Research Ctr. Canada (Canada); L. Chen, X. Bao, Univ. of Ottawa (Canada)
- 6796 31 **Offset sideboard modulation for FTTx** [6796-111]
J. D. Gaudette, D. J. Krause, J. C. Cartledge, Queen's Univ. (Canada); K. Roberts, Nortel Networks (Canada)
- 6796 32 **Fabrication and characterization of an SOI-based thermally tuned phase modulator** [6796-132]
A. B. Eniang, B. E. Obiesio, K. Akpan, Algonquin College (Canada); C. Raum, Carleton Univ. (Canada)
- 6796 33 **Electronic dispersion compensation based on maximum likelihood sequence estimation for 10 Gb/s optical communication systems** [6796-72]
X. Zhu, McMaster Univ. (Canada); S. Raghavan, Corning Inc. (USA); S. Kumar, McMaster Univ. (Canada)
- 6796 34 **All-optical variable delay for re-circulating buffers based on fiber Bragg grating** [6796-118]
M. Amine Jebali, M. Zghal, N. Boudriga, Engineering School of Communication of Tunis (Tunisia); H. Hamam, Univ. of Moncton (Canada)
- 6796 35 **Study of the fabrication process of Bragg gratings in channel waveguides using ultrafast radiation and the phase mask method** [6796-88]
D. Grobncic, S. J. Mihailov, C. W. Smelser, Communications Research Ctr. Canada (Canada)

PHOTONIC DESIGN AND SIMULATION

- 6796 36 **Time-domain simulation of CMOS compatible micro-disk lasers** [6796-82]
W. H. P. Pernice, F. P. Payne, Univ. of Oxford (United Kingdom); D. F. G. Gallagher, Photon Design (United Kingdom)
- 6796 37 **Compensation of optical pulse broadening in photonic crystal fibers using Kerr effect** [6796-127]
R. Cherif, M. Zghal, Engineering School of Communication of Tunis (Tunisia); H. Hamam, Univ. of Moncton (Canada)
- 6796 38 **Object-oriented numerical simulation of a passively modelocked fiber laser** [6796-85]
A. S. Karar, A. L. Steele, T. Smy, Carleton Univ. (Canada)
- 6796 39 **First order optimization technique for interferometric optical waveguide sensors** [6796-92]
D. Celo, D. J. Walkey, T. Smy, J. Albert, Carleton Univ. (Canada)
- 6796 3A **Accurate and efficient sensitivity extraction of complex structures using FDTD** [6796-121]
M. A. Swillam, M. H. Bakr, X. Li, McMaster Univ. (Canada)
- 6796 3B **Analysis of linear and nonlinear photonic devices using eigenmode expansion** [6796-104]
B. Maes, Ghent Univ. (Belgium) and Massachusetts Institute of Technology (USA); M. Ibanescu, M. Soljačić, J. D. Joannopoulos, Massachusetts Institute of Technology (USA); P. Bienstman, R. Baets, Ghent Univ. (Belgium)

- 6796 3C **Challenges for integrated optics design and simulation** [6796-125]
T. M. Benson, E. V. Bekker, A. Vukovic, P. Sewell, Univ. of Nottingham (United Kingdom)
- 6796 3D **Visualizing phase velocity in photonic crystals** [6796-76]
F. S. Roux, Univ. of Pretoria (South Africa)
- 6796 3E **Subwavelength grating structures in planar waveguide facets for modified reflectivity** [6796-80]
J. H. Schmid, P. Cheben, S. Janz, J. Lapointe, E. Post, A. Delâge, A. Densmore, B. Lamontagne, P. Waldron, D.-X. Xu, National Research Council of Canada (Canada)
- 6796 3F **OLED design: combined micro-and nanophotonics modeling, and routes to a complex optimization algorithm** [6796-83]
N. Danz, D. Michaelis, C. Wächter, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany)
- 6796 3G **Shortening Veselago lenses using variable photonic crystals** [6796-77]
F. S. Roux, Univ. of Pretoria (South Africa)
- 6796 3H **Recent progress in design and hybridization of planar grating-based transceivers** [6796-91]
S. Bidnyk, M. Pearson, A. Balakrishnan, M. Gao, Enablence Technologies Inc. (Canada)
- 6796 3I **Crosstalk analysis in in-line transceiver** [6796-79]
X. Hong, Beijing Univ. of Posts & Telecommunications (China) and McMaster Univ. (Canada); Q. Xu, W. Liang, W. Huang, X. Li, C. Q. Xu, McMaster Univ. (Canada)
- 6796 3J **Planar waveguide spatial heterodyne spectrometer** [6796-81]
M. Florjańczyk, York Univ. (Canada) and National Research Council (Canada); P. Cheben, S. Janz, National Research Council (Canada); A. Scott, COM DEV Ltd. (Canada); B. Solheim, York Univ. (Canada); D.-X. Xu, National Research Council (Canada)
- 6796 3K **Optical blackplane technology for a large sonnet multi-service switch** [6796-100]
M. B. Tayahi, B. Rawat, Univ. of Nevada/Reno (USA)
- 6796 3L **DS-OCDMA encoders/decoders synthesis using fiber Bragg gratings** [6796-84]
M. Mathlouthi, École Nationale d'Ingénieurs de Tunis (Tunisia); M. Menif, École Supérieure des Communication (Tunisia); C. Lepersc, Lab. de Physique des Lasers, Atomes et Molécules, CNRS, Univ. de Lille I (France); H. Rezig, École Nationale d'Ingénieurs de Tunis (Tunisia)
- 6796 3M **Modelling of elliptical core D-fibers for determination of cladding thickness** [6796-78]
S. M. Chandani, N. A. F. Jaeger, Univ. of British Columbia (Canada)
- 6796 3N **Mirror cavity MMI-coupled photonic wire resonator in SOI** [6796-128]
P. J. Bock, Univ. of Ottawa (Canada) and National Research Council of Canada (Canada); P. Cheben, D.-X. Xu, S. Janz, National Research Council of Canada (Canada); T. J. Hall, Univ. of Ottawa (Canada)

ULTRA-SHORT PULSE LASERS

- 6796 3O **Spatiotemporal Bessel beams** [6796-87]
M. Dallaire, N. McCarthy, M. Piché, COPL, Univ. Laval (Canada)
- 6796 3P **Observation of 101st harmonic generated from laser-produced Mn plasma** [6796-110]
R. A. Ganeev, Scientific Association Akadempribo, Academy of Sciences of Uzbekistan (Uzbekistan); L. B. E. Bom, J.-C. Kieffer, T. Ozaki, Institut National de la Recherche Scientifique (Canada)

Author Index

Conference Committee

Conference Chair

John Armitage, Carleton University (Canada)

Cochair

Trevor J. Hall, University of Ottawa (Canada)

Organizing Committee

Michael Scott, *Chair*, Ottawa Photonic Cluster (Canada)

George A. Lampropoulos, *Vice-Chair*, A.U.G. Signals (Canada)

Roger A. Lessard, *Vice-Chair*, Université Laval (Canada)

Jacques Labelle, *Vice-Chair*, Quebec Photonic Network (Canada)

John Armitage, Carleton University (Canada)

Sylvain Charbonneau, Canadian Photonic Fabrication Center
(Canada)

Robert Corriveau, CIPI-ICIP (Canada)

Kelly Daize, OCRI (Canada)

Michael Darch, OCRI (Canada)

Trevor J. Hall, University of Ottawa (Canada)

Don Wilford, Ontario Centres of Excellence (Canada)

Session Chairs

Biophotonics

Andrew Ridsdale, Ottawa Health Research Institute (Canada)

Virgis Barzda, University of Toronto at Mississauga (Canada)

George Natchev, University of Toronto (Canada)

Fiber Lasers and Amps

Sophie LaRochelle, Université Laval (Canada)

Francois Brunet, Université Laval (Canada)

Xiaoyi Bao, University of Ottawa (Canada)

Véronique François, ETS (Canada)

Guided Waves Devices

Raman Kashyap, École Polytechnique de Montréal (Canada)

Industrial Applications

Frank Shepherd, CNRC-IMS (Canada)

New Optical Materials and Nanophotonics
Peter Mascher, McMaster University (Canada)
Jean-Michel Nunzi, Queen's University (Canada)

Optical Sensors and Detectors
Jacques Albert, Carleton University (Canada)
Xiaoyi Bao, University of Ottawa (Canada)
J. Newhook, Dalhousie University (Canada)

Optics and Photonics in Defense and Security
Nick Bertone, Optoelectronic Components (Canada)
Bruno Dion, CMC Electronics (Canada)
Christian Carrier, DRDC-RDDC (Canada)

Photonic Devices
Karin Hinzer, University of Ottawa (Canada)
Hussein Mouftah, University of Ottawa (Canada)
Patrick Langlois, JDS Uniphase (Canada)
Norbert Puetz, Cyrium Technologies (Canada)

Photonic Design and Simulation
Pavel Cheben, National Research Council of Canada (Canada)
Stoyan Tanev, Carleton University (Canada)
Jirí Ctyroky, Academy of Sciences (Czech Republic)

Ultra-short Pulse Lasers
Hanan Anis, University of Ottawa (Canada)
Ravi Bhardwaj, University of Ottawa (Canada)

WE THANK OUR SPONSORS

GOLD SPONSORS

Ontario Centres of
Excellence

Where Next Happens

SILVER SPONSORS

OPTOELECTRONICS INDUSTRY
DEVELOPMENT ASSOCIATION

OPIN

Ontario Photonics Industry Network

SUPPORTING SPONSORS

Réseau photonique du Québec
Quebec Photonic Network

CANADIAN PHOTONICS
FABRICATION CENTRE
CENTRE CANADIEN DE
FABRICATION DE
DISPOSITIFS PHOTONIQUES

Canadian Photonics Consortium
Consortium photonique du Canada

NRC-CMRC

OCRI | **GLOBAL
MARKETING**

OPC
Ottawa Photonics Cluster

uOttawa

L'Université canadienne
Canada's university

Carleton
UNIVERSITY

Canada's Capital University

PHOTONICS
SPECTRA

LaserFocusWorld