



Antonello Cutolo
Brian Culshaw
José Miguel López-Higuera
Editors

4–6 July 2007
Napoli, Italy

Organized by
Optoelectronic Division – Engineering Department, Università degli Studi del Sannio (Italy)

Technical Cosponsors
SPIE Europe
SIOF—Società Italiana di Ottica e fotonica
EOS—European Optical Society

Published by
SPIE

SPIE Volume 6619

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 *Third European Workshop on Optical Fibre Sensors*, edited by Antonello Cutolo, Brian Culshaw, José Miguel López-Higuera, Proceedings of SPIE Vol. 6619 (SPIE, Bellingham, WA, 2007) Article CID Number.

ISSN 0277-786X
ISBN 9780819467614

Published by

SPIE—The International Society for Optical Engineering

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone 1 360/676-3290 (Pacific Time) · Fax 1 360/647-1445

<http://www.spie.org>

Copyright © 2007, The 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 <http://www.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.

Contents

xix	Conference Committees
xxi	<i>Introduction</i>
xxiii	Conference Sponsors

SPECIAL SESSION: MARKET OPPORTUNITIES

- 661902 **Fiber optic sensing technology: emerging markets and trends (Invited Paper)**
D. B. Huff, M. S. Lebby, Optoelectronics Industry Development Association (USA)
- 661903 **Market potential for optical fiber sensors in the energy sector (Invited Paper)**
T. Bosselmann, Siemens AG (Germany)
- 661904 **Photonic sensing technology: currents and trends (Invited Paper)**
W. B. Spillman, Jr., Virginia Polytechnic Institute and State Univ. (USA)
- 661905 **Fiber Bragg grating sensors: a market overview (Invited Paper)**
A. Méndez, MCH Engineering LLC (USA)
- 661906 **Standards and guidelines: Could they enhance user confidence in fiber sensor technology? (Invited Paper)**
W. R. Habel, Federal Institute for Materials Research and Testing (BAM) (Germany)
- 661907 **The evolution and exploitation of the fiber-optic hydrophone (Invited Paper)**
D. J. Hill, QinetiQ Ltd. (United Kingdom)
- 661908 **Market opportunities on fiber optic sensors for aeronautics and aerospace applications (Invited Paper)**
J. M. Menendez, Airbus España (Spain)

Pagination: 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.

INVITED TALKS

- 661909 **Surface plasmon resonance biosensors (Invited Paper)**
J. Homola, M. Piliarik, P. Kvasnička, Institute of Photonics and Electronics (Czech Republic)
- 66190A **3D femtosecond laser microfabrication of photonic biochips (Invited Paper)**
K. Sugioka, Y. Hanada, K. Midorikawa, RIKEN—The Institute of Physical and Chemical Research (Japan)
- 66190B **Chiral fiber gratings: perspectives and challenges for sensing applications (Invited Paper)**
V. I. Kopp, V. M. Churikov, G. Zhang, J. Singer, C. W. Draper, N. Chao, D. Neugroschl, Chiral Photonics, Inc. (USA); A. Z. Genack, Chiral Photonics, Inc. (USA) and Queens College of CUNY (USA)
- 66190C **Molecularly imprinted polymers as biomimetic receptors for fluorescence-based optical sensors (Invited Paper)**
M. C. Moreno-Bondi, J. L. Urraca, E. Benito-Peña, F. Navarro-Viloslada, S. A. Martins, G. Orellana, Complutense Univ. (Spain); B. Sellergren, Univ. Dortmund (Germany)
- 66190D **Fibre optic distributed scattering sensing system: perspectives and challenges for high performance applications (Invited Paper)**
M. Niklès, Omnisens S.A. (Switzerland)
- 66190E **Fabrication and metrology of micro- and nano-optics (Invited Paper)**
F. Farahi, Univ. of North Carolina at Charlotte (USA)
- 66190F **Optical fiber sensors based on nanostructured coatings fabricated by means of the layer-by-layer electrostatic self-assembly method (Invited Paper)**
F. J. Arregui, I. R. Matías, Univ. Pública de Navarra (Spain); R. O. Claus, NanoSonic, Inc. (USA)
- 66190G **Photonic crystal fibers: new opportunities for sensing (Invited Paper)**
W. Urbanczyk, Wroclaw Univ. of Technology (Poland); T. Martynkien, Wroclaw Univ. of Technology (Poland) and Vrije Univ. Brussel (Belgium); M. Szpulak, G. Statkiewicz, J. Olszewski, G. Golajuch, Wroclaw Univ. of Technology (Poland); J. Wojcik, P. Mergo, M. Makara, Maria Curie-Sklodowska Univ. (Poland); T. Nasilowski, Vrije Univ. Brussel (Belgium); F. Berghmans, Vrije Univ. Brussel (Belgium) and SCK•CEN (Belgium); H. Thienpont, Vrije Univ. Brussel (Belgium)

SPECIAL PAPER

- 66190H **Eat-by-light: fiber-optic and micro-optic devices for food safety and quality assessment**
A. G. Mignani, L. Ciaccheri, C. Cucci, A. A. Mencaglia, CNR-IFAC (Italy); A. Cimato, C. Attilio, CNR-IVALSA (Italy); H. Thienpont, H. Ottevaere, Vrije Univ. Brussel (Belgium); R. Paolesse, M. Mastroianni, D. Monti, Univ. di Roma Tor Vergata (Italy); G. Buonocore, CNR-IMCB (Italy); A. Del Nobile, A. Mentana, Univ. di Foggia (Italy); C. Dall'Asta, A. Faccini, G. Galaverna, A. Dossena, Univ. di Parma (Italy)

Wednesday, 4 July 2007

SESSION I PHYSICAL AND MECHANICAL SENSORS

- 66190I **Simultaneous independent measurement of temperature and strain using a tilted fibre Bragg grating**
E. Chehura, S. W. James, R. P. Tatam, Cranfield Univ. (United Kingdom)
- 66190J **Radiation effect on PMMA POF under gamma-ray irradiation**
K. Toh, S. Nagata, B. Tsuchiya, T. Shikama, Tohoku Univ. (Japan)
- 66190K **Temperature measurement by thermo-luminescence of fused silica optical fiber under irradiation environment**
T. Shikama, K. Toh, A. Honda, S. Nagata, B. Tsuchiya, Tohoku Univ. (Japan)
- 66190L **Fiber mode converter incorporated fiber ring-down strain sensors**
H. Qiu, Y. Qiu, Fujian Normal Univ. (China); Z. Chen, Institute for Infocomm Research (Singapore); B. Fu, G. Li, Fujian Normal Univ. (China)
- 66190M **High radiation tolerance of temperature resistant Bragg gratings written in N-doped silica-core fibers up to MGy dose levels**
A. Fernandez Fernandez, B. Brichard, SCK•CEN (Belgium); O. V. Butov, K. M. Golant, Fiber Optics Research Ctr. (Russia); A. V. Lanin, Business-Unitech Co. Ltd. (Russia)
- 66190N **An integrated probe design for measuring food quality in a microwave environment**
M. O'Farrell, C. Sheridan, E. Lewis, Univ. of Limerick (Ireland); W. Z. Zhao, T. Sun, K. T. V. Grattan, City Univ. London (United Kingdom)
- 66190O **Thermal response of tellurite glass optical fibre**
H. Li, Heriot-Watt Univ. (United Kingdom); J. Lousteau, Univ. of Leeds (United Kingdom); H. T. Bookey, W. N. MacPherson, J. S. Barton, A. K. Kar, Heriot-Watt Univ. (United Kingdom); A. Jha, Univ. of Leeds (United Kingdom)
- 66190P **Fiber optic probe for local void fraction measurements in bubbly flows**
C.-H. Lee, C.-J. Huang, National Cheng Kung Univ. (Taiwan); W.-W. Lin, Ta Jen Univ. (Taiwan)
- 66190Q **Two-axis accelerometer based on multicore fibre Bragg gratings**
A. Fender, W. N. MacPherson, R. R. J. Maier, J. S. Barton, Heriot-Watt Univ. (United Kingdom); D. S. George, R. I. Howden, G. W. Smith, B. J. S. Jones, S. McCulloch, AWE Plc (United Kingdom); X. Chen, R. Suo, L. Zhang, I. Bennion, Aston Univ. (United Kingdom)
- 66190R **Displacement sensor based on optical fibre with multiple overlapping imperfections**
E. Vilge, M. Levantovsky, Y. Arieli, Jerusalem College of Technology (Israel); H. Poisel, Univ. of Applied Sciences Nuremberg (Germany); A. Babchenko, Jerusalem College of Technology (Israel)
- 66190S **Improved optical fibre sensors using hollow glass spheres with a high-performance CCD spectrometer interrogator**
J. P. Dakin, Univ. of Southampton (United Kingdom); W. Ecke, M. Reuter, K. Schroeder, Institute for Physical High Technology (Germany)

- 66190T **Optical fibre Bragg sensor torque transducer**
A. J. van Wyk, M. C. S. Snyman, Univ. of Johannesburg (South Africa)
- 66190U **Multi-wavelength fiber-optic confocal position sensor with diffractive optics for enhanced measurement range**
G. Berkovic, E. Shafir, Soreq Nuclear Research Ctr. (Israel); M. A. Golub, M. Bril, V. Shurman, Holo-Or Ltd. (Israel)
- 66190V **Cure monitoring of a UV cured epoxy resin using a long period grating Mach-Zehnder interferometer**
S. J. Buggy, R. P. Murphy, S. W. James, R. P. Tatam, Cranfield Univ. (United Kingdom)
- 66190W **Effects of temperature on high concentration erbium-doped fiber intrinsic parameters**
F. J. Madruga, M. Á. Quintela, C. Galíndez, M. Lomer, J. M. López-Higuera, Univ. of Cantabria (Spain)
- 66190X **Origin of coupling to antisymmetric cladding modes in arc-induced long-period fiber gratings**
O. V. Ivanov, INESC Porto (Portugal); P. Caldas, G. Rego, INESC Porto (Portugal) and Instituto Politécnico de Viana de Castelo (Portugal)
- 66190Y **Temperature independent strain/load sensor using a highly birefringent photonic crystal fibre loop mirror**
O. Frazão, L. Marques, J. Marques, INESC Porto (Portugal); J. M. Baptista, INESC Porto (Portugal) and Univ. da Madeira (Portugal); J. L. Santos, INESC Porto (Portugal) and Univ. do Porto (Portugal)
- 66190Z **Obstacle detector for use with electric windows in vehicles**
M. Linec, D. Donlagic, Univ. of Maribor (Slovenia)
- 661910 **Comparison of FBG wavelengths in the regions of 2/3 of the Bragg wavelength and the Bragg wavelength by piecewise irradiation of a chirped phase mask**
S. P. Yam, D. J. Kitcher, G. W. Baxter, S. F. Collins, Victoria Univ. (Australia)
- 661911 **Localized strain measurements using an integration method to process intensity reflection spectra from a chirped FBG**
A. Nand, D. J. Kitcher, Victoria Univ. (Australia); S. A. Wade, R. Jones, Monash Univ. (Australia); G. W. Baxter, S. F. Collins, Victoria Univ. (Australia)
- 661912 **Durability under fatigue loading of optical fibres applied to fibre reinforced plastic composites**
I. Herszberg, M. K. Bannister, Cooperative Research Ctr. for Advanced Composite Structures Ltd. (Australia); H. C. H. Li, RMIT Univ. (Australia); B. Qi, Cooperative Research Ctr. for Advanced Composite Structures Ltd. (Australia); J. Marsden, Hawker de Havilland (Australia)
- 661913 **Measurements of adsorption strain in porous silicon by Raman scattering**
M. A. Ferrara, IMM-CNR (Italy) and Univ. Mediterranea of Reggio Calabria (Italy); L. Sirleto, IMM-CNR (Italy); G. Messina, M. G. Donato, S. Santangelo, Univ. Mediterranea di Reggio Calabria (Italy); I. Rendina, IMM-CNR (Italy)

- 661914 **A thin foil optical strain gage based on silicon-on-insulator microresonators**
D. Taillaert, W. Van Paepegem, Ghent Univ. (Belgium); J. Vlekken, FOS&S (Belgium);
R. Baets, Ghent Univ. (Belgium)
- 661915 **Laser-frequency locking techniques for high-sensitivity strain measurements by high-birefringence fiber Bragg gratings and resonators**
M. Salza, G. Gagliardi, A. Di Maio, P. Ferraro, P. De Natale, Istituto Nazionale di Ottica Applicata-CNR (Italy); E. Chehura, R. Tatam, Cranfield Univ. (United Kingdom)
- 661916 **The effectiveness of metal coating on FBG sensor sensitivity at cryogenic temperature**
C. Lupi, F. Felli, Univ. di Roma La Sapienza (Italy); M. A. Caponero, ENEA C.R. Frascati (Italy);
A. Paolozzi, Univ. di Roma La Sapienza (Italy)
- 661917 **Quasi-distributed liquid level measurement with adaptable optical fiber transducers**
M. Lomer, A. Quintela, M. A. Quintela, A. Cobo, J. M. López-Higuera, Univ. of Cantabria (Spain)
- 661918 **Strain characterization of fiber Bragg gratings inscribed by high-intensity femtosecond UV pulses**
R. P. O'Byrne, S. V. Sergeyev, D. A. Flavin, Waterford Institute of Technology (Ireland);
D. N. Nikogosyan, Aston Univ. (United Kingdom)
- 661919 **Fiber optic temperature sensor depositing quantum dots inside hollow core fibers using the layer by layer technique**
J. Bravo, J. Goicoechea, J. M. Corres, F. J. Arregui, I. R. Matias, Univ. Pública de Navarra (Spain)
- 66191A **Transversely loaded fibre Bragg grating for pressure measurements**
R. Correia, E. Chehura, S. W. James, R. P. Tatam, Cranfield Univ. (United Kingdom)
- 66191B **Accessing refractive index of absorptive liquid media with optical fibre evanescent-field sensor**
S. Khotaintsev, V. Svyryd, J. E. Morales-Farah, C. E. García-Guerra, L. E. Yam-Ontiveros, National Autonomous Univ. of Mexico (Mexico)
- 66191C **A fiber optic Bragg grating seismic sensor**
A. Laudati, OptoSmart s.r.l. (Italy) and Univ. of Sannio (Italy); F. Mennella, M. Esposito, OptoSmart s.r.l. (Italy); A. Cusano, OptoSmart s.r.l. (Italy) and Univ. of Sannio (Italy); M. Giordano, OptoSmart s.r.l. (Italy) and Institute for Composite and Biomedical Materials, CNR (Italy); G. Breglio, OptoSmart s.r.l. (Italy) and Univ. of Napoli Federico II (Italy); S. Sorge, C. Calisti Tassini, A. Torre, G. D'Altrui, D'Appolonia s.p.a. (Italy); A. Cutolo, OptoSmart s.r.l. (Italy) and Univ. of Sannio (Italy)

Thursday Morning, 5 July 2007

SESSION II CHEMICAL, ENVIRONMENTAL, BIOMECHANICAL, AND MEDICAL SENSORS

- 66191D **^{29}Si NMR investigation of ORMOSIL layers used as luminophores' sol-gel matrices in a UV optical fibre sensor**
E. M. Chodkowska, J. Rayss, Maria Curie-Sklodowska Univ. (Poland)

- 66191E **Fibre-optic sensors for the estimation of biofilm thickness on metals**
A. Balaji Ganesh, T. K. Radhakrishnan, G. Gobi, D. Sastikumar, National Institute of Technology, Trichirappalli (India)
- 66191F **All-optical fiber hydrogen sensor based on annealed Pd-Au sensing nanolayers**
D. Monzón-Hernández, D. Luna-Moreno, Ctr. de Investigaciones en Óptica, A.C. (Mexico); J. Villatoro, G. Badenes, ICFO—Institut de Ciències Fotòniques (Spain)
- 66191G **High sensitivity near-field opto-chemical sensors based on SnO₂ particle layers**
M. Consales, M. Pisco, Univ. of Sannio (Italy); A. Buosciolo, Univ. of Napoli (Italy); R. Viter, V. Smyntyna, Odessa National Univ. (Ukraine); A. Cutolo, Univ. of Sannio (Italy); M. Giordano, Institute for Composite and Biomedical Materials, CNR (Italy); A. Cusano, Univ. of Sannio (Italy)
- 66191H **Carbon dioxide detection at 2 μm using an integrating sphere as an optical absorption cell**
E. Hawe, P. Chambers, C. Fitzpatrick, E. Lewis, Univ. of Limerick (Ireland)
- 66191I **Hydrogen detection using a transmission-based optical fibre sensor in the VIS spectrum**
K. Gleeson, E. Lewis, Univ. of Limerick (Ireland)
- 66191J **Deep-UV-based differential optical absorption spectroscopy (DOAS) system for the monitoring of nitric oxide**
G. Dooly, C. Fitzpatrick, P. Chambers, E. Lewis, Univ. of Limerick (Ireland)
- 66191K **An infrared surface plasmon resonance tilted fibre Bragg device for biological and biochemical sensing**
T. Allsop, Aston Univ. (United Kingdom); R. Neal, Univ. of Plymouth (United Kingdom); S. Rehman, FiberLogix Ltd. (United Kingdom); D. J. Webb, Aston Univ. (United Kingdom); D. Mapps, Univ. of Plymouth (United Kingdom); I. Bennion, Aston Univ. (United Kingdom)
- 66191L **New optical hydrogen sensor with fast response time based on multilayer palladium-nickel-PTFE thin film for explosion-proof detection of high H₂ concentrations of 1-100%**
G. Bramann, Hochschule Wismar, Univ. of Technology, Business and Design (Germany); B. Zacharias, Forschungs-GmbH Wismar (Germany); M. Wienecke, Hochschule Wismar, Univ. of Technology, Business and Design (Germany)
- 66191M **Orthodontic forces sensing with polymer PCF**
M. S. Milczewski, Univ. Tecnológica Federal do Paraná (Brazil) and Univ. of Sidney (Australia); C. Martelli, J. Canning, Univ. of Sydney (Australia); H. J. Kalinowski, Univ. Tecnológica Federal do Paraná (Brazil); J. A. Simões, Univ. de Aveiro (Portugal); M. Stevenson, Univ. of Sydney (Australia); P. Talaia, Univ. de Aveiro (Portugal)
- 66191N **Multi-channel fibre optic dosimeter based on optically stimulated luminescence for dose verification during radiotherapy treatments**
S. Magne, L. Auger, CEA LIST, Lab. de Mesures Optiques (France); A. Isambert, A. Bridier, Institut Gustave Roussy (France); P. Ferdinand, J. Barthe, CEA LIST, Lab. de Mesures Optiques (France)

- 66191O **Design and optimization of slotted multimode interference devices for chemical and biochemical sensing**
M. Mayeh, Univ. of North Carolina at Charlotte (USA); J. Viegas, Univ. of North Carolina at Charlotte (USA), INESC Porto (Portugal), and Univ. do Porto (Portugal); P. Marques, J. L. Santos, INESC Porto (Portugal) and Univ. do Porto (Portugal); F. Farahi, Univ. of North Carolina at Charlotte (USA)
- 66191P **Cadmium arachidate single-walled carbon nanotubes composites as sensitive coatings for high sensitivity fiber optic chemo-sensors**
M. Consales, A. Crescitelli, A. Cutolo, Univ. of Sannio (Italy); M. Penza, P. Aversa, ENEA (Italy); M. Giordano, Institute for Composite and Biomedical Materials, CNR (Italy); A. Cusano, Univ. of Sannio (Italy)
- 66191Q **True challenges of disposable optical fiber sensors for clinical environment**
É. Pinet, C. Hamel, FISO Technologies, Inc. (Canada)
- 66191R **Optical fibre sensors embedded into medical textiles for monitoring of respiratory movements in MRI environment**
A. Grillet, D. Kinet, Multitel (Belgium); J. Witt, M. Schukar, K. Krebber, Federal Institute for Materials Research and Testing (Germany); F. Pirotte, Centexbel (Belgium); A. Depré, Elasta (Belgium)
- 66191S **DL-UWTs: novel devices for chemical and biological sensing**
A. González-Cano, N. Díaz-Herrera, M. Navarrete, Univ. Complutense de Madrid (Spain); Ó. Esteban, Univ. de Alcalá de Henares (Spain)
- 66191T **Polymer optical fibre sensor to monitor skin moisture**
J. Vaughan, C. Woodyatt, P. J. Scully, The Univ. of Manchester (United Kingdom)
- 66191U **Ethanol concentration measurement by Raman spectroscopy in liquid-core microstructured optical fiber**
C. Meneghini, S. Caron, A. Proulx, F. Émond, P. Paradis, C. Paré, A. Fougères, Institut National d'Optique (Canada)
- 66191V **Evaluation of coupling losses in hollow-core photonic crystal fibres**
J. P. Carvalho, F. Magalhães, O. V. Ivanov, O. Frazão, F. M. Araújo, L. A. Ferreira, INESC Porto (Portugal); J. L. Santos, INESC Porto (Portugal) and Univ. of Porto (Portugal)
- 66191W **Optical fiber pH sensors based on self-assembled multilayered Neutral Red coatings**
J. Goicoechea, F. J. Arregui, I. R. Matías, Univ. Pública de Navarra (Spain)
- 66191X **High spectral power density supercontinuum source at 1.3 µm suitable for optical coherence tomography applications**
L. Abrardi, S. Martín-López, A. Carrasco-Sanz, P. Corredora, M. L. Hernanz, Instituto de Física Aplicada, CSIC (Spain); M. González-Herráez, Univ. de Alcalá de Henares (Spain)
- 66191Y **Simultaneous determination of oxygen and temperature using quantum dots and a ruthenium complex**
P. A. S. Jorge, INESC Porto (Portugal); A. J. Silva, Univ. do Porto (Portugal); R. Benrashid, Univ. of North Carolina at Charlotte (USA); J. L. Santos, INESC Porto (Portugal) and Univ. do Porto (Portugal); F. Farahi, Univ. of North Carolina at Charlotte (USA)

- 661912 **Optical fiber pH sensor based on poly (p-phenylene vinylene)**
J. Goicoechea, M. Esparza, I. R. Matias, F. J. Arregui, Univ. Pública de Navarra (Spain)
- 661920 **Optical psychrometer for relative humidity measurement in non-conventional environments**
S. Pirrotta, E. Guglielmino, Univ. of Messina (Italy)
- 661921 **Microalgal fiber-optic biosensors for water quality monitoring**
G. Orellana, L. Villén, D. Haigh, E. Maneiro, F. Marvá, E. Costas, Univ. Complutense de Madrid (Spain)
- 661922 **In vivo characterization of a microdialysis-based pH sensor**
F. Baldini, Institute of Applied Physics, CNR (Italy); F. Feichtner, Joanneum Research (Austria); A. Giannetti, Institute of Applied Physics, CNR (Italy); G. Gori, Univ. of Florence (Italy); A. A. Mencaglia, Institute of Applied Physics, CNR (Italy); V. Pavoni, A. M. Perna, Univ. of Florence (Italy); C. Trono, Institute of Applied Physics, CNR (Italy)
- 661923 **Optical PMMA chip for multianalyte detection**
F. Baldini, A. Carloni, R. Falciai, A. Giannetti, A. Mencaglia, Institute for Applied Physics, CNR (Italy); G. Porro, Datamed S.r.L. (Italy); C. Trono, Institute for Applied Physics, CNR (Italy)
- 661924 **A compact optical system for the interrogation of microcantilevers**
F. Baldini, A. Giannetti, A. A. Mencaglia, Institute of Applied Physics, CNR (Italy); F. Senesi, Cecchi s.r.l. (Italy); L. Citti, C. Domenici, L. Tedeschi, D. Gozzoli, Institute of Clinical Physiology, CNR (Italy)
- 661925 **LPG-based PVA coated sensor for relative humidity measurement**
T. Venugopalan, T. L. Yeo, T. Sun, K. T. V. Grattan, City Univ. London (United Kingdom)
- 661926 **Integrated optic surface plasmon resonance measurements in glass substrates**
A. Parisi, F. P. D'Aleo, S. Guarino, L. Curcio, G. Badalamenti, A. C. Cino, Ctr. per la Ricerca Elettronica in Sicilia (Italy); A. C. Busacca, E. D'Asaro, S. Riva Sanseverino, Univ. di Palermo (Italy)
- 661927 **Tunable diode laser spectroscopy for industrial process applications**
K. Duffin, A. McGettrick, W. Johnstone, G. Stewart, Univ. of Strathclyde (United Kingdom)

Thursday Afternoon, 5 July 2007

SESSION III ELECTROMAGNETIC, INTERFEROMETRIC, POLARIMETRIC, NEW CONCEPTS, AND DEVICES FOR SENSORS

- 661928 **WLI high voltage optical fiber sensor systems with compensation for optical power fluctuations**
J. C. Santos, J. C. J. Almeida, L. P. C. da Silva, Univ. de São Paulo (Brazil)
- 661929 **Influence of the pre-stress in Terfenol-fiber Bragg grating integrated magnetic field sensors**
C. Ambrosino, Univ. of Sannio (Italy); S. Campopiano, Univ. of Naples Parthenope (Italy); A. Cusano, A. Cutolo, D. Davino, C. Visone, Univ. of Sannio (Italy)

- 66192A **New approach for optical resonances in dielectric circular cylinder based on whispering gallery mode**
 A. Rahman, S. Kumar, Polytechnic Univ. (USA)
- 66192B **Gamma radiation and low-temperature effect on a low-birefringence fibre for current sensing application in plasma burning reactors**
 B. Brichard, SCK•CEN (Belgium); Ph. Moreau, Association EURATOM-CEA, CEA Cadarache (France); F. Berghmans, SCK•CEN (Belgium)
- 66192C **Comparative analysis of the DFB fiber laser and fiber-optic interferometric strain sensors**
 G. A. Cranch, G. M. H. Flockhart, Naval Research Lab. (USA) and SFA Inc. (USA); C. K. Kirkendall, SFA Inc. (USA)
- 66192D **Identification near-field seismic rotational events by fibre-optic rotational seismometer**
 L. R. Jaroszewicz, Z. Krajewski, Military Univ. of Technology (Poland)
- 66192E **Fiber optic differential distance measurements based on a dual fringe synthesis technique**
 S. Kinugasa, Yamatake Corp. (Japan)
- 66192F **Study of LPG-assisted fibre modal Michelson interferometers with coherence addressing and heterodyne interrogation**
 P. Caldas, INESC Porto (Portugal), Univ. do Porto (Portugal), and Escola Superior de Tecnologia e Gestão de Viana do Castelo (Portugal); F. Araújo, L. A. Ferreira, INESC Porto (Portugal); G. Rego, INESC Porto (Portugal) and Escola Superior de Tecnologia e Gestão de Viana do Castelo (Portugal); M. B. Marques, J. L. Santos, INESC Porto (Portugal) and Univ. do Porto (Portugal)
- 66192G **Modal interferometer based on a single non-adiabatic fibre taper**
 O. Frazão, INESC Porto (Portugal); P. Caldas, INESC Porto (Portugal), Univ. do Porto (Portugal), and Escola Superior de Tecnologia e Gestão de Viana do Castelo (Portugal); J. L. Santos, INESC Porto (Portugal) and Univ. do Porto (Portugal); F. M. Araújo, L. A. Ferreira, INESC Porto (Portugal)
- 66192H **In-fibre Mach-Zehnder configuration based on fibre multimode interference structure combined with a long period grating**
 O. Frazão, J. Viegas, P. Caldas, INESC Porto (Portugal) and Univ. do Porto (Portugal); F. M. Araújo, L. A. Ferreira, INESC Porto (Portugal); J. L. Santos, INESC Porto (Portugal) and Univ. do Porto (Portugal); F. Farahi, Univ. of North Carolina at Charlotte (USA)
- 66192I **Design, development, and analysis of crossover-free fiber optic gyroscope sensor coils**
 C. Heaton, Stanley Associates (USA); P. Ruffin, U.S. Army Aviation and Missile Research, Development and Engineering Ctr. (USA); A. Lompado, Polaris Sensor Technologies (USA)
- 66192J **The detection of ultrasound using fibre optic sensors**
 B. Culshaw, G. Thursby, Univ. of Strathclyde (United Kingdom); D. Betz, Daimler Chrysler (Germany); B. Sorazu, Univ. of Glasgow (United Kingdom)
- 66192K **Design of a multi-wavelength fibre laser using an intra-cavity phase modulator and Sagnac loop filter for sensor applications**
 M. A. Mirza, G. Stewart, Univ. of Strathclyde (United Kingdom)

- 66192L **Miniaturized optical fiber sensor interrogation systems for potential aerospace applications**
G. Xiao, National Research Council Canada (Canada); N. Mrad, Defense Research and Development Canada (Canada); F. Sun, Z. Zhang, J. Liu, Z. Lu, National Research Council Canada (Canada)
- 66192M **Global optimization of multimode interference structure for ratiometric wavelength measurement**
Q. Wang, G. Farrell, A. M. Hatta, Dublin Institute of Technology (Ireland)
- 66192N **Tilted-fibre-Bragg-grating-based 800nm WDM interrogation system for strain, temperature, and refractive index sensing**
R. Suo, X. Chen, K. Zhou, L. Zhang, I. Bennion, Aston Univ. (United Kingdom); B. Liu, Nankai Univ. (China)
- 66192O **Comparison between a symmetric bidirectional-pumping and a unidirectional-pumping configurations in an erbium fiber ring laser**
M. A. Quintela, C. Quintela, M. Lomer, F. J. Madruga, O. M. Conde, J. M. Lopez-Higuera, Univ. of Cantabria (Spain)
- 66192P **Nanocoating effects on tapered long period fiber gratings**
P. Pilla, Univ. of Sannio (Italy) and Institute for Composite and Biomedical Materials, CNR (Italy); A. Cusano, A. Cutolo, Univ. of Sannio (Italy); M. Giordano, Institute for Composite and Biomedical Materials, CNR (Italy); M. L. Korwin-Pawlowski, W. J. Bock, Univ. du Québec en Outaouais (Canada)
- 66192Q **Non-uniform nano-coated long-period fiber gratings for sensing applications**
D. Paladino, A. Cutolo, A. Cusano, Univ. of Sannio (Italy); I. Del Villar, I. R. Matias, F. J. Arregui, Univ. Pública de Navarra (Spain)
- 66192R **Nanogrinding of microprofiles and microlenses on optical fibers endfaces for use in optical-fiber sensors**
Y. A. Gharbia, Dhofar Univ. (Oman); G. Milton, J. Katupitiya, Univ. of New South Wales (Australia)
- 66192S **Technique of FBG fabrication with an arbitrary spectrum**
A. Quintela, J. M. Lázaro, J. Mirapeix, N. Becue, M. Silva, J. M. López-Higuera, Univ. of Cantabria (Spain)
- 66192T **Micro-structured chirped fiber Bragg gratings: toward new spatial encoded fiber optic sensors**
M. Pisco, Univ. of Sannio (Italy); A. Iadicicco, S. Campopiano, Univ. of Naples Parthenope (Italy); A. Cutolo, A. Cusano, Univ. of Sannio (Italy)
- 66192U **Sensitivity characteristics in thinned long-period tapered gratings**
A. Iadicicco, Univ. of Naples Parthenope (Italy) and Univ. of Sannio (Italy); S. Campopiano, Univ. of Naples Parthenope (Italy); A. Cutolo, A. Cusano, Univ. of Sannio (Italy); M. L. Korwin-Pawlowski, W. J. Bock, Univ. du Québec en Outaouais (Canada)

- 66192V **Improvements in the fabrication of microstructured fiber Bragg grating sensors**
D. Paladino, Univ. of Sannio (Italy); A. Iadicicco, Univ. of Sannio (Italy) and Univ. of Naples Parthenope (Italy); G. Servodio, Univ. of Sannio (Italy); S. Campopiano, Univ. of Naples Parthenope (Italy); A. Cutolo, Univ. of Sannio (Italy); M. Giordano, Institute Composite Biomedical Materials, National Research Council (Italy); A. Cusano, Univ. of Sannio (Italy)
- 66192W **Self-assembled optical detectors for optical fiber sensors**
H. Ruan, Y. Kang, J. Lalli, NanoSonic, Inc. (USA); R. O. Claus, Virginia Polytechnic Institute and State Univ. (USA)
- 66192X **Effects of thickness and external refractive index in coated tilted fiber Bragg gratings**
D. Paladino, Univ. of Sannio (Italy); P. Pilla, Univ. of Sannio (Italy) and Institute of Composite and Biomedical Materials, National Research Council (Italy); A. Cutolo, Univ. of Sannio (Italy); S. Campopiano, Univ. of Naples Parthenope (Italy); M. Giordano, Institute of Composite and Biomedical Materials, National Research Council (Italy); A. Cusano, Univ. of Sannio (Italy); C. Caucheteur, P. Mégrét, Faculté Polytechnique de Mons (Belgium)
- 66192Y **Supercontinuum generation with a figure-eight fiber laser**
D. Schmieder, P. L. Swart, R. Kitzinger, Univ. of Johannesburg (South Africa)
- 66192Z **High precision and tunable multi-wavelength fiber source based on cascaded four-wave mixing enhanced by Raman**
A. Carrasco-Sanz, S. Martín-López, Instituto de Física Aplicada, CSIC (Spain); M. González-Herráez, Univ. de Alcalá (Spain); P. Corredora, L. Abrardi, M. L. Hernanz, F. Rodríguez, Instituto de Física Aplicada, CSIC (Spain)
- 661930 **Temperature compensation technique for Bragg gratings in microstructured optical fibers for sensing applications**
M. C. Phan Huy, G. Laffont, V. Dewynter, P. Ferdinand, CEA LIST, Ctr. d'Etudes de Saclay (France); D. Pagnoux, P. Roy, Xlim, CNRS, Univ. de Limoges (France); B. Dussardier, W. Blanc, LPMC/FOA, CNRS, Univ. de Nice Sophia Antipolis (France)
- 661931 **Silicon resonant cavity enhanced photodetectors based on internal photoemission effect**
M. Casalino, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy) and Univ. degli Studi Mediterranea di Reggio Calabria (Italy); L. Sirleto, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy); L. Moretti, F. Della Corte, Univ. degli Studi Mediterranea di Reggio Calabria (Italy); I. Rendina, Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (Italy)
- 661932 **Design of long-period fibre grating refractometric sensors with linear transfer function by a genetic algorithm**
I. Flores-Llamas, V. Svyryd, S. Khotiantsev, National Autonomous Univ. of Mexico (Mexico)
- 661933 **Modeling and design of a 2D photonic crystal microcavity on polymer material for sensing applications**
C. Ciminelli, M. N. Armenise, Politecnico di Bari (Italy)

- 661934 **Hollow-core optical fiber functionalized with single walled carbon nanotubes for VOC detection**
M. Pisco, M. Consales, Univ. of Sannio (Italy); S. Campopiano, Univ. of Naples Parthenope (Italy); P. Aversa, M. Penza, ENEA, Ctr. Ricerche Brindisi (Italy); M. Giordano, Institute of Composite and Biomedical Materials, CNR (Italy); A. Cutolo, A. Cusano, Univ. of Sannio (Italy)
- 661935 **Optical properties of photonic crystal fibers with the strain**
J. M. Lázaro, C. Galíndez, A. Quintela, A. Cobo, J. M. López-Higuera, Univ. of Cantabria (Spain)
- 661936 **Low-contrast photonic bandgap fibers and their potential applications in liquid-base sensors**
H. Xuan, The Hong Kong Polytechnic Univ. (Hong Kong China) and Tsinghua Univ. (China); W. Jin, J. Ju, H. L. Ho, The Hong Kong Polytechnic Univ. (Hong Kong China); M. Zhang, Tsinghua Univ. (China); Y. Liao, The Hong Kong Polytechnic Univ. (Hong Kong China) and Tsinghua Univ. (China)
- 661937 **How to play with the spectral sensitivity of interferometers using slow light concepts — and how to do it practically**
M. Gonzalez-Herraez, O. Esteban, F. B. Naranjo, Univ. of Alcalá (Spain); L. Thevenaz, École Polytechnique Fédérale de Lausanne (Switzerland)

Friday, 6 July 2007

SESSION IV DISTRIBUTED, MULTIPLEXING, SYSTEM APPLICATIONS, AND FIELD TRIALS

- 661938 **High performance Brillouin distributed fibre sensor**
S. Diaz, Public Univ. of Navarra (Spain); S. Foaleng Mafang, École Polytechnique Fédérale de Lausanne (Switzerland); M. Lopez-Amo, Public Univ. of Navarra (Spain); L. Thévenaz, École Polytechnique Fédérale de Lausanne (Switzerland)
- 661939 **Distributed fiber optic sensing for traffic monitoring purposes**
M. Hlaváč, Slovak Univ. of Technology (Slovak Republic)
- 66193A **Pulse shapes effects on backscattering Brillouin gain for distributed fiber sensing**
C. Galíndez, J. M. Lázaro, P. B. García-Allende, F. Madruga, J. M. López-Higuera, Univ. de Cantabria (Spain)
- 66193B **High performance and highly reliable Raman-based distributed temperature sensors based on correlation-coded OTDR and multimode graded-index fibers**
M. A. Soto, Scuola Superiore Sant'Anna (Italy); P. K. Sahu, Indian Institute of Technology (India); S. Faralli, Scuola Superiore Sant'Anna (Italy); G. Sacchi, Photonic Networks National Lab. (Italy); G. Bolognini, F. Di Pasquale, Scuola Superiore Sant'Anna (Italy); B. Nebendahl, C. Rueck, Agilent Technologies Research and Development and Marketing GmbH & Co. KG (Germany)
- 66193C **Raman-based distributed temperature sensing supported by integrated-optics technology**
G. Cattaneo, R. Belli, P. Boffi, S. Avanzi, F. Persia, A. Melloni, M. Martinelli, Politecnico di Milano (Italy)

- 66193D **One centimeter spatial resolution temperature measurements in a nuclear reactor using Rayleigh scatter in optical fiber**
A. K. Sang, D. K. Gifford, B. D. Dickerson, B. F. Fielder, M. E. Froggatt, Luna Technologies Inc. (USA)
- 66193E **A resilient Raman amplified double ring network for multiplexing fiber Bragg grating sensors**
R. A. Perez-Herrera, S. Diaz, P. Urquhart, M. Lopez-Amo, Univ. Pública de Navarra (Spain)
- 66193F **Hybrid wavelength-time domain interrogation system for multiplexed fiber Bragg sensors using a strain-tuned erbium-doped fiber laser**
N. Haramoni, A. S. Paterno, G. Soares, J. C. C. Silva, Federal Univ. of Technology (Brazil); H. J. Kalinowski, Federal Univ. of Technology (Brazil) and Institute of Telecommunications and Univ. of Aveiro (Portugal)
- 66193G **Nested long period grating interferometers**
R. P. Murphy, S. W. James, R. P. Tatam, Cranfield Univ. (United Kingdom)
- 66193H **Railway monitoring and train tracking by fiber Bragg grating sensors**
F. Mennella, A. Laudati, M. Esposito, OptoSmart s.r.l. (Italy); A. Cusano, A. Cutolo, Univ. of Sannio (Italy); M. Giordano, Institute for Composite and Biomedical Materials, CNR (Italy); S. Campopiano, Univ. of Naples Parthenope (Italy); G. Breglio, Univ. of Naples Federico II (Italy)
- 66193I **Dual-channel fiber ring down force sensor**
G. Li, Y. Qiu, B. Fu, Fujian Normal Univ. (China); Z. Chen, Institute for Infocomm Research (Singapore); H. Qiu, Fujian Normal Univ. (China)
- 66193J **Validation of FBGs sensors C-PFM multiplexing and interrogation technique**
L. Rossi, G. Breglio, Univ. di Napoli Federico II (Italy); A. Cusano, Univ. del Sannio (Italy); A. Irace, Univ. di Napoli Federico II (Italy); V. Pascazio, Univ. di Napoli Parthenope (Italy); A. Cutolo, Univ. del Sannio (Italy)
- 66193K **Bragg grating dual fiber laser system for measurement of strain**
M. Durán Sánchez, Univ. Tecnológica de Puebla (Mexico); G. Beltrán Pérez, J. Castillo-M, S. Muñoz Aguirre, Benemérita Univ. Autónoma de Puebla (Mexico)
- 66193L **A novel method for demodulation of FBG sensor**
S. He, K. Yu, S. Hu, J. Zhou, W. Li, Beijing Univ. of Technology (China)
- 66193M **A method of examination of liquids by neural network analysis of reflectometric time domain data from optical capillaries and fibers**
M. Borecki, Warsaw Univ. of Technology (Poland); M. L. Korwin-Pawlowski, Univ. du Québec en Outaouais (Canada); M. Beblowska, Warsaw Univ. of Technology (Poland)
- 66193N **A new generation of SPAD: single photon avalanche diodes**
S. Tudisco, INFN-Lab. Nazionali del Sud (Italy); S. Privitera, F. Musumeci, L. Lanzanò, A. Scordino, INFN-Lab. Nazionali del Sud (Italy) and DMFCI-Univ. di Catania (Italy); A. Campisi, L. Cosentino, P. Finocchiaro, INFN-Lab. Nazionali del Sud (Italy); G. Fallica, S. Lombardo, M. Mazzillo, D. Sanfilippo, E. Sciacca, G. Valvo, ST-Microelectronics and IMM-CNR (Italy)

- 66193O **Temperature and strain sensor based on weak LPG and fiber ring down**
 B. Liu, Nankai Univ. (China); B. Guan, Dalian Univ. of Technology (China); G. Sun, G. Kai, Nankai Univ. (China)
- 66193P **Arc-welding quality assurance by means of embedded fiber sensor and spectral processing combining feature selection and neural networks**
 J. Mirapeix, P. B. García-Allende, A. Cobo, O. Conde, J. M. López-Higuera, Univ. of Cantabria (Spain)
- 66193Q **Data processing method applying principal component analysis and spectral angle mapper for imaging spectroscopic sensors**
 P. B. García-Allende, O. M. Conde, J. Mirapeix, A. M. Cubillas, J. M. López-Higuera, Univ. of Cantabria (Spain)
- 66193R **Detection of premature browning in ground beef using an optical-fibre-based sensor**
 C. Sheridan, M. O'Farrell, E. Lewis, C. Flanagan, Univ. of Limerick (Ireland); J. F. Kerry, N. Jackman, Echo Food Solutions International Ltd. (Ireland)
- 66193S **Minimum detectable signal and optimal operating point in intensity noise-limited fiber optic gyroscopes**
 E. C. Ferreira, F. F. de Melo, J. A. Siqueira Dias, Univ. of Campinas (Brazil)
- 66193T **Distributive tactile sensing using fibre Bragg grating sensors**
 B. M. Cowie, A. S. Main, D. J. Webb, P. N. Brett, Aston Univ. (United Kingdom)
- 66193U **Unambiguous signal demodulation extending the measuring range of fiber Bragg gratings sensors using artificial neural networks: a temperature case**
 L. S. Encinas, A. C. Zimmermann, C. L. N. Veiga, T. A. Weege, Federal Univ. of Santa Catarina (Brazil)
- 66193V **Multi-point fibre optic hot-spot network integrated into a high power transformer**
 A. B. Lobo Ribeiro, Univ. Fernando Pessoa (Portugal); N. Eira, Univ. of Porto (Portugal); J. M. Sousa, P. T. Guerreiro, J. A. R. Salcedo, Multiwave Photonics, S.A. (Portugal)
- 66193W **Temperature influence of an air conditioner in refractive index measurements using long-period fiber gratings**
 R. Falate, Univ. Estadual de Ponta Grossa (Brazil); G. R. C. Possetti, R. C. Kamikawachi, J. L. Fabris, H. J. Kalinowski, Univ. Tecnológica Federal do Paraná (Brazil)
- 66193X **Progress in miniaturization of a multichannel optical fiber Bragg grating sensor interrogator**
 C. M. Lopatin, S. Mahmood, Naval Surface Air Warfare Ctr. (USA); E. Mendoza, Redondo Optics (USA); B. Moslehi, R. Black, K. Chau, L. Oblea, Intelligent Fiber Optic Systems Corp. (USA)
- 66193Y **Characterization of railway traffic and its effects on a short span bridge by using a hybrid fibre optic/electrical measurement system**
 R. Pimentel, Univ. do Porto (Portugal); C. Barbosa, N. Costa, FiberSensing (Portugal); D. Ribeiro, Univ. do Porto (Portugal); L. A. Ferreira, F. M. Araújo, FiberSensing (Portugal) and INESC Porto (Portugal); R. Calçada, Univ. do Porto (Portugal)

- 66193Z **Smart synthetic material arresting cable based on embedded distributed fiber optic sensors**
E. Mendoza, J. Prohaska, C. Kempen, Redondo Optics, Inc. (USA); D. Bentley, C. Murdock, Cortland Cable Co. (USA); D. Piatkowski, L. White, NAVAIR (USA)
- 661940 **Active vibration control using fiber Bragg grating sensors and piezoelectric actuators in co-located configuration**
C. Ambrosino, Univ. of Sannio (Italy); G. Diodati, Italian Aerospace Research Ctr. (Italy); A. Laudati, OptoSmart s.r.l. (Italy); A. Gianvito, A. Concilio, R. Sorrentino, Italian Aerospace Research Ctr. (Italy); G. Breglio, Univ. of Naples Federico II (Italy); A. Cutolo, A. Cusano, Univ. of Sannio (Italy)
- 661941 **Structural health monitoring of the church of Santa Casa da Misericórdia of Aveiro using FBG sensors**
H. F. Lima, R. Vicente, Univ. de Aveiro (Portugal); R. N. Nogueira, Instituto de Telecomunicações (Portugal); I. Abe, Univ. de Aveiro (Portugal); P. André, Univ. de Aveiro (Portugal) and Instituto de Telecomunicações (Portugal); C. Fernandes, H. Rodrigues, H. Varum, Univ. de Aveiro (Portugal); H. J. Kalinowski, Instituto de Telecomunicações (Portugal) and Univ. Federal de Tecnologia do Paraná (Brazil); A. Costa, Univ. de Aveiro (Portugal); J. L. Pinto, Univ. de Aveiro (Portugal) and Instituto de Telecomunicações (Portugal)
- 661942 **Damage detection under a composite patch using an embedded PZT-FBG ultrasonic sensor array**
Y. Botsev, E. Arad, M. Tur, Tel-Aviv Univ. (Israel); I. Kressel, U. Ben-Simon, Ben Gurion International Airport (Israel); S. Gali, Consultant (Israel); D. Osmont, ONERA (France)
- 661943 **Smart sensors and active adaptive control exploitation for vibration damping of a cantilever beam**
L. Rossi, A. Irace, G. Breglio, Univ. degli Studi di Napoli Federico II (Italy)
- 661944 **Residual strain measurement in bonded composite repairs for aging aircraft by embedded fiber Bragg grating sensors**
U. Ben-Simon, I. Kressel, Ben Gurion International Airport (Israel); Y. Botsev, Tel-Aviv Univ. (Israel); A. K. Green, G. Ghilai, Ben Gurion International Airport (Israel); N. Gorbatov, M. Tur, Tel-Aviv Univ. (Israel); S. Gali, Consultant (Israel)
- 661945 **Strain measurements using an interferometrically interrogated embedded fibre optic rosette**
K. Levin, J. Matrat, FOI, Swedish Defence Research Agency (Sweden)
- 661946 **Alarm system of optical fibre using the thermal-optical sensibility of the PNIPAAm polymer**
J. C. Rueda, D. Chana, K. Contreras, R. Coello, Pontificia Univ. Católica del Perú (Peru); M. Lomer, Univ. of Cantabria (Spain)

Author Index

Conference Committees

General Chair

Antonello Cutolo, Università degli Studi del Sannio (Italy)

Technical Program Chairs

Brian Culshaw, University of Strathclyde (United Kingdom)

José Miguel López-Higuera, Universidad de Cantabria (Spain)

Technical Program Committee

M. Armenise, Politecnico di Bari (Italy)

F. Baldini, Institute of Applied Physics–CNR (Italy)

I. Bennion, Aston University (United Kingdom)

A. Bjarklev, Technical University of Denmark (Denmark)

T. Bosselmann, Siemens AG (Germany)

A. Cobo García, University of Cantabria (Spain)

J. P. Dakin, University of Southampton (United Kingdom)

P. Ferdinand, CEA LIST (France)

K. T. V. Grattan, City University (United Kingdom)

D. Inaudi, SMARTEC SA (Switzerland)

S. James, Cranfield University (United Kingdom)

L. R. Jaroszewicz, Military University of Technology (Poland)

J. D. C. Jones, Heriot-Watt University (United Kingdom)

M. Martinelli, University of Milano (Italy)

A. G. Mignani, Institute of Applied Physics–CNR (Italy)

G. Orellana, Madrid Complutense Universidad (Spain)

D. Pagnoux, University of Limoges (France)

J. Rayss, Marie Curie–Sklodowska University (Poland)

G. Righini, IFAC–CNR (Italy)

J. L. C. de Oliveira Santos, University of Porto (Portugal)

M. Lopez-Amo Sainz, Public University of Navarra (Spain)

G. Stewart, University of Strathclyde (United Kingdom)

L. Thévenaz, Swiss Federal Institute of Technology (Switzerland)

H. Thienpont, Vrije Universiteit Brussel (Belgium)

M. Tur, Tel Aviv University (Israel)

M. Voet, FOS&S (Belgium)

R. Willsch, Institute for Physical High-Technology (Germany)

International Advisory Committee

W. J. Bock, Université du Québec en Outaouais (Canada)

R. O. Claus, Virginia Tech. (USA)

F. Farahi, University of North Carolina at Charlotte (USA)

M. Haruna, University of Osaka (Japan)
K. Hotate, University of Tokyo (Japan)
W. Jin, The Hong Kong Polytechnic University (China)
H. José Kalinowski, Federal University of Technology (Brazil)
B. Y. Kim, Korea Advanced Institute of Science and Technology
(South Korea)
S. Bae Lee, Korea Institute of Science and Technology (South Korea)
F. Mendoza, Centro de Investigaciones en Optica (Mexico)
D. D. Sampson, University of Western Australia (Australia)
W. B. Spillman, Jr., Columbia Gorge Research (USA)
F. Svelto, ASI (Italia Spatial Agency) (Italy)
P. Swartz, University of Johannesburg (South Africa)

Technical Local Organising Committee

G. Breglio, University of Naples Federico II (Italy)
S. Campopiano, University of Naples Phartenope (Italy)
A. Crescitelli, University of Sannio (Italy)
A. Cusano, University of Sannio (Italy)
M. Giordano, IMCB–CNR (Italy)
A. Iadicicco, University of Naples Phartenope (Italy)

Administrative Local Organising Committee

P. Ambrosino, University of Sannio (Italy)
A. Saioni, Effe Erre Congressi s.r.l. (Italy)

Introduction

Welcome to Napoli and to the third in our consolidated series on optical fibre sensors.

We have the honour of organizing this workshop after the successful past editions (Peebles 1998, Santander 2004). Much has changed, especially considering the enormous impact of nanotechnology, although much has also stayed the same. Bragg gratings continue to excite the research and industrial community, and distributed sensors offer enormous potential in several industrial sectors. Biological and chemical areas are emerging with new demands, opening new application opportunities in life science. New concepts based on photonic crystal fibres, band-gap structures, active and functionalised materials at sub-wavelength or nano-scale, and metamaterials offer a potential that has yet to be realised. The areas in which fibre sensors are applied continue to steadily expand, and most certainly commercial activity has significantly increased.

The organization of the workshop will be devoted to create a colloquial and informal atmosphere in order to help knowledge exchange and the creation of new collaborations. Our goal is to provide a common forum for leading international authorities, young researchers, practitioners, user-communities, and research planners. The aim is to stimulate and convey considerations, thoughts, and future perspectives on the role of optical fibre sensor technology in the wider sensing world.

To this aim, the workshop program includes invited oral contributions given by leading authorities, and submitted contributions principally in poster form with discussions groups. We have also incorporated a special session: Optical Fibre Sensors: Market Opportunities. In this session, leading authorities from the industrial world will provide a market overview of optical fibre sensors in important industrial sectors. You will also hear of important aspects related to optical fibre-based systems' commercialization such as reliability and standards.

These proceedings include 149 papers. Fifteen are from very well reputed world-wide invited speakers. One is a special paper and 133 were accepted after being peer reviewed for their significance, innovation, and quality by well recognised experts in the field.

On behalf of all involved in the preparation of the conference, we would like to particularly thank Andrea Cusano, Agostino Iadicicco, and Alessio Crescitelli for the technical support, and Paola Ambrosino and Alessandra Saioni for the administrative assistance.

Our sponsors, listed within these proceedings, have donated both financial and technical support for which we are extremely grateful. The technical and advisory committee reviewed the papers with skill, authority, and speed, providing invaluable technical and strategic inputs to the conference program.

It is a great pleasure to welcome you to southern Italy. This is a very beautiful part of the country and we hope that in addition to participating in what we expect to be a very stimulating meeting, you will have the opportunity to explore this amazing area.

Antonello Cutolo
Brian Culshaw
José Miguel López-Higuera

Conference Sponsors

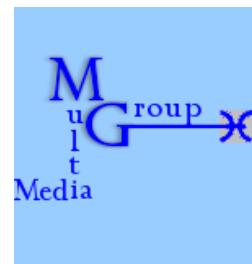
Organizer



Sponsors



Provincia di Benevento





Technical Cosponsors

SPIE Europe



Cooperating Cosponsors





**Seconda Università
degli studi di
Napoli**



**Istituto per il Rilevamento
Elettromagnetico
dell'Ambiente**



**Università degli
Studi di Napoli
Parthenope**



**Università degli Studi
di Napoli
Federico II**

