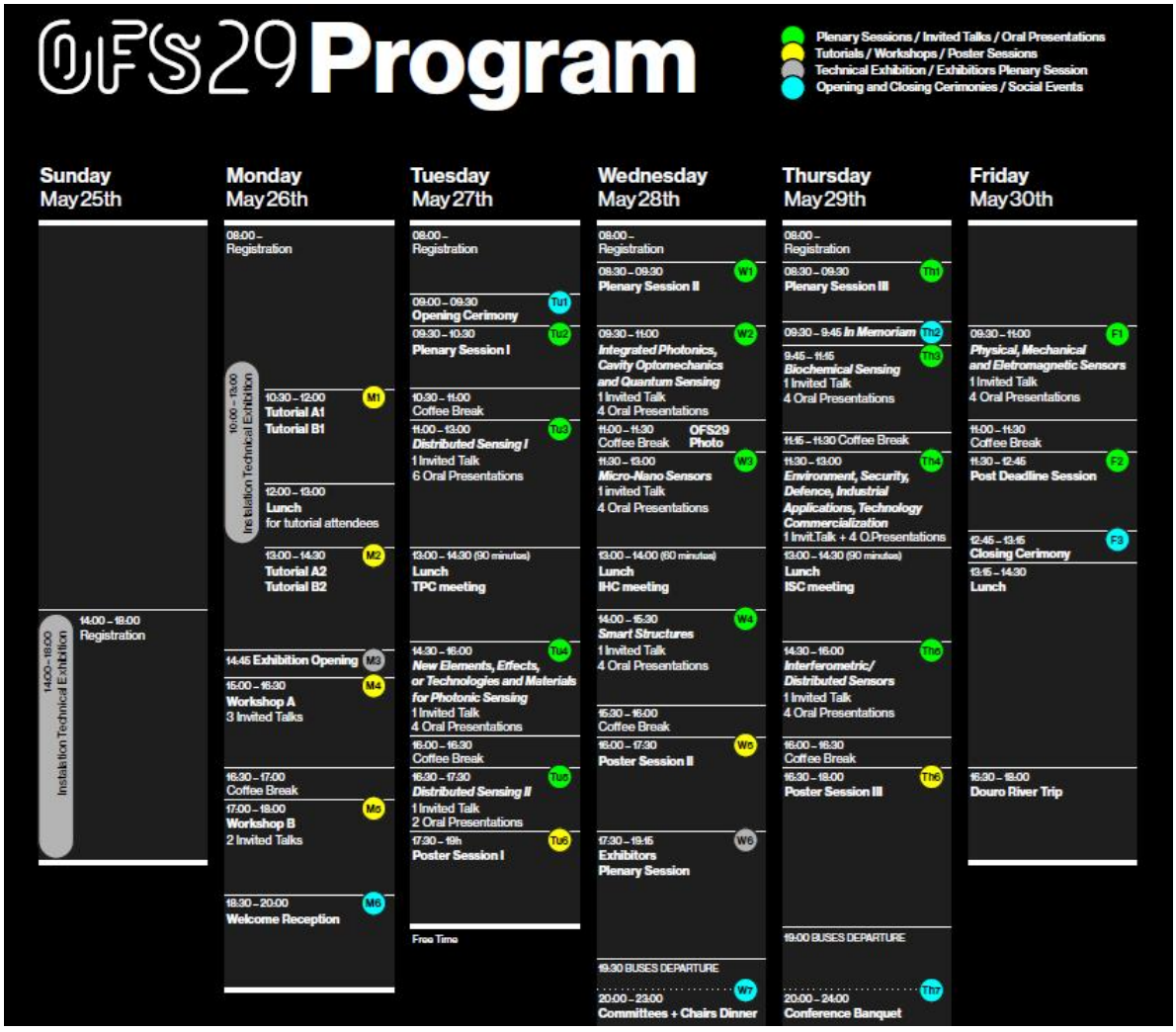
Program OFS29


OFS29 Program
Plenary Sessions / Invited Talks / Oral Presentations
Tutorials / Workshops / Poster Sessions
Technical Exhibition / Exhibitors Plenary Session
Opening and Closing Cerimonies / Social Events
Sunday May 25th
14:00 – 18:00 Registration
14:00 – 19:00 Installation Technical Exhibition
Monday May 26th
08:00 – Registration
10:00 – 13:00 Installation Technical Exhibition
10:30 – 12:00 M1 Tutorial A1 Tutorial B1
12:00 – 13:00 Lunch for tutorial attendees
13:00 – 14:30 M2 Tutorial A2 Tutorial B2
14:45 Exhibition Opening M3
15:00 – 16:30 M4 Workshop A 3 Invited Talks
16:30 – 17:00 Coffee Break
17:00 – 18:00 M5 Workshop B 2 Invited Talks
18:30 – 20:00 M6 Welcome Reception
Tuesday May 27th
08:00 – Registration
09:00 – 09:30 Tu1 Opening Cerimony
09:30 – 10:30 Tu2 Plenary Session I
10:30 – 11:00 Coffee Break
11:00 – 13:00 Tu3 Distributed Sensing I
1 Invited Talk
6 Oral Presentations
13:00 – 14:30 (90 minutes) Lunch TPC meeting
14:30 – 16:00 Tu4 New Elements, Effects, or Technologies and Materials for Photonic Sensing
1 Invited Talk
4 Oral Presentations
16:00 – 16:30 Coffee Break
16:30 – 17:30 Tu5 Distributed Sensing II
1 Invited Talk
2 Oral Presentations
17:30 – 19h Tu6 Poster Session I
Free Time
Wednesday May 28th
08:00 – Registration
08:30 – 09:30 W1 Plenary Session II
09:30 – 11:00 W2 Integrated Photonics, Cavity Optomechanics and Quantum Sensing
1 Invited Talk
4 Oral Presentations
11:00 – 11:30 Coffee Break OFS29 Photo
11:30 – 13:00 W3 Micro-Nano Sensors
1 invited Talk
4 Oral Presentations
13:00 – 14:00 (60 minutes) Lunch IHC meeting
14:00 – 15:30 W4 Smart Structures
1 Invited Talk
4 Oral Presentations
15:30 – 16:00 Coffee Break
16:00 – 17:30 W5 Poster Session II
17:30 – 19:15 W6 Exhibitors Plenary Session
19:30 BUSES DEPARTURE
20:00 – 23:00 W7 Committees + Chairs Dinner
Thursday May 29th
08:00 – Registration
08:30 – 09:30 Th1 Plenary Session III
09:30 – 9:45 In Memoriam Th2
9:45 – 11:15 Th3 Biochemical Sensing
1 Invited Talk
4 Oral Presentations
11:15 – 11:30 Coffee Break
11:30 – 13:00 Th4 Environment, Security, Defence, Industrial Applications, Technology Commercialization
1 Invit.Talk + 4 O.Presentations
13:00 – 14:30 (90 minutes) Lunch ISC meeting
14:30 – 16:00 Th5 Interferometric/ Distributed Sensors
1 Invited Talk
4 Oral Presentations
16:00 – 16:30 Coffee Break
16:30 – 18:00 Th6 Poster Session III
19:00 BUSES DEPARTURE
20:00 – 24:00 Th7 Conference Banquet
Friday May 30th
09:30 – 11:00 F1 Physical, Mechanical and Eletromagnetic Sensors
1 Invited Talk
4 Oral Presentations
11:00 – 11:30 Coffee Break
11:30 – 12:45 F2 Post Deadline Session
12:45 – 13:15 F3 Closing Cerimony
13:15 – 14:30 Lunch
16:30 – 19:00 Douro River Trip

Welcome

The International Conference on Optical Fiber Sensors (OFS), established in 1983, is acknowledged as the world's leading conference on all topics related to photonic sensing principles and technologies supported in fiber optics, providing a forum for reporting and exchanging ideas on the latest advances in the field. It has also contributed significantly to industrialization and standardization of the related devices and systems for field deployment.

At the beginning of the 1980s, the recognition of the opportunity for high-performance sensing associated with optical fiber led to the development of a new R&D field, creating a community that had its first meeting in London in April 1983, which became identified as OFS1-1th *International Conference on Optical Fiber Sensors*.

Since then, 28 editions of this conference have taken place every 18 months (except in the pandemic time), moving across Europe/Middle East/Africa, Americas, and Asia/Pacific in accordance with the principle established long ago of "*following the light*" (the Sun). Over this period of more than 40 years the field expanded enormously in consequence of progress in multiple scientific and technological domains, also the diversity of applications where sensing supported by optical fiber presents comparative advantages.

Now is the time for the twenty-ninth edition of this conference, OFS29, which takes place in Porto, Portugal, from 25-30 May 2025. It is demanding the responsibility of organizing an event that does justice to the prestigious history of this emblematic conference. Being aware of that, we will do our best to build a scientific program of recognized quality, a showcase where companies all around the world demonstrate their technologies and optical sensing equipments, a context where different generations of researchers and entrepreneurs meet and feel encouraged to share their experiences and goals, a welcoming environment that helps everyone feel at home.

In short, we express our commitment to do our best to turn this a reality, looking for a meeting tuned to the culture and values that have guided OFS over the years.

José Luís Santos
Manuel Lopez-Amo Sainz
Tong Sun

Organization and Institutional Support

Organization

INESC TEC – Institute for Systems and Computer Engineering, Technology and Science

Institutional Support

- *Visit Portugal*
- *Visit Porto & North of Portugal*
- *PRR- Plano de Recuperação e Resiliência*
- *República Portuguesa*
- *European Union: NextGenerationEU*
- *European Photonics Industry Consortium (EPIC)*
- *27th International Conference on Optical Fiber Sensors (OFS2022)*
- *28th International Conference on Optical Fiber Sensors (OFS28)*

OFS Format

The OFS conferences has an established format along the following guidelines:

- Option for no parallel sessions, with the program developing sequentially between periods in the auditorium (plenary and invited talks and oral presentations), and also periods in spaces where the exhibition and discussion of contributions in posters take place;
- Thematic sessions spread over three and a half days along the conference week (from Tuesday until Friday morning);
- Technical exhibition where companies and institutions exhibit their products and activity in fiber optic sensing and related fields;
- On Monday of the conference week are held tutorials and workshops on relevant topics in fiber optic sensing and related fields;
- The social program has two fixed events: the welcome reception on Monday evening and the gala dinner on Thursday; others may be considered depending on the organisation of a particular edition of the conference;
- During the conference, plenary meetings of the three OFS committees will take place: *Steering Committee*, *Technical Program Committee*, *International Honorary Committee*

OFS29 Features

The Conference program will include:

- Invited oral contributions given by recognized authorities in the broad domain of optical sensing and related R&D fields;
- Submitted contributions all undergoing a peer review process on the basis of a full-length manuscript, following acceptance criteria based on quality, relevance and originality;
- Evaluation and prospective assessment of the exploitation and commercialization of optics/fiber optics sensing technology;
- Workshops on edge topics in the field;
- Technical Exhibition.

Optical fiber sensors and related concepts and technologies will represent the core of the conference. Contributions would cover novel sensing principles, advanced transducers based on artificial materials, new subsystems combined with advanced signal processing, multi-point and distributed sensing, as well as new applications and the exploitation of this sensing technology.

Conference Proceedings

Accepted contributions will be compiled into the Conference Proceedings edited by SPIE.

Special Issue

In addition to the Conference Proceedings, the authors are invited to submit an extended version of the accepted papers for an OFS29 dedicated Special Issue of Journal of Lightwave Technology.

OFS29 Scope and Topics

Optical Fiber Sensors will be the core of the Conference, but the scope is wide enough to include new concepts, developments, and applications in the field of optical fiber science and technology and related areas. Relevant topics include, but are not limited to:

PHYSICAL AND MECHANICAL SENSORS
Temperature // Pressure // Strain // Vibration // Acceleration // Flow // Rotation // Displacement//Others//

ELECTROMAGNETIC SENSORS
Magnetic Field // Electric Field // Current // Voltage //

CHEMICAL AND ENVIRONMENTAL

Chemical Sensors// Remote Spectroscopy //Environmental Monitoring //Security //Defense and Industrial Applications

BIOLOGICAL AND MEDICAL SENSORS

Sensing for Biophotonics // OCT Imaging // Instrumentation for Life Sciences // In-Vivo Applications.

INTERFEROMETRIC & POLARIMETRIC SENSORS

Gyroscopes // Hydrophones // Geophones // Acoustic Sensor Arrays //

DISTRIBUTED SENSING

Time // Frequency and Coherence Domain Reflectometry // Rayleigh, Raman and Brillouin Detection Techniques // Sensing Cable Designs // Standard and Novel Applications

MULTIPLEXING AND SENSOR NETWORKING

Topologies and Theories // Multiplexing Techniques //Applications //

PASSIVE & ACTIVE DEVICES FOR PHOTONIC SENSING

Sources // Detectors // Modulators // Specialty Fibres // Integrated Optics Devices // Fibre Gratings // MEMS // Micro-Optic Components //

NEW CONCEPTS FOR PHOTONIC SENSING

Optical Quantum Sensing Principles and Technology Challenges// Photonic Crystal Fibres // Hollow Core Fibres // Nanomaterials and Nano-Optical Devices // Metamaterials //Diffractive Optics //Plasmonic Based Sensing //

SIGNAL PROCESSING FOR FIBER OPTIC SENSING

Genetic Algorithms//Neural Networks//Data Fusion//Pattern Recognition//Statistical Methods//Virtual Instrumentation

SMART STRUCTURES AND SMART MATERIALS

Structural Health Monitoring // Strain and Deformation Sensors //Fibre Embedding Techniques//Condition Monitoring Algorithms //

SYSTEM APPLICATIONS AND FIELD TRIALS

Relevant Installations and Field Demonstration of Photonic-based Sensing Systems // Metrology Projects // Standardization // Commercialization//

Registration

The values of the registration fee (regular, access to tutorials/workshops, accompanying person) are shown in the following table

Registration	**up to 2025 March 31st**	**From 2025 April 1st**
Normal	€ 650	€ 750
Student	€ 500	€ 600
Normal SPIE Member	€ 625	€ 725
Student SPIE Member	€ 475	€ 575
Accompanying Person	€ 300	€ 300
Registration Tutorials	**up to 2025 March 31st**	**From 2025 April 1st**
Normal	€ 125	€ 150
Student	€ 75	€ 100

The regular registration fee includes:

- Workshops on the afternoon of 26th May
- Full access to all conference sessions
- Conference proceedings
- Lunches on 27th, 28th, 29th and 30th May 2025; coffee-breaks on 26th, 27th, 28th, 29th and 30th May 2025
- Welcome Cocktail on 26th May 2025
- Gala Dinner on 29th May 2025
- Douro River Cruise on 30th May 2025

The accompanying person program includes:

- Welcome Cocktail on 26th May 2025
- Trip Douro Region on 27th May 2025
- Trip Porto City on 28th May 2025
- Gala Dinner on 29th May 2025
- Douro River Cruise on 30th May 2025

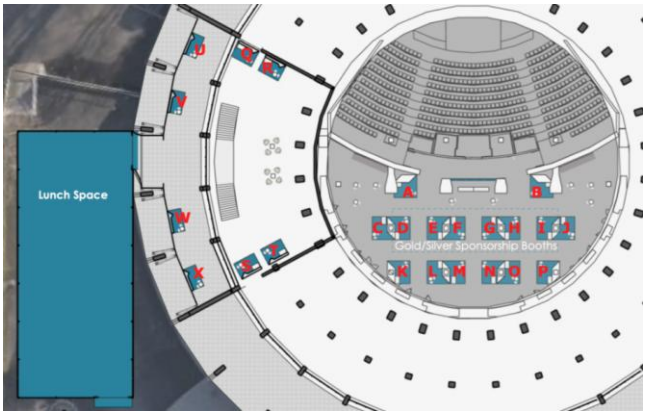
Exhibition

The Conference will include an Exhibition event where companies/institutions with activity in optical fiber sensing and optical fiber technology in general have the opportunity to show their latest products/initiatives.

As shown in the following figure, Exhibition will happen in the foyer spaces of the Congress Center where the Conference will be held, enabling very close interaction with OFS29 delegates and guests.

The Exhibition space is split in three regions. In the first one are located the booths A-P with cost €3500+VAT (except the booths D-I, which are reserved to Gold/Silver Exhibitors), the second one includes the booths Q-T with cost €3000+VAT, and the third one aggregate the booths U-X with cost €2750+VAT.

Besides the access to all infrastructures required for a booth operation, Regular Exibitors are provided by lunch and coffee vouchers for one person for 27, 28, 29, 30, May, as well as access to a standard time slot (3 minutes) in the Exhibitor´s Plenary Session.



Gold/Silver Exhibitors has right to additional benefits, as summarized in the following table.

Gold Exhibitor	Silver Exhibitor
• Two individual full Conference registrations • One Exhibition Booth at privileged location • Display of Sponsor Logo on the Conference Screen • Large Sponsor Logo on Conference proceedings • Large Sponsor Logo on Conference website • Gold time slot (7 minutes) in the Exhibitor´s Plenary Session • Inclusion of Sponsor promotional literature in the participant's courtesy bags • Inclusion of Gold Sponsor Logo of the Conference in the Sponsor website	• One individual full Conference registration • One Exhibition booth at privileged location • Sponsor Logo on Conference proceedings • Sponsor Logo on Conference website • Silver time slot (5 minutes) in in the Exhibitor´s Plenary Session

The Exhibitor´s Plenary Session will be held May 28th (Wednesday) at 17h45. The order of presentation will be Gold Exhibitors, Silver Exhibiters, Regular Exhibitors. In each category the order will follow the registration timeline.

The Exhibitores of OFS29 are shown in the following table (by order of registration).

Company	Logo	Booth
Gold Exhibitors		
HBK Fibersensing		F
Exail		H
Luna		J
Yangtze Optical Eletronic		X
Silver Exhibitors		
Shandong Micro Sensor Photonics		D
Thorlabs GmbH		E
Northlab Photonics		G
B-Sens		I
Febus-Optics		M
FiberLogix		W

Exhibitors		
FiberPro	FIBERPRO	A
Redondo Optics	Redondo Optics, Inc. An Opterra Company	C
Ibsen	Ibsen photonics	R
Optoeletro-Tek	厦门烽行光电科技 Xiamen Fengxing Optoelectro-tek	V
Wires&Bytes	WIRES &BYTES	T
Flyin Group	Flyin	N
FBGS	FBGS DRAW TOWER GRATINGS	P
Photonics Bretagne	PHOTONICS BRETAGNE Photonics Innovation Hub	B
Technica Optical Components	TECHNICA	K
Xiamen Beogold Technology	傲铭科技 BEOGOLD TECHNOLOGY	O
INDIE (Teraxion/Exalos)	indie	S
Notice	NOTICE	Q
Aragon Photonics	ARAGÓN PHOTONICS	U
Univ. of Electronic Science and Technology of China	电子科技大学 University of Electronic Science and Technology of China	L

Awards

Paper Awards

- **Best Paper Award**

  For the paper with the best mark in the combination *evaluation score and presentation performance*

- **Best Student Paper Awards**

  Following the same criteria, the best student paper in each of the four following categories:

  - *Physical and Mechanical Sensors*
  - *Chemical, Environmental, Biomechanical, and Medical Sensors*
  - *Electromagnetic, Interferometric, Polarimetric, New Concepts*
  - *Distributed, Multiplexing, System Applications, and Field Trials*

Lifetime Awards

To honor two researchers who have significantly contributed to the development of this area of Human knowledge.

In Memoriam

Moment of introspection and recognition of Members of our Community who are no longer with us, with a life of contributions to the development of the fiber optic sensing field.

Thursday, 29/05/2025; 9h30

Group Photo

The group photo of participants at OFS29 will be recorded on Thursday (29-05-2024), at 11:15 am.

Meetings of OFS Committees

During the conference, meetings of the three OFS committees will take place according to the following calendar

Technical Program Committee: 27/05/2025; 13h00-14h30

International Honorary Committee: 28/05/2025; 13h00-14h00

International Steering Committee: 29/05/2025; 13h00-14h30

Social Program

In addition to the lunches and coffee breaks that will take place in spaces adjacent to the auditorium, poster hall and exhibition, OFS29 will include the following social events:

- *Welcome Reception* (Monday, 18h30-20h00)
- *Committees + Chairs Dinner* (Wednesday, 20h00-23h00)
- *Conference Dinner* (Thursday, 20h00-24h00)
- *Douro River Trip* (Friday, 16h30-18h00)

The Welcome Reception will happens in the spaces where the conference will take place. For other events, transportation will be provided by bus.

Online Access to Technical Digest

Registered OFS29 participants have full access to the conference proceedings from SPIE Digital Library accessible from

https://SPIEDigitalLibrary.org/

and inserting the credentials provided by the OFS29 organization.

Committees

General Chair

José Luís Santos, Universidade do Porto (Portugal)

Technical Program Chairs

Prof Manuel Lopez-Amo Sainz, Universidad Pública de Navarra (Spain)
Prof Tong Sun, City St George´s, University of London (United Kingdom)

International Steering Committee

Prof Avinoam Zadok, Bar Ilan University (Israel)
Dr Geoff Cranch, Naval Research Laboratory (United States of America)
Prof Gilberto Brambilla, University of Southampton (United Kingdom)
Prof Hypolito Jose Kalinowski, Universidade Federal Fluminense (Brazil)
Prof John Canning, Laseire Pty Ltd (Australia)
Prof José Luís Fabris, Universidade Federal de Tecnologia (Brazil)
Prof José Luís Santos, Universidade do Porto (Portugal)
Prof Julian Jones (*OFS General* Secretary), Heriot-Watt University (United Kingdom)
Prof Kara Peters, North Carolina State University (United States of America)
Prof Kentaro Nakamura, Tokyo Institute of Technology (Japan)

Prof Kwang Yong Song, Chung-Ang University (Republic of Korea)
Prof Miguel Gonzalez Herraez,University of Alcala (Spain)
Prof Wei Jin, Hong Kong Polytechnic University (China)

Technical Program Committee

Dr Ali Masoudi, University of Southampton (United Kingdom)
Prof Alselmo Frizera Neto, Universidade Federal do Espírito Santo (Brazil)
Prof Andrea Cusano, Universita di Sanio (Italy)
Prof Avishay Eyal, Tel Aviv University (Israel)
Prof Bai-Ou Guan, Jinan University (China)
Prof Balaji Srinivasan, Indian Institute of Technology Madras (India)
Dr Clay Kirkendall, Naval Research Laboratory (United States of America)
Prof Christos Markos, Technical University of Denmark (Denmark)
Prof Denis Donlagic, University of Maribor (Slovenia)
Prof Eric Fujiwara, Universidade Estadual de Campinas (Brazil)
Dr Gabriele Bolognini, Bologna UNIT-CNR (Italy)
Prof Hideaki Murayama, University of Tokyo (Japan)
Prof Fumihiko Ito, Shimane University (Japan)
Prof Jean Carlos Cardozo da Silva, Universidade Federal Tecnológica do Paraná (Brazil)
Dr João Batista Rosolem, CPqD-Telecommunication R&D Center (Brazil)
Dr Jonathan Wheeler, Northup Grumman (United States of America)
Prof Jun Yang, Guangdong University of Technology (China)
Dr Kwanil Lee, Korea Institute of Science and Technology (Republic of Korea)
Prof Libo Yuan, Guilin University of Eletronic Technology (China)
Prof Luca Palmieri, Universita di Padova (Italy)
Prof Luis Rodriguez Cobo, Universidad de Cantabria (Spain)
Prof Marcelo Soto, Universidad Técnica Federico Santa María (Chile)
Prof Marc Wuilpart, Université de Mons (Belgium)
Prof Margarita Varón Durán, Universidad Nacional de Colombia (Colombia)
Dr Martin Becker, Safran Eletronics&Defense (Germany)
Prof Michel Digonnet, Stanford University (United States of America)
Prof Ming Han, Michigan State University (United States of America)
Prof Min Yong Jeon, Chungnam National University (Republic of Korea)
Prof Nageswara Lalam, National Energy Technology Laboratory (United States of America)
Prof Pedro Jorge, Universidade do Porto (Portugal)
Prof Peter Dragic, University of Illinois (United States of America)
Prof Rainer Engelbrecht, Nuremberg Institute of Technology (Germany)
Dr Robert Lieberman, Lumoptix (United States of America)
Prof Satoshi Tanaka, National Defense Academy (Japan)
Dr Scott Brian Foster, Defence Science&Tech Group (Australia)
Prof Stephen Warren-Smith, University of South Australia (Australia)
Prof Sylvain Girard, University of St Etienne (France)
Prof Tinko Eftimov, Université Du Québec (Canada)
Prof Waclaw Urbanczyk, Politechnika Wroclawska (Poland)
Dr Walter Margulis, Fiber Activity (Brazil)
Prof Yizheng Zhu, Virginia Polytechnic Institute and State University (United States)
Prof Yosuke Mizuno, Yokohama National University (Japan)
Prof Yosuke Tanaka, Tokyo University of Agriculture and Technology (Japan)
Prof Yuliya Semenova, Technological University of Dublin (Ireland)
Prof Yunjiang Rao, University of Electronic Science&Technology of China (China)

Prof Zhengying Li, Wuhan University of Technology (China)
Prof Zuyuan He, Shanghai Jiao Tong University (China)

International Honorary Committee

Dr Alan Kersey (United States)
Dr Alexis Mendez (United States)
Dra Anna Grazia Mignani (Italy)
Dr Anthony Dandridge (United States)
Prof Brian Culshaw (United Kingdom)
Prof Byoung Yoon Kim (Republic of Korea)
Prof David Jackson (United Kingdom)
Prof David Sampson (Australia)
Prof Eric Udd (United States)
Dr Glen Sanders (United States)
Dr Gordon Day (United States)
Dr Herve Lefevre (France)
Prof John Dakin (United Kingdom)
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Prof Kazuo Hotate (Japan)
Prof Leszek Jaroszewicz (Poland)
Prof Luc Thévenaz (Switzerland)
Dr Marc Voet (Belgium)
Prof Moshe Tur (Israel)
Prof Nobuaki Takahashi (Japan)
Dr Pierre Ferdinand (France)
Prof Ralf Kersten (Germany)
Prof Reinhardt Willsch (Germany)
Prof Richard Claus (United States)
Prof Ryozo Yamauchi (Japan)
Dr Thomas Giallorenzi (United States)
Prof Wojtek Bock (Canada)
Prof Wolfgang Ecke (Germany)
Prof Yanbiao Liao (China)
Prof Youngjoo Chung (Republic of Korea)

Local Organizing Committee

Prof António Lobo Ribeiro, Universidade Fernando Pessoa (Portugal)
Prof Ariel da Silva Guerreiro, Universidade do Porto/INESC TEC (Portugal)
Prof Carla Carmelo Rosa, Universidade do Porto/INESC TEC (Portugal)
Prof Carlos Alberto Marques, Universidade do Aveiro (Portugal)
Carlos Gaspar, INESC TEC (Portugal)
Dra Catarina Monteiro, INESC TEC (Portugal)
Dr Claudio Floridia, INESC TEC (Portugal)
Dra Cristina Barbosa, HBK/Fibersensing (Portugal)
Dra Diana Filipa Guimarães, INESC TEC (Portugal)
Dr Francisco Moita Araújo, HBK/Fibersensing (Portugal)
Prof Gaspar Mendes Rego, Instituto Politécnico de Viana do Castelo/INESC TEC (Portugal)
Dr Ireneu Dias, INESC TEC (Portugal)

Dr João Castro Ferreira, INESC TEC (Portugal)
Dr José Carlos Sousa, INESC TEC (Portugal)
Prof José Manuel Almeida, Universidade de Trás-os-Montes e Alto Douro /INESC TEC (Portugal)
Prof José Manuel Batista, Universidade da Madeira/INESC TEC (Portugal)
Dra Lídia Vilas Boas, INESC TEC (Portugal)
Dr Luís Alberto Ferreira, HBK/Fibersensing (Portugal)
Dr Luís Costa Coelho, INESC TEC (Portugal)
Luísa Pereira Mendonça, INESC TEC (Portugal)
Prof Manuel Joaquim Bastos Marques, Universidade do Porto/INESC TEC (Portugal)
Prof Marta Ferreira, Universidade de Aveiro (Portugal)
Dr Nuno Azevedo Silva, INESC TEC (Portugal)
Dr Orlando Reis Frazão, INESC TEC (Portugal)
Prof Paulo Amorim Caldas, Instituto Politécnico de Viana do Castelo /INESC TEC (Portugal)
Prof Paulo Fernandes Antunes, Universidade de Aveiro (Portugal)
Prof Paulo Silva Marques, Universidade do Porto/INESC TEC (Portugal)
Prof Paulo Sérgio André, Universidade de Lisboa (Portugal)
Prof Pedro Alberto da Silva Jorge, Universidade do Porto/INESC TEC (Portugal)
Prof Susana Fernando, Escola Superior de Artes e Design (Portugal)
Dra Susana Novais, INESC TEC (Portugal)
Dra Susana Oliveira Silva, INESC TEC (Portugal)
University of Porto SPIE Chapter (Portugal)

Invited Speakers

Plenary Speakers

Prof Christian Degen, Department of Physics, ETH Zurich, Switzerland
Quantum Sensors in Diamond: Technology and Applications
Tuesday, 27/05/2025; 9h30

Prof Roberto Osellame, CNR - Institute for Photonics and Nanotechnologies, Italy
Optical Sensing and Imaging in Femtosecond-Laser-Written Optofluidic Lab-On-Chip
Thursday, 29/05/2025; 8h30

Dr Stuart Russell, Sintela Ltd, United Kingdom
Distributed Acoustic Sensing (DAS) a Real-World Perspective, Requirements, Applications and Techniques
Wednesday, 28/05/2025; 8h30

Session Invited Speakers

Prof. Andrea Cusano, Universidad di Sannio, Italy
Lab on Fiber Technology: Towards Theranostics Endoscopes
Thursday, 29/05/2025; 9h45

Dr. Austin Taranta, University of Southampton, United Kingdom
Recent Advances in Antiresonant Hollow Core Fibers for the Next Generation of Gyroscopes and Precision Fiber Sensors
Friday, 30/05/2025; 9h30

Prof. Brant Gibson, RMIT University, Australia
Diamond-Doped Optical Fibres for Magnetometry Applications
Wednesday, 28/05/2025;11h30

Prof. Chang-Seok Kim, Pusan National University, Korea
Autonomous Vehicle 4D LiDAR Sensor based on OFDR Technology
Thursday, 29/05/2025;11h30

Dr. Giuseppe Marra, National Physical Laboratory, United Kingdom
Science with Seafloor Cables
Thursday, 29/05/2025;14h30

Prof. Lan Yang, Washington University, United States of America
Whispering-Gallery Microresonators Sensors: Fundamentals and Applications
Tuesday, 27/05/2025;14h30

Prof. Miguel González Herráez, Universidad de Alcalá, Spain
Distributed Acoustic Sensing in Submarine Optical Fibers
Tuesday, 27/05/2025;11h00

Dr. Mikael Mazur, Nokia Bell Labs, United States of America
Fiber Sensing using Live Fibers in the Deployed Fiber Grid
Wednesday, 28/05/2025;14h00

Dr. Miguel Soriano, RISE, Sweden
Time-Expansion Concept in Distributed Sensing
Tuesday, 27/05/2025;16h30

Prof. Stephanie Krober, Technische Universität Braunschweig, Germany
Bringing Atoms and Ions onto a Chip: Integrated Photonics for Compact and Robust Quantum Technologies
Wednesday, 28/05/2025;9h30

Workshop Invited Speakers

Prof. Cristiano Cordeiro, Universidade Estadual de Campinas, Brazil
Innovative Platforms for Optical Sensing: Hollow-Core and Biodegradable Optical Fibers
Monday, 26/05/2025;17h30

Dr. Linh Nguyen, University of South Australia, Australia
Sensing with multimode optical fibers: A machine learning perspective
Monday, 26/05/2025;17h00

Prof. Yuan Gong, University of Electronic Science and Technology of China, China
Fiber-optic Microlaser Biosensors
Monday, 26/05/2025;16h00

Prof. Markus Schmidt, Leibniz Institute of Photonic Technology, Germany
Optofluidic Microstructured Fibers: Exploring Nanoparticle Dynamics via Tracking Analysis
Monday, 26/05/2025;15h30

Prof. Vasilis Ntziachristos, Technical University Munich, Germany
Listening to Light: Optoacoustics and Fiber Sensors
Monday, 26/05/2025;15h00

Tutorial Lecturers

Dr. Ali Masoudi, University of Southampton, United Kingdom
Nonlinear Effects in Optical Fibers for Distributed Sensing
Monday, 26/05/2025;10h30

Dr. Francesco Chiavaioli, CNR – Istituto di Fisica Applicata "Nello Carrara", Italy
Towards a Uniform Metrological Assessment of the Performance of Optical Fiber Sensors in Real-Life Contexts
Monday, 26/05/2025;13h00

Dra. Anna Grazia Mignani/Dr. Leonardo Ciaccheri, CNR – Istituto di Fisica Applicata "Nello Carrara", Italy
Pocket-Sized OpticalSspectroscopy: Revolutionizing Food Analytics at your Fingertips
Monday, 26/05/2025;10h30

Dr. Hugo Martins, Consejo Superior de Investigaciones Científicas-CSIC, Spain
Signal Processing in Distributed Fiber Optic Sensing
Monday, 26/05/2025;13h00

Session Chairs

Workshops		
	Schedule	***Chairs***
Workshop A (*Biosensing*)	26/5/2025, 15h00-16h30	*Dr. Robert Lieberman* (Lumoptix, LLC, United States) *Prof. Pedro Jorge* (Universidade do Porto, Portugal)
Workshop B (*Technologies in Fiber Optic Sensing*)	26/5/2025, 17h00-18h00	*Prof Satoshi Tanaka* (National Defense Academy, Japan) *Dr. Luis Rodrigue-Cobo* (Universidad de Cantabria, Spain)

Plenary Sessions		
	Schedule	***Chairs***
Plenary Session I	27/5/2025, 9h30-10h30	*Prof Manuel Lopez-Amo Sainz* (Universidad Pública de Navarra, Spain)
Plenary Session II	28/5/2025, 8h30-9h30	*Prof Tong Sun* (City St George´s, University of London, United Kingdom)
Plenary Session III	29/5/2025, 8h30-9h30	*Prof Julian Jones* (Heriot-Watt University, United Kingdom)

Regular Sessions		
	Schedule	***Chairs***
Distributed Sensing I	27/5/2025, 11h00-13h00	*Dr. Kwanil Lee* (Korea Institute of Science and Technology, Republic of Korea) *Prof Luca Palmieri* (Universidad degli Studi di Padova, Italy)
New Elements, Effects, or Technologies and Materials for Photonic Sensing	27/5/2025, 14h30-16h00	*Prof Sylvain Girard* (University Jean Monnet Saint-Etienne, France) *Dr Ali Masoudi* (University of Southampton, UK)
Distributed Sensing II	27/5/2025, 16h30-17h30	*Prof Yun-Jiang Rao* (University of Electronic Science and Technology of China, China) *Prof Avishay Eyal* (Tel Aviv University, Israel)
Integrated Photonics, Cavity Optomechanics and Quantum Sensing	28/5/2025, 9h30-11h00	*Prof Fumihiko Ito* (Shimane University, Japan) *Dr Rainer Engelbrecht* (Technische Hochschule Nurenberg, Germany)
Micro-Nano Sensors	28/5/2025, 11h30-13h00	*Prof Moshe Tur* (Tel Aviv University, Israel) *Prof Yosuke Mizuno* (Yokohama National University, Japan)
Smart Structures	28/5/2025, 14h00-15h30	*Prof Jean Carlos Cardozo Da Silva* (Universidade Tecnológica Federal do Paraná, Brazil) *Prof Hideaki Murayama* (The University of Tokyo, Japan)
Biochemical Sensing	29/5/2025, 9h45-11h15	*Prof Eric Fujiwara* (State University of Campinas, Brazil) *Dr Stephen Warren-Smith* (University of South Australia, Australia)
Environment, Security, Defence, Industrial Applications, Technology Commercialization	29/5/2025, 11h30-13h00	*Prof Anselmo Frizera-Neto* (Universidade Federal do Espírito Santo, Brazil) *Prof Andrea Cusano* (University Di Sanio, Italy)

Interferometric/Distributed Sensors	29/5/2025, 14h30-16h00	*Prof Marc Wulpart* (University de Mons, Belgium) *Prof Yosuke Tanaka* (Tokyo University of Agriculture and Technology, Japan)
Physical, Mechanical and Eletromagnetic Sensors	30/5/2025, 9h30-11h00	*Dr Gabriele Bolognini* (Istituto per la Microelettronica e Microsistemi, Italy) *Prof Luc Thévenaz* (EPFL, Switzerland)

Post-Deadline Session		
	Schedule	***Chairs***
Post-Deadline Session	30/5/2025, 11h30-12h45	*Prof Jose Miguel Lopez Higuera* (Universidad de Cantabria, Spain) *Prof Zuyuan He* (Shanghai Jiao Tong University, China)

Technical Program

Monday
(26/05/2025)

Tutorials

M1-Tutorial A: Core Topics for Distributed Fiber Optic Sensing

10:30-12:00 **Dr. Ali Masoudi**
University of Southampton (United Kingdom)

M1-T1 **Nonlinear Effects in Optical Fibers for Distributed Sensing**

In this Tutorial, we will explore the critical role of nonlinear effects in optical fibers for distributed sensing applications. We will start with a brief introduction to distributed sensing and the scattering mechanisms in optical fibers. Following this, we will delve into key nonlinear effects, including Stimulated Brillouin Scattering (SBS), Stimulated Raman Scattering (SRS), and modulation instability. We will examine the adverse impacts of these nonlinearities on linear Distributed Optical Fiber Sensors (DOFS) such as Raman and Rayleigh-based distributed sensors.

The Tutorial will then focus on Brillouin Optical Time-Domain Analysis (BOTDA) systems, which harness SBS to achieve a Brillouin gain spectrum with a high signal-to-noise ratio (SNR). We will discuss the sensing principles of BOTDA systems and compare different system architectures. Additionally, a brief overview of Brillouin Optical Correlation-Domain Analysis (BOCDA) systems and their operating principles will be provided. We will conclude with insights on the advantages of leveraging nonlinear effects in advanced sensing technologies.

. **13:00-14:30** **Dr. Hugo Martins**
Consejo Superior de Investigaciones Científicas -CSIC (Spain)

M1-T2 **Signal Processing in Distributed Fiber Optic Sensing**

The whole is greater than the sum of its parts. Distributed Fiber Optic Sensing (DFOS) allow for a single interrogator to measure a large number of points, but specific and key advantages can be further gained from processing DFOS as a coherent network array of sensors. Effective image denoising algorithms have been demonstrated in BOTDA, since instrumental noise will affect all channels similarly. Pulse coding techniques allow for gains of SNR that surpass those of simple averaging. In DAS, using the coherency of signals arriving to multiple channels, the fiber position in the field (and physical location of noise sources relative to it) can be mapped, and measurements with sensitivity below ambient noise can be performed. With the addition of a full new dimension (space), a multitude of waves can be mapped in seismology, even when overlapping in the same frequency band. We will review signal processing considerations specific to DOFS.

M2-Tutorial B: Core Topics in Fiber Optic Sensing

10:30-12:00 **Dra. Anna Grazia Mignani and Dr. Leonardo Ciaccheri**

National Research Council of Italy (CNR), Institute of Applied Physics "Nello Carrara"-IFAC (Italy)

M2-T1 **Pocket-Sized Optical Spectroscopy: Revolutionizing Food Analytics at your Fingertips**

Optical spectroscopy is transforming food analysis by providing a cost-effective and eco-friendly alternative to traditional methods. With its ability to deliver rapid and non-destructive measurements

without the need for harmful chemicals or solvents, it allows green analytics for food quality and safety assessment.

By integrating chemometrics or AI-powered algorithms, optical spectroscopy can decode complex data and perform simultaneous analysis of multiple food components. A single flash of light, combined with advanced spectroscopic training, enables comprehensive quantitative and qualitative assessments of various nutraceutical indicators in one go. It's an intelligent and sustainable solution for achieving superior food quality and safety standards.

Photonic technologies initially developed for telecommunications, generated an explosion of compact light sources, detectors, micro-spectrometers, spectral sensors, fiber optics, and micro-photonic components. These innovations are now transforming food control, providing compact, robust, and low-cost instruments that are perfect for online applications by users with minimal technical training, as well as by consumers.

In this tutorial, we will show the the latest and most compact optical spectroscopy devices, with a special attention to those operating in the near-infrared, and to pocket-sized and smartphone-connected models. We will show their applications in food analysis and showcase their potential through a live demo.

Get ready to see how these powerful tools can revolutionize food multi-component analyses, and discover opportunities for future collaborations.

13:00-14:30 **Dr. Francesco Chiavaioli**

National Research Council of Italy (CNR), Institute of Applied Physics "Nello Carrara"-IFAC (Italy)

M2-T2 Towards a Uniform Metrological Assessment of the Performance of Optical Fiber Sensors in Real-Life Contexts

Optical fiber sensors (OFSs) are dramatically spreading worldwide not only in the scientific research, but also in the industrial market. Given their peculiarities, OFSs are applied to countless different applications, such as physics, engineering, material science, biochemistry and medicine. However, it is still very cumbersome to uniformly compare their performance. Therefore, there is an urgently need for defining the fundamentals of metrological parameters to uniformly assess the performance of optical fiber sensors, and hence to make the their comparison easier. The tutorial will encompass commonly-used performance parameters (sensitivity, resolution, limit of detection, selectivity) and some other parameters of generic interest (accuracy, stability, repeatability and reproducibility). Common mistakes still present in the literature will also be highlighted. The concepts discussed can be applied to any resonance-based sensor, thus providing the basis for an easier and direct performance comparison of a great number of sensors published in the literature up to now.

M3-Exhibition Opening

14:45-15:00

M4-Workshop A: Biosensing

Chairs: ***Dr. Robert Lieberman*** (Lumoptix, LLC, United States)
Prof. Pedro Jorge (Universidade do Porto, Portugal)

15:00-15:30 **Prof. Vasilis Ntziachristos**
Technical University Munich (Germany)

M4-W1 Listening to Light: Optoacoustics and Fiber Sensors

Biological discovery is a driving force of biomedical progress. With rapidly advancing technology to collect and analyse information from cells and tissues, we generate biomedical knowledge at rates never before attainable to science. Nevertheless, conversion of this knowledge to patient benefits remains a slow process. To accelerate the process of reaching solutions for healthcare, it would be important to

strongly complement this culture of discovery with a culture of problem-solving in healthcare. The talk focuses on recent progress with optical and optoacoustic technologies, in particular fiber sensors and their application to widely employed optoacoustic modalities, including Multispectral Optoacoustic Tomography (MSOT) and Raster-scan Optoacoustic Mesoscopy (RSOM).

The talk reviews advances in fiber sensors for the detection of ultrasound / optoacoustic signals and their implementation into optoacoustic approaches, which, when aided by advanced computational methods, can open new paths for solutions in biology and medicine, e.g. for early detection, prevention and monitoring of disease evolution. The talk further shows new classes of imaging systems and sensors for assessing biochemical and pathophysiological parameters of systemic diseases, complement knowledge from –omic analytics and drive integrated solutions for improving healthcare.

15:30-16:00 **Prof. Markus Schmidt**
Leibniz Institute of Photonic Technology (Germany)

M4-W2 Optofluidic Microstructured Fibers: Exploring Nanoparticle Dynamics via Tracking Analysis

High-speed tracking of single nano-objects provides key insights into nanoscale processes. This talk showcases advancements in tracking individual particles and ensembles within optofluidic microstructured optical fibers using elastic light scattering. Nano-objects are dispersed in liquid within a selected fiber channel. Light propagating through the fiber scatters at the diffusing nano-objects and is detected transversely with a microscope. Statistical trajectory analysis reveals diffusion properties and particle diameters with high accuracy.

I will outline the principles of this approach and highlight key findings. Specifically, I will demonstrate the retrieval of 3D trajectories of diffusing nanospheres and the simultaneous detection of hundreds of nano-objects in hollow anti-resonant fibers. Additionally, I will present data on the characterization of exceptionally small nanospheres (9 nm) and the precise identification of nanoparticle mixtures with close mean diameters. These results underscore the potential of optofluidic fiber platforms for nanoscale tracking and analysis.

16:00-16:30 **Prof. Yuan Gong**
University of Electronic Science and Technology of China (China)

M4-W3 Fiber-Optic Microlaser Biosensors

The field of optical fiber biosensors has witnessed remarkable advancements and continues to offer significant opportunities for innovation. This presentation will focus on the development and application of fiber microlaser biosensors for the detection of protein biomarkers. The distinctive features of optical fibers and microlasers for biosensing will be analyzed. However, leveraging these features to achieve competitive performance in biosensing remains a considerable challenge.

Key mechanisms of fiber microcavity lasing and sensing will be discussed, alongside optimization strategies. These include, but are not limited to, comparisons between traveling-wave and standing-wave microcavities, the utilization of solid- versus solution-based gain materials, heterogeneous versus homogeneous bioconjugation, and intensity-based versus wavelength-based detection methods. Furthermore, two examples will be highlighted: sub-monolayer microlaser biosensors and homogeneous optofluidic laser biosensors. These examples will elucidate the tradeoffs in sensing performance, offering insights into the potential of this technology.

M5-Workshop B: Technologies in Optical Fiber Sensing

Chairs: ***Prof Satoshi Tanaka*** (National Defense Academy, Japan)
Dr. Luis Rodrigue-Cobo (Universidad de Cantabria, Spain)

17:00-17:30 **Dr. Linh Nguyen**
University of South Australia (Australia)

M5-W1 **Sensing with Multimode Optical Fibers: A Machine Learning Perspective**

In multimode optical fibers, the light confined in each mode has slightly different sensitivities to surrounding parameters, be it temperature, strain, or refractive index of the ambient environment (cladding). When used for sensing a specific parameter, multimode fibers can be viewed as the co-location of many slightly different sensors in both time and space. However, the cross-sensitivity from other parameters will lead to a different standard deviation for each sensing mode. Those parameter-specific estimations can be combined to produce a measurement with a much smaller variance by applying machine learning techniques on the entire multimode data.

I will discuss the principle behind the application of machine learning to multimode fiber sensing, with emphasis on sensing under very strong cross-perturbations and distributed sensing. The probabilistic nature of machine learning and its consequences on laboratory-based sensing experiments will be discussed. Perspectives on the future of using machine learning in conjunction with multimode fiber sensing in real-world applications will be presented.

17:30-18:00 **Prof. Cristiano Cordeiro**
Universidade Estadual de Campinas/(UNICAMP), Campinas (Brazil)

M5-W2 **Innovative Platforms for Optical Sensing: Hollow-Core and Biodegradable Optical Fibers**

IWe will discuss the investigation of specialty optical fibers with innovative structures, focusing on our current research efforts with hollow-core and biodegradable fibers for sensing applications. Recent advancements in hollow-core photonic crystal fibers have led to the development of low-loss fibers with simplified cross-sectional designs. Our research has focused on utilizing these fibers as sensing platforms, exploring applications in directional curvature, high-temperature, strain, and displacement sensors. By tuning their properties through asymmetric profiles, exploring core-cladding mode coupling, and incorporating additional materials, these fibers show promising capabilities for optical sensing.

In contrast, biodegradable optical materials offer unique advantages, such as biochemical compatibility and safe interaction with living tissues. Unlike conventional glass and plastic fibers, bioresorbable materials are soft, free from sharp edges, and can be absorbed or excreted after use. Here, we highlight our recent work on agar-based optical devices, including lenses, slab waveguides, and optical fibers for pressure, displacement, electric current, and biochemical measurements. Agar, a versatile yet underexplored material in photonics, holds potential for developing environmentally friendly, biocompatible optical sensors.

M6-Welcome Reception

18:30-20:00

Tuesday

(27/05/2025)

Tu1-Opening Cerimony

9:00-9:30

Tu2-Plenary Session I

Chair: Prof Manuel Lopez-Amo Sainz, Universidad Pública de Navarra, Spain

9:30-10:30 **Prof. Christian Degen**
ETH Zurich (Switzerland)

Tu-2.1 **Quantum Sensors in Diamond: Technology and Applications**

Diamond has emerged as a unique material for a variety of applications, both because it is very robust and because it has defects with interesting properties. One of these defects, the nitrogen-vacancy (NV) center, shows quantum behavior up to above room temperature. Our group is exploring diamond as a platform for realizing nanoscale sensors with exquisite sensitivities and new capabilities.

In this talk, I will introduce the concept of diamond-based quantum sensors. I will discuss the fabrication of diamond probes and their integration into plug-and-play sensor chips. I will also discuss current challenges in scanning probe microscopy (SPM) system integration. The talk will conclude with illustrative examples of applications in metrology of magnetism and currents at the nanometer scale.

Tu3-Session *Distributed Sensing I*

(11h00-13h00)

Chairs: ***Dr. Kwanil Lee*** (Korea Institute of Science and Technology, Republic of Korea)
Prof. Luca Palmieri (University degli Studi di Padova, Italy)

11:00-11:30 **Prof. Miguel González Herráez**
(invited) *Universidad de Alcalá (Spain)*

Tu-3.1 **Distributed Acoustic Sensing in Submarine Optical Fibers**

Submarine optical fibers carry well above 98% of the international data traffic. Despite their strategic function, these cables are very fragile and unprotected. In this talk, I will show that Distributed Acoustic Sensing (DAS) can provide essential information for protecting these extremely vital routes of information. Moreover, I will demonstrate that DAS over these cables also has significant potential for geophysical monitoring on the ocean floor. This may be especially valuable in regions where the scarcity of geophysical instruments limits our ability to measure crucial phenomena related to our planet and climate change, such as water mixing and stratification. In addition, I will discuss the potential for leveraging sensing information obtained in these cables to enhance tsunami early warning systems in vulnerable regions.

11:30-11:45 **Tu-3.2**

Polarization pulling in Brillouin fiber sensing using orthogonal probes, Moshe Tur*[a], Jonathan Bohbot[a], Luc Thévenaz[b], Marcelo A. Soto[c] ; [a]School of Electrical Engineering, Tel Aviv University, Ramat Aviv 69978, Israel; [b]EPFL Swiss Federal Institute of Technology, Inst. ELE, SCI STI LT, 1015 Lausanne, Switzerland; [c]Dept. of Elect. Engineering, Universidad Técnica Federico Santa María, 2390123 Valparaíso, Chile. *tur@tauex.tau.ac.il

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11:45-12:00 **Tu-3.3**

Microcomb-enhanced BOTDR, Jianting Li, Kezhao Gao, Mingming Nie, Junting Du, Xiangyang Lu, Zhaoyu Li, Teng Tan, Baicheng Yao, Yunjiang Rao*, Bowen Li*; Fiber Optics Research Center, Key Laboratory of Optical Fiber Sensing and Communications, University of Electronic Science and Technology of China, Chengdu 611731, China. *bowen.li@uestc.edu.cn ; *yjrao@uestc.edu.cn

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12:00-12:15 **Tu-3.4**

High-spatial-resolution distributed Brillouin sensing in plastic optical fibers: detection of 5 cm heated region, Shimbu Shirai[a], Seiga Ochi[a], Keita Kikuchi[b], Shuto Tsurugai[b], Heeyoung Lee[b], and Yosuke Mizuno[a,c] ;[a]Faculty of Engineering, Yokohama National University, Yokohama 240-8501, Japan; [b]Graduate School of Engineering and Science, Shibaura Institute of Technology, Tokyo 135-8548, Japan; [c]Institute of Multidisciplinary Sciences, Yokohama National University, Yokohama 240-8501, Japan

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12:15-12:30 **Tu-3.5**

Temperature sensing based on forward stimulated Brillouin scattering using high-order optical modes in few-mode fibers, Yichun Li[a], Liang Zhang[a], Yu Chen[a], Heming Wei[a], Mengshi Zhu[a], Yunqi Liu[a], Fufei Pang[a], Tingyun Wang[a], Marcelo A. Soto[b]; [a]Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Shanghai University, Shanghai 200444, China; [b]Department of Electronics Engineering, Universidad Técnica Federico Santa María, Valparaíso 2390123, Chile

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12:30-12:45 **Tu-3.6**

***DAS with 302 km sensing range using remote amplification and engineered fiber*,** Erlend Rønnekleiv[a], Jan Kristoffer Brenne*[a], Trygve Sørgård[a], Ole Henrik Waagaard[a], Nikolai Tolstik[a], Dmitry Klimentov[a], Timothy Lee[b], Martynas Beresna[b], Gilberto Brambilla[b];[a]Alcatel Submarine Networks Norway, Vestre Rosten 77, 7075 Tiller, Norway; [b]Optoelectronics Research Centre, University of Southampton, Southampton, SO17 1BJ, UK. *jan.kristoffer.brenne@asn.com

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12:45-13:00 **Tu-3.7**

***Quasi-distributed acoustic sensing with DSB-OFDR for large measurement range and enhanced frequency response*,** Rongrong Niu[a], Qingwen Liu*[a], Yanming Chang[a], and Zuyuan He[a]; [a]State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, Shanghai 200240, China

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Tu4-Session *New Elements, Effects, or Technologies and Materials for Photonic Sensing*

(14h30-16h00)

Chairs: ***Prof. Sylvain Girard*** (University Jean Monnet Saint-Etienne, France)
Dr. Ali Masoudi (University of Southampton, United Kingdom)

14:30-15:00 **Prof. Lan Yang**
(invited) *Washington University (United States of America)*

Tu-4.1 **Whispering-Gallery Microresonators Sensors: Fundamentals and Applications**

Sensors play crucial roles in biomedical research, clinical diagnosis, food safety, pharmaceutical testing, and environmental monitoring. Among them, optical sensors based on whispering-gallery-mode (WGM) resonators have emerged as front-runners for sensing applications due to their exceptional capability to significantly enhance light-matter interactions. This talk will introduce ultra-high-quality (Q) optical WGM microresonators and the diverse sensing mechanisms and strategies developed around them. Various

strategies, such as a self-referenced mode-splitting technique for size measurement of nanoparticles, mechanical solitons through optomechanical effects in a microtoroid resonator, a barcode technology based on collective behaviors of multiple resonances, and AI-enhanced label-free classification of free-flowing nanoparticles and cells through photoacoustic signatures, will be introduced. Recent investigations into fundamental physics, particularly light-matter interactions around exceptional points (EPs) in WGM resonators, have unraveled innovative strategies to achieve a new generation of optical systems. A novel strategy to extend EP-enhanced sensing to a wide range of optical sensor systems will be presented. This talk will elucidate the transformative potential of WGM resonators in advancing the field of optical sensing technologies.

15:00-15:15 **Tu-4.2**

Plasmonic tilted fiber Bragg grating sensors: insights into their effective demodulation, Hadrien Fasseaux[a], Médéric Loyez[b], Christophe Caucheteur*[a]; [a]Advanced Photonic Sensors Unit, University of Mons, Boulevard Dolez 31, 7000 Mons (Belgium); *Christophe.CAUCHETEUR@umons.ac.be

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15:15-15:30 **Tu-4.3**

Enhancing a polarimetric fiber sensor using Fisher information, Tiago D. Ferreira[a,b], Catarina Monteiro[a,b], Carolina Gonçalves[a,b], Orlando Frazão[a,b], Nuno A. Silva[a,b]; [a]INESC TEC, Centre of Applied Photonics, Rua do Campo Alegre 687, 4169-007 Porto, Portugal; [b]Departamento de Física e Astronomia, Faculdade de Ciências, Universidade do Porto, Rua do Campo Alegre s/n, 4169-007 Porto, Portugal

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15:30-15:45 **Tu-4.4**

Control of Bragg wavelength drift in high temperature annealing cycles for RFBGs and fs-FBGs, Karima Chah[a*], Damien Kinet[a,b], Maria Traianidis[c], Corentin Guyot[b], Christophe Caucheteur[a]; [a]University of Mons, Electromagnetism and Telecommunication Department, 31 Boulevard Dolez, 7000 Mons, Belgium; [b]B-SENS SRL, 31 Boulevard Dolez, 7000 Mons, Belgium; [c]Belgian Ceramic Research Centre - BCRC Av. du Gouverneur Emile Cornez 4, 7000 Mons, Belgium. *karima.chah@umons.ac.be

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15:45-16:00 **Tu-4.5**

Natural scene images reconstruction based on multimode fiber, Mengyao Zhang[a,b], Wei Jin[a,b], Jiaxing Gao[a,b], Jinhua Mou[a,b], Shanshan Li[a,b], Yu Zhang*[a,b], Zhihai Liu*[a,b]; [a]Key Laboratory of In-Fiber Integrated Optics, Ministry of Education, Harbin Engineering University, Harbin, 150001, P. R. China; [b]Key Laboratory of Photonic Materials and Device Physics for Oceanic Applications, Ministry of Industry and Information Technology of China, Harbin Engineering University, Harbin, 150001, P. R. China.

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Tu5-Session *Distributed Sensing II*

(16h30-17h30)

Chairs: ***Prof. Yun-Jiang Rao*** (University of Electronics Science and Technology of China, China)
Prof. Avishay Eyal (Tel Aviv University, Israel)

16:30-17:00 **Dr. Miguel Soriano Amat**
(invited) *RISE (Sweden)*

Tu-5.1 **Recent Advances in Time-expansion Distributed Sensing Technology**

Time-expansion technology has emerged as a promising approach to enhance the spatial resolution of time-resolved distributed fiber sensing systems. By leveraging dual-frequency comb concepts, this technique enables a customized temporal expansion of retrieved traces, reducing detection requirements and improving efficiency. This method overcomes the conventional high-bandwidth detection limitations of centimeter-scale resolution systems while maximizing optical SNR and simplifying post-processing. In this contribution, we review the latest advancements in time-expansion technology, including SNR optimization and improvements in QIR configurations, and expose interesting applications of the technology, such as distributed and dynamic shape sensing

17:00-17:15 **Tu-5.2**

Ambient noise interferometry using Chirped-Pulse DAS data for subsurface exploration, Jorge Canudo*[a,b], Javier Preciado-Garbayo[b], Pascual Sevillano[a], Jesus Subias[a], Miguel Gonzalez-Herraez[c], Hugo F. Martins[d], Beatriz Gaite-Castrillo[e], Jose Benito Bravo-Monge[e], Irene de Maria[f] and Miguel Rodriguez-Plaza[f];[a]Department of Applied Physics, University of Zaragoza, C/Pedro Cerbuna 12, 50009, Zaragoza, Spain; [b]Aragon Photonics Labs, C/Prado 5, 50009, Zaragoza, Spain; [c]University of Alcala de Henares, 28805 Madrid, Spain; [d]Instituto de Optica, CSIC. C/ Serrano 121, 28006 Madrid, Spain; [e]Instituto Geografico Nacional. C/ General Fernandez de Ibero 3, 28003 Madrid, Spain; [f]Administrador de Infraestructuras Ferroviarias (ADIF). C/ Titan 4-6. 28045 Madrid, Spain.*j.canudo@aragonphotonics.com

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17:15-17:30 **Tu-5.3**

Absolute temperature sensing in the 67-350 K range using Brillouin scattering in gases, Yuting Yang*[a], Marcelo A. Soto[b], Luc Thévenaz[a]; [a]EPFL Ecole Polytechnique Fédérale de Lausanne, Institute of Electrical and Micro Engineering, Station 11, 1015 Lausanne, Switzerland; [b]Department of Electronics Engineering, Universidad Técnica Federico Santa María, 2390123 Valparaiso, Chile.

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Tu6-Poster Session I *Distributed/Multiplexing/Physical Sensors*

(Tu-5; 17h30-19h00)

17:30-19:00 **Tu-6.1**

σ-BOTDA: exploiting frequency symmetry in Brillouin sensors, Sébastien Le Floch, Florian Sauser; Haute Ecole ARC Ingénierie (University of Applied Sciences of Western Switzerland), Espace de l'Europe 11, 2000 Neuchâtel, Switzerland

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17:30-19:00 **Tu-6.2**

An investigation of Rayleigh backscattering: utilizing coherent laser sources for enhanced IFOG performance, Rizwan Zahoor[1]*, Ferdinando D'Apice[1], Marialuisa Capezzuto[1,2], Fabrizio Sgobba[1,3], Davide D'Ambrosio[1], Paolo De Natale[4], Gianluca Gagliardi[1], Luigi Santamaria Amato[3] and Saverio Avino[1] ;[1]Consiglio Nazionale delle Ricerche, Istituto Nazionale di Ottica (INO), via Campi Flegrei, 34 Comprensorio A. Olivetti, I-80078 Pozzuoli, Italy; [2]Dipartimento di Matematica e Fisica, Università della Campania 'Luigi Vanvitelli, Caserta, Italy; [3]Agenzia Spaziale Italiana, Centro di Geodesia Spaziale 'Giuseppe Colombo, Località Terlecchia, 75100 Matera, Italy; [4]Consiglio Nazionale delle Ricerche, Istituto Nazionale di Ottica (INO), Largo E. Fermi 6, 50125 Firenze, Italy.

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17:30-19:00 **Tu-6.3**

Semi-distributed optical fiber bending extensometer system for precision landslide monitoring based on OTDR, Lorenzo Santini[a,b]*, Paulo Caldas[a,c], Luis C. C. Coelho[a,b], Claudio Floridia[a,b]; [a]INESC TEC-Institute for Systems and Computer Engineering, Technology and Science; [b]Faculty of Sciences, Univ. of Porto, R. do Campo Alegre, 4169-007 Porto, Portugal; [c]IPVC, Polytech. Inst. of Viana do Castelo, R. Escola Industrial e Comercial de Nun'Alvares, Viana do Castelo, Portugal. *lorenzo.santini@inesctec.pt

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17:30-19:00 Tu-6.4

Broad-bandwidth distributed acoustic sensor with phase offset and phase sensitivity fading compensation, Jiazhen Ji[a], Jiageng Chen*[a], Zhengyuan Xiao[a], Zhengwen Li[a], Jingdong Zhang[b], Shengwen Feng[b], Feng Li[b], Qingwen Liu[a], Zuyuan He[a] ; [a]State Key Laboratory of Advanced Optical Communication System and Networks, Shanghai Jiao Tong University, Shanghai 200240, China; [b]Huawei Technologies Company, Ltd., Shenzhen 518129, China. *ji.jiazhen@sjtu.edu.cn; jiagengchen@sjtu.edu.cn.

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17:30-19:00 Tu-6.5

High thermal-stability Fabry-Perot acoustic sensor with graphene diaphragm, Yang Liu[a], Cheng Li*[a,b], Shuxuan Donga, Zhen Wan[a], Shangchun Fan[a]; [a]School of Instrumentation Science and Opto-Electronics Engineering, Beihang University, Beijing 100191, China; [b]Shenzhen Institute of Beihang University, Shenzhen 518063, China.*licheng@buaa.edu.cn.

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17:30-19:00 Tu-6.6

Fiber Fabry-Perot interferometer sensor for dynamic magnetic field detection based on microwave photonic filter, Ziyue Wang[a], Bing Wei[b], Ling Yang[a], Xiaofeng Jin*[a]; [a]College of Information Science and Electronic Engineering, Zhejiang University, Hangzhou 310027, China; [b]College of Engineering, Zhejiang University, Hangzhou 310015, China.*jinxf00@zju.edu.cn

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17:30-19:00 Tu-6.7

Parallel data transmission using modulated vibration and MachZehnder interferometer, Nozomi Nagamatsu[1], Daniel Akira Ando[1], Tetsuya Manabe*[1], Shingo Ohno[2], Atsushi Nakamura[2], Kunihiro Toge[2]; [1]Graduate School of Engineering, Mie University, 1577 Kurimamachiyacho Tsu, Mie, 514-8507 Japan; [2]Access Network Service Systems Laboratories, NTT, 1-7-1 Hanabatake, Tsukuba, Ibaraki, 305-0805 Japan.

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17:30-19:00 **Tu-6.8**

Chitosan-ion-imprinted polymer-based Mach-Zehnder interferometer sensors for Cd^{2+} detection using cross-linking polymerization, Xujie Wang*[a], Abdullah Al Noma[b] and Changyuan Yu[a];[a]Photonics Research Center, Department of Electronic and Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong SAR, China, 999077; [b]Department of Electronic and Computer Engineering,

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17:30-19:00 **Tu-6.9**

Enhanced multi-branch sensing by leveraging the Fresnel reflection points in phase-sensitive OTDR-based PON monitoring, Maoqi Liu[a,b], Jingchuan Wang[b,*], Chen Liu[a], Luming Zhao[a], Changyuan Yu[b], and Chao Lu[b] ;[a]School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan 430074, China; [b]Photonics Research Institute, Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China. *jingchuan98.wang@connect.polyu.hk

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17:30-19:00 **Tu-6.10**

High-fidelity vehicle sensing with swiftly deployed DAS system, Yingqing Wu, Siyuan Peng, Ke Liu, Chunye Liu, Wangyouyou Li, Jie Li, Taichao Wang, Minglu Li, Yifei Qi, Zinan Wang*; Key Laboratory of Optical Fiber Sensing and Communications, University of Electronic Science and Technology of China, Chengdu 611731. *znwang@uestc.edu.cn

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17:30-19:00 **Tu-6.11**

Forward Brillouin scattering in few-mode fiber towards sensing, Elad Layosh[a], Elad Zehavi[a], Alon Bernstein[a,b], Mirit Hen[a], Maayan Holsblat[a], Ori Pearl[a], and Avi Zadok*[a,b]; [a]Faculty of Engineering and Institute for Nano-Technology and Advanced Materials, Bar-Ilan University, Ramat-Gan 5290002, Israel; [b]Faculty of Electrical and Computer Engineering and the Solid State Institute, Technion – Israel Institute of Technology, Haifa 3200003, Israel.*Avi.Zadok@technion.ac.il

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17:30-19:00 **Tu-6.12**

The impact of chromatic dispersion on Frequency Scanning COTDR and its compensation, Naoki Yamashiro, Yoshihiro Kanda, Kengo Koizumi, and Hitoshi Murai; Photonics R&D Department, R&D Center, Technology Division, Oki Electric Industry Co., Ltd, 1-16-8 Chuo, Warabi-shi, Saitama, 335-8510, Japan

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17:30-19:00 **Tu-6.13**

Extension of the measurable strain range in OFDR using overlapping and averaging method; Riku Hiroto, Naoki Yamashiro, Kengo Koizumi, and Yoshihiro Kanda; Photonics R&D Department, R&D Center, Technology Division, Oki Electric Industry Co., Ltd., 1-16-8 Chuo, Warabi-shi, Saitama 335-8510, Japan

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17:30-19:00 **Tu-6.14**

Lightweight distributed vibration sensing algorithm boosted with cross-domain distillation, Zhongyao Luo, Hao Wu*, Zhao Ge, Ming Tang; Wuhan National Laboratory for Opto-electronics, Next Generation Internet Access National Engineering Laboratory, and Hubei Optics Valley Laboratory, School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China. *wuhaoboom@hust.edu.cn

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17:30-19:00 **Tu-6.15**

Novel OFDR enhanced by dual-microcombs, Zhao-Yu Li, Xu-Yan Chen, Yun-He Song, Bing Chang, Jian-Ting Li, Teng Tan, Bai-Cheng Yao, and Yun-Jiang Rao; Key Laboratory of Optical Fiber Sensing and Communications, University of Electronic Science and Technology of China, Chengdu 611731, China.

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17:30-19:00 **Tu-6.16**

BOTDR based on a self-sweeping fiber laser, N. R. Poddubrovskii*[a], I. A. Lobach[a], S. I. Kablukov[a]; [a]Institute of Automation and Electrometry of SB RAS, 630090, 1 Ac. Koptyug Ave., Novosibirsk, Russia

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17:30-19:00 **Tu-6.17**

Distributed Brillouin measurement in graded index multimode optical fiber, Colombel[1], Maxime Romanet[1], Pierre Sillard[2], Guillaume Labroille[3], Louis Andreoli[3], Kenny Hey Tow[4], and Jean-Charles Beugnot[1]*; [1]FEMTO-ST Institute, UMR 6174, Universit´ e Marie et Louis Paster, 25030 Besançon, France; [2]Prysmian Group, 644 Boulevard Est, Billy Berclau, 62092 Haisnes Cedex, France; [3]Cailabs, 1 rue Nicolas Joseph Cugnot, 35000 Rennes, France; [4]RISE Research Institutes of Sweden, Fiber Optics and Photonics Unit, Sweden. *jc.beugnot@femto-st.fr

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17:30-19:00 **Tu-6.18**

Separation of temperature and strain measurement in photon-counting BOTDR, Maxime Romanet[1,2], Etienne Rochat[3], Kien Phan-Huy[1,4], and Jean-Charles Beugnot[1];[1]FEMTO-ST Institute, UMR 6174, Université Marie et Louis Pasteur, 25030 Besançon, France; [2]AURÉA Technology, 25000 Besançon, France; [3]Omnisens S.A., Morges, Switzerland; [4]SUPMICROTECH, Institut FEMTO-ST, 25000 Besançon, France. *maxime.romanet@femto-st.fr

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17:30-19:00 **Tu-6.19**

Characterization of heterogeneously integrated periodically-polled lithium niobate using optical frequency-domain reflectometry; Sanghoon Chin[a]*, Jean-Etienne Tremblay[a], Homa Zarebidaki[a], Hamed Sattari[a], Philip P.J. Schrinner[b], Ronald Dekker[b], Karol Obara[c], Milan Milosevic[c] and Davide Grassani[a]; [a]Centre Suisse d'Electronique et Microtechnique SA (CSEM), CH-2002 Neuchâtel, Switzerland; [b]LioniX International B.V., Hengelosestraat 500, 7521AN, Enschede, the Netherlands; [c]PHIX B.V., Hengelosestraat 525, 7521 AG Enschede, the Netherlands. *sanghoon.chin@csem.ch

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17:30-19:00 **Tu-6.20**

A modal interferometer-based wearable system for health monitoring, Pratik Mishra[1,2], Kalipada Chatterjee[1,2], Hemant Kumar[2], Rajan Jha*[1,2];[1]Nanophotonics and Plasmonics Laboratory, School of Basic Sciences, IIT Bhubaneswar, Odisha-752050, India; [2]School of Basic Sciences, IIT Bhubaneswar, Odisha-752050, India.*rjha@iitbbs.ac.in

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17:30-19:00 **Tu-6.21**

Mitigation of nonlocal polarization effect in Φ-OTDR using MIMO technique, Youmin Zhang, Zihe Hu, Can Zhao*, Ming Tang; Wuhan National Lab for Optoelectronics (WNLO) & National Engineering Laboratory for Next Generation Internet Access System, School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan 430074, China. *zhao_can@hust.edu.cn

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17:30-19:00 **Tu-6.22**

Optical flow processing for chirped-pulse coherent OTDR, Jian Fang*, Yaowen Li, Giovanni Milione, Sarper Ozharar, and Ting Wang; NEC Laboratories America Inc., 4 Independence Way, Princeton, NJ USA 08540-6634.*jfang@nec-labs.com

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17:30-19:00 **Tu-6.23**

Compact highly-sensitive device based on interference-whispering gallery mode composite structure, Chencheng Zhang[a], Shengli Pu*[a,b], Weinan Liu[a], Tengfei Xu[a], Siyang Huang[a], and Siman Zhang[a]; [a]College of Science, University of Shanghai for Science and Technology, Shanghai 200093, China; [b]Shanghai Key Laboratory of Modern Optical System, University of Shanghai for Science and Technology, Shanghai 200093, China.*shlpu@usst.edu.cn

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17:30-19:00 **Tu-6.24**

High-precision fabrication method for Fabry-Perot cavities using white light interferometry, António Vaz Rodrigues*[a,b], Paulo Robalinho[a,b], Susana Silva[b], Sérgio Tavares[c], Orlando Frazão[b]; [a]Faculty of Engineering-University of Porto (FEUP), Porto, Portugal; [b]Institute for Systems and Computer Engineering, Technology and Science, Porto, Portugal; [c]Center for Mechanical Technology and Automation, University of Aveiro, Aveiro, Portugal. *antonio.v.rodrigues@inesctec.pt

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17:30-19:00 **Tu-6.25**

Analysis and compensation for the impact of modulation signal reset errors on scale factor of interferometric fiber optic gyroscopes, Tiezhi Li, Jing Jin, Xiaowei Wang*, Ningfang Song, Xiong Pan, Xiaxiao Wang, Zuchen Zhang; Institute of Optics and Electronics Technology, School of Instrumentation and Optoelectronic Engineering, Beihang University, Beijing, China 100191.*wangxw@buaa.edu.cn

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17:30-19:00 **Tu-6.26**

Extending the measurement range of Brillouin optical correlation domain analysis through asymmetric adjustment of Stokes and anti-Stokes intensities, Wookjin Jeong, Kwanil Lee*; Nanophotonics Research Center, Korea Institute of Science and Technology (KIST), Seoul 02792, Republic of Korea.*klee21@kist.re.kr

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17:30-19:00 **Tu-6.27**

Dual closed-loop detection scheme for differential FOG driven by dual sources, Liangya Du, Yuanhong Yang*, Shuai Li, Junyuan Zhang; School of Instrumentation and Optoelectronic Engineering, Beihang University, 100191, Beijing, China. *yhyang@buaa.edu.cn

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17:30-19:00 **Tu-6.28**

Short-time Fourier neural operator for self-extraction of data feature in distributed acoustic sensing, Haotian Wang[1], Yangyang Wan[1]*, Jiageng Chen[1], and Zuyuan He[1];[1]State Key Laboratory of Advanced Optical Com munication Systems and Networks, Shanghai Jiao Tong University, Shanghai 200240, China.*YangyangWan@sjtu.edu.cn.

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17:30-19:00 **Tu-6.29**

A vibration sensor with four channels utilizing an in-line Sagnac interference structure, Yifei Lu[a,b], Jiaxing Gao[a,b], Wei Jin[a,b], Shanshan Li[a,b], Yu Zhang*[a,b], Zhihai Liu*[a,b]; [a]Key Laboratory of In-Fiber Integrated Optics, Ministry of Education, Harbin Engineering University, Harbin, 150001, P. R. China; [b]Key Laboratory of Photonic Materials and Device Physics for Oceanic Applications, Ministry of Industry and Information Technology of China, Harbin Engineering University, Harbin, 150001, P. R. China.*liuzhihai@hrbeu.edu.cn

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17:30-19:00 **Tu-6.30**

Dual-stage modulation correlation OTDR for high-resolution monitoring in passive 0ptical network, Wu Liu*, Tianqian Zhang, Zhiyi Zhong, Han Li, Ming Luo; National Key Laboratory of Optical Communication Technologies and Networks, China Information Communication Technologies Group Corporation, Wuhan 430074, Hubei, China

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17:30-19:00 **Tu-6.31**

Distributed humidity measurements using fibre-segment interferometry, K. B. Wiseman, S. W. James*, R. P. Tatam; Centre for Engineering Photonics, Cranfield University, Cranfield, UK, MK43 0AL. *s.w.james@cranfield.ac.uk

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17:30-19:00 **Tu-6.32**

Detection of aaves and sea-surface vessels via time domain only analysis of underwater DAS data, Sarper Ozharar*[a], Yue Tian[a,] Yangmin Ding[a], Zhuocheng Jiang[a], Jian Fang[a], Yao Wang[b], Yi Bao[b], Ting Wang[a]; [a]NEC Labs America, 4 Independence Way, Princeton, NJ USA 08540; [b]Department of Civil, Environmental and Ocean Engineering, Stevens Institute of Technology, 1 Castle Point Terrace, Hoboken, NJ USA 07030.*sarper@nec-labs.com

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17:30-19:00 **Tu-6.33**

Hollow-core fiber Fabry–Pérot photothermal gas sensing characteristics over the temperature range of 256–354 K, Jingwen Wu[a,b], Pengcheng Zhao[a,b], Haihong Bao[a,b], Hoi Lut Ho[a,b], Wei Jin[a,b];[a]Dept. of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China 999077; [b]Photonics Research Center, The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China 518057

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17:30-19:00 **Tu-6.34**

Deployment of fibre segment interferometry in a high temperature superconducting magnet, James H Barrington[a], Benjamin Bryant[b], David Warren[b], Stephen W James*[a], Stephen E Staines[a], Andrew Twin[b], Ralph P Tatam[a]; [a]Centre for Engineering Photonics, Cranfield University, Cranfield, Bedfordshire, MK43 0AL, UK; [b]Oxford Instruments Nanoscience, Tubney Woods, Abingdon, OX13 5QX, UK. *s.w.james@cranfield.ac.uk

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17:30-19:00 **Tu-6.35**

Raman-assisted large chirped-pulse Phi-OTDR for long range millikelvin distributed fiber thermometry, Laura Hernández-Martín*[a], Javier Preciado-Garbayo[b], Jorge Canudo[b], Juan D. Ania-Castañón[a], Hugo F. Martins[a]; [a]Instituto de Óptica "Daza de Valdés" IO-CSIC, C/Serrano 121, 28006 Madrid, Spain; [b]Aragon Photonics Labs, S.L., 5 Prado, Zaragoza, Spain 50009. *laura.hernandez@io.cfmac.csic.es

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17:30-19:00 **Tu-6.36**

Large chirped-pulse Phi-OTDR for single-shot to daylong nanostrain measurements with high dynamic range, Hugo F. Martins[a*];[a]Instituto de Óptica "Daza de Valdés" IO-CSIC, C/Serrano 121, 28006 Madrid, Spain. *hugo.martins@csic.es

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17:30-19:00 **Tu-6.37**

Reference matrix self-correction for perturbation compensation in MFDD-DAS, Pedro J. Vidal-Moreno[1], Marcos G. Barriopedro[2], Alejandro Rosado[2], Laura Hernández-Martín[3], Sonia Martin-Lopez[1], Hugo F. Martins*[3] ;[1]Universidad de Alcalá, Departamento de Electrónica, 28805 Alcalá de Henares, Spain; [2]Universidad Politécnica de Madrid, 28040 Madrid, Spain; [3]Instituto de Óptica "Daza de Valdés" IO-CSIC, C/Serrano 121, 28006 Madrid, Spain. *hugo.martins@.csic.es

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17:30-19:00 **Tu-6.38**

A closed loop fiber-optic gyroscope based on phase-locked loop, Ferdinando D'Apice[1]*, Rizwan Zahoor[1], Marialuisa Capezzuto[1,2], Fabrizio Sgobba[1,3], Davide D'Ambrosio[1], Paolo De Natale[4], Gianluca Gagliardi[1], Luigi Santamaria Amato[3] and Saverio Avino[1]; [1]Consiglio Nazionale delle Ricerche, Istituto Nazionale di Ottica (INO), via Campi Flegrei, 34 Comprensorio A. Olivetti, I-80078 Pozzuoli, Italy; [2]Dipartimento di ingegneria, Università della Campania 'Luigi Vanvitelli, Aversa, Italy; [3]Agenzia Spaziale Italiana, Centro di Geodesia Spaziale 'Giuseppe Colombo, Località Terlecchia, 75100 Matera, Italy; [4]Consiglio Nazionale delle Ricerche, Istituto Nazionale di Ottica(INO), Largo E. Fermi 6 , 50125 Firenze, Italy

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17:30-19:00 **Tu-6.39**

Bending-Loss compensated backscattering-enhanced fiber for distributed acoustic sensing, Zewen Han[a], Kehua Yan[a], Liheng Yang[a], Xinyu Li[a], Ronghua Guo[a], Chun-Bao Shi[b], Yanbo Xiao[a], Lang Xie[a], Zeng-Ling Ran[a], Yu Wu[a], Yun-Jiang Rao[a] and Yuan Gong [a]*;[a]Key Laboratory of Optical Fiber Sensing & Communications (Ministry of Education of China), University of Electronic Science and Technology of China, Chengdu, 611731 China; [b]Chongqing Research Institute & State Key Laboratory of Coal Mine Disaster Prevention and Control, China Coal Technology & Engineering Group, Chongqing, 400039 China.*ygong@uestc.edu.cn

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17:30-19:00 **Tu-6.40**

High accuracy OFDR-type dynamic distributed strain measurement using phase integration coherence compensation method and interferometer base point shift, Akiko Tada*, Masaru Koshihara, Takanori Saitoh; Anritsu Corporation, 5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan.*Akiko.Tada@anritsu.com

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17:30-19:00 **Tu-6.41**

497-km distributed acoustic sensing With 20-m spatial resolution 45-pε/√Hz strain resolution and broad-bandwidth, Jiexuan Gu[a], Yang Lu*[a], Pengcheng Liu[a], Jianfei Wang[a], Mo Chen[a], Xiaoyang Hu[a], Qiang Bian[a] and Zhou Meng[a] ;[a]College of Meteorology and Oceanology, National University of Defense Technology, Changsha 410073, China.*luyang01@nudt.edu.cn

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17:30-19:00 **Tu-6.42**

Field trial of DAS data analysis methods for detecting excavation encroachment, Keisuke Murakami*, Chihiro Kito, Kunihiro Toge; NTT Access Network Service Systems Laboratories, NTT Corporation, 1-7-1 Hanabatake, Tsukuba-city, Ibaraki, 305-0805 Japan.*keisuke.murakami@ntt.com

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17:30-19:00 **Tu-6.43**

Self-supervised pre-training for distributed acoustic sensing data feature learning with Transformers, Junyi Duan, Jiageng Chen*, Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, 800 Dongchuan Road, Minhang, Shanghai 200240, China.*jiagengchen@sjtu.edu.cn

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17:30-19:00 **Tu-6.44**

Exploring the use of a virtual reference spectrum in the Vernier effect, Daniela Santos[a,b], Gil Gonçalves[b,c], Paula A. A. P. Marques[b], M. Fátima Domingues[a,d], Paulo Antunes[a,e], Marta S. Ferreira[e], Nélia Alberto*[a]; [a]Instituto de Telecomunicações, University of Aveiro, 3810-193 Aveiro, Portugal; [b]TEMA, Mechanical Engineering Department, University of Aveiro, 3810-193 Aveiro, Portugal; [c]Intelligent Systems Associate Laboratory (LASI), 4800-058 Guimarães, Portugal; [d]Department of Biomedical Engineering and Biotechnology, Khalifa University of Science and Technology, Abu Dhabi, UAE; [e]i3N and Physics Department, University of Aveiro, 3810-193 Aveiro, Portugal.*nelia@av.it.pt

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17:30-19:00 **Tu-6.45**

A new perspective on the optical Vernier effect and Its apparent sensitivity enhancement, Paulo Robalinho*[a,c], Vinicius Piaia[a,b], António Lobo Ribeiro[d], Susana Silva[a], Orlando Frazão[a]; [a]INESC TEC – zInstitute for Systems and Computer Engineering, Technology and Science, Porto, Portugal; [b]Department of Physics and Astronomy, Faculty of Science of University of Porto, Portugal; [c]Department of Engineering Physics, Faculty of Engineering of University of Porto, Portugal; [d]Faculty of Health Sciences, University Fernando Pessoa, R. Carlos da Maia 296, 4200-150 Porto, Portugal. *paulo.robalinho@inesctec.pt

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17:30-19:00 **Tu-6.46**

Quasi-distributed ultrasonic sensing scheme based on crosstalk suppressed optical coherence domain reflectometry, Chaozhu Liu[1], Xinyu Fan1* and Zuyuan He[1]; [1]State Key Laboratory of Advanced Optical Communication Systems and Networks, Department of Electronic Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai 200240, China. *fan.xinyu@sjtu.edu.cn

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17:30-19:00 **Tu-6.47**

Frequency and time multiplexed high-precision BOTDR using a frequency-shifting loop, Kezhao Gao, Jianting Li, Yunjiang Rao*, Bowen Li*; Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China; Chengdu, 611731, China. *yjrao@uestc.edu.cn; *bowen.li@uestc.edu.cn

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17:30-19:00 **Tu-6.48**

An 80 km open path Brillouin optical time domain analysis with far-end probe light, Mengying Ru, Jiageng Chen*, Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, Shanghai 200240, China.*jiagengchen@sjtu.edu.cn

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17:30-19:00 **Tu-6.49**

Ultrahigh-resolution compact spectropolarimeter based on leaky-mode speckle from random interference and scattering, Qianyu Zhou, Yangyang Wan*, Xinyu Fan*, Zhengchao Yuan and Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Department of Electronic Engineering, Shanghai Jiao Tong University, Shanghai, China. *fan.xinyu@sjtu.edu.cn; *yangyangWan@sjtu.edu.cn

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17:30-19:00 **Tu-6.50**

Fiber-optic DAS for efficient wellbore data transmission, Haoyu Tong[a], Chun Hong Kang[a], Islam Ashry[a,*] Tien Khee Ng[a], Thomas Finkbeiner[b], Boon S. Ooi[a,*]; [a]Photonics Laboratory, Computer, Electrical and Mathematical Sciences & Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; [b]Physical Science and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia.*islam.ashry@kaust.edu.sa; *boon.ooi@kaust.edu.sa

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17:30-19:00 **Tu-6.51**

Fiber-artefact methodology for distributed Brillouin sensing, Jesper B. Christensen*, Mikael Lassen; Danish Fundamental Metrology (DFM), Kogle Allé 5, DK-2970 Hørsholm, Denmark. *jbc@dfm.dk

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17:30-19:00 **Tu-6.52**

High Performance Φ-OTDR with the temporally sequenced multi-frequency multi-wavelength chirped source, Yifan Liu[ab], Luwei Shuai[ab], Boqi Chen[abc], Zhaoyong Wang*[abd], Yici Chen[ab], Jinyi Wu[abc], Feifei Song[abc], Xuan Li[ab], Haoyang Pi[ab], Kan Gao[ab], Ronghui Qu[a], Haiwen Cai[a], Qing Ye*[abd]; [a]Key Laboratory of Space Laser Communication and Detection Technology, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai 201800, China; [b]Qiguang Research and Innovation Center, Aerospace Laser Technology and System Department, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai 201800, China; [c]Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing 100049, China; [d]Shanghai Zhongke Shenguang Optoelecronic Industry Co., Ltd, Shanghai 201815, China. *wzhy0101@siom.ac.cn; *yeqing@siom.ac.cn

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17:30-19:00 Tu-6.53

High-speed strain measurement in dual-laser Brillouin optical correlation-domain reflectometry, Guangtao Zhu*[a] and Yosuke Mizuno[a,b]; [a]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [b]Institute of Multidisciplinary Sciences, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan.

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17:30-19:00 Tu-6.54

Fiber optic Fabry-Pérot sensor multiplexing technology Based on self-calibration wavelength modulation, Yi Huang*[a], Hewen Chen[a], Yuanhang Ma[a], Chengyong Hu[a], Chuanlu Deng[a], Xiaobei Zhang[a], Sujuan Huang[a], Qi Zhang[a], Qun Li[b], Jian Shao[b], Peng Wu[b], Yuncai Lu[b], Tingyun Wang[a]; [a]Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Joint International Research Laboratory of Specialty Fiber Optics and Advanced Communication, Shanghai Institute for Advanced Communication and Data Science, Shanghai University, Shanghai 200444, China; [b]State Grid Jiangsu Electric Power Research Institute, Nanjing 211103, China

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17:30-19:00 Tu-6.55

Monitoring of FTTH-PON using direct-detection FBG-assisted φ-OTDR, Fourier Sandah*[a,b], Michel Dossou[b], Damien Kinet[a], Prasad Dandu[a], Marc Wuilpart[a]; [a]Unit of Electromagnetism and Telecommunications, University of Mons, Boulevard Dolez 31, 7000, Mons, Belgium; [b]Research Unit in Photonics and Wireless Communications, LETIA/EPAC, University of Abomey-Calavi, 01 BP 526, Abomey-Calavi, Benin.

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17:30-19:00 **Tu-6.56**

Extending the range of measurement and the sensitivity response of Fabry-Perot interferometric sensors, María de los Ángeles Martínez-Guerrero[a], Rodolfo Martínez-Manuel[a]*, Jonathan Esquivel-Hernández[a], Luis M. Valentín-Coronado[a,b], Jung-Mu Kim[c]; [a]Centro de Investigaciones en Óptica, A.C., Aguascalientes, México, 20200; [b]Secretaría de Ciencia, Humanidades, Tecnología e Innovación, México City, México, 03940; [c]Department of Electronic Engineering, Jeonbuk National University, Jeonju, Republic of Korea, 54896.*rodolfom@cio.mx

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17:30-19:00 **Tu-6.57**

Soft force sensor based on silicone rubber embedding single mode fiber using Brillouin optical correlation-domain reflectometry, Kohei Noda*[a], Atsushi Takata[b], Shinji Yamashita[a], Sze Yun Set[b]; [a]Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 1138656, Japan; [b]Department of Mechanical Engineering, School of Engineering, Institute of Science Tokyo, 2-12-1 Ookayama, Meguro-ku, Tokyo, Japan; [c]Research Center for Advanced Science and Technology, University of Tokyo, 4-6-1, Komaba, Meguro-ku, Tokyo, Japan

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17:30-19:00 **Tu-6.58**

Distributed fibre-optic acoustic sensing: a tool to assess rock properties during active and passive seismic surveys, Miguel Soriano-Amat*[a], Joao Pereira[a], Matteo Rossi[b], Roger Wisen[c], Kenny Hey Tow[a]; [a]RISE Research Institutes of Sweden, Fiber Optics and Photonics Unit, Sweden; [b]Engineering Geology Division, LTH, Lund University, Sweden; [c]Impakt Geofysik AB, Sweden.*miguel.soriano.amat@ri.se

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17:30-19:00 **Tu-6.59**

Self-referenced carrier frequency offset interferogram correction for dual-comb systems, A. Romero-Barrueco*[a], C. Escobar-Vera[a], C. Quevedo-Galán[b], A. Rosado[c,d], J. Mateu-Comas[a], S. Martin-Lopez[a], M. Gonzalez-Herraez[a], I. Esquivias[b], M. R. Fernández-Ruiz[a]; [a]GRIFO - Sensors and Photonic Technologies, Universidad de Alcalá (UAH), Associate Unit to CSIC by Institute of Optics, 28805 Alcalá de Henares, Spain; [b]CEMDATIC - E.T.S.I. Telecomunicación, Universidad Politécnica de Madrid, 28040 Madrid, Spain; [c]Photonics Systems and Sensing Lab, School of Electronic Engineering, Dublin City University, Glasnevin, Dublin 9, Ireland, [d]CONNECT Research Centre, Dunlop Oriel House, Trinity College Dublin, Dublin, Ireland. *alonso.romero@uah.es

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17:30-19:00 **Tu-6.60**

Potential of electrical-domain interference driven by modal distribution in optical fibers for strain and displacement sensing, Ryo Takano*[a], Marcelo A. Soto[b], and Yosuke Mizuno[a,c]; [a]Faculty of Engineering, Yokohama National University, Yokohama 240-8501, Japan; [b]Department of Electronics Engineering, Universidad Técnica Federico Santa Maria, 2390123 Valparaíso, Chile; [c]Institute of Multidisciplinary Sciences, Yokohama National University, Yokohama 240-8501, Japan

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17:30-19:00 **Tu-6.61**

Distributed temperature measurement with Brillouin optical correlation-domain reflectometry at 8.5 mm spatial resolution, Keita Kikuchi*[a], Ryuki Ohata[b], Kohei Noda[c], Ryo Inoue[a], Heeyoung Lee[a], and Yosuke Mizuno[b,d]; [a]Graduate School of Engineering Science, Shibaura Institute of Technology, 3-7-5, Toyosu, Kotoku, Tokyo 135-8548, Japan; [b]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [c]Graduate School of Engineering, The University of Tokyo, 7-3-1, Hongo, Bunkyo-ku, Tokyo 113-8656, Japan; [d]Institute of Multidisciplinary Sciences, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan

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17:30-19:00 **Tu-6.62**

Proposal of OCDR based on periodic pseudo-random modulation, Yuta Higa*[a], Keisuke Motoda[a], Soshi Yoshida[a], Takaki Kiyozumi[b], Takahiro Ishimaru[c], Hiroshi Takahashi[c], Kunihiro Toge[c], Yosuke Mizuno[a]; [a]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [b]Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan; [c]NTT Access Network Service Systems Laboratories, 1-7-1 Hanabatake, Tsukuba, Ibaraki 305-0805, Japan

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17:30-19:00 **Tu-6.63**

Proposal of correlation-dip-based optical correlation-domain reflectometry, Haruyuki Kubota, Yosuke Mizuno; Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan

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17:30-19:00 **Tu-6.64**

Interferometric optical fiber sensor with a polyoxometalate-doped xerogel for the selective detection of ammonia, C. Hernández-López*[a], B. Rosales-Reina[b], S. Reinoso[b], J.J. Garridob D. López-Torres[a], C. Elosua[a]; [a]Sensors Group, Electric and Electronic Engineering Department, Universidad Pública de Navarra (UPNA), Edif. Los Tejos, Campus de Arrosadía, 31006 Pamplona, Spain; [b]Institute for Advanced Materials and Mathematics (INAMAT2), Departamento de Ciencias, Universidad Pública de Navarra (UPNA), Edif. Los Acebos, Campus de Arrosadía, 31006 Pamplona, Spain. *claudia.hernandez@unavarra.es

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17:30-19:00 **Tu-6.65**

Time-transformed spectral analysis for multiparametric sensing using a single antiresonant interferometer, Isabel Jaso*[a,b], Arturo Sanchez-Gonzalez[b], Mikel Bravo[a,b], Rosa A. Perez-Herrera[b], Daniel Leandro[b]; [a]Menditech S.L., Tajonar 22, 31006 Pamplona, Spain; [b]Institute of Smart Cities (ISC), Dpt. of Electrical, Electronic and Communication Engineering, Public University of Navarre (UPNA), Campus de Arrosadia, 31006 Pamplona, Spain**.** *isabel.jaso@menditech.com

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17:30-19:00 **Tu-6.66**

Long range Brillouin optical time-domain analysis using cyclic m-sequence, Yang Zhang[a], Jiageng Chen*[a], Hanzhao Li[b], Qingwen Liu[a], Xuhui Yu[b], and Zuyuan He[a];[a]State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, Shanghai, China; [b]Ningbo AllianStream Photonics Technology Co., Ltd., Ningbo, China.*jiagengchen@sjtu.edu.cn

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17:30-19:00 **Tu-6.67**

Frequency-division-multiplexed optical correlation-domain reflectometry for overcoming sampling rate constraint, Takaki Kiyozumi*[a,b], Kohei Noda[b], Soshi Yoshidaa[b], Keisuke Motoda[a], Naoki Yamaguchi[b], Sze Yun Set[c], Yosuke Mizuno[a,e] and Shinji Yamashita[b,c];[a]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [b]Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyoku, Tokyo 113-8656, Japan; [c]Research Center for Advanced

Science and Technology, The University of Tokyo, 4-6-1 Komaba Meguro-ku, Tokyo 153-8904, Japan; [d]Institute of Multidisciplinary Sciences, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan

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17:30-19:00 Tu-6.68

Beat spectrum in dual-laser optical correlation-domain reflectometry, Takaki Kiyozumi*[a,b], Keisuke Motoda[a], Kohei Noda[b], Sze Yun Setc, Yosuke Mizuno[a,d], and Shinji Yamashita[b]; [a]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [b]Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan; [c]Research Center for Advanced Science and Technology, The University of Tokyo, 4-6-1 Komaba Meguro-ku, Tokyo 153-8904, Japan; [d]Institute of Multidisciplinary Sciences, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan.*kiyozumi-takaki@g.ecc.u-tokyo.ac.jp

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17:30-19:00 Tu-6.69

Dual sideband probe Pound-Drever-Hall Brillouin optical time domain analysis, Mengying Ru, Jiageng Chen*, Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, Shanghai 200240, China.*jiagengchen@sjtu.edu.cn

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17:30-19:00 Tu-6.70

Experimental investigation of relationship between modulation frequency and spatial resolution in OCDR with frequency shifter, Keisuke Motoda*[a], Takaki Kiyozumi*[a,b], Sze Yun Set[c], Shinji Yamashita[b,c], and Yosuke Mizuno[a,d]; [a]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [b]Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan; [c]Research Center for Advanced Science and Technology, The University of Tokyo, 4-6-1 Komaba Meguro-ku, Tokyo 153-8904, Japan; [d]Institute of Multidisciplinary Sciences, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan. *kiyozumi-takaki@g.ecc.u-tokyo.ac.jp

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17:30-19:00 **Tu-6.71**

Vernier effect-based C-shaped fiber sensor for temperature measurement, Qipeng Huang[a], Siya Huang[a], Haiming Qiu*[b], Lin Htein[c], Xin Cheng[c], Hwa-Yaw Tam[c], Hang Qu[a], Christophe Caucheteur[d], Xuehao Hu*[d]; [a]Department of Physics, College of Science, Shantou University, Shantou, 515063, China; [b]Dept. of Electronic and Information Engineering, Harbin Institute of Technology, Shenzhen, China; [c]Photonics Research Centre, Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR, China; [d]Department of Electromagnetism and Telecommunication, University of Mons, Boulevard Dolez 31, 7000 Mons, Belgium. *qiuhaiming4414@gmail.com; xuehao.hu@umons.ac.be

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17:30-19:00 **Tu-6.72**

Strain and temperature simultaneous measurement in kilometer-scale fiber-optic gyroscopic coils using OFDR, Fan Zhang[a], Xiang Zhang*[b,c,d], Cuofu Lin[b,c,d], Jun Yang[b,c,d], Yuncai Wang[b,c,d], Yuwen Qin[b,c,d]; [a]School of Physics and Optoelectronic Engineering, Harbin Engineering University, Harbin, China; [b]Key Laboratory of Photonic Technology for Integrated Sensing and Communication, Ministry of Education of China, Guangdong University of Technology, Guangzhou, 51006, China; [c]Guangdong Provincial Key Laboratory of Information Photonics Technology, Guangdong University of Technology, Guangzhou, 51006, China; [d]Institute of Advanced Photonics Technology, School of Information Engineering, Guangdong University of Technology, Guangzhou, 51006, China**.** *qyy@hrbeu.edu.cn

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17:30-19:00 **Tu-6.73**

Fiber-optic micro-displacement sensor probe based on Vernier effect, Ziwu Lu[a], Rongcheng Zheng[a], Xintong Zhong[a], Xuehao Hu*[b]. Hang Qu[a]; [a]Department of Physics, College of Science, Shantou University, Shantou, 515063, China; [b]Department of Electromagnetism and Telecommunication, University of Mons, Boulevard Dolez 31, 7000 Mons, Belgium. *xuehao.hu@umons.ac.be

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17:30-19:00 **Tu-6.74**

An optimized method to suppress the spontaneous MI induced phase noise in the interferometric fiber sensing system, Dongying Wang[a], Xiaoyang Hu*[a], Jianfei Wang[a], Mo Chen[a], Yang Lu[a], Wei Chen[a], Hantao Li[a], Zhou Meng*[a];[a]College of Meteorology and Oceanology, National University of Defense Technology, Changsha 410073, China. *huxiaoyang08@sina.cn; *zhoumeng6806@139.com

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17:30-19:00 **Tu-6.75**

Implementation of externally modulated Brillouin optical correlationdomain reflectometry using single-sideband modulator, Ryuki Ohata*[a], Kouta Ozaki[a], Keita Kikuchi[b], Heeyoung Lee[b], and Yosuke Mizuno[a,c]; [a]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [b]Graduate School of Engineering and Science, Shibaura Institute of Technology, 3-7-5 Toyosu, Koto-ku, Tokyo 135-8548, Japan; [c]Institute of Multidisciplinary Sciences, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan.

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17:30-19:00 **Tu-6.76**

Analysis on the strain and temperature dependence of stimulated Brillouin scattering in a PANDA-type few-mode fiber, Eun Chae Ha*, Kwang Yong Song; Dept. of Physics, Chung-Ang University, Seoul 06974, Korea

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***Ch*17:30-19:00** **Tu-6.77**

Water absorption effects on distributed temperature sensing using polyimide-coated optical fiber, Kun Wang*, Xin Lu, Marcus Schukar, Konstantin Hicke;Bundesanstalt für Materialforschung und -prüfung (BAM), Unter den Eichen 87, 12205 Berlin, Germany. *kun.wang@bam.de

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17:30-19:00 **Tu-6.78**

A stimulated Brillouin scattering suppression method in the remote interferometric fiber sensing system based on electro-optic phase modulator and modified phase-generated carrier, Hantao Li, Xiaoyang Hu*, Dongying Wang, Jianfei Wang, Mo Chen, Wei Chen, Yang Lu[a], Zhou Meng[a]; College of Meteorology and Oceanology, National University of Defense Technology, Changsha 410073, China. *huxiaoyang08@sina.cn

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17:30-19:00 **Tu-6.79**

Improving the strain measurement accuracy in OFDR by suppressing residual phase noise, Mingye Fu[a], Jun Yang[a], Cuofu Lin[a,b,c], Ziqiao Wei[a], Jun Yanga,[b,c*];[a]Institute of Advanced Photonics Technology, School of Information Engineering, Guangdong University of Technology, Guangzhou, China, 510006; [b]Key Laboratory of Photonic Technology for Integrated Sensing and Communication, Ministry of Education of China, Guangdong University of Technology, Guangzhou, China, 510006; [c]Guangdong Provincial Key Laboratory of Information Photonics Technology, Guangdong University of Technology, Guangzhou, China, 510006. *yangj@gdut.edu.cn

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17:30-19:00 **Tu-6.80**

Positive and negative slope assisted BOTDA based on five-frequency light to compensate for the effect of loss and reflection, Yuya Yamamoto*[a], Daichi Seia, Takuma Serizawa[a], Mohd Saiful Dzulkefly Zan[b], Yosuke Tanaka[a]; [a]Graduate School of Engineering, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei, Tokyo 184-8588, Japan; [b]Department of Electrical, Electronic and Systems Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia

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17:30-19:00 **Tu-6.81**

Slope-assisted BOTDA using Brillouin gain and loss spectra with phase-shift pulse pump for improved spatial resolution and reduced measurement time, Shota Togashi*[a], Daichi Sei[a], Takuma Serizawa[a], Mohd Saiful Dzulkefly Zan[b], Yosuke Tanaka[a]; [a]Graduate School of Engineering, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei, Tokyo 184-8588, Japan; [b]Department of Electrical, Electronic and Systems Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia

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17:30-19:00 **Tu-6.82**

Temporal data densification in fiber optic interferometer with triangular-wave phase modulation for dynamic displacement measurement, Kano Ito, Kai Asanuma, Yuki Noda, Sora Matsumoto, and Yosuke Tanaka; Graduate School of Engineering, Tokyo University of Agriculture and Technology 2-24-16 Naka-cho, Koganei, Tokyo 184-8588, Japan

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17:30-19:00 **Tu-6.83**

Proposal of phase measurement method from FFT on broadband probe based BOTDA, Takahiro Ishimaru, Yoshifumi Wakisaka, Hiroshi Takahashi, Kunihiro Toge; Access Network Service Systems Laboratories, NTT corp., 1-7-1 Hanabatake, Tsukuba, Ibaraki, Japan

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17:30-19:00 **Tu-6.84**

Efficient Inhibition of Rayleigh scattering in interferometric sensor through random phase noise, Qihao Hu*, Wujie Wang, Lina Ma, Xiaoqian Zhu; College of Meteorology and Oceanography, National University of Defense Technology, Changsha, 410073, China.*huqihaojoe@163.com

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17:30-19:00 **Tu-6.85**

Fast and robust post-processing algorithm for STFT-BOTDR, Qing Wang, Zhisheng Yang*, Simeng Jin, Xiaobin Hong*, Yifeng Lu, Jian Wu; State Key Laboratory of Information Photonics & Optical Communications, Beijing University of Posts and Telecommunications, Beijing 100876, China**.** *zhisheng.yang@bupt.edu.cn

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17:30-19:00 **Tu-6.86**

High-frequency response TGD-OFDR-based distributed acoustic sensor utilizing frequency-shift loop, Yimin Luo, Qingwen Liu*, Chaozhu Liu, Huanmo Zhou, Xinyu Fan, and Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, 800 Dongchuan Road, Minhang, Shanghai 200240, China.*liuqingwen@sjtu.edu.cn

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17:30-19:00 **Tu-6.87**

Quasi-static pressure sensitivity of single-mode optical fibers, Clément Charliac[a,b]*, Vincent Kemlin[a], Inès Ghorbel[a], Luc Pastur[b], Vincent Crozatier[a]; [a]Thales Research & Technology, 1 avenue Augustin Fresnel, Palaiseau, France; [b]Mechanical Engineering Dpt, LMI, ENSTA, Institut Polytechnique de Paris, Palaiseau, France. *clement.charliac@thalesgroup.com

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17:30-19:00 Tu-6.88

High-sensitivity distributed random lasing sensor, Bismarck Costa Lima, Walter Margulis, Jean Pierre von der Weid*; Dept. of Electrical Engineering, Pontifical Catholic University of Rio de Janeiro Rua Marques de S. Vicente 225, Rio de Janeiro, RJ, 22451-900, Brazil

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17:30-19:00 Tu-6.89

A novel distributed interferometer for security monitoring of ultra-long-distance submarine optical cables, Chenyue He, Rui Jin, Yang Yan, Yunke Du, and Chao Wang*; Department of Materials Science, Fudan University, Shanghai, China. *wangchao@fudan.edu.cn

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17:30-19:00 Tu-6.90

Suppression of Doppler-shift-induced crosstalk in linear-frequency swept φ-OTDR by using scattering enhanced fiber, Baijie Xu[a,b], Yihang Wang[a,b], Bin Du[a,b], Guanfeng Chen[a,b], Yiping Wang[a,b], and Jun He*[a,b]; [a]State Key Laboratory of Radio Frequency Heterogeneous Integration, Key Laboratory of Optoelectronic Devices and Systems of Ministry of Education/Guangdong Province, College of Physics and Optoelectronic Engineering, Shenzhen University, Shenzhen 518060, China; [b]Shenzhen Key Laboratory of Ultrafast Laser Micro/Nano Manufacturing, Guangdong and Hong Kong Joint Research Centre for Optical Fibre Sensors, Shenzhen University, Shenzhen 518060, China.*hejun07@szu.edu.cn

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17:30-19:00 Tu-6.91

Frequency distortion suppressed phase-sensitive OFDR by using dual-wavelength digitally enhanced interferometry, Congfan Wang, Weilin Xie*, Jun Xue, Qiang Yang, Bowen Li, Xiang Zheng, Xin Li, Sijing Yang, Wei Wei and Yi Dong Key; Laboratory of Photonics Information Technology, Ministry of Industry and Information Technology, School of Optics and Photonics, Beijing Institute of Technology, No. 5, Zhongguancun South Street, Haidian District, Beijing 100081, China. *wlxie@bit.edu.cn

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17:30-19:00 Tu-6.92

Realization of a collinear pump-probe beam configuration for a fiber-optic photothermal trace gas sensing system, Manuel Tanzer*, Benjamin Lang, and Alexander Bergmann; Graz University of Technology, Institute of Electrical Measurement and Sensor Systems, Inffeldgasse 33I, 8010 Graz, Austria.*manuel.tanzer@tugraz.at

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17:30-19:00 Tu-6.93

Impact of the laser spectral purity on high-resolution distributed acoustic sensing based on optical frequency domain reflectometry, Clément Charliac[a,b]*, Vincent Kemlin[a], Ines Ghorbel[a], Luc Pastur[b], Vincent Crozatier[a];[a]Thales Research & Technology, 1 avenue Augustin Fresnel, Palaiseau, France; [b]Mechanical Engineering Dpt, LMI, ENSTA, Institut Polytechnique de Paris, Palaiseau, France.

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17:30-19:00 Tu-6.94

Microwave frequency OTDR for high strain-rate sensing, Yan Ren[a], Pedro J. Vidal-Moreno[a], María R. Fernández-Ruiz[a], Sonia Martín-López[a], Luis Costa[b], Zhongwen Zhan[b], Miguel González-Herráez[a]; [a]GRIFO - Sensors and Photonic Technologies, Universidad de Alcalá (UAH), Associate Unit to CSIC by Institute of Optics, 28805 Alcalá de Henares, Spain; [b]Seismological Laboratory, California Institute of Technology, 1200 E. California Boulevard, Pasadena, CA USA 91125-2100

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17:30-19:00 Tu-6.95

Signal fading analysis for φ-OTDR applied in vehicle detection, Leonardo Rossi*[a], Lun-Kai Cheng[b], Wim de Jong[b], Lorenzo Scherino[b], Rob Jansen[b], Gabriele Bolognini[a]; [a]Consiglio Nazionale delle Ricerche, ISMN Institute, Via Gobetti 101, 40129 Bologna, Italy; [b]TNO, Optics Dept., Stieltjesweg 1, 2628CK Delft, The Netherlands.

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17:30-19:00 Tu-6.96

Acoustic resonance sensing of hydrogen diffusion in standard single-mode optical fibers, S. Paterno[a,b]*, C. A. Alvarez-Ocampo[b], A. Díez[b], M. D. Pinar[b], J. L. Cruz[b], and M. V. Andrés[b]; [a]Santa Catarina State University, Rua Paulo Malshitzky, 200, Joinville, Santa Catarina, Brazil; [b]ICMUV- University of Valencia, Calle Dr. Moliner 50, Burjasot, Valencia, Spain. *aleksander.paterno@udesc.br

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17:30-19:00 Tu-6.97

Acoustic sensing over 100 km using coherent-correlation OTDR and Manchester coding, M. Ali Allousch*; Adtran Networks SE, Märzenquelle 1, 98617 Meiningen, Germany. *Ali.Allousch@adtran.com

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17:30-19:00 Tu-6.98

Influence of Doppler frequency shift induced by environmental perturbations on sensing performance of OFDR, Bowen Li, Weilin Xie*, Congfan Wang, Qiang Yang, Xiang Zheng, Xin Li, Sijing Yang, Wei Wei and Yi Dong Key; Laboratory of Photonics Information Technology, Ministry of Industry and Information Technology, School of Optics and Photonics, Beijing Institute of Technology, No. 5, Zhongguancun South Street, Haidian District, Beijing 100081, China. *wlxie@bit.edu.cn

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17:30-19:00 Tu-6.99

Comparison investigation of DAS measurements between fibers in/on the cable for the smartification of optical fiber cables, Shintaro Nakamoto[a], Daisuke Iida[b], Yoshifumi Wakisak[a,b], Takuji Arihar[a,b], Hiroshi Takahashi[b], Kunihiro Toge[b], Hideaki Murayama[a]; [a]Graduate School of Frontier Sciences, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa-shi, Chiba-ken 277-8561, Japan; [b]Access Network Service Systems Laboratories, NTT Corporation, 1-71, Hanabatake, Tsukuba, Ibaraki-ken, 305-0805, Japan

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17:30-19:00 Tu-6.100

Investigation of metal-coated optical fiber in temperature response using TD-BOCDA, Dae-cheol seo*[a], Yong-seok Kwon[a], Min-yong Jeon[b], Il-bum kwon[a]; [a]Non-Destructive Metrology Group, KRISS, 267, Gajeong-ro, Yuseong-gu, Daejeon, Rep. of Korea 34113; [b]Fiber Optics Lab, Department of Physics, Chung-nam national University, 99, Daehak-ro, Yuseong-gu, Daejeon, Rep. of Korea 34134. *dcseo@.kriss.re.kr

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17:30-19:00 Tu-6.101

High-speed BOCDA system with dual sidebands for analyzing twodimentional deformation induced by mechanical shock, Jae Hyeong Youn*, Kwang Yong Song; Department of Physics, Chung-Ang Univ., 84, Heukseok-ro, Dongjak-gu, Seoul, Republic of Korea

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17:30-19:00 Tu-6.102

Quasi-distributed FBG-based temperature measurement of rotating components of electrical motor through fiber optical rotary joint, Sidney Goossens*[a,b], Damilare S. Ojo[a,b], Valerie Marissens[a,b,c,d], Faezeh Hosseini[c,d], Hendrik Vansompel[c,d], Francis Berghmans[a,b]; [a]Brussels Photonics (B-PHOT), Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussel, Belgium; [b]FlandersMake@VUB - BP&M, Pleinlaan 2, 1050 Brussel, Belgium; [c]Department of Electromechanical, Systems and Metal Engineering, Ghent University, Universiteitstraat 4, 9000 Ghent, Belgium; [d]FlandersMake@UGent - MIRO, Technologiepark-Zwijnaarde 131, 9052 Ghent, Belgium. *sidney.goossens@vub.be

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17:30-19:00 Tu-6.103

Rayleigh signature interrogation in time-domain DAS sensors using the short-frequency Fourier transform, Vahid Sharif, Mikel Sagues, and Alayn Loayssa; Institute of Smart Cities and Electrical, Electronic and Communication Engineering Department, Universidad Pública de Navarra, 31006 Pamplona, Spain

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17:30-19:00 Tu-6.104

Fiber-optic torsion sensing using fiber segment interferometry, Marvin Henkel, Christoph Hemeling, and Thomas Kissinger Institute for Process Measurement and Sensor Technology, Technische Universitat at Ilmenau, PF 10 05 65, 98684 Ilmenau, Germany

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17:30-19:00 Tu-6.105

Current sensing in phase-OTDR systems using deep learning, Muhammet Cagri Yeke[a,*], Samil Sirin[b], Kivilcim Yuksel[b], Abdurrahman Gumus[b]; [a]Department of Biotechnology and Bioengineering, Izmir Institute of Technology, Urla, Izmir, 35430, Turkey [b]Department of Electrical and Electronics Engineering, Izmir Institute of Technology, Urla, Izmir, 35430, Turkey. *muhammetyeke@iyte.edu.tr

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17:30-19:00 Tu-6.106

Phase bias-enhanced Sagnac interferometer for airborne audible sound detection based on 3×3 fiber coupler, Wang Zijian, Kentaro Nakamura*;Institute of Integrated Research, Institute of Science Tokyo, R2-26, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan. *knakamur@sonic.pi.titech.ac.jp

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17:30-19:00 Tu-6.107

Separation of Lamb waves modes using remotely bonded seven-core fiber Bragg grating Fabry–Pérot Interferometer; Junghyun Wee[a], Yupeng Zhu[b], Ming Han[b] and Kara Peters[a,*]; [a]Department of Mechanical and Aerospace Engineering, North Carolina State University, Campus Box 7910, Raleigh, NC, USA 27695, USA; [b]Department of Electrical and Computing Engineering, Michigan State University, Lansing MI, USA 48824, USA. *kjpeters@ncsu.edu

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17:30-19:00 **Tu-6.108**

Ultra-low-ZCPs Long-distance OFDR based on compressive sensing technology, Zhengze Jin[a,b], Wenzhu Huang*[a,b], Wentao Zhang[a,b], Fang Li[a,b]; [a]Institute of Semiconductors, Chinese Academy of Sciences, Beijing 100083, China; [b]Center of Materials Science and Optoelectronic Engineering, University of Chinese Academy of Sciences, Beijing, 100049, China. *hwzhu@semi.ac.cn

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17:30-19:00 **Tu-6.109**

Harnessing speckle optical fiber sensors through high-frequency interrogation with an event-based camera, Tomás Lopes[a,b,*], Joana Teixeira[a,b], Vicente V. Rocha[a,b], Tiago D. Ferreira[a,b], Catarina S. Monteiro[a,b], Pedro A. S. Jorge[a,b], and Nuno A. Silva[a,b]; [a]Department of Physics and Astronomy, Faculty of Sciences, University of Porto, Rua do Campo Alegre s/n, 4169-007 Porto, Portugal; [b]INESC TEC, Centre for Applied Photonics, Rua do Campo Alegre 687, 4169-007 Porto, Portugal. *tomas.j.lopes@inesctec.pt

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17:30-19:00 **Tu-6.110**

Enhancement of DAS sensitivity with acoustic metasurface, Qiang Jing, Jiahao Wang, Qiyun Zhang, Rong Tang, Sijin Zheng, Zengling Ran, Yunjiang Rao*; Fiber Optics Research Center, Key Laboratory of Optical Fiber Sensing and Communications, University of Electronic Science and Technology of China, Chengdu 611731, China.yjrao@uestc.edu.cn

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Wednesday

(28/05/2025)

W1-Plenary Session II

Chair: Prof Tong Sun, City St George´s, University of London, United Kingdom

8:30-9:30 **Dr. Stuart Russell**
Sintela Ltd (United Kingdom)

W-1.1 **Distributed Acoustic Sensing (DAS) a Real-World Perspective, Requirements, Applications and Techniques**

This talk presents a brief history of the development of Distributed Acoustic Sensing (DAS) systems utilizing Rayleigh scatter. We then describe some of the technical issues associated with coherent detection DAS topologies before presenting results using novel optical and signal processing techniques employed by Sintela in their Onyx platform. We demonstrate noise floors of <-81dB rads/(Hz)$^{1/2}$ and -90dB rads/(Hz)$^{1/2}$ operating at 6.4m resolution at 20kHz on 5km of standard SMF-28e+ fiber and enhanced scatter fiber respectively. The same system when deployed on OFS Scuba-110 ULL fiber exhibiting a loss of 0.146dB/km, is capable of operation over ranges of 180km, with a spatial resolution of only 10m. Novel real-world applications of DAS are discussed before giving the authors perspective on the research and development path which future DAS sensors may take in the short to mid-term in order to address the current limitations observed in current DAS applications

W2-Session *Integrated Photonics, Cavity Optomechanics and Quantum Sensing*

(9h30-11h00)

Chairs: ***Prof. Fumihiko Ito*** (Shimane University, Japan)
Dr. Rainer Engelbrecht (Technische Hochschule Nurenberg, Germany)

9:30-10:00 **Prof Stephanie Krober**
(invited) *Technische Universität Braunschweig (Germany)*

W-2.1 **Bringing Atoms and Ions onto a Chip: Integrated Photonics for Compact and Robust Quantum Technologies**

Integrated photonics plays a crucial role in enabling compact photonic systems for light routing and conditioning, incorporating increasingly complex optical functions. By offering scalability in both ensemble size and system complexity, it holds great promise for developing compact and robust quantum technologies. In this talk, I will provide an overview of integrated photonic devices for quantum sensing and quantum computing with trapped atoms and ions. I will discuss the physical requirements and key material considerations essential for these applications.

10:00-10:15 **W-2.2**

Silicon photonics MIOC with forward-biased phase modulators for closed-loop operation in an interferometric fiber optic gyroscope, Jen-Shu Lo[1], Bo-Yu Su[1], Wei-Xuan Chen[1], Chia-Chien Wei[1]*, Yung-Jr Hung1**, Quan-Hsiang Tseng[2], Tz-Shiuan Peng[2]; [1]Dept. of Photonics, National Sun Yat-sen University, No. 70, Lienhai Rd., Kaohsiung, Taiwan; [2]Missile & Rocket Systems Research Division, National Chung-Shan Institute of Science & Technology (NCSIST), No. 481, Zhongzheng Rd., Taoyuan, Taiwan**.** *ccwei@mail.nsysu.edu.tw; **yungjr@mail.nsysu.edu.tw

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10:15-10:30 **W-2.3**

Ultra-sensitive monolithically integrated tri-axial fiber-optic accelerometer with a nano-g level noise floor, Minzhi Hong, Chaotan Sima*, Kuangqi Li, Jiakang Xu, Yuhan Xiao, Ping Lu; Next Generation Internet Access National Engineering Research Center, School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan 430074, China.*smct@hust.edu.cn

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10:30-10:45 **W-2.4**

PDMS-based flexible distributed tactile sensor in a multi-waveguide system fabricated by the Mosquito Method, Y. Yin[a], T. Ishigure[b]; [a]Graduate School of Science and Technology, Keio university, Yokohama, Japan 223-8522; [b]Faculty of Science and Technology, Keio university, Yokohama, Japan 223-8522

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10:45-11:00 **W-2.5**

Role of thin film refractive index contrast in the design and performance of nano-photonic crystal D-shaped fiber devices for label-free biosensing, Ignacio Del Villar[a,b], Esteban Gonzalez-Valencia[c,d], Norbert Kwietniewski[e], Dariusz Burnat[e], Claudia Borri[f], Rukmani Singhf, Shadab Dabagh[f], Dayron Armas[a], Emil Pituła[e], Monika Janik[e], Ignacio R. Matías[a,b], Ambra Giannetti[f], Pedro Torres[d], Mateusz Śmietana[e,g], Francesco Chiavaioli[f]*; [a]Electrical, Electronic and Communications Engineering Department, Public University of Navarre, Pamplona 31006, Spain; [b] Institute of Smart Cities (ISC), Public University of Navarra, 31006 Pamplona, Spain; [c]Department of Electronic and Telecommunications Engineering, Instituto Tecnológico Metropolitano, Medellín, Colombia; [d]Escuela de Física, Universidad Nacional de Colombia - Sede Medellín, A.A. 3840 Medellín, Colombia; [e]Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, 00-662, Warszawa, Poland; [f]National Research Council of Italy (CNR), Institute of Applied Physics "Nello Carrara", 50019 Sesto Fiorentino, Italy; [g]Łukasiewicz Research Network – Institute of Microelectronics and Photonics, Department of Glass, al. Lotników 32/46, 02-668 Warsaw, Poland. *f.chiavaioli@ifac.cnr.it

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W3-Session *Micro-Nano Sensors*

(11h30-13h00)

Chairs: ***Prof. Moshe Tur*** (Tel Aviv University, Israel)
Prof. Yosuke Mizuno (Yokohama National University, Japan)

11:30-12:00 **Prof. Brant Gibson**
(invited) *RMIT University (Australia)*

W-3.1 **Diamond-Doped Optical Fibres for Magnetometry Applications**

The ability to persistently monitor weak magnetic fields is a key objective in long-term surveillance. One approach to meeting this goal is the development of optical fibre-based magnetometers capable of remote operation. Diamond containing the negatively-charged nitrogen vacancy colour centre (NV) is emerging as an important system for the sensing of various physical parameters including magnetic field

and temperature. Many existing diamond NV magnetometers require complex microscopes to monitor the fluorescence signal, which can restrict NV to laboratory settings. Here I will discuss the fabrication and characterization of an intrinsically magneto-sensitive optical fibre with potential applications including remote magnetic field sensing. The hybrid fibre allows for optical interrogation of NV-spin states via bound modes in a highly-stable waveguide structure. Our results open the possibility of robust, field-deployable fibre optical magnetometry for a broad range of quantum sensing applications.

12:00-12:15 **W-3.2**

Effect of TiO2 coating on neutron response of UV-written B-Ge co-doped optical fiber long period gratings, Lorenzo Scherino[a], Gaia Maria Berruti[b], Patrizio Vaiano[b], Giuseppe Quero[b], Simona Zuppolini[c], Aldobenedetto Zotti[c], Mauro Zarrelli[c], Anna Borriello[c], Paolo Petagna[a], Andrea Cusano[b]*, Marco Consales[b]*; [a]European Organization for Nuclear Research, Dept. of Experimental Physics, Geneva CH-1211; [b]Universidad Di Sannio, Dept. of Engineering, Benevento I-82100; [c]National Research Council, Institute for Polymers, Composites and Biomaterials, Portici, Naples, I-80055. *consales@unisannio.it, acusano@unisannio.it

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12:15-12:30 **W-3.3**

Ultra-sensitive gas detection using noise-canceled graphene-microcavity-based fiber laser sensor, Yuchen Wang[a], Yiwei Li[a], Zihan Liu[a], Zeping Wang[a], Yanhong Guoa, Teng Tan[a], Yunjiang Rao*[a], Baicheng Yao*[a,b] ; [a]Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, Chengdu 611731, China; [b]Engineering Center of Integrated Optoelectronic & Radio Meta-chips, University of Electronic Science and Technology, Chengdu, China. *yjrao@uestc.edu.cn; yaobaicheng@uestc.edu.cn

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12:30-12:45 **TW-3.4**

Ultra-high resolution fiber laser strain sensor based on optical injection phase-lock loop, Wei Jin[a,b], Jiaxing Gao[a,b], Mengyao Zhanga[b], Yifei Lu[a,b], Yu Zhang*[a,b], Zhihai Liu*[a,b]; [a]Key Laboratory of In-Fiber Integrated Optics, Ministry of Education, Harbin Engineering University, Harbin 150001, P. R. China; [b]Key Laboratory of Photonic Materials and Device Physics for Oceanic Applications, Ministry of Industry and Information Technology of China, Harbin Engineering University, Harbin 150001, P. R. China.*zhangy0673@163.com, *liuzhihai@hrbeu.edu.cn

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12:45-13:00 **W-3.5**

A graphene micro-rod resonator gas sensor with switchable selectivity, Hao Zhang[a], Shuya Yuan[a], Fan Tang[a], Yanhong Guo[a], Guangming Zhao[b], Teng Tan[a]*, Yunjiang Rao*[a], Baicheng Yao*[a]; [a]Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, Chengdu 611731, China; [b]Institute of Semiconductors, Chinese Academy of Science, Beijing 100083, China.*taurus_tan@uestc.edu.cn; yjrao@uestc.edu.cn; yaobaicheng@uestc.edu.cn

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W4-Session *Smart Structures*

(14h00-15h30)

Chairs: ***Prof. Jean Carlos Cardozo da Silva*** (University Tecnológica Federal do Paraná, Brazil)
Prof. Hideaki Murayama (The University of Tokyo, Japan)

14:00-14:30 **Dr. Mikael Mazur**
(invited) *Nokia Bell Labs (United States of America)*

W-4.1 **Fiber Sensing using Live Fibers in the Deployed Fiber Grid**

In this work we focus on fiber sensing using the deployed telecommunication grid. Sensing using telecom transceivers as well as dedicated distributed fiber sensing systems are covered. We discuss the challenges around using already deployed fiber, both from a compatibility and sensitivity perspective. Specifically, we focus on how to avoid any degradation on the telecom signals from introducing fiber sensing, a vital requirement for large scale deployment.

We present results from several field experiments over lit fibers (co-propagating data channels), focusing on two main use-cases. First, how can fiber sensing tools and techniques be introduced to increase the reliability of the optical communication network. Second, how can subsea cables be leveraged for monitoring today's unmonitored deep oceans, focusing primarily on climate change and seismic detection.

14:30-14:45 **W-4.2**

High-precision colonoscope image guidance using OFDR shape sensing with right-angle core configuration in multicore fiber, Zhou Xu[1], Tianle Chen[1], Lei Tu[2], Liang Wang[1*], and Ming Tang[1]; [1]School of Optics and Electronic Information, Huazhong University of Science and Technology, Wuhan 430074, China [2]Division of Gastroenterology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China. *hustwl@hust.edu.cn

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14:45-15:00 **W-4.3**

Simultaneous distributed acoustic and temperature sensing for robust leakage detection in gas pipelines, V Panand[a,b], Neethu Sasikumar[a], V R Ranjith[a], Arsath Abbasali Ayubali[a], Sachit Sekhar Patra[a], and Balaji Srinivasan[a] ; [a]Indian Institute of Technology, Madras, Chennai, India; [b]CSIR Central Scientific Instruments Organisation, Chennai, India.

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15:00-15:15 **W-4.4**

Novel sensing network based on seamless integration of DAS and PON, Rong Tang, Sijin Zheng, Qiang Jing, Shengtao Zou, Tianyu Hua, Yunjiang Rao*; Fiber Optics Research center, Key Laboratory of Optical Fiber Sensing and Communications, University of Electronic Science and Technology of China, Chengdu 611731, China.*yjrao@uestc.edu.cn

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15:15-15:30 **W-4.5**

Beam shaping the evanescent field for distributed fluorescence-based optical fibre sensing, S. C Warren-Smith*[a,b,c], X. Li[d], C. M. B. Cordeiro[e], Dale E. Otten[b] David G. Lancaster[b], H. Ebendorff-Heidepriem[c], and L. V. Nguyen[a,b,c]; [a]Future Industries Institute, University of South Australia, Mawson Lakes, South Australia 5095, Australia; [b]Laser Physics and Photonics Devices Laboratories, UniSA STEM, University of South Australia, Mawson Lakes, South Australia 5095, Australia; [c]Institute for Photonics & Advanced Sensing, The University of Adelaide, North Terrace, South Australia 5005, Australia; [d]College of Information Science and Engineering, Northeastern University, Shenyang, Liaoning 110819, China; [e]Gleb Wataghin" Institute of Physics, University of Campinas, Campinas 13083-859, Brazil.*stephen.warren-smith@unisa.edu.au

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W5-Poster Session II *Novel Concepts/Materials/Gratings/Micro-Nano/Smart Structures*

(W-5; 16h00-17h30)

16:00-17:30 **W-5.1**

Optical fiber macrobend sensor assisted by artificial intelligence for monitoring a flexible structure, Vinicius de Carvalho*, André Eugenio Lazzaretti, Marcia Muller, José Luís Fabris; Graduate Program in Electrical and Computer Engineering, Universidade Tecnológica Federal do Paraná, Av. Sete de Setembro, 3165, Curitiba, PR, 80230-901, Brazil. *crvlh.v@gmail.com

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16:00-17:30 **W-5.2**

Homogenizing fibre optic for plasma emission in multichannel LIBS spectrometry, J. F. Algorri[1,2,3,*], M. G. Fernández-Manteca[3], L. Rodriguez-Cobo[2] J.M López-Higuera[1,2,3] and A. Cobo[1,2,3] ; [1]Photonics Engineering Group, Universidad de Cantabria, 39005, Santander, Spain; [2]CIBER-bbn, Instituto de Salud Carlos III, 28029, Madrid, Spain; [3]Instituto de Investigación Sanitaria Valdecilla (IDIVAL), 39011, Santander, Spain. *algorrijf@unican.es

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16:00-17:30 **W-5.3**

Analysis of the effects of temperature, strain and refractive index in long-period fiber grating used for epoxy resin cure monitoring, Oleg V. Ivanov*, Kaushal Bhavsar, James M. Gilbert; University of Hull, Hull, United Kingdom HU6 7RX.*olegivvit@yandex.ru

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16:00-17:30 **W-5.4**

A low-noise Brillouin/erbium fiber laser module for optical sensing, Mo Chen*, Jiaze Zhao, Jianfei Wang, Yang Lu, Xiaoyang Hu and Zhou Meng; College of Meteorology and Oceanography, National University of Defense Tchnology, Changsha, Hunan, China.*suiningchenmo@163.com

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16:00-17:30 **W-5.5**

Hyperbolic metamaterial enhancement based high sensitivity sidepolished fiber SPR sensors, Shiqi Hu[a,b], Yaofei Chen[b], Gui-shi Liu[b], Lei Chen[b], Yunhan Luo[b*], Zhe Chen[b,c*]; [a]The Affiliated Guangdong Second Provincial General Hospital of Jinan University, Guangzhou 510632, P.R. China; [b]Department of Optoelectronic Engineering, Jinan University, Guangzhou China, 510632; [c]JiHua Laboratory, Foshan, Guangdong, China, 528200. *yunhanluo@163.com; thzhechen@163.com

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16:00-17:30 **W-5.6**

Exchangeable scanning probe microscopy optical fiber tips, L. Zezulka*[a,b], Z. Nováčeka[b], M. Konečnýa[b], M. Matějka[c], Š. Černý[d], J. Spousta[a,b], T. Šikola[a,b]; [a]Brno University of Technology, Faculty of Mechanical Engineering, Institute of Physical Engineering, Brno 61669, Czech Republic; [b]Brno University of Technology, Central European Institute of Technology, Purkyňova 123, 61200 Brno, Czech Republic; [c]Institute of Scientific Instruments of the Czech Academy of Sciences, Královopolská 147, 61264 Brno, Czech Republic; [d]IQS nano s.r.o., Hlavní 130, 25068, Husinec, Czech Republic.*Lukas.Zezulka@vut.cz

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16:00-17:30 **W-5.7**

BNNT coating of FBGs written in tapered optical fiber for hydrophilic gas sensing, Ping Lu*, Jingwen Guan, Huimin Ding, Kasthuri De Silva, Christopher Kingston, and Stephen J. Mihailov; National Research Council Canada, Quantum and Nanotechnologies Research Center, 100 Sussex Drive, Ottawa, ON K1A 0R6, Canada.*ping.lu@nrc-cnrc.gc.ca

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16:00-17:30 **W-5.8**

Two-dimensional force sensing whisker based on a WGM microbubble resonator, Yiming Shen[a,b,*], Zhe Wang[a], Anand V. R[a], Zhuochen Wang[a], Rayhan Habib Jibon[a], Anuradha Rout[a], Bo Cai[b], Qiang Wu[c], Yuliya Semenova[a]; [a]Photonics Research Centre, School of Electrical and Electronic Engineering, Technological University Dublin, Dublin, Ireland; [b]Eblana Photonics, West Pier Business Campus, Dun Laoghaire, Co. Dublin, A96 A621, Ireland; [c]Department of Mathematics, Physics and Electrical Engineering, Northumbria University, NE1 8ST Newcastle Upon Tyne, UK.

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16:00-17:30 **W-5.9**

Fiber optical sensor for structural strain and displacement monitoring of large power generation facilities, Michael Willsch; Siemens Energy Global GmbH & Co. KG, Schuckertstr. 2, 91058 Erlangen, Germany. *michael.willsch@siemens-energy.com

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16:00-17:30 **W-5.10**

Expressway embankment health monitoring by DAS measurement, S. Ueno[a], Y. Murata[b], M. Yamazaki[c], K. Fujioka[a], A. Yashima[b,*], K. Hayashi[d], Y. Ohno[e]; [a]Central Nippon Expressway Co. Ltd., Aichi, Japan 460-0003; [b]Gifu Univ., Gifu, Japan 501-1193; [c]Central Nippon Highway Eng. Nagoya Co. Ltd., Aichi, Japan 460-0003; [d]DPRI, Kyoto Univ., Kyoto, Japan 611-0011;[e]Taiyo Kisokougyo Co. Ltd., Aichi,Japan 454-0871.*yashima@gifu-u.ac.jp

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16:00-17:30 **W-5.11**

Unraveling the generation dynamics of Brillouin-Kerr microcomb using a harmonically synchronized time magnifie, Junting Du[a], Wenxuan Lian[a], Zhangru Shi[a], Kunpeng Jia[b], Zhenda Xie[b], Baicheng Yao[a], Mingming Nie[a,*], Bowen Li[a,*], Yunjiang Rao[a] ; [a]Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, Chengdu 611731, China; [b]National Laboratory of Solid State Microstructures, School of Electronic Science and Engineering, Nanjing University, Nanjing 210093, China. *mingming.nie@uestc.edu.cn; bowen.li@uestc.edu.cn

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16:00-17:30 **W-5.12**

Fiber-enhanced Fourier-transform photothermal spectroscopy for multi-component gas sensing, Linhao Guo[1], Pengcheng Zhao[1], Haihong Bao[1,2], Jingwen Wu[1,2], Shoufei Gao[3], Yingying Wang[3], Hoi Lut Ho[1,2], Shoulin Jiang[2], and Wei Jin[1,2]; [1]Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China; [2]Photonics Research Center, The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen 518057, China; 3Institute of Photonics Technology, Jinan University, Guangzhou 510632, China.

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16:00-17:30 **W-5.13**

Sound detection and recognition based on biomimetic fiber-microcavity acoustic sensors, Xinyue He[a], Zeping Wang[a], Wenchao He[a], Sipei Liu[b], Siqin Ge[b], Teng Tan[a], Yunjiang Rao[a], Yu Wu[a,*], Baicheng Yao[a,*]; [a]Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, Chengdu 611731, China; [b]Institute of zoology, Chinese Academy of Sciences, China. *yaobaicheng@uestc.edu.cn; *wuyu@uestc.edu.cn

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16:00-17:30 **W-5.14**

NN-recognition algorithm with gaussian activation function adjusted to probability range for fiber vibration multi-classification, Masaaki Inoue and Kunihiro Toge; NTT Access Network Service Systems Laboratories, NTT Corporation, 1-7-1 Hanabatake, Tsukubacity, Ibaraki, 305-0805 Japan

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16:00-17:30 **W-5.15**

Linearizing the mode transition in LPFG sensors with metal and dielectric thin films, Lazaro Gonzalez-Salgueiro[a], Ignacio Del Villar[a,b], Jesús M. Corresa[b], Ignacio R. Matias[a,b]; [a]Electrical and Electronic Engineering Department, Public University of Navarra, 31006 Pamplona, Spain; [b]Institute of Smart Cities (ISC), Public University of Navarra, 31006 Pamplona, Spain.

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16:00-17:30 **W-5.16**

Force feedback using fiber Bragg gratings embedded in a suction cup, J. Ascorbe*, A. Feijoo, J. Masood and T. Grandal; Aimen Technology Center, O Porriño, 36418, Spain. *joaquin.ascorbe@aimen.es

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16:00-17:30 **W-5.17**

Pipeline intrusion events recognition method based on AWTFE image enhancement for DAS, Jingcai Xu, Lang Xie, Shibo Han, Yunjiang Rao, Yu Wu*; Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, Chengdu, Sichuan 611731, China.*wuyu@uestc.edu.cn

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16:00-17:30 **W-5.18**

Full spectral Interrogation of π-phase-shifted TFBG based refractive index sensor using convolutional neural network, Ziqi Liu[a], Chang Liu[a], Xiaoliang Cao[a], Zhaohui Li[a,b], Zhengyong Liu*[a,b]; [a]School of

Electronics and Information Technology, Sun Yat-sen University, Guangzhou 510006, China; [b]Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), Zhuhai 519082, China.*liuzhengy@mail.sysu.edu.cn

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16:00-17:30 W-5.19

Hollow-core fiber cavity-enhanced stimulated Raman gain spectroscopy for trace hydrogen detection, Feifan Chen[1,2], Haihong Bao[1,2], Shoulin Jiang[1,2], Shoufei Gao[3], Yingying Wang[3], Hoi Lut Ho[1], Xiaolin Wang[4], Jianan Wang[4], Junyang Liu[4], Ming Li[4], Wei Jin[1,2]; [1]Department of Electrical and Electronic Engineering and Photonics Research Institute, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong, China; [2]Photonics Research Center, The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, 518057, China; [3]Institute of Photonics Technology, Jinan University, Guangzhou, 511443, China; [4]Sinopec Dalian Research Institute of Petroleum and Petrochemicals Co. Ltd., Dalian, 116041, China.

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16:00-17:30 W-5.20

Mechanical measurements in filament-wound composite cylinders by optical fiber specklegram sensor, Eric Fujiwara[a], Eduardo A. W. de Menezes[b], Jonathan Andra[b], Tales V. Lisbôa[b], Axel Spickenheuer[b], Sandro C. Amico[c], Cristiano M. B. Cordeiro[d]; [a]School of Mechanical Engineering, Universidade Estadual de Campinas, Campinas, Brazil; [b]Leibniz-Institut f¨ur Polymerforschung Dresden e.V., Dresden, Germany; [c]PROMEC, Federal University of Rio Grande do Sul, Porto Alegre, Brazil; [d]Institute of Physics, Universidade Estadual de Campinas, Campinas, Brazil.

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16:00-17:30 W-5.21

Optical fiber-based sensing platform with integrated biodegradable agar-structured transducer, Eric Fujiwara[a,*], Lidia O. Rosa[a,b], Francisca I. S. Oliveira[b], Victor A. V. Guimaraes[a], Cristiano M. B. Cordeiro[b*], School of Mechanical Engineering, UNICAMP, Campinas, Brazil 13083-860 bInstitute of Physics, UNICAMP, Campinas, Brazil 13083-859. *fujiwara@fem.unicamp.br, *cordeiro@unicamp.br

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16:00-17:30 **W-5.22**

High-resolution interrogation of FBG-based inclination sensor with microwave photonic filtering technique, Han Li, Di Zheng*; Center of Information Photonics & Communications, School of Information Science and Technology, Southwest Jiaotong University, Chengdu 611756, China. *dzheng@swjtu.edu.cn

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16:00-17:30 **W-5.23**

All-optical direct strain sensor based on multimode fiber and optical computing, Yu Tao, Yangyang Wan*, Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, Shanghai 200240, China.*YangyangWan@sjtu.edu.cn

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16:00-17:30 **W-5.24**

Silicon photonic interrogator for Brillouin optical time-domain analysis, Zhicheng Jin[a], Jiageng Chen[a,*], Yang Zhang[a], Mengying Ru[a], Zhengwen Li[a], Hanzhao Li[b], Keke Hu[b], Xuhui Yu[b], Zuyuan He[a]; [a]State Key Laboratory of Advanced Optical Communication System and Networks, Shanghai Jiao Tong University, Shanghai 200240, China; [b]Ningbo AllianStream Photonics Technology Co., Ltd., Ningbo 315524, China.*jiagengchen@sjtu.edu.cn

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16:00-17:30 **W-5.25**

High-SNR integrated Φ-OTDR based on injection locking laser and frequency diversity, Chen Chen[1,2], Fang Wei[3,*], Zhaoyong Wang[2,*],Qingshuai Su[3], Haoyang Pi[2], Yifan Liu[2], Huimin Wu[2], Xiangyue Li[2], Zexi Liu[2], Xiuyou Han[1], Kan Gao[2], Qing Ye[2], Haiwen Cai[3,*]; [1]School of Optoelectronic Engineering and Instrumentation Science, Dalian University of Technology, Dalian, 116024, China; [2]Wangzhijiang Innovation Center for Laser, Aerospace Laser Technology and System Department, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai 201800, China; [3]ZhangJiang Laboratory, Shanghai 201210, China. *weifang@siom.ac.cn, *wzhy0101@siom.ac.cn, *hwcai@siom.ac.cn

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16:00-17:30 **W-5.26**

Research on temperature characteristics of open cavity fiber optic sensing structure, Zi-ting Lin, Ran Gao, Kaifeng Wang, Ruijie Liu, Yong Zhao*; College of Information Science and Engineering, Northeastern University, Shenyang 110819, China Hebei Province Key Laboratory of Micro Nano Precision Optical Sensing and Measurement, Qinhuangdao 066004, China.*zhaoyong@ise.neu.edu.cn

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16:00-17:30 **W-5.27**

Nano-g resolution optical fiber MEMS accelerometer with symmetric push-pull spring structure, Zexi Liu[1,2,4], Kan Gao[1,2,*], Jiajing He[1,3,4], Haoyang Pi[1,2], Yanguang Sun[1,2], Qing Ye[1,2,4,*], Haiwen Cai[5,*]; [1]Wangzhiiiang Innovation Center for Laser, Aerospace Laser Technology and System Department, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai 201800, China; [2]Key Laboratory of Space Laser Communication and Detection Technology, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai 201800, China; [3]Key Laboratory for Quantum Optics, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Science. Shanghai 201800, China; [4]Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing 100049, China; 5ZhangJiang Laboratory, Shanghai 201210, China.*gaokan@siom.ac.cn, *yeqing@siom.ac.cn, *hwcai@aiom.ac.cn

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16:00-17:30 **W-5.28**

Detecting single ultra fine particles with fiber-tip sensors, Hasan Yalcinoglu, Arthur L. Hendriks, Mildred S. Cano-Velázquez, René P.J. van Veldhoven, Andrea Fiore; Eindhoven University of Technology, Department of Applied Physics and Science Education, De Groene Loper 19, 5612 AP Eindhoven/Netherlands

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16:00-17:30 **W-5.29**

Chirped-pulse DAS as a seismic surface wave monitoring tool along trackside dark fibers: application in the analysis of superstructure features, Javier Preciado-Garbayo[a,*], Jorge Canudo[a], Miguel Gonzalez-Herraez[b], Hugo F. Martins[c], Beatriz Gaite-Castrillo[d], Jose Benito Bravo-Monge[d], Irene de Maria[e,] Miguel

Rodrıguez-Plaza[e]; [a]Aragon Photonics Labs. C/ Prado 5, 50009 Zaragoza, Spain; [b]University of Alcala de Henares, 28805 Madrid, Spain; [c]Instituto de Optica, CSIC. C/ Serrano 121, 28006 Madrid, Spain; [d]Instituto Geografico Nacional. C/ General Fernandez de Ibero 3, 28003 Madrid, Spain; [e]Administrador de Infraestructuras Ferroviarias (ADIF). C/ Titan 4-6. 28045 Madrid, Spain.*j.preciado@aragonphotonics.com

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16:00-17:30 W-5.30

ZnO nanoparticles doped optical fibers for radioluminescence sensors, Jan Mrázek*, Jana Proboštová, Ivo Bartoň, Ondřej Podrazký, Ivan Kašík; Institute of Photonics and Electronics of the Czech Academy of Sciences, Chaberska 57, 182 57 Prague 8, Czech Republic.*mrazek@ufe.cz

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16:00-17:30 W-5.31

Field trial of railway track defect detection with DAS, Xinlei Wang, Xinjian Shu, Lang Xie, Jingcai Xu, Yu Wu, Huijuan Wu*, Yunjiang Rao; Key Lab of Optical Fiber Sensing & Communications (Ministry of Education), School of Information and Communication Engineering, University of Electronic Science & Technology of China, Chengdu, Sichuan, China 611731

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16:00-17:30 W-5.32

A hybrid demodulation algorithm for high-sensitivity and wide-range quasi-distributed fiber optic sensing, Rongrong Niu, Qingwen Liu*, and Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, Shanghai 200240, China

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16:00-17:30 W-5.33

Applying draw tower FBGs to characterize fiber drawing processes, K. Schroeder*[a], A. Lorenz[a], C. Voigtlaender[b], Marco Walter[b], T. Habisreuther[a]; [a]Leibniz- Institute of Photonic Technology, Albert-Einstein-Str. 9, 07745 Jena, Germany; [b]FBGS Technologies GmbH, Franz-Loewen-Str. 3, 07745 Jena, Germany

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16:00-17:30 **W-5.34**

Large-area hole-sphere nanogap platform for high-sensitivity, low deviation SERS analysis and its applications, Minjun Kim[a], Jongmin Lee[b], Samir Adhikari[c], Donghan Lee[c,d], Min Yong Jeon*[a,d]; [a]Institute of Quantum Systems, Chungnam National University, 99 Daehak-ro, Yuseong-gu, Daejeon, 34134, Republic of Korea; [b]School of Semiconductor Display Technology, Hallym University, Chuncheon, 24252, Republic of Korea; [c]Bright Quantum Inc., 99 Daehak-ro, Yuseonggu, Daejeon, 34134, Republic of Korea; [d]Department of Physics, Chungnam National University, 99 Daehak-ro, Yuseong-gu, Daejeon, 34134, Republic of Korea

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16:00-17:30 **W-5.35**

Ultra-wideband wavelength-swept laser with a 440 nm scanning range using four SOAs, Min Su Kim[a,*], Soyeon Ahn[a], Ji Su Kim[a], Byeong Kwon Choi[b], Sung Yoon Cho[a], Jaehyun Yoo[a], Minjun Kim[c], and Min Yong Jeon[a,c]; [a]Department of Physics, College of National Sciences, Chungnam National University, Daejeon, Republic of Korea 34134; [b]Siemens Electronic Design Automation (Korea) LLC, Seongnamsi, Gyeonggi-do, 13524, Republic of Korea; [c]Institute of Quantum System, Chungnam National University, Daejeon, Republic of Korea 34134

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16:00-17:30 **W-5.36**

Two-dimensional acoustic source localization algorithm based on physics-informed neural network in distributed acoustic sensing, Dongyang Zhao, Yangyang Wan*, Jiageng Chen, and Zuyuan He; State Key Laboratory of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong University, Shanghai 200240, China.*YangyangWan@sjtu.edu.cn

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16:00-17:30 **W-5.37**

Embedding fiber-optic sensors in DEB-LB processes for structural monitoring, Fraga S[a]*, Grandal T.[a], Ruíz R.[a], Pohlkoetter A.[b], Reif S.[b], Rey P.[a], Rivas R.[a], Troncoso I.[a], Vázquez E.[a]; [a]AIMEN Technology Center, P.I. de Cataboi SUR-PPI-2, 2, Parcela 3. 36418 O Porriño, Pontevedra, Spain, +34 986344000; [b]ENGIONIC Femto Gratings GMbH, Am Stollen 19, 38640, Goslar, Germany, +49 3958709.*sergio.fraga@aimen.es

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16:00-17:30 **W-5.38**

Astigmatism-controlled beam shaping for high-quality fibre Bragg grating inscription using femtosecond laser, Lukman Kamarudin[1], Yuehui Ma[1,2], Jiaxuan Li[1,3], Bing Sun[4], Kaiming Zhou[1]*; [1]Aston Institute of Photonic Technologies, Aston University, Aston Triangle, Birmingham B4 7ET, United Kingdom; [2] The Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Joint International Research Laboratory of Specialty Fiber Optics and Advanced Communication, Shanghai University 200444, China; [3] School of Information Science and Engineering, The Key Laboratory for Special Fiber and Fiber Sensor of Hebei Province, Yanshan University, Qinhuangdao 066004, China; [4]Advanced Photonic Technology Lab, College of Electronic and Optical Engineering & College of Flexible Electronics (Future Technology), Nanjing University of Posts and Telecommunications, Nanjing 210023, China; *k.zhou@aston.ac.uk

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16:00-17:30 **W-5.39**

Wide-spectrum erbium-doped fiber ring laser induced by deexcitation at high pump power, Rui Jin[a] and Chao Wang[a,b]*; [a]Department of Materials Science, Fudan University, Shanghai, China; [b]Dongguan Institute of Advanced Optical Fiber Technology, Dongguan, China.*wangchao@fudan.edu.cn

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16:00-17:30 **W-5.40**

Smart tape for monitoring the automated tape layering process using all-grating fiber sensors, M. C. Nespereira[a], Rubén Ruiz Lombera[a], Tania Grandal González[a], Beatriz Simoes Pereira Gomes[a], Ibon Aranberri Askargorta[b], Aratz Genuab, Asier M. Salaberria[b]; [a]AIMEN Technological Center, Polígono Industrial de Cataboi, SUR-PPI-2 (Sector 2), Parcela 3, 36418 O Porriño, Pontevedra, Spain; [b]CIDETEC Technological Center, Parque Científico y Tecnológico de Gipuzkoa, Paseo Miramón, 196, 20014, Donostia/San Sebastián (Spain)

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16:00-17:30 **W-5.41**

Monitoring the effects of planar constraint on strain accumulation during epoxy resin curing process using fibre Bragg gratings, Kaushal Bhavsar*, Oleg V. Ivanov, James M. Gilbert University of Hull, Hull, United Kingdom HU6 7RX.*K.Bhavsar@hull.ac.uk

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16:00-17:30 **W-5.42**

Remote structural health monitoring employing OFDR via optical fiber communication networks, Sakuya Hara[1], Keigo Nakao[1], Ryota Ogu[1], Chao Zhang[1,2], Fumihiko Ito[1], Yuichi Yoshimura[3], Hiroyuki Aoshika[3], Michio Imai[3]; [1]Shimane University, 1060 Nishikawatsu, Matsue, Shimane, 690-8504 Japan; [2]Research Center for Advanced Science and Technology, the University of Tokyo, 4-6-1 Komaba, Meguro, Tokyo, 153-8904 Japan; [3]Kajima Technical Research Institute, 2-19-1 Tobitakyu, Chofu, Tokyo, 182-0036 Japan

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16:00-17:30 **W-5.43**

Photo-bleaching effect of a 980 nm light source on radiation-induced attenuation in pure silica core fibers, Gukbeen Ryu*, Youngwoong Kim, Jongyeol Kim, Younggwan Hwang; Nuclear System Integrity Sensing and Diagnosis Division, Korea Atomic Energy Research Institute, Daejeon 34057, Repubic of Korea

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16:00-17:30 **W-5.44**

Multi-gas analysis using dual-comb driven nanomaterial functionalized micro fiber Bragg grating array, Yiwei Li, Teng Tan, Yuchen Wang, Zihan Liu, Yun-Jiang Rao*, Baicheng Yao*; Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, Chengdu 611731, China. *yjrao@uestc.edu.cn; *yaobaicheng@uestc.edu.cn

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16:00-17:30 **W-5.45**

A machine learning approach for designing surface plasmon resonance PCF based sensors, Amanda F. Romeiro[a,*], Cauã M. Cavalcante[a], Anderson O. Silva[b], João C. W. A. Costa[a], Maria T. R. Giraldi[c], A. Guerreiro[d,e], José L. Santos[d,e]; [a]Federal University of Pará, Applied Eletromagnetism Laboratory, Belém Pará, Brazil; [b]Federal Center for Technological Education Celso Suckow da Fonseca, Rio de Janeiro, Rio de Janeiro, Brazil; [c]Military Institute of Engineering, Rio de Janeiro, Rio de Janeiro, Brazil; [d]INESC TEC, Porto, Portugal; [e]Faculty of Sciences, University of Porto, Porto, Portugal

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16:00-17:30 **W-5.46**

Hydrogen sensor based on hollow-core fiber photothermal spectroscopy, Shiyu Zhang[a,b,c], Shoulin Jiang[a], Shuangxiang Zhaoa, Hanyu Liao[a], Yuncai Wang[b,c], Yuwen Qin[b,c], A. Ping Zhang[a], and Wei Jin[a]; [a]Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hung Hom, Hong Kong, China; [b]Key Laboratory of Photonic Technology for Integrated Sensing and Communication, Ministry of Education, Institute of Advanced Photonics Technology, School of Information Engineering, Guangdong University of Technology, Guangzhou 510006, China; [c]Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), Zhuhai 519082, China

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16:00-17:30 **W-5.47**

All-fiber content-addressable memory (CAM) for in-sensor computing, Siying Cheng[a,b], Wei Jin[a,b], Xiang Li[a,b], Yaru Li[a,b], Yu Zhang*[a,b], Zhihai Liu*[a,b]; [a]Key Laboratory of In-Fiber Integrated Optics, Ministry of Education, Harbin Engineering University, Harbin, 150001, P. R. China; [b]Key Laboratory of Photonic Materials and Device Physics for Oceanic Applications, Ministry of Industry and Information Technology of China, Harbin Engineering University, Harbin, 150001, P. R. China. *liuzhihai@hrbeu.edu.cn, *zhangy0673@163.com

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16:00-17:30 **W-5.48**

LSPR-based fibre optic Sensor fabricated by laser annealing of thin gold films, H. R. Solaimany Nazar[a], D. C. Koutsogeorgis[b], C. Ying[a], J. Yang[c], Q. Zhang[a]*; [a]Department of Engineering, School of Science and Technology, Nottingham Trent University, Clifton Lane, Nottingham NG11 8NS, UK; [b]Department of Physics and Mathematics, School of Science and Technology, Nottingham Trent University, Clifton Lane, Nottingham NG11 8NS, UK; [c]School of Pharmacy, Faculty of Science, University of Nottingham, NG7 2RD, UK.*qimei.zhang@ntu.ac.uk

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16:00-17:30 **W-5.49**

Microdisplacement sensor based on a processed optical fiber by an ultrafast laser-assisted etching method, R.A. Perez-Herrera[a,*], P. Roldan-Varona[b,c], A. Sanchez-Gonzalez[a], C. Gomez-Galdos[b], M. Lopez Amo[a], J.M Lopez-Higuera[b,d,e], L. Rodriguez-Cobo[b,d,e]; [a]Dpt of Electrical, Electronic and Communications Engineering, and Institute of Smart Cities (ISC), Public University of Navarra, 31006, Spain; [b]Photonics Engineering Group, University of Cantabria, 39005, Spain; [c]Institute of Photonics and Quantum Sciences, Heriot-Watt University, EH14 4AS, Edinburgh, UK; [d]CIBER-BBN, Instituto de Salud Carlos III, 28029 Madrid, Spain; [e]Instituto de Investigación Sanitaria Valdecilla (IDIVAL), Santander, Spain. *rosa.perez@unavarra.es

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16:00-17:30 **W-5.50**

Laser-activated optofluidic microrod hydrogen sensor with single ppm sensitivity and 5 orders of magnitude detection range, Yanhong Guo[a,#], Shuya Yuan [a,#],, Yiwei Li[a], Yuchen Wang[a], Guangming Zhao[b], Teng Tan[a,*], Yunjiang Rao[a,*], Baicheng Yao[a,c,*]; [a]Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China, Chengdu, China, 611731; [b]Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China, 100083; [c]Engineering Center of Integrated Optoelectronic & Radio Meta-chips, University of Electronic Science and Technology, Chengdu, China, 611731

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16:00-17:30 **W-5.51**

FEM simulation for the design of a smart washer-type sensor with FBG for use in metro-railway platform door security systems, Marcos A. Diniz[a,b,*], Gleison E. Silva[b,c], Fábio G. Cavalcante[a], Josemir C. Santos[b], Silvio I. Nabeta[b]; [a]São Paulo Metro Company, Rua Boa Vista, 175, Centro, 01014-001, São Paulo/SP, Brazil; [b]Optical Sensors Lab. of the Dept. of Electrical and Automation Engineering, Polytechnic School of the University of São Paulo (EPUSP), Av. Prof. Luciano Gualberto, 158, Butantã, 05508-900, São Paulo/SP, Brazil;

[c]Dept. of Mining and Petroleum Engineering of EPUSP, Av. Professor Mello Moraes, 2373, Butantã, 05508-030, São Paulo/SP, Brazil. *madiniz@metrosp.com.br

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16:00-17:30 **W-5.52**

Monitoring and early-warning technique for expressway substructure defect detection based on ultra-weak FBG array sensors, Sheng Li, Xiaowei Yan, Wenbin Hu, Lina Yue, Qiuming Nan, Lixin Wang, Juntao Wang*; National Engineering Research Center for Fiber Optic Sensing Technology and Networks, Wuhan University of Technology, Wuhan 430070, China; b School of Civil Engineering and Architecture, Wuhan University of Technology, Wuhan 430070, China. wangjuntao@whut.edu.cn

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16:00-17:30 **W-5.53**

End-to-end deep learning framework for coarsely sampled TFBG-SPR spectrum demodulation, Shenqi Yang, Haining Xu, Jintu Zhang, Yang Zhang*; School of Physics, Dalian University of Technology, Dalian 116024, China.*yangzhang@dlut.edu.cn

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16:00-17:30 **W-5.54**

Sparking fiber random laser for wavelength scanning, Zhenchuan Liu, Mingzhu She, Jintao Wen, Yunjiang Rao, Weili Zhang*; Fiber Optics Research Centre, School of Information and Communication Engineering, University of Electronic Science & Technology of China, Chengdu, 611731, China. *wl_zhang@uestc.edu.cn

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16:00-17:30 **W-5.55**

Phase-sensitive common-path dual frequency comb spectroscopy, J. Mateu-Comas*, A. Romero-Barrueco, M. Gonzalez-Herraez, S. Martin-Lopez, M.R. Fernández-Ruiz; GRIFO - Sensors and Photonic Technologies, Universidad de Alcalá (UAH), Associate Unit to CSIC by Institute of Optics, 28805 Alcalá de Henares, Spain. *julia.mateu@uah.es

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16:00-17:30 **W-5.56**

Self-assembled hierarchical nanostructures: towards advanced SERS optrodes, M. A. Cutolo[a], F. Galeotti[b], S. Spaziani[a,e], G. Quero[d], V. Calcagno[a], A. Micco[e], A. Irace[c], G. Breglio[c], M. Pisco[a,e,*], A. Cusano[a]; [a]Optoelectronic Division-Engineering Department, Universidad Di Sannio, 82100 Benevento, Italy; [b]Istituto di Scienze e Tecnologie Chimiche "G. Natta" (SCITEC), Consiglio Nazionale delle Ricerche (CNR), 20133 Milan, Italy**;** [c]Department of Electrical Engineering and Information Technology (DIETI), University of Naples "Federico II", 80125 Naples, Italy; [d]Biosciences and Territory Department, University of Molise, 86090 Pesche, Italy; [e]Centro Regionale Information Communication Technology (CeRICT Scrl), 82100 Benevento, Italy. *pisco@unisannio.it

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16:00-17:30 **W-5.57**

Polarization-mode-phase-difference photothermal gas sensing with an optical microfiber coupler, Pengcheng Zhao[a,b], Hoi Lut Ho[a,b], Shuangxiang Zhao[a,b], Wei Jin[a,b]; [a]Dept. of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China 999077; [b]Photonics Research Center, The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China 518057

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16:00-17:30 **W-5.58**

Data processing optimization for TFBG spectral discretization and sensor coding, Ander Zornoza*[a], Lucero M. Hernandez-Cedillo[b], Igor Ayesta[a], Joseba Zubia[b], Joel Villatoro[b,c]; [a]Department of Applied Mathematics, University of the Basque Country UPV/EHU, 48013 Bilbao, Spain; [b]Department of Communications Engineering, University of the Basque Country UPV/EHU, 48013 Bilbao, Spain; [c]IKERBASQUE, Basque Foundation for Science, 48011 Bilbao, Spain.*ander.zornoza@ehu.eus

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16:00-17:30 **W-5.59**

Plastic optical fiber alkane gas sensor with polyisoprene cladding and carbon black-doped polyisoprene layers, Kei Iijima[a], Yutaka Suzuki[b], Masayuki Morisawa*[a]; [a]Graduate Faculty of Interdisciplinary Research, University of Yamanashi; [b]Department of Biomedical Engineering, Graduate School of Science and Engineering, Technology, Toyo University E. *morisawa@yamanashi.ac.jp

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16:00-17:30 **W-5.60**

All-fiber counter-propagating all-normal-dispersion (CANDi) laser for coherently averaged dual-comb spectroscopy, Mingjun Wang, Peize Li, Yanhong Guo, Baicheng Yao, Yunjiang Rao, Bowen Li* ; Key Laboratory of Optical Fiber Sensing and Communications (Education Ministry of China), University of Electronic Science and Technology of China; Chengdu, 611731, China. *bowen.li@uestc.edu.cn

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16:00-17:30 **W-5.61**

A hybrid structural health monitoring system based on Lamb waves and distributed optical fiber sensors, R. Vallifuoco*, E. Catalano, A. Coscetta, L. Zeni, A. Minardo, D. Perfetto, A. Aversano, A. De Luca, F. Caputo Department of Engineering, University of Campania "Luigi Vanvitelli", Via Roma 29 81031 Aversa (Italy). *raffaele.vallifuoco@unicampania.it

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16:00-17:30 **W-5.62**

Ultra-high stability chip-scale optical gyroscope, Shuang Liu, Junyi Hu, Binjie Li, Hewei Wang, Yaqi Yong, Huilian Ma*; School of Aeronautics and Astronautics, Zhejiang University, Hangzhou 310027, China. *mahl@zju.edu.cn

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16:00-17:30 **W-5.63**

High-resolution mid-infrared dual electro-optic comb spectroscopy based on spectral interleaving, Zhengchao Yuan[a], Xinyu Fan[a]*, Bingxin Xu[a,b], and Zuyuan He[a]; [a]State Key Laboratory of Advanced Optical Communication Systems and Networks, Department of Electronic Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai 200240, China; [b]Max-Planck Institute of Quantum Optics, Hans-Kopfermann-Straße 1, 85748, Garching, Germany.*fan.xinyu@sjtu.edu.cn

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16:00-17:30 **W-5.64**

New sensing solutions based on Fibre Bragg Gratings for engineering applications, Małgorzata Garbacka[a,*], Tomasz Howiacki[a,b], Rafał Sieńko[b], Łukasz Bednarski[c]; [a]SHM System / Nerve-Sensors, Libertów ul. Jana Pawła II 82A, 30-444 Kraków, Poland; [b]Faculty of Civil Engineering, Cracow University of Technology, Warszawska 24, 31-155, Krakow, Poland; [c]Faculty of Mechanical Engineering and Robotics, AGH University of Science and Technology in Krakow, Mickiewicza 30, 30-059, Krakow, Poland

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16:00-17:30 **W-5.65**

Avalanche photodiode integrated silicon photonics MIOC for interferometric fiber optic gyroscope, Meng-Hsuan Tsai, Jen-Shu Lo, Ting-Hsuan Kuo, Wei-Xuan Chen, and Yung-Jr Hung*; Dept. of Photonics, National Sun Yat-sen University, No. 70, Lienhai Rd., Kaohsiung, Taiwan.*yungjr@mail.nsysu.edu.tw

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16:00-17:30 **W-5.66**

Monitoring heat losses in a heating pipeline model using distributed temperature sensing, Sergei Mikhailov[1,2,*], Svend Bram[3,4], Francis Berghmans[1,2]; [1]Vrije Universiteit Brussel, Brussels Photonics (B-PHOT), Pleinlaan 2, 1050 Brussel, Belgium; [2]Flanders Make@VUB - BP&M, Pleinlaan 2, 1050 Brussel, Belgium; [3]Vrije Universiteit Brussel, Thermo and Fluid Dynamics (FLOW), Pleinlaan 2, Brussels, 1050, Belgium; [4]Brussels Institute for Thermal-Fluid Systems and Clean Energy (BRITE), Vrije Universiteit Brussel (VUB) and Université Libre de Bruxelles (ULB), Brussels, 1050, Belgium.*sergei.mikhailov@vub.be

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16:00-17:30 **W-5.67**

Railway track monitoring using distributed acoustic sensing (DAS) with standard telecom cable, Alex Chedid[a,*], Ali Kabalan[b], Tarik Hammi[b], Gabriel Papaiz Garbini[b], Renaud Gabet[a]; [a]Télécom Paris, 19 Place Marguerite Perey, 91120 Palaiseau, France; [b]SNCF Réseau, 6 avenue François Mitterrand - 93574 La Plaine St Denis, France

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16:00-17:30 **W-5.68**

Optical fiber gas sensors based on the interaction of evanescence waves with active layers detecting pure gases and liquid vaporous, Joanna Korec-Kosturek, and Karol A. Stasiewicz*; Faculty of Advanced Technologies and Chemistry, Military University of Technology, 2 Kaliskiego Street, 00-908 Warsaw, Poland.*karol.stasiewicz@wat.edu.pl

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16:00-17:30 **W-5.69**

Low noise refractive index sensing with short-length long-period gratings written with femtosecond laser, R. Funari, R. M. A. Ayaz, F. Di Pasquale, C. J. Oton*; Scuola Superiore Sant'Anna, Institute of Mechanical Intelligence, Via G. Moruzzi 1, 56124, Pisa, Italy.*claudio.oton@santannapisa.it

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16:00-17:30 **W-5.70**

Feature extraction of disturbance signal based on hilbert-huang transform for event recognition of Φ-OTDR , Yi Huang*[a], Ziyi Wei[a], Yi Zhang[a], Wei Shen[a], Chengyong Hu[a], Chuanlu Deng[a], Wei Jin[c], Qi Zhang[a], Fufei Pang[a], Xiaobei Zhang[a], Lin Chen[b], Jianming Tang[c] and Tingyun Wang[a]; [a]Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Joint International Research Laboratory of Specialty Fiber Optics and Advanced Communication, Shanghai Institute for Advanced Communication and Data Science, Shanghai University, Shanghai 200444, China; [b]College of Electronics and Information Engineering, Shanghai University of Electric Power, Shanghai 200090, China; [c]DSP Centre of Excellence, School of Computer Science and Engineering, Bangor University, Bangor LL57 1UT, U.K. *huangyi1008@shu.edu.cn

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16:00-17:30 **W-5.71**

Silica microlenses for extrinsic optical fibre sensors, Celia Gómez-Galdós[a,b,*], Maria Gabriela Fernández-Manteca[a,b], Borja García-García[a,b], Andrea Perez-Asensio[a,b], José Francisco Algorria[b,c], José Miguel López-Higuera[a,b,c], Adolfo Cobo[a,b,c], Luis Rodríguez-Cobo[a,b,c]; [a]Photonics Engineering Group, Universidad de Cantabria (UC), 39005, Santander, Spain; [b]Instituto de Investigación Sanitaria Valdecilla (IDIVAL), 39011, Santander, Spain; [c]CIBER-bbn, Instituto de Salud Carlos III, 28029, Madrid, Spain.*ggaldosc@unican.es

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16:00-17:30 **W-5.72**

A reflection scheme for optical chemical sensors via light-diffusing fibers and molecularly imprinted polymers, Rosalba Pitruzzella[a], Filipa Sequeira[b], Chiara Marzano[a], Francesco Arcadio[a], Catarina Cardoso Novo[b], Luigi Zeni[a], Ricardo Jorge Figueiredo Oliveira[b], Maria Pesavento[c], Giancarla Alberti[c], Rogerio Nunes Nogueira[b], Nunzio Cennamo[a]*; [a]Dep. of Engineering, University of Campania Luigi Vanvitelli, Via Roma 29, 81031 Aversa, Italy; [b]Instituto de Telecomunicações, Universidade de Aveiro, Campus Universitário de Santiago, 3810 - 193 Aveiro, Portugal; [c]Dep. of Chemistry, University of Pavia, Via Taramelli 12, 27100 Pavia, Italy.*nunzio.cennamo@unicampania.it

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16:00-17:30 **W-5.73**

Limitations of OFDR measurements in civil structural health monitoring, Andrea Agreiter, Werner Lienhart; Graz University of Technology, Institute of Engineering Geodesy and Measurement Systems, Steyrergasse 30, 8010 Graz, Austria. andrea.agreiter@tugraz.at

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16:00-17:30 **W-5.74**

Femtosecond laser-written microstructured dual hole flat fibre pressure sensor, Timothy Lee[a,*], Pawel Maniewski[a,b], Matthew Whitaker[a], Bruno Moog[a], Martynas Beresna[a], Christopher Holmes[a];[a]Optoelectronics Research Centre, Highfield Campus, University of Southampton, Southampton, SO17 1BJ, United Kingdom; [b]Department of Applied Physics, KTH Royal Institute of Technology, Stockholm, Sweden. *Timothy.Lee@soton.ac.uk

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16:00-17:30 **W-5.75**

Microfluidic flowmeter using a PDMS-coated capillary, Zhe Wang[a,*], Yiming Shen[a], Zhuochen Wang[a], Anuradha Rout[a], Rayhan Habib Jibon[a], Anand V. R[a], Fangfang Wei[a], Marek Rebow[b], Qiang Wu[c], Yuliya Semenova[a]; [a]Photonics Research Centre, School of Electrical and Electronic Engineering, Technological University Dublin, Dublin 7, Ireland; [b]College of Engineering and Built Environment, Technological University Dublin, Ireland; [c]Department of Mathematics, Physics and Electrical Engineering, Northumbria University, Newcastle Upon Tyne NE1 8ST, UK. *d19125415@mytudublin.ie

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16:00-17:30 **W-5.76**

Organic solvents in-diffusion probe based on Bragg reflectors inscribed in polypropylene no-core optical fibers, Ivan Chapaloa*, Vasilis Sarakatsianos[a], Chrysi Kouklinou[a], Maria Konstantaki[a], Theodoros Manouras[a,b], Maria Vamvakaki[a,b], Stavros Pissadakis[a]; [a]Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology - Hellas (FORTH), Nikolaou Plastira 100, Vassilika Vouton, Heraklion 70013, Greece; [b]Department of Materials Science and Technology, University of Crete, Heraklion 70013, Greece.*ivan.chapalo@iesl.forth.gr

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16:00-17:30 **W-5.77**

Hybrid fibre-optic assemblies: a miniature, multi-functional cable for quasi- and fully- distributed measurements, Kenny Hey Tow*[a,] Joao M B Pereira[a], Miguel Soriano-Amat[a], Markus Persson[a], Kristian Angele[b], Mats Billstein[b], Åsa Claesson[a]; [a]RISE Research Institutes of Sweden, RISE Fiberlab, Fibervägen 2-6, 824 50 Hudiksvall, Sweden; [b]Vattenfall AB, R&D Laboratories, Älvkarleby, 814 70, Sweden.*kenny.heytow@ri.se

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16:00-17:30 **W-5.78**

Two-photon 3D printed Fabry-Perot cavity combined with a femtosecond fiber Bragg grating on a single fiber for simultaneous sensing of pressure and temperature at high temperatures, Franz-Enno Morel[a,*], Guillaume Laffont[a], Marc Douay[b]; [a]Université Paris-Saclay, CEA List, F-91120 Palaiseau, France. [b]Univ. Lille, CNRS, UMR 8523 - Physique des Lasers Atomes et Molécules (PhLAM), F-59000 Lille, France. *franz-enno.morel@cea.fr

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16:00-17:30 **W-5.79**

Underground pipeline imaging using broadband fiber optic seismometer array, Yiqian Huang[1,2], Wenzhu Huang[1,2], Wentao Zhang[1,2,*]; [1]Institute of Semiconductors, Chinese Academy of Sciences, Beijing 100083, China; [2]Center of Materials Science and Optoelectronic Engineering, University of Chinese Academy of Sciences, Beijing, 100049, China.*zhangwt@semi.ac.cn

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16:00-17:30 **W-5.80**

Assessing electron radiation impact on Long Period Gratings: radiation saturation and recovery insights, Andrei Stancalie*[a], Flavio Esposito*[b], Anubhav Srivastava[b], Razvan Mihalcea[a], Laura Mihai[a], Daniel Ighigeanu[c], Stefania Campopiano[b], Agostino Iadicicco*[b]; [a]Center for Advanced Laser Technologies (CETAL), National Institute for Laser, Plasma and Radiation Physics, Magurele RO-077125, Romania; [b]Department of Engineering, University of Naples "Parthenope", 80143 Naples, Italy; [c]Accelerators Department, National Institute for Laser, Plasma and Radiation Physics, Magurele RO-077125, Romania. *andrei.stancalie@inflpr.ro, flavio.esposito@uniparthenope.it, agostino.iadicicco@uniparthenope.it

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16:00-17:30 **W-5.81**

Investigation of internal fine structure testing and defect analysis methods for fiber optic couplers, Zhang Dengfeng[a], Wen Kunhua[a,b,c,d], Lin Cuofu[b,c,d,*], Yang Jun[b,c,d]; [a]School of Physics & Optoelectronic Engineering, Guangdong University of Technology, Guangzhou 510006, Guangdong, China; [b]Institute of Advanced Photonics Technology, School of Information Engineering, Guangdong University of Technology, Guangzhou 510006, Guangdong, China; [c]Key Laboratory of Photonic Technology for Integrated Sensing an Communication, Ministry of Education of China, Guangdong University of Technology, Guangzhou 510006, Guangdong, China; [d]Guangdong Provincial Key Laboratory of Information Photonics Technology, Guangdong University of Technology, Guangzhou 510006, Guangdong, China. *mrlin@hrbeu.edu.cn

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16:00-17:30 **W-5.82**

Pressure and temperature sensing with 3D nanoprinted structure integrated on optical fiber, Diana Pereira[a,b,*], Marta. S. Ferreira[b], Markus A. Schmidt[a,c,d]; [a]Leibniz Institute of Photonic Technology, Albert-Einstein-Str. 9, 07745 Jena, Germany; [b]i3N & Physics Department, University of Aveiro, Campus Santiago, 3810-193 Aveiro, Portugal; [c]Otto Schott Institute of Materials Research (OSIM), Friedrich Schiller University of Jena, Fraunhoferstr. 6, 07743 Jena, Germany; [d]Abbe Center of Photonics and Faculty of Physics, Friedrich Schiller University of Jena, Max-WienPlatz 1, 07743 Jena, Germany.*dsap@ua.pt

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16:00-17:30 **W-5.83**

Temperature and relative humidity fiber optic sensing system for concrete monitoring, Rita Faria[a,*], André D. Santos[a], Pedro M. da Silva[a], Luis. C. C. Coelho[a], José M. M. M. de Almeida[a,b], João P. Mendes[a]; [a]NESC TEC—Institute for Systems and Computer Engineering, Technology and Science, and Faculty of Sciences, University of Porto, 4169-007 Porto, Portugal; [b]Department of Physics, School of Sciences and Technology, University of Trás-os-Montes e Alto Douro, 5001-801 Vila Real, Portugal.*rita.p.faria@inesctec.pt

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16:00-17:30 **W-5.84**

Magnetic field measurement using Fabry-Perot fiber-optic sensor with 3D microstructures, Junjie He[a], Tongtong Zhu[a], Lutian Li[a], Hang Qu[a], Xuehao Hu[b,*]; [a]Department of Physics, College of Science, Shantou University, Shantou, 515063, China; [b]Department of Electromagnetism and Telecommunication, University of Mons, Boulevard Dolez 31, 7000 Mons, Belgium.*xuehao.hu@umons.ac.be

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16:00-17:30 **W-5.85**

Opto-mechanical analysis of thermal stability of fiber coatings, Shahaf Noimark[a], Ori Pearl[a], Kenny Hey Tow[b], Sandy Alomari[b], Åsa Claesson[b], Elad Zehavi[a], Alon Bernstein[a,c], Mirit Hen[a], Maayan Holsblat[a], and Avi Zadok*[a,c]; [a]Faculty of Engineering and Institute for Nano-Technology and Advanced Materials, Bar-Ilan University, Ramat-Gan 5290002, Israel; [b]RISE Research Institutes of Sweden, RISE Fiberlab, Fibervägen 2-6, 824 50 Hudiksvall, Sweden; [c]Faculty of Electrical and Computer Engineering and the Solid-State Institute, Technion – Israel Institute of Technology, Haifa 3200003, Israel.*Avi.Zadok@technion.ac.il

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16:00-17:30 **W-5.86**

Development of a low-cost Raman spectroscopy platform for high-throughput analysis, Guilherme Lopes*[a,b], António José Fernandes[b], Alexandre Carvalho[b], Carlos Marques[a]; [a]CICECO – Aveiro Institute of Materials, Physics Department, University of Aveiro, Aveiro 3810193, Portugal; [b]I3N and Physics Department, University of Aveiro, Aveiro 3810-193, Portugal

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16:00-17:30 **W-5.87**

Multidimensional monitoring of gas pipeline leakage: an application of distributed multiparameter sensing based on hybrid UWFBG array, Cong Liu[a,b], Yu Wang[a,b], Ajiaikebaier Wulamu[a,b], Xiaolong Li[a], Weibing Gan[a], Minghong Yang[a]*; [a]National Engineering Research Center of Fiber Optic Sensing Technology and Networks, Wuhan University of Technology, Wuhan, Hubei province 430070, China; [b]School of Information Engineering, Wuhan University of Technology, Wuhan, Hubei province 430070, China.*minghong.yang@whut.edu.cn

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16:00-17:30 **W-5.88**

Stimulated Raman photothermal spectroscopy on an optical nanofiber for hydrogen detection, Hanyu Liao[a,b,*], Shuangxiang Zhao[a,b], Kaiyuan Zheng[c], Hoi Lut Ho[a,b], Haihong Bao[a,b,*], Wei Jin[a,b]; [a]Department of Electrical and Electronic Engineering and Photonics Research Institute, The Hong Kong Polytechnic University, Hong Kong, China; [b]Photonics Research Center, The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China; [c]Division of Environment and Sustainability, The Hong Kong University of Science and Technology, Hong Kong, China

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16:00-17:30 **W-5.89**

Pipeline leaks acoustic detection using mechanically amplified fiber Bragg gratings sensors and artificial intelligence, Javier Madrigal[a,*], Victor J. Ruiz[b], Beatriz Defez[b], Jorge Gosálvez[b,] Salvador Sales[a]; [a]Institute of Telecommunications and Multimedia Applications (iTEAM), Universitat Politècnica de València, Camino de Vera, s/n, 46022,Valencia, Spain; [b]Research Center in Graphical Technologies,Universitat Politècnica de València, Camino de Vera, s/n, 46022,Valencia, Spain.*jamadmad@iteam.upv.es

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16:00-17:30 W-5.90

Topological sensing with plasmons, A. Guerreiro[a,b,*]; [a]Faculdade de Ciências da Universidade do Porto, Rua do Campo Alegre s/n, 4169-007 Porto, Portugal; [b]INESC TEC- Institute for Systems and Computer Engineering, Technology and Science, Campus da FEUP, 4200-465 Porto, Portugal. *ariel@fc.up.pt

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16:00-17:30 W-5.91

Polarization sensing for optical network security: a comparative study of 1G and 200G systems, Adrian Tomasov, Pavel Zaviska, Tomas Horvath, Petr Dejdar, Matej Cernohous, and Petr Munster; Brno University of Technology, Faculty of Electrical Engineering and Communications, Dept. of Telecommunications, Technicka 12, 616 00 Brno, Czech Republic. *optolab@vut.cz

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16:00-17:30 W-5.92

NV centres in diamond for magnetic field quantum sensing, Matthew Green*, Matthias Fabian, Tong Sun, Kenneth T.V. Grattan; Department of Engineering, City St George's, University of London, Northampton Square, London EC1V 0HB, United Kingdom

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16:00-17:30 W-5.93

Low-cost versatile optical fiber sensor for structural health monitoring of reinforced concrete structures, P. M. da Silva[a,b,*], João. P. Mendes[a], L. C. C. Coelho[a] , J. M. M. M. de Almeida[c]; [a]INESC TEC - Institute for Systems and Computer Engineering, Technology and Sciences, and Faculty of Sciences, University of

Porto, Rua do Campo Alegre, 4169-007 Porto Portugal; [b]Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal; [c]Department of Physics, School of Sciences and Technology, University of Trás-os-Montes e Alto Douro, 5001-801, Vila Real, Portugal

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16:00-17:30 **W-5.94**

'Measuring the Monument' – fibre optic sensor systems show why Hooke's and Wren's plans for a giant telescope within the Monument in London failed, Matthias Fabian[a,b,c], Joanna M. Coote[a], Philip J. Thomas[c], Michael Mainelli[d], Tong Sun[a,b], Kenneth T. V. Grattan[a,b,c,*]; [a]City Optotech Ltd, Northampton Square, London, EC1V 0HB, UK; [b]School of Science & Technology, City St George's, University of London, London EC1V 0HB, UK; [c]Worshipful Company of Scientific Instrument Makers, 9 Montague Close, London, SE1 9DD, UK; [d]Lord Mayor of London (2023-24), Guildhall, PO Box 270, London, EC2P 2EJ, UK.*k.t.v.grattan@city.ac.uk

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16:00-17:30 **W-5.95**

Generation of lossy mode resonances in a printed optical waveguide, Rebeca Dávila[a,*], Frank Martinez[a], Abián B. Socorro[a,c], César Elosúa[a], Aritz Ozcariz[b], Pedro J. Rivero[a,d], Ignacio R. Matías[a,b,c], Jesus M. Corres[a,b]; [a]Electrical, Electronic and Comunication Dept. Public University of Navarra, 31006 Pamplona, Spain; [b]Institute of Smart Cities (ISC), Public University of Navarra, 31006 Pamplona, Spain; [c]Navarra Institute for Health Research (IdiSNa), Complejo Hospitalario de Navarra, 31008 Pamplona, Spain; [d]Institute for Advanced Materials and Mathematics, Public University of Navarra, 31006 Pamplona, Spain. *rebecabeatriz.davila@unavarra.es

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16:00-17:30 **W-5.96**

Anisotropic plasmonic nano emitters to excite surface plasmon polaritons on thin film-coated tapered optical fibers, Paulo S. S. dos Santos*[a], João P. Mendes[a], I. Pastoriza-Santos[b,c], José M. M. M. de Almeida[a,d] and Luís C. C. Coelho[a,e]; [a]INESC TEC—Institute for Systems and Computer Engineering, Technology and Science, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal; [b]CINBIO, Universidad de Vigo, Campus Universitario Lagoas, Marcosende, 36310, Vigo, Pontevedra, España; [c]Instituto de Investigación Sanitaria Galicia Sur, 36312 Vigo, Pontevedra, Espanha; [d]Department of Physics, School of Science and Technology, University of Trás-os-Montes e Alto Douro, 5001-801 Vila Real, Portugal; [e]Department of Physics, Faculty of Sciences of Porto University, Rua do Campo Alegre, 4169-007 Porto, Portugal.

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16:00-17:30 **W-5.97**

Repeatability of vibration-based damage detection on rolling element bearings with FBG sensors, Sidney Goossens[a,b,*], Panagiotis Mantas[c,d], Damilare Ojo[a,b], Octavian Axinte[a,b], Alexandre Mauricio[c,d], Konstantinos Gryllias[c,d], Francis Berghmans[a,b]; [a]Brussels Photonics (B-PHOT), Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussel, Belgium; [b]FlandersMake@VUB - BP&M, Pleinlaan 2, 1050 Brussel, Belgium; [c]LMSD Division Mecha(tro)nic System Dynamics, Department of Mechanical Engineering, KU Leuven, Celestijnenlaan 300, Box 2420, B-3001 Leuven; [d]FlandersMake@KULeuven, Celestijnenlaan 300, Box 2420, 3001 Leuven, Belgium.*sidney.goossens@vub.be

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16:00-17:30 **W-5.98**

Molecularly imprinted optical fibre sensor for detection of nitroglycerin, Nancy S. Whittaker*[a], Pavel Čurda[b], Beatriz Rosales-Reina[c], Tong Sun[a], Kenneth T.V. Grattan[a], Kate Khan[d], Alex Parker[e], Vitezslav Stranak[b], Mateusz Śmietana[f], Cesar Elosúa[c]; [a]City St George's University of London, London, United Kingdom, EC1V 0HB; [b]University of South Bohemia, Branisovska 1760 Ceske Budejovice; [c]Universidad Pública de Navarra (UPNA), 31006 Pamplona, Spain; [d]Department for Transport, Great Minster House, 33 Horseferry Rd, London, United Kingdom, SW1P 4DR; [e]Smiths Detection, Century House, Maylands Avenue, Hemel Hempstead, Hertfordshire, United Kingdom, HP2 7DE [f]Warsaw University of Technology, 00-662 Warsaw, Poland

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16:00-17:30 **W-5.99**

Early leak detection in wastewater pipelines using fibre Bragg grating sensors, Matthias Fabian[a,b,*], Joanna M Coote[b], Richard Scott[a], Tong Sun[a,b], Kenneth T V Grattan[a,b], Heriberto Bustamante[c], Timothy Hill[c], James McCulloch[c], Simon Tait[d], Kirill Horoshenkov[d] : [a]City St George's, University of London, London, EC1V 0HB, UK; [b]City Optotech Ltd., London, EC1V 0HB, UK; [c] Sydney Water Corporation, Parramatta, NSW 2124, Australia; [d]The University of Sheffield, S10 2TN, UK .*matthias.fabian.1@city.ac.uk

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16:00-17:30 **W-5.100**

Hybrid sensor based on a single segment of hollow-core microstructured optical fiber for simultaneous measurement of pressure and temperature, Carolina Neves[a], Jörg Bierlich[b], Micael Nascimento[a], Marta S. Ferreira[a,*]; [a]i3N & Physics Department, University of Aveiro, Campus de Santiago, 3810-193 Aveiro, Portugal; [b]Leibniz Institute of Photonic Technology, Albert-Einstein-Straße 9, 07745 Jena, Germany.*marta.ferreira@ua.pt

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16:00-17:30 W-5.101

Mind the splice: ultra-high sensitivity refractometer based on thin-wall silica capillary tube, Mariline M. Costa[a], Ana I. Freitas[a,b], Jörg Bierlich[c], Marta S. Ferreira*[a]; [a]i3N & Physics Department, University of Aveiro, Campus de Santiago, 3810-193 Aveiro, Portugal; [b]Faculty of Exact Sciences and Engineering, University of Madeira, Campus da Penteada, 9020-105 Funchal, Portugal; [c]Leibniz Institute of Photonic Technology, Albert-Einstein-Straße 9, 07745 Jena, Germany. *marta.ferreira@ua.pt

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16:00-17:30 W-5.102

Hydrophobicity level detection of superhydrophobic glass-composite coatings based on a fibre-hole-fibre structure, Chengxi Liu[a], Pingyu Zhu*[a], Chaoyi Peng[b], Marcelo A. Soto[c]; [a]School of Mechanical and Electric Engineering, Guangzhou University, Guangzhou, China, China; [b]Zhuzhou Times New Material Technology Co. LtD, 412007 Zhuzhou, China; [c]Department of Electronics Engineering, Universidad Técnica Federico Santa María, 2390123 Valparaíso, Chile

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16:00-17:30 W-5.103

Reversible pH sensing utilizing U-bent optical fibers coated with a layer-by-layer application of polymer multilayers, H. Okuda[a,b], K. Hirakawa[b], S. Korposh[c], S.-W. Lee*[a]; [a]Dept. of Chemical and Environmental Engineering, University of Kitakyushu, 1–1 Hibikino, Kitakyushu, Fukuoka 808–0135; [b]Toyokokagaku Co. Ltd., 370 Ichinotsubo, Nakahara, Kawasaki, 211-8502; [c]Optics and Photonics Group, Department of Electrical and Electronic Engineering, University of Nottingham, Nottingham NG7 2RD, UK.*leesw@kitakyu-u.ac.jp

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16:00-17:30 W-5.104

Fiber-optic EFPI acoustic emission sensor with bulk silicon micromachined membrane, YuBin Choe, Jung-Mu Kim, and Minho Song*; Dept. Electronics and Information Engineering, Jeonbuk National University, Jeonju-si, 54896, Jeonbuk-do, Republic of Korea.*msong@jbnu.ac.kr

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16:00-17:30 W-5.105

Optical fibers used as structural sensing elements in a tensegrity structure for force measurement and localization, Christoph Hemeling[1], Lukas Merker[2], Lena Zentner[2], Thomas Fr¨ ohlich[1], Thomas Kissinger[1]; [1]Institute for Process Measurement and Sensor Technology, TU Ilmenau, Ilmenau, Germany; [2]Mechanics of Compliant Systems Group, TU Ilmenau, Ilmenau, Germany

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16:00-17:30 W-5.106

An improved deconvolution beamforming algorithm based on fiber optic microphone array for acoustic imaging, Jindong Liu[a], Yi Huang[a], Chengyong Hu[a], Yuanhang Ma[a], Chuanlu Deng[a], Xiaobei Zhang[a], Sujuan Huang[a], Qi Zhang[a], Qun Li[b], Jian Shao[b], Peng Wu[b], Yuncai Lu[b], Tingyun Wang*[a]; [a]Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Joint International Research Laboratory of Specialty Fiber Optics and Advanced Communication, Shanghai Institute for Advanced Communication and Data Science, Shanghai University, Shanghai 200444, China; [b]State Grid Jiangsu Electric Power Research Institute, Nanjing 211103, China.*tywang@shu.edu.cn

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16:00-17:30 W-5.107

Analyzing the laser-driven dynamics of SU-8 microcantilevers with optical fiber Fabry-Perot cvity, S. Ghasemi-Darestani[a], O.R. Ranjbar-Naeini[a,c], H. Latifi*[a,b]; [a]Laser and Plasma Research Institute, Shahid Beheshti University, Tehran, Iran; bDepartment of Physics, Shahid Beheshti University, Tehran 1983963113, Iran; [c]INL International Iberian Nanotechnology Laboratory, Braga, Portugal.*latifi@sbu.ac.ir

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16:00-17:30 W-5.108

2.7 μm surface plasmon resonance fiber optic sensors, Wenwei Lin*, Ole Bang, Getinet Woyessa; Department of Electrical and Photonics Engineering, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark

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16:00-17:30 W-5.109

Ultra-hiigh-SMSR femtosecond apodized FBG based on variable pulse number Inscription technology, Yuanjing Zhao[a,b], Wenzhu Huang*[a,b], Wentao Zhang[a,b], Fang Li[a,b]; [a]Institute of Semiconductors, Chinese Academy of Sciences, Beijing 100083, China; [b]Center of Materials Science and Optoelectronic Engineering, University of Chinese Academy of Sciences, Beijing, 100049, China.*hwzhu@semi.ac.cn

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16:00-17:30 W-5.110

Polarization-switched fiber optic ring laser for L-band multiwavelength remote sensing applications, Iñaki Janices[a], Uxue San-Martin[a], Alvaro Salinas[a], Arturo Sanchez-Gonzalez[a,b], Maria Jose Erro[a,b], Rosa A. Perez-Herrera[a,b], and Santiago Tainta[a,b]*; [a]Dpt. Electrical, Electronic and Communication Engineering, Public University of Navarra, 31006 Pamplona, Spain; [b]Institute of Smart Cities, Public University of Navarra, 31006 Pamplona, Spain.*santiago.tainta@unavarra.es

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16:00-17:30 W-5.111

Functional near-infrared spectroscopy sensor using a combined short channel regression and frequency-division multiplexing, Chang Hyun Park, Dongyoung Jo, Jeesu Kim, Chang-Seok Kim*; Department of Cogno-Mechatronics Engineering, Pusan National University, Busan, 46241, Korea.* ckim@pusan.ac.kr

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16:00-17:30 W-5.112

Displacement sensor based on an external cavity fiber laser for non-contact photoacoustic sensing, Wontae Choe[a], Sang Min Park[b], Hansol Jang[c], Hwidon Lee[a,b], Jeesu Kim[a,b], Chang-Seok Kim[a,b,*]; [a]Department of Optics and Mechatronics Engineering, Pusan National University, Busan, South Korea; [b]Engineering Research Center for Color-Modulated Extra-Sensory Perception Technology, Pusan National University, Busan, South Korea; [c]Ground Technology Research Institute, Agency for Defense Development, Yuseong-gu, Daejeon 34186, Korea.*ckim@pusan.ac.kr

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16:00-17:30 **W-5.113**

Enhancement of fiber-optic sensor performance through hyperbolic dispersion engineering, João P. M. Carvalho*[a,b], João P. Mendes[a], Luís C. C. Coelho[a,b], José M. M. M. de Almeida[a,c]; [a]Centre for Applied Photonics, Institute for Systems and Computer Engineering, Technology and Science - INESC TEC, Rua do Campo Alegre, 4169-007 Porto, Portugal; [b]Dept. of Physics and Astronomy, Faculty of Sciences, University of Porto, Rua do Campo Alegre, 4169-007 Porto, Portugal; [c]Department of Physics, School of Science and Technology, University of Trás-os-Montes and Alto Douro, 5000-801 Vila Real, Portugal

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16:00-17:30 **W-5.114**

Multi-Fiber optic sensing system for eco-friendly gas-insulated switchgear condition monitoring, Jonghyun Eom[a,*], Hwee-Kwon Jung[a], Young-Guk Choi[b], Jun-Geun Shin[b], Hyo-Jong Kim[b]; [a]Intelligent Technology Research Center, Korea Photonic Sensor Research Center(KOPTI); [b]Optical Precision Measurement Research Center, Korea Photonic Sensor Research Center(KOPTI), 9, Chumdan Venture-ro 108beon-gil, Buk-gu, Gwangju, Republic of Korea. *jheom@kopti.re.kr

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W6-Exhibitors Plenary Session

(17h30-19h00)

Chair **Prof. António Barbosa Lobo Ribeiro**, Universidade Fernando Pessoa, Portugal

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W7-Committees + Chairs Dinner

(20h00-23h00)

Thursday

(29/05/2025)

Th1-Plenary Session III

Chair: Prof Julian Jones, Heriot-Watt University, United Kingdom

8:30-9:30 **Prof. Prof Roberto Osellame**
CNR - Institute for Photonics and Nanotechnologies (Italy)

Th-1.1 **Optical Sensing and Imaging in Femtosecond-Laser-Written Optofluidic Lab-on-Chip**

The integration of optical imaging and sensing in lab-on-a-chip devices is transforming the field of microfluidic analysis. By enabling real-time, high-sensitivity detection in small volumes, these technologies facilitate breakthroughs in healthcare, environmental analysis, and research, bridging the gap between laboratory precision and portable diagnostic solutions. Femtosecond laser micromachining is rapidly becoming a widely appreciated method for processing transparent materials. Being contactless, maskless, cost-effective and capable of 3D structuring, it raised great interest both in scientific as well as in industrial applications. Its properties are particularly advantageous for the realization of lab-on-chip devices where the combination of microfluidics and photonic components enable the integrated manipulation and high-quality imaging of biological samples, from organoids to single cells.

Th2-In Memoriam

(9h30-9h45)

Th3-Session *Biochemical Sensing*

(9h45-11h15)

Chairs: ***Prof. Eric Fujiwara*** (State University of Campinas, Brazil)
Dr. Stephen Warren-Smith (University of South Australia, Australia)

9:45-10:15 **Prof Andrea Cusano**
(invited) *Universidad di Sannio (Italy)*

Th-3.1 **Lab on Fiber Technology: Towards Theranostics Endoscopes**

In recent decades, the old "one-size-fits-all" approach to the treatment of various clinically relevant pathologies has been replaced by a personalized model in which the therapeutic strategy is based on the biological characteristics of the patient's disease.
At the same time, the last two decades marked a turning point in the optical fiber technology roadmap. leading the development of the so called Lab on Fiber (LOF) technology, which in turn represents one of the most suitable technology to support the translation towards the personalised medicine paradigm
Indeed, according to the Lab on fiber revolution, optical fibers cease to be just a simple waveguide, and become a new all-around technological platform where different kind of passive materials and structures at nano-scale (i.e. the labs) are suitably integrated around, on top or inside the fiber itself, allowing for the realization of advanced multifunctional optrodes.
Considering the technological maturity achieved so far, at both fabrication and application level, here we will review recent advances in the field with special focus on the development of novel generation of multifunctional in vivo tools for advanced diagnostics (liquid and tissue biopsies) and to support loco-regional therapies through light triggered intelligent (targeted) nano-carriers.

10:15-10:30 **Th-3.2**

Multifunctional integrated fiber-optic probe for in vivo tumor identification, therapy, and efficacy assessment, Zesen Li[a,b], Yang Ran*[a,b], Bai-Ou Guan[a,b] ; [a]Guangdong Provincial Key Laboratory of Optical Fiber Sensing and Communications, Institute of Photonics Technology, Jinan University, Guangzhou, 510632, China; [b]College of Physics & Optoelectronic Engineering, Jinan University, Guangzhou, 510632, China. *tranyang@jnu.edu.cn

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10:30-10:45 **Th-3.3**

Pharmaceutical chemical sensing in hollow-core anti-resonant fiber with surfaces functionalized by semiconductor nanoparticles, Han Wang[a], Wenjing Gao[a], Yu Zheng[a], Ruochen Yin[b], Haihu Yu[a]*, Xin Jiang[b]* ;[a]National Engineering Research Center of Fiber Optic Sensing Technology and Networks, Wuhan University of Technology, Wuhan 430070, China; [b]Russell Centre for Advanced Lightwave Science, Shanghai Institute of Optics and Fine Mechanics and Hangzhou Institute of Optics and Fine Mechanics, Hangzhou 311421, China.*hhyu@whut.edu.cn, xin.jiang@r-cals.com

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10:45-11:00 **Th-3.4**

Fiber ultrasound transducer array for in vivo anatomic and functional photoacoustic imaging of mouse glioma, Jun Ma*[a,b], Zitao Chen[a,b], Yuhan Wu[a,b], Hexiang Xu[a,b], Bai-Ou Guan[a,b]; [a]Guangdong Provincial Key Laboratory of Optical Fiber Sensing and Communications, Institute of Photonics Technology, Jinan University, Guangzhou 510632, China; [b]College of Physics & Optoelectronic Engineering, Jinan University, Guangzhou 510632, China.*jun.ma@jnu.edu.cn

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11:00-11:15 **Th-3.5**

Metasurface-based Lab-on-fiber biosensor for label-free detection of vitamin D, M. Cusano[a], G. Quero[b], P. Vaiano[c], P. Cicatiello[d], M. Principe[c], A. Micco[a], M. Ruvo[e], M. Consales*[c], A. Cusano*[c]; [a]Centro Regionale Information Communication Technology, Benevento, Italy I-82100; [b]University of Molise, Dept. of Biosciences and Territory, Pesche, Italy I-86090; [c]Universidad Di Sannio, Dept. of Engineering, Optoelectronics Group, Benevento, Italy I-82100; [d]University of Naples Federico II, Dept. of Chemical Sciences, Napoli, Italy I-80126; [e]National Research Council, Institute of Biostructure and Bioimaging, Napoli, Italy I-80131.*consales@unisannio.it; a.cusano@unisannio.it

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Th4-Session *Environment, Security, Defence, Industrial Applications, Technology Commercialization*

(11h30-13h00)

Chairs: ***Prof. Anselmo Frizera-Neto*** (University Federal do Espírito Santo, Brazil)
Prof. Andrea Cusano (University di Sanio, Italy)

11:30-12:00 **Prof. Chang-Seok Kim**
(invited) *Pusan National University (Republic of Korea)*

Th-4.1 **Autonomous Vehicle 4D LiDAR Sensor based on OFDR Technology**

Optical Frequency-Domain Reflectometry (OFDR) technology was actively developed in the 1990s as a 1-dimensional optical fiber sensor interrogation.
It has recently evolved into a 3-dimensional spatial optical imaging system, Light Detection and Ranging (LiDAR), which is being actively industrialized in the 2020s.
The next generation LiDAR with Frequency Modulation Continuous Wave (FMCW) technology, which is similar to OFDR, is expected to be crucially utilized as the eyes of autonomous vehicles, compared to the conventional time of flight (TOF) LiDAR which is based on Optical Time-Domain Reflectometry (OTDR).
It has a few irreplaceable advantages of implementing 4-dimensional optical imaging that adds the velocity information of the target, having a higher signal-to-noise ratio, and being resistant to adverse weather environments on real road conditions.

12:00-12:15 **Th-4.2**

In situ ppb-level dissolved gas detection with micro-gas-cavity based fiber photoacoustic spectrometer, Jun Ma*[a,b], Haojie Liu[a,b], Enbo Fan[a,b], Bai-Ou Guan[a,b]; [a]Guangdong Provincial Key Laboratory of Optical Fiber Sensing and Communications, Institute of Photonics Technology, Jinan University, Guangzhou 510632, China; [b]College of Physics & Optoelectronic Engineering, Jinan University, Guangzhou 510632, China.*jun.ma@jnu.edu.cn

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12:15-12:30 **Th-4.3**

Palladium/hafnium-coated pi-FBGs: a path to wavelength-encoded, zero-point referenced, linearized, and temperature-decoupled hydrogen sensing, Fabian Buchfellner*[a], Qiang Bian[a], Alexander Roehrl[a], Fan Zhang[b], Minghong Yang[b], Alexander W. Koch[c], Johannes Roths[a]; [a]Photonics Lab, Munich University of Applied Sciences, Munich 80335, Germany; [b]National 6 Engineering Lab for Fiber Optic Sensing Technology, Wuhan University of Technology, Wuhan 7 430070, China; [c]Institute for Measurement Systems and Sensor Technology; Technical University of 8 Munich, Munich 80333, Germany.*fabian.buchfellner0@hm.edu

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12:30-12:45 **Th-4.4**

Shock wave overpressure history mapping using high-resolution distributed acoustic sensing, A. Masoudi*[a], T. Lee[a], M. Beresnaa, R. Critchley[b] ,G. Brambilla[a], J. Denny[c]; [a]Optoelectronics Research Centre (ORC), University of Southampton, Southampton, UK, SO17 1BJ; [b]Cranfield Forensic Institute, Cranfield University, College Rd, Wharley, Bedford, UK, MK43 0AL; [c] School of Engineering, University of Southampton, Southampton, UK, SO17 1BJ.*a.masoudi@soton.ac.uk

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12:45-13:00 **Th-4.5**

Humidity response analysis of optical fibers with hygroscopic coatings based on Lamé's equations, Xin Lu*, Marcus Schukar; Bundesanstalt für Materialforschung und -prüfung (BAM), Unter den Eichen 87, 12205 Berlin, Germany.*xin.lu@bam.de

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Th5-Session *Interferometric/Distributed Sensors*

(14h30-16h00)

Chairs: ***Prof. Marc Wulpart*** (University de Mons, Belgium)
Prof. Yosuke Tanaka (Tokyo University of Agriculture and Technology, Japan)

14:30-15:00 **Dr. Giuseppe Marra**
(invited) *National Physical Laboratory (United Kingdom)*

Th-5.1 **Science with Seafloor Cables**

Are we at the beginning of a new ear for Earth monitoring? Despite continuing advances in monitoring capability on land and from space, the bottom of the oceans remains largely unmonitored to this day. However, by turning the huge web of seafloor optical cables into environmental sensors, we can now start filling the huge data gap from the bottom of ocean. We'll show how ultra-precise optical measurements over 1000s of km of seafloor cables can provide invaluable data to advance research in a number of science areas, including seismology, oceanography and climate change, with potential applications in early warning systems.

15:00-15:15 **Th-5.2**

Ultra-miniature optical fiber accelerometer Based on a 3D microprinted proof mass-integrated Fabry-Pérot micro-interferometer, Peng Wang[a], Taige Li[a], Shangming Liu[a], Xin Cheng[a], Hwa-Yaw Tam[a], and A. Ping Zhang[a,b]*; [a]Photonics Research Institute, Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR, China. [b]State Key Laboratory of Ultraprecision Machining Technology, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR, China. *azhang@polyu.edu.hk

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15:15-15:30 **Th-5.3**

Self-integrated auxiliary interferometer for nonlinearity compensation in optical frequency domain reflectometry, Salah Harb[a], Linqing Luo[a], and Gang Huang*[a] ;[a]Lawrence Berkeley National Laboratory, 1 Cyclotron Rd, Berkeley, USA.*ghuang@lbl.gov

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15:30-15:45 **Th-5.4**

Distributed electric field measurements along a hollow-core fiber by localizing a trapped charged particle with sub-mm spatial resolution using coherent optical frequency domain reflectometry, J. Freitag*[a], P. Schmidt[a,c], M. Borandegi[a], T. Redwig[a], and B. Schmauss[a,b,c]; [a]Institute of Microwaves and Photonics, Friedrich-Alexander-Universität Erlangen-Nürnberg, 91058 Erlangen, Germany; [b]Max Planck Institute for the Science of Light, 91058 Erlangen, Germany; [c] Graduate School in Advanced Optical Technologies, 91058 Erlangen, Germany.*jasper.freitag@fau.de

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15:45-16:00 **Th-5.5**

Measuring tip deflection in multicore fiber optic probes based on fiber segment interferometry, Christoph Hememling, Valeriya Cherkasova, Thomas Frohlich, Thomas Kissinger; Institute for Process Measurement and Sensor Technology, Technische Universitat Ilmenau, PF 10 05 65, 98684 Ilmenau, Germany

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Poster Session III *Biochemical/Environment/Physical*

(Th-6; 16h30-18h00)

16:00-18:00 **Th-6.1**

Capillary-based optical fiber sensor for turbidity measurement, Evelyn Vanegas-Tenezaca[a,*], Marko Galarza[a], Romain Dauliat[b], Raphael Jamier[b], Philippe Roy[b], Adolfo Coboc, Manuel Lopez-Amo[c]; [a]Public University of Navarra, 31006 Pamplona, Spain. Electrical, Electronic and Communication Engineering Dept.; [b]Fiber Photonics Department, UMR CNRS/University of Limoges 7252, 123 Avenue Albert Thomas, 87060 Limoges cedex, France; [c]"Grupo de Ingeniería fotónica", Avenida Los Castros s/n. Edificio de I+D+i de Telecomunicación. 39005 Santander, Cantabria, Spain. *evelyndayanara.vanegas@unavarra.es

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16:00-18:00 Th-6.2

Advanced optical fiber sensors for measuring seawater salinity and pressure, Junhao Jing[1,2], Wanhuan Zhou[1,2,*]; [1]State Key Laboratory of Internet of Things for Smart City & Department of Civil and Environmental Engineering, University of Macau, Macau SAR, China; [2]Center for Ocean Research in Hong Kong and Macao (CORE), Hong Kong SAR, People's Republic of China.

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16:00-18:00 Th-6.3

Evaluation of overhead cable sag using distributed acoustic sensing, Tatsuya Okamoto*, Daisuke Iida, Kunihiro Toge; NTT Access Network Service Systems Laboratories, 1-7-1 Hanabatake, Tsukuba, Ibaraki, Japan 305–0805.*tatsuya.okamoto@ntt.com

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16:00-18:00 Th-6.4

Remote power over fiber electro-mechanical modulation for enabling hybrid sensor networks, Armando Rodriguez[a,b*], Manuel Lopez-Amoa[b], Mikel Bravo[a,b,c]; [a]Dpt. of Electrical Electronic and Communication Engineering, Public University of Navarra, 31006 Pamplona, Spain; [b]Institute of Smart Cities (ISC), Public University of Navarra, 31006 Pamplona, Spain; [c]Menditech, Sensores de Fibra Óptica, S.L., C/ Tajonar 22, -1, 31006 Pamplona, Spain. *armando.rodriguez@unavarra.es

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16:00-18:00 Th-6.5

Indoor comfort monitoring in buildings using distributed fiber optic sensors, R. Ruiz-Lombera*, M. Castiñeirasa, J. Ascorbe, T. Grandal; Smart Systems and Smart Manufacturing department, Centro Tecnológico AIMEN. C/ Relva, 27 A, 36410 O Porriño, Pontevedra, Spain.*ruben.ruiz@aimen.es

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16:00-18:00 **Th-6.6**

Fiber-optic flammable vapor sensor based on a porous cholesteric liquid crystal film, Soyeon Ahn[1], Na Hyeon Hwang[1], Min Su Kim[1], Ji Su Kim[1], Byeong Kwon Choi[2], Sung Yoon Cho[1], Jaehyun Yoo[1], Na-Hyun Bak[1], Moon-Deock Kim[1,3], Jong Hyun Kim[1,3], Min Yong Jeon[1,3,*]; [1]Dept. of Physics, Chungnam National University, Deajeon, 34134, Korea; [2]Siemens Electronic Design Automation (Korea) LLC, Seongnam-si, Gyeonggi-do, 13524, Korea; [3]Institute of Quantum Systems, Chungnam National University, Daejeon, 34134, Korea

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16:00-18:00 **Th-6.7**

Spectral analysis of type III femtosecond fiber Bragg gratings at high temperatures, Matilde Sosa[a,b], Maxime Cavillon[b], Thomas Blanchet[a], Guillaume Laffont[a], Matthieu Lancry[b]; [a]Université Paris-Saclay, CEA, List, F-91120, Palaiseau, France; [b]Institut de Chimie Moléculaire et des Matériaux d'Orsay (ICMMO/SP2M/MAP), Université Paris-Saclay, CNRS 91405, Orsay Cedex, France

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16:00-18:00 **Th-6.8**

Optical fiber sensor based on lossy mode resonance for high sensitive temperature detection, Yuxiao Xue, Jing Yang, Peng Ye, Binbing Li, Shan Gao, Jinhui Shi, and Chunying Guan*; Key Laboratory of In-fiber Integrated Optics, Ministry Education of China, Harbin Engineering University, Harbin 150001, China. *cyguan@163.com

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16:00-18:00 **Th-6.9**

A Polarization switching and Faraday rotator mirror hybrid method for ultra low polarization fading noise in optical fiber hydrophone, Wang, Lina Ma, Qihao Hu*, Min Zhu, Jiali Gao, Junqiang Song; College of Meteorology and Oceanography, National University of Defense Technology, Changsha, Hunan, 410073, China.*mln_c7@nudt.edu.cn

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16:00-18:00 **Th-6.10**

Intensity-based refractive index sensor using sliced fiber Bragg grating, Vinícius Piaia[a,*], Paulo Robalinho[a,b], Liliana Soares[a,b], Susana Novais[a], António L. Ribeiro[c], Orlando Frazão[a,] Susana Silva[a] ; [a]INESC TEC - Institute for Systems and Computer Engineering, Porto, Portugal 4169-007; [b]FEUP - Faculty of Engineering of the University of Porto, R. Dr. Roberto Frias, Porto, Portugal 4200-465; [c]Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal 4200-150

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16:00-18:00 **Th-6.11**

Dynamic strain measurement at high frequencies by using portable fiber Bragg grating (FBG) interrogator, Rana M. Armaghan Ayaz[a,*], J. Elaskar[a], M. Marrazzo[b], E. Beghini[b], C. J. Oton[a]; [a]Scuola Superiore Sant'Anna, Institute of Mechanical Intelligence, Via G. Moruzzi, 1, 56124 Pisa, Italy ; [b]Baker Hughes, Via F. Matteucci 2, 50127, Florence, Italy. *r.ayaz@santannapisa.it

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16:00-18:00 **Th-6.12**

Resilient DFOS placement strategy for power grid monitoring: integrating fiber and power network dependencies, Yangmin Ding[a,*], Md Z. Islam[a,b], Jayson Shiau[c], Andrea D. Amico[a], Yue Tian[a], Zhuocheng Jiang[a], Sarper Ozharar[a], Ting Wang[a], Yuzhang Lin[b]; [a]NEC Laboratories America, Inc., 4 Independence Way, Princeton, NJ USA 08540; [b]Dept. of Electrical and Computer Engineering, New York University, New York, NY USA 10012; [c]Commonwealth Edison Company, 3 Lincoln Center, Oakbrook Terrace, IL USA 60181.*yding@nec-labs.com

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16:00-18:00 **Th-6.13**

Intermittent still image monitoring system operated by weak powerover-fiber from an unused port of a PON splitter, Riku Matsumoto[1,*], Daniel Akira Ando[1], Tetsuya Manabe[1], Tomohiro Kawano[2], Takashi Matsui[2]; [1]Graduate School of Engineering, Mie University, 1577 Kurimamatiyacho, Tsu, Mie, 514-8507 Japan; [2]Access Network Service Systems Laboratories, 1-7-1 Hanabatake, Tsukuba, Ibaraki, 3050805 Japan

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16:00-18:00 **Th-6.14**

DFBG-based shape sensor for large-curvature reconstruction, Weiliang Zhao[1,2], Xiangpeng Xiao[1,2], Jialei Zuo[1], Zhengqi Sun[1], Hanlin Liu[1,2], Yijie Zhang[1], Minming Zhang[1,3,*], Qizhen Sun[1,2,3], Zhijun Yan[1,2,3,*]; [1]School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei 430074, China; [2]Wuxi Research Institute, Huazhong University of Science and Technology, Wuxi, Jiangsu 214174, China; [3]Optical Valley Laboratory, Wuhan, Hubei 430074, China.*yanzhijun@hust.edu.cn

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16:00-18:00 **Th-6.15**

Optical fiber laser sensor for torsion measurement using a three-core fiber and a nanocrystals-based reflector, Angel I. Correa[a,b,*], Jose R. Vento Alvarez[a,d], Marko Galarza[a,b], Arturo Sanchez-Gonzalez[a,b], Romain Dauliat[c], Raphael Jamier[c], Philippe Roy[c], Georges Humbert[c], Rosa A. Perez-Herrera[a,b], and Manuel Lopez-Amo[a,b] ; [a]Dpt. of Electrical Electronic and Communication Engineering, Public University of Navarra, 31006 Pamplona, Spain; [b]Institute of Smart Cities (ISC), Public University of Navarra, 31006 Pamplona, Spain; [c]XLIM, UMR CNRS/7252. University of Limoges 87060 Limoges, France; [d]Telecommunication and Electronic Engineering Dept., Universidad de Pinar del Río, Cuba.*angelignacio.correa@unavarra.es

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16:00-18:00 **Th-6.16**

Determining insertion depth of silica optical fiber-integrated cochlear implant electrode array using optical frequency domain reflectometry, Jingxian Cui[a,*], Chern Yang Leong[a], Nick Pawsey[b], Linyue Lu[a], Lin Htein[a], Chao Lu[a], Denny Oetomo[d], Stephen O'Leary[c], Hwa-Yaw Tam[a]; [a]Photonics Research Institute, Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR; [b]Cochlear Limited, University Avenue, Macquarie University, Sydney, NSW 2109, Australia; [c]Department of Otolaryngology, University of Melbourne and the Royal Victorian Eye and Ear Hospital, Victoria 3002, Australia; [d]Department of Mechanical Engineering, University of Melbourne, Parkville, Victoria 3010, Australia

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16:00-18:00 **Th-6.17**

Measurement of curvilinearly varying strain using a Brillouin-gain spectrum-based method with a multiline strain model, Hiroshi Naruse, Yukimune Mizutani; Graduate School of Engineering, Mie University, 1577 Kurimamachiya, Tsu, Mie 514-8507, Japan

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16:00-18:00 **Th-6.18**

Integrated fiber-optic drug delivery system for effective anti-tumor synergistic therapy, Xu Yue[a,b], Yongkang Zhang[a,b], Yang Ran[a,b,*], Bai-Ou Guan[a,b]; [a]Guangdong Provincial Key Laboratory of Optical Fiber Sensing and Communications, Institute of Photonics Technology, Jinan University, Guangzhou, China, 511436; [b]College of Physics & Optoelectronic Engineering, Jinan University, Guangzhou, China, 510632. *tranyang@jnu.edu.cn

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16:00-18:00 **Th-6.19**

Hetero-core optical fiber-based force myography sensor, Eric Fujiwara[a], Kentaro Harada[b], Yuya Koyama[b]; [a]School of Mechanical Engineering, Universidade Estadual de Campinas (UNICAMP), Campinas, Brazil 13083-860; [b]Department of Electrical and Electronic Engineering, Chiba Institute of Technology, Chiba, Japan 275-0016.fujiwara@fem.unicamp.br

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16:00-18:00 **Th-6.20**

Polarization diversity detection based wavelength scanning coherent optical time domain reflectometer and its application for bus monitoring, Xin Lu*, Konstantin Hicke; Bundesanstalt für Materialforschung und -prüfung (BAM), Unter den Eichen 87, 12205 Berlin, Germany.*xin.lu@bam.de

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16:00-18:00 **Th-6.21**

Fault classification in electric motors using feature selection on vibration data from fiber Bragg grating accelerometers: a comparison of MLP and KAN networks, Douglas Soprani[a,b,*], Kaio Santos[a], Leandro Macedo[a], Arnaldo Leal-Junior[a], Anselmo Frizera[a]; [a]Graduate Program of Electrical Engineering of the Federal University of Espirito Santo, Fernando Ferrari Av., 514, Vitória, ES, BR 29075-910; [b]Dept. of Electrical Engineering of the Federal Institute of Education, Science and Technology of Espirito Santo, Vitória Av., 1729, Vitória, ES, BR 29040-780.*douglassoprani@ifes.edu.br

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16:00-18:00 **Th-6.22**

Direct electronical readout of surface plasmon resonance biosensor enabled by on-fiber Graphene/PMMA photodetector, Chao Shen[a,b], Junhua Huang[a,b], Shiqi Hu[a,b,c], Yaofei Chen[a,b], Gui-shi Liu[a,b], Lei Chen[a,b], Zhe Chen[a,b], Yunhan Luo*[,a,b]; [a]Department of Optoelectronic Engineering, College of Physics and Optoelectronic Engineering, Jinan University, Guangzhou, 510632, PR China; [b]Guangdong Provincial Key Laboratory of Optical Fiber Sensing and Communications, Jinan University, Guangzhou, 510632, PR China ; [c]The Affiliated Guangdong Second Provincial General Hospital of Jinan University, Guangzhou 510632, P.R. China. *yunhanluo@163.com

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16:00-18:00 **Th-6.23**

Leak detection in insulated pipe for nuclear pressure boundary monitoring using optical fiber distributed temperature sensor, Youngwoong Kim*, Jongyeol Kim, Gukbeen Ryu, Younggwan Hwang, Byunyoung Chung; Nuclear System Integrity Sensing and Diagnosis Division, Korea Atomic Energy Research Institute, 111, Daedeok-Daero 989 Beon-Gil, Daejeon 34057, Republic of Korea.*kywave@kaeri.re.kr

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16:00-18:00 **Th-6.24**

Hydrogen sensing performance of partially Pd90:Ni10-coated pi-FBGs in nitrogen and air backgrounds, Fabian Buchfellner[a,*], Alexander Roehrl[a], Minghong Yang[b], Alexander W. Koch[c], Johannes Roths[a]; [a]Photonics Lab, Munich University of Applied Sciences, Munich 80335, Germany; [b]National Engineering Lab for Fiber Optic Sensing Technology, Wuhan University of Technology, Wuhan 430070, China; [c]Institute for Measurement Systems and Sensor Technology; Technical University of Munich, Munich 80333, Germany. *fabian.buchfellner0@hm.edu

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16:00-18:00 **Th-6.25**

Hyperbolic-metamaterial-based optical fiber SPR sensor enhanced by a smart hydrogel for perspiration pH measurements, Ying Chen[a,b], Shiqi Hu[a,b,c], Yaofei Chen[a,b], Gui-shi Liu[a,b], Lei Chen[a,b,*], Zhe Chen[a,b,*], Yunhan Luo[a,b,*]; [a]Department of Optoelectronic Engineering, College of Physics and Optoelectronic Engineering, Jinan University, Guangzhou, 510632, P.R. China; [b]Guangdong Provincial Key Laboratory of Optical Fiber Sensing and Communications, Jinan University, Guangzhou, 510632, P.R. China; [c]The

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16:00-18:00 **Th-6.26**

Wind-resistant fault location method for aerial cables using speaker-assisted distributed vibration sensing, Tomokazu Oda*, Kei Makino, Takayuki Hosome, Masami Miyazaki, Hiromu Hashimoto; Innovation and Technology Department, NTT EAST Corporation, 3-19-2 Nishi-Shinjuku, Shinjuku-ku, Tokyo, Japan 163–8019.*tomokazu.oda.mc@east.ntt.co.jp

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16:00-18:00 **Th-6.27**

FBG touch sensors in a social robot: Toward natural behaviors controlled by physical human-robot Interactions, Elizabeth Sanchez R[a], María Gaitán-Padilla[a], Vinicius Mageste Coimbra[a], Maria José Pontes[a], Marcelo Eduardo Vieira Segatto[a], Marcela Munera[b], Carlos A. Cifuentes[b], Camilo A. R. Diaz[a,*]; [a]Telecommunications Laboratory (LabTel), Electrical Engineering Department, Federal University of Espírito Santo, Vitoria, Brazil; [b]Bristol Robotics Laboratory, University of the West of England, Bristol, UK.

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16:00-18:00 **Th-6.28**

Unveiling simultaneous detection and identification of different forms of amyloid-β peptides in Alzheimer's disease via multi-channel TFBGSPR biosensor, Lijiao Zu[a], Xicheng Wang[a], Peng Liu[b], Jiwei Xie[a], Claudia Borri[c,*], Rukmani Singh[c], Shadab Dabagh[c], Ambra Giannetti[c], Xuejun Zhang[d], Weiru Liu[a], Zhencheng Li[a], Shiqing Zhang[b], Kaiwei Li[a], Wei Bi[e], Francesco Chiavaioli[c], Lei Shi[b], Tuan Guo[a]; [a]Jinan University, Institute of Photonics Technology, 510632 Guangzhou, China; [b]Jinan University, State Key Laboratory of Bioactive Molecules and Druggability Assessment, College of Pharmacy, 510632 Guangzhou, China; [c]National Research Council of Italy (CNR), Institute of Applied Physics "Nello Carrara", 50019 Sesto Fiorentino, Italy; [d]Harvard University, Center for Advanced Biomedical Imaging and Photonics, Beth Israel Deaconess Medical Center, 02215 Boston, USA; [e]The First Affiliated Hospital of Jinan University, Department of Neurology, 510632 Guangzhou, China.*c.borri@ifac.cnr.it

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16:00-18:00 **Th-6.29**

Pre-eclampsia diagnosis on clinical samples using microfiber Bragg grating-assisted point-of-care biosensor, Shifang Cao[a,b], Ruiping Chen[a], Rukmani Singh[c,*], Claudia Borri[c], Shadab Dabagh[c], Qiaochu Yang[b], Xin He[a], Yang Ran[b], Bai-Ou Guan[b], Francesco Chiavaioli[c]; [a]The First Clinical Medical College, Jinan University, 510630 Guangzhou, China; [b]Institute of Photonics Technology, Jinan University, 510632 Guangzhou, China; [c]National Research Council of Italy (CNR), Institute of Applied Physics "Nello Carrara", 50019 Sesto Fiorentino, Italy. *r.singh@ifac.cnr.it

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16:00-18:00 **Th-6.30**

WSe2-PDA enhanced fiber optic surface plasmon resonance bioprobe for the detection of prostate-specific antigen, Kun Liu[a,b,c,1], Jianying Jing[a,b,c,1], Junfeng Jiang*[a,b,c,],Shuang Wanga,[b,c], Tianhua Xu[a,d,] Tiegen Liu[a,b,c*]; [a]School of Precision Instruments and Opto-Electronics Engineering, Tianjin University, Tianjin 300072, China; [b]Key Laboratory of Opto-Electronics Information Technology, Ministry of Education, Tianjin University, Tianjin 300072, China; [c]Tianjin Optical Fiber Sensing Engineering Center, Institute of Optical Fiber Sensing, Tianjin University, Tianjin 300072, China; [d]School of Engineering, University of Warwick, Coventry CV4 7AL, United Kingdom. *jiangjfjxu@tju.edu.cn, *tgliu@tju.edu.cn; [1]The authors contribute equally to this work.

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16:00-18:00 **Th-6.31**

Vibration identification of fiber optic current sensors based on dual closed-loop feedback and VMD, Jundong Tian, Aodi Yu, Yuan Ke, Can Li, Li Xia*; School of Optical and Electronic Information, Huazhong University of Science and Technology, Wu Han 430074, China.*xiali@hust.edu.cn

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16:00-18:00 **Th-6.32**

Non-contact sleep atrial fibrillation monitoring using fiber optic sensors, Hanyu Jin[a,c], Zurui Wang[a], Zhuolin Chen[a], Kai Zhou[a], Weijian Hang[b], Feng Wang[b], Chen Chen[b], Hao Li[a], Cunzheng Fan[a,*], Zhijun Yan[a,c], Qizhen Sun[a,c]; [a]School of Optical and Electronic Information, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan 430074, China; [b]Division of Cardiology, Department of Internal Medicine and Hubei Key Laboratory of Genetics and Molecular Mechanism of Cardiologic Disorders, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, 430000, P. R. China; [c]HUST-Wuxi Research Institute, Wuxi, Jiangsu 214174, China.*buckt@hust.edu.cn

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16:00-18:00 **Th-6.33**

Abandoned objects detection on the highway based on distributed features of UWFBG array sensors, Sheng Li[a], Yunhai Huang[b], Jinpeng Jiang[a], Fang Liu[a], Yan Yang[a], Yueming Wang[a], Yimin Xu[a], Wenbin Hu[a,*]; [a]National Engineering Research Center for Fiber Optic Sensing Technology and Networks, Wuhan University of Technology, Wuhan 430070, China; [b]School of Information Engineering, Wuhan University of Technology, Wuhan 430070, China.*wenbinhu_whut@163.com

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16:00-18:00 **Th-6.34**

High-resolution optical fiber ring magnetic field sensor, Jiaxing Gao[a,b], Wei Jin[a,b], Shanshan Li[a,b], Mengyao Zhang[a,b], Yu Zhang[a,b,*], Zhihai Liu[a,b,*]; [a]Key Laboratory of In-Fiber Integrated Optics, Ministry of Education, Harbin Engineering University, Harbin, 150001, P. R. China; [b]Key Laboratory of Photonic Materials and Device Physics for Oceanic Applications, Ministry of Industry and Information Technology of China, Harbin Engineering University, Harbin, 150001, P. R. China; *zhangy0673@163.com; *liuzhihai@hrbeu.edu.cn

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16:00-18:00 **Th-6.35**

A magneto-optical fibre rotary sensor for robotics, Yunlong Guo[a], John Canning[b], Zenon Chaczko[c], Gang-Ding Peng[a]; [a]School of Electrical Engineering and Telecommunications, UNSW Sydney, NSW, 2052, Australia; [b]Laseire Consulting Pty Ltd, Sydney, NSW, Australia cDIVE IN AI, Wrocław, Poland.*canning.john@outlook.com

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16:00-18:00 **Th-6.36**

Localized surface plasmon resonance based optical fiber mercury ion sensor employing CNT/PVA nanocomposite, Fatima Banoo, Sunil K. Khijwania; Indian Institute of Technology Guwahati, Guwahati-781039, Assam India

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16:00-18:00 **Th-6.37**

GST-enhanced fiber SPR curvature sensor, Xuhao Ji[a,b], Zhuo Ren[a,b], Nailiang Yu[a,b], Jianan Liu[a,b], Jiaxin Gao[a,b], Yu Zhang[a,b,*], Zhihai Liu[a,b,*]; [a]Key Laboratory of In-Fiber Integrated Optics, Ministry of Education, Harbin Engineering University, Harbin, 150001, P. R. China; [b]Key Laboratory of Photonic Materials and Device Physics for Oceanic Applications, Ministry of Industry and Information Technology of China, Harbin Engineering University, Harbin, 150001, P. R. China

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16:00-18:00 **Th-6.38**

Fiber Bragg grating monitoring during 3D wire arc additive manufacturing process, T. Blanchet, A. Baumard, G. Ollaic, G. Laffont; Université Paris-Saclay, CEA, List, F-91120, Palaiseau, France

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16:00-18:00 **Th-6.39**

Comparative analysis of distributed acoustic sensing and geophones for multichannel surface wave applications, João Paulo Bazzo[a], Beatriz Brusamarello[a], Guilherme Heim Weber[a], Uilian José Dreyer[a], Gustavo Macioski[a], Larissa Wierzynski Kulik[a], Sidnei H. C. Teixeira[b], Gilson A. Brunetto[c], Luis F. P. Melegari[c], Daniel Rodrigues Pipa[a], Cicero Martelli[a], Jean Carlos Cardozo da Silva[a]; [a]Universidade Tecnologica Federal do Paraná (UTFPR); [b]Universidade Federal do Paraná (UFPR); c CPFL Energia Brasil

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16:00-18:00 **Th-6.40**

Double-helix shaped optical fibers as a route for high torsion sensing, João Preizal*, Ricardo Oliveira; Instituto de Telecomunicações, Universidade de Aveiro, Aveiro, Portugal, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

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16:00-18:00 **Th-6.41**

A new embeddable FBG sensor system to measure and decouple moisture swelling, thermal expansion, and mechanical strain, Pietro Aceti*, Paolo Bettini, Giuseppe Sala; Department of Aerospace Science and Technology, Politecnico di Milano, Via La Masa 34, 20156, Milano, Italia. *pietro.aceti@polimi.it

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16:00-18:00 **Th-6.42**

Bacterial biofilm detection using a fiber optic Mach-Zehnder interferometer, Flavio Esposito[a], Attena Rashidi[a], Adriana Sacco[b], Carmine Vitagliano[c], Federica Granata[d], Anubhav Srivastava[a], Stefania Campopiano[a], Giuseppe Coppola[d,*], Michele Giordano[c], Gennaro Di Prisco[b,*], Lucia Sansone[c,*], Agostino Iadicicco[a,*]; [a]Department of Engineering, University of Naples "Parthenope", 80143 Naples, Italy; [b]Institute for Sustainable Plant Protection (IPSP), CNR, 80055 Portici, Italy; [c]Institute for Polymers, Composites, and Biomaterials (IPCB), CNR, 80055 Portici, Italy; [d]Institute of Applied Science and Intelligent Systems (ISASI), CNR, 80128 Naples, Italy *giuseppe.coppola@cnr.it, gennaro.diprisco@cnr.it, lucia.sansone@ipcb.cnr.it, agostino.iadicicco@uniparthenope.it

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16:00-18:00 **Th-6.43**

Outstanding sensitivity to ionizing radiation of custom optical fibers evaluated in real-time by Long Period Gratings, Flavio Esposito[a], Andrei Stancalie[b,*], Anubhav Srivastava[a], Razvan Mihalcea[b], Ivo Bartoň[c], Daniel Negut[d], Stefania Campopiano[a], Mateusz Śmietana[e], Jan Mrázek[c,*], Agostino Iadicicco[a,*]; [a]Department of Engineering, University of Naples "Parthenope", 80143 Naples, Italy; [b]Center for Advanced Laser Technologies (CETAL), National Institute for Laser, Plasma and Radiation Physics, Magurele RO-077125, Romania; [c]Institute of Photonics and Electronics, Czech Academy of Sciences, Prague, Czech Republic; [d]"Horia Hulubei" National Institute for R&D in Physics and Nuclear Engineering, Magurele RO077125, Romania [e]Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, 00-662 Warszawa, Poland; and Łukasiewicz Research Network – Institute of Microelectronics and Photonics, Department of Glass, 02-668 Warszawa, Poland. *andrei.stancalie@inflpr.ro; mrazek@ufe.cz; agostino.iadicicco@uniparthenope.it

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16:00-18:00 **Th-6.44**

Comparative evaluation of thiram detection by LSPR based fiber optic probes with different nanostructures, Amin Moslemi[a,+], Lucia Sansone[b,+], Flavio Esposito[a,*], Carlos Marques[c,d], Stefania Campopiano[a], Michele Giordano[b,*], Agostino Iadicicco[a,*]; [a]Department of Engineering, University of Naples "Parthenope", 80143 Naples, Italy; [b]Institute for Polymers, Composites, and Biomaterials, National Research Council of Italy, IPCBCNR, 80055 Portici, Italy; [c]CICECO – Aveiro Institute of Materials, Physics Department, University of Aveiro, Aveiro 3810193, Portugal; [d]Department of Physics, VSB – Technical University of Ostrava, Ostrava 70800, Czech Republic. [+]These authors contributed equally to this work; *flavio.esposito@uniparthenope.it, michele.giordano@cnr.it, agostino.iadicicco@uniparthenope.it

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16:00-18:00 **Th-6.45**

Seismic activity monitoring in Iceland with Fiber Bragg Grating accelerometers, Julien Govoorts*[,a,b,c], Christophe Caucheteur[b], Corentin Caudron[a,d], Thomas Lecocq[c]; [a]Laboratoire G-Time, Université libre de Bruxelles, 50 Avenue F.Roosevelt, Brussels, BE 1050; [b]Advanced Photonic Sensors, Université de Mons, 31 Boulevard Dolez, Mons, BE 7000; [c]Seismology-Gravimetry, Royal Observatory of Belgium, 3 Avenue Circulaire, Brussels, BE 1180; [d]WEL Research Institute, 6 Avenue Pasteur, Wavre, BE 1300.*julien.govoorts@ulb.be

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16:00-18:00 **Th-6.46**

Ship hydrodynamic pressure field detection using distributed acoustic sensing and a submarine photoelectric composite cable, Yici Chen[a,b], Yifan Liu[b,c], Zhaoyong Wang*[,b,c,d], Liang Wang[a], Jinyi Wu[b,c], Feifei Song[b,c], Boqi Chen[b,c], Yichen Zhao[d], Kan Gao[b], Xuan Li[b], Haoyang Pi[b], Qing Ye[b,c,d], Haiwen Cai[b], Ronghui Qu[b]; [a]National Engineering Laboratory for Next Generation Internet Access System, School of Optics and Electronic Information, Huazhong University of Science and Technology, Wuhan 430074, China; [b]Key Laboratory of Space Laser Communication and Detection Technology, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai 201800, China; [c]Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing 100049, China; [d]Shanghai Zhongke Shenguang Optoelecronic Industry Co., Ltd., Shanghai 201815, China.*wzhy0101@siom.ac.cn

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16:00-18:00 **Th-6.47**

A step towards multipoint hydrogen sensing: development of metal hydride-coated FBG hydrogen sensors, Kasun P. Dissanayake[a,b,*], H. Sandra Dewi[a,b], Ziqing Yuan[b], Herman Schreuders[b], Lars J. Bannenberg[b], Roger M. Groves[a]; [a]Department of Aerospace Structures and Materials, Delft University of

Technology, The Netherlands; [b]Faculty of Applied Sciences, Delft University of Technology, The Netherlands.*k.p.w.dissanayake@tudelft.nl

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16:00-18:00 Th-6.48

Coating of microfibrillated cellulose on plastic optical fiber, Guilherme Dutra Ébias*, Isis Lavinne Ferreira de Queiroz, Isabela Rosa Marchette, Andrés Pablo Lopez Barbero, Ninoska Isabel Bojorge Ramirez, Vinicius Nunes Henrique Silva; Universidade Federal Fluminense, Niterói – Rio de Janeiro, Brazil

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16:00-18:00 Th-6.49

Ballistocardiography sensor based on polymeric optical fiber: A frequencies validation study, Juan Andrés García[a], Vinicius Mageste Coimbra[a], Daniel E. Garcia A.[a], Marcelo Eduardo Vieira Segatto[a], Carlos A. Cifuentes[b], Camilo A. R. Diaz[a,*]; [a]Telecommunications Laboratory (LabTel), Electrical Engineering Department, Federal University of Espírito Santo, Vitoria, Brazil; [b]Bristol Robotics Laboratory, University of the West of England. United Kingdom. *camilo.diaz@ufes.br

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16:00-18:00 Th-6.50

Evaluating the performance of CT method in distributed Brillouin fiber sensing, Youhei Okawa; Sensing System Research Center, National Institute of Advanced Industrial Science and Technology (AIST), 1-1-1 Higashi, Tsukuba, Ibaraki 305-8565, Japan.ookawa.youhei@aist.go.jp

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16:00-18:00 Th-6.51

A magneto-optical fibre transducer, Yunlong Guo[a,*], John Canning[b], Zenon Chaczko[c], Gang-Ding Peng[a]; [a]School of Electrical Engineering and Telecommunications, UNSW Sydney, NSW, 2052, Australia; [b]Laseire Consulting Pty Ltd, Sydney, NSW, Australia cDIVE IN AI, Wrocław, Poland. *canning.john@outlook.com

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16:00-18:00 **Th-6.52**

Fiber Bragg grating-based sensing for dynamic strain and speech recognition, Ibrahim G. Alsayoud[1,*], Alaaeddine Rjeb[1,*], Redha H. Al Ibrahim[1], Islam Ashry[1,**], Tien Khee Ng[1], Boon S. Ooi[1,***] [1]Photonics Laboratory, Computer, Electrical, and Mathematical Sciences & Engineering, King Abdullah University of Science and Technology, Thuwal 23955-6900, Saudi Arabia; *These authors contributed equally to the paper; *islam.ashry@kaust.edu.sa, *boon.ooi@kaust.edu.sa

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16:00-18:00 **Th-6.53**

Normalized temperature sensitivity of fiber Bragg gratings inscribed under different conditions, João Preizal[d], Miguel Cosme[e], Marizane Pota[b], Paulo Caldas[b,c], Francisco M. Araújo[e], Ricardo Oliveira[d], Rogério Nogueira[d], Gaspar M. Rego[a,b,*]; [a]ADiT-LAB, Instituto Politécnico de Viana do Castelo, Rua Escola Industrial e Comercial Nun'Álvares, 4900-347 Viana do Castelo, Portugal; [b]Center for Applied Photonics, INESC TEC, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal; cCISAS, Escola Superior de Tecnologia e Gestão, Instituto Politécnico de Viana do Castelo; [d]Instituto de Telecomunicações and University of Aveiro, Campus Universitário de Santiago, 3810-1938 Aveiro, Portugal; [e]HBK FiberSensing, S. A., Maia, Portugal. *gaspar@estg.ipvc.pt

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16:00-18:00 **Th-6.54**

Fiber Bragg grating 7-core hydrophone as an acoustic waves direction sensor, Manuel Monfort*, Ramón Miralles, Javier Madrigal, Salvador Sales; Institute of Telecommunications and Multimedia Applications (iTEAM), Universitat Politècnica de València, València, Spain.*manumonfort@gmail.com; mmonrip@upvnet.upv.es

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16:00-18:00 **Th-6.55**

FBG-based force sensing gripper in minimally invasive robot assisted laparoscopic surgery, Wanqi Feng[a,*], Mark W McDonald[a], Calum Anderson[a], David Smith[b], Robert L Reuben[a], Duncan P Hand[a], Yuhang Chen[a], William N MacPherson[a]; [a]School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, UK; [b]CMR Surgical Ltd., 1 Evolution Business Park Milton Road, Cambridge, UK. *wf2008@hw.ac.uk

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16:00-18:00 **Th-6.56**

Logic-gated biolaser for digital biochemical sensing, Xi Yang[a], Chen-Xiang Wang[a], Ze-Kai Li[a], Ting-Ting Wang[a], Cai-Rong Zhang[a], Mateusz Smietana[b], Yun-Jiang Rao[a], Yuan Gong[a,*]; [a]Key Laboratory of Optical Fiber Sensing and Communications (Ministry of Education), School of Information and Communication Engineering, University of Electronic Science and Technology of China, No. 2006, Xiyuan Ave., High-Tech Zone (West) 611731, Chengdu, Sichuan, China; [b]Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, Koszykowa 75, 00-662 Warsaw, Poland.*ygong@uestc.edu.cn

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16:00-18:00 **Th-6.57**

Temperature characterization of nanoparticles-doped fiber in the context of transmission-reflection analysis, Apolline Legrand[a,b], Minh Chau Phan Huy[b], Wilfried Blanc[a,*], [a]Université Côte d'Azur, CNRS, INPHYNI, France; [b]Safran Tech, Safran SA, rue des Jeunes Bois, 78117 Châteaufort, France. *wilfried.blanc@univ-cotedazur.fr

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16:00-18:00 **Th-6.58**

Multipoint measurement of strain using FSBS induced acoustic mode resonances, Anna I. Garrigues-Navarro[a,*], Martina Delgado-Pinar[a,b], Antonio Díez[a,b], Miguel V. Andrés[a,b]; [a]Institut de Ciència dels Materials, Universitat de València, 46980 Paterna, València, Spain; [b]Departament de Física Aplicada, Universitat de València, 46100 Burjassot, València, Spain.*ana.i.garrigues@uv.es

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16:00-18:00 **Th-6.59**

Real-time high-precision traffic flow monitoring with DAS, Zhichao Wang, Jiansheng Jiang, Yujie Zhao, Yuanyuan Song, Xiaoyu Zhu, Huijuan Wu*,Yunjiang Rao; Key Lab of Optical Fiber Sensing &

Communications (Ministry of Education), School of Information and Communication Engineering, University of Electronic Science & Technology of China, Chengdu, Sichuan, China 611731

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16:00-18:00 Th-6.60

Fiber Bragg grating-based optical fiber sensing system integrated with ensemble deep learning for enhanced liquid level sensing, Siva Kumar Nagi, Amare Mulatie Dehnaw, Yao-Jen Chug, Pradeep Kumar, Zi-Gui Zhong, Peng-Chun Peng; Department of Electro-Optical Engineering, National Taipei University of Technology, Taipei 10608, Taiwan

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16:00-18:00 Th-6.61

Humidity sensor based on MMF-CLF-MMF structure with GOEnhanced SPR sffect, Siyang Huang[a], Shengli Pu[a,b,*], Tengfei Xu[a], Chencheng Zhang[a], Weinan Liu[a], Yu Ji[a]; [a]College of Science, University of Shanghai for Science and Technology, Shanghai 200093, China; [b]Shanghai Key Laboratory of Modern Optical System, University of Shanghai for Science and Technology, Shanghai 200093, China

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16:00-18:00 Th-6.62

A novel plate-type fiber optic sensor for enhanced underwater detection, Tan Lu[a,b,c], Shun Wang[a,b,c,*], Xinyang Ping[a,b,c], Kunhua Wen[a,b,c], Jun Yang[a,b,c]; [a]Institute of Advanced Photonics Technology, School of Information Engineering, Guangdong University of Technology, Guangzhou, 510006, China; [b]Key Laboratory of Photonic Technology for Integrated Sensing and Communication, Ministry of Education of China, Guangdong University of Technology, Guangzhou, 510006, China; [c]Guangdong Provincial Key Laboratory of Information Photonics Technology, Guangdong University of Technology, Guangzhou, 510006, China. *shunwang@gdut.edu.cn

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16:00-18:00 Th-6.63

Reliable, doped hybrid xerogel-based optical fibre sensor for pH monitoring for industry, B. Rosales-Reina[a,*], N. Whittaker[b], D. López-Torres[b], C. Elosúa[b], S. Reinoso, T. Sun[b], K.T.V. Grattanb, J.J. Garrido[a];

[a]Institute for Advanced Materials and Mathematics (INAMAT2), Departamento de Ciencias, Universidad Pública de Navarra (UPNA), Campus de Arrosadia, 31006 Pamplona, Spain; [b]School of Science and Technology, City St George's, University of London, London EC1B 0HB, UK; [c]Institute of Smart Cities (ISC), Departamento de Ingeniería Eléctrica, Electrónica y de Comunicación, Universidad Pública de Navarra (UPNA), Campus de Arrosadía, 31006 Pamplona, Spain. *beatriz.rosales@unavarra.es

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16:00-18:00 **Th-6.64**

Optical fiber fluorescence sensor integrated into a photobioreactor, Borja García García[a,b,*], María Gabriela Fernández-Manteca[a,b], Celia Gómez Galdós[a,b], Susana Deus Álvarez[c], Agustín P. Monteoliva[c], José Miguel López-Higuera[a,b,d], Adolfo Cobo[a,b,d], Luis Rodríguez-Cobo[a,b,d]; [a]Photonics Engineering Group, Universidad de Cantabria, 39005 Santander, Spain; [b]Instituto de Investigación Sanitaria Valdecilla (IDIVAL), 39011 Santander, Spain; [c]Ecohydros S.L., 39600 Maliaño, Spain; dCIBER-BBN, Instituto de Salud Carlos III, 28029 Madrid, Spain. *borja.garcia@unican.es

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16:00-18:00 **Th-6.65**

Low-cost implementation of polarization-stable Sagnac intrusion detection system using standard networking hardware, Eran Burstein*, Avishay Eyal; School of Electrical Engineering, Tel Aviv University, Ramat Aviv 69978, Israel; *eranbur1@gmail.com

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16:00-18:00 **Th-6.66**

Bio-amplified fiber microlaser for ultrasensitive and disposable immunosensing, Yiling Liu[a,b], Chenxiang Wang[a], Zekai Li[a], Xi Yang[a,*], Chaoyang Gong[c], Yun-Jiang Rao[a], Yuan Gong[a,*]; [a]Key Laboratory of Optical Fiber Sensing and Communications (Ministry of Education of China), School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan 611731, People's Republic of China; [b]Southwest Institute of Technical Physics, Chengdu 610041, People's Republic of China; [c]Key Laboratory of Optoelectronic Technology and Systems (Ministry of Education of China), School of Optoelectronic Engineering, Chongqing University, Chongqing 400044, China. *ygong@uestc.edu.cn

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16:00-18:00 **Th-6.67**

Distributed magnetic sensing with high precision and long distance using polarization-sensitive optical frequency domain reflectometry, Yidai Zhu, Yangyang Wan, Sizhe Zhang, Xinyu Fan*, Zuyuan He; [1]State Key Laboratory of Advanced Optical Communication System and Networks, Shanghai Jiao Tong University, Shanghai 200240, China.*fan.xinyu@sjtu.edu.cn

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16:00-18:00 **Th-6.68**

Portable SPR-based optical fibre sensing platform for detection of cortisol and escherichia coli, Lucas Pereira[a,*], Bárbara Gonçalves[b,c], Francesco Arcadio[d], Nunzio Cennamo[d], Luigi Zeni[d], Luís Fontes[e,f], Pavel Zelenovskii[a], Carlos Marques[a,g,*]; [a]CICECO – Aveiro Institute of Materials & Physics Department, University of Aveiro, 3010-193 Aveiro, Portugal; [b]Associate Laboratory i4HB—Institute for Health and Bioeconomy, School of Sciences and Technology, NOVA University of Lisbon, 1099-085 Lisbon, Portugal; [c]Egas Moniz Center for Interdisciplinary Research (CiiEM), Egas Moniz School of Health and Science, Almada, Portugal; [d]Department of Engineering, University of Campania "L. Vanvitelli", Aversa, Italy; [e]CICECO – Aveiro Institute of Materials & Chemistry Department, University of Aveiro, 3010-193 Aveiro, Portugal; [f]LAQV-Requimte, Department of Chemistry, University of Aveiro, 3010-193 Aveiro, Portugal; [g]Department of Physics, VSB – Technical University of Ostrava, Ostrava, 70800, Czech Republic

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16:00-18:00 **Th-6.69**

Flexible wearable optical sensor based on a balloon-like interferometer to breathing monitoring, Mateus N. Costa[a,*], Victor H. R. Cardoso[a,*], Marcos F. C. de Souza[a], Paulo Caldas[b,c], Maria Thereza Rocco Giraldi[d], Orlando Frazão[b,e], José L. Santos[b,e], João C. W. A. Costa[a]; [a]Applied Electromagnetism Laboratory, Federal University of Pará, R. Augusto Corrêa, 01, Belém, Brazil; [b]Institute for Systems and Computer Engineering, Technology and Science, R. do Campo Alegre, 687, 4169-007 Porto, Portugal; [c]Polytechnic Institute of Viana do Castelo, Rua Escola Industrial e Comercial de Nun'Alvares, 4900-347 Viana do Castelo, Portugal; [d]Laboratory of Photonics, Military Institute of Engineering, Praça Gen. Tibúrcio, 80, Rio de Janeiro 22290-270, Brazil; [e]Department of Physics and Astronomy, Faculty of Sciences of University of Porto, R. do Campo Alegre, 687, 4169-007 Porto, Portugal. *mateus.costa@ufpa.br; victorcard@ufpa.br

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16:00-18:00 **Th-6.70**

Electromagnetic feedback fiber optic accelerometer with wide bandwidth and high sensitivity, Ran An[1,2], Xinyang Ping[1,2], Jun Yang[3,4,5,*], Yonggui Yuan[1,2], Kunhua Wen[4,5,6], Shun Wang[3,4,5], Yuncai Wang[3,4,5.],Yuwen Qin[3,4,5]; [1]Key Laboratory of In-Fiber Integrated Optics of Ministry of Education, College of Physics and Optoelectronic Engineering, Harbin Engineering University, Harbin 150001, China; [2]Key Laboratory of Photonic Materials and Devices Physics for Oceanic Applications, Ministry of Industry and Information Technology of China, College of Physics and Optoelectronic Engineering, Harbin Engineering University, Harbin 150001, China;[3] Institute of Advanced Photonics Technology, School of Information Engineering, Guangdong University of Technology, Guangzhou, 51006, China; [4]Key Laboratory of Photonic Technology for Integrated Sensing and Communication, Ministry of Education of China, Guangdong University of Technology, Guangzhou 510006, China; [5]Guangdong Provincial Key Laboratory of Information Photonics Technology, Guangdong University of Technology, Guangzhou 510006, China;[6]School of Physics and Optoelectronic Engineering, Guangdong University of Technology, Guangzhou 510006, China. *yangj@gdut.edu.cn

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16:00-18:00 **Th-6.71**

Exploring the application of Tamm plasmon resonance structures in fiber tips for remote hydrogen sensing, Miguel A. S. Almeida[a,b,*], João P. M. Carvalho[a,b], Isabel Pastoriza-Santos[c], J. M. M. M. de Almeida[a,d], Luís C. C. Coelho[a]; [a]INESC TEC – Institute of Systems and Computer Engineering, Technology and Science, and Department of Physics, Faculty of Sciences, University of Porto, 4169-007 Porto, Portugal; [b]Department of Engineering Physics, Faculty of Engineering, University of Porto, 4200-465 Porto, Portugal; [c]CINBIO – Center of Research in Nanomaterials and Biomedicine, Campus Universitario Lagoas, Universidad de Vigo, 36310, Vigo, Pontevedra, Espanha, and SERGAS-UVIGO – Galicia Health Service, 36312 Vigo, Pontevedra, Espanha; [d]Department of Physics, School of Sciences and Technology, University of Trás-os-Montes e Alto Douro, 5001-801 Vila Real, Portugal. *miguel.a.almeida@inesctec.pt

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16:00-18:00 **Th-6.72**

Optical fiber sensor for assessing asphaltene content in crude oil, V. Sarakatsianos[a], M. Konstantaki[a,*], E. Antoniou[b], E. Chamilaki[b], N. Pasadakis[b], S. Pissadakis[a]; [a]Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology – Hellas (FORTH), 70013, Heraklion, Greece; [b]School of Mineral Resources Engineering, Technical University of Crete, 73100, Chania, Greece.*mkonst@iesl.forth.gr

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16:00-18:00 **Th-6.73**

Fluorescence-based optical fiber sensor for liquid sample analysis in silica glass well, Celia Gómez-Galdós[a,b,*], Borja García-García[a,b], Maria Gabriela Fernández-Manteca[a,b], Andrea Perez-Asensio[a,b], José Francisco Algorri[a,b,c], José Miguel López-Higuera[a,b,c], Adolfo Cobo[a,b,c], Luis Rodríguez-Cobo[a,b,c]; [a]Photonics Engineering Group, Universidad de Cantabria (UC), 39005, Santander, Spain; [b]Instituto de Investigación Sanitaria Valdecilla (IDIVAL), 39011, Santander, Spain; cCIBER-BBN, Instituto de Salud Carlos III, 28029, Madrid, Spain. *ggaldosc@unican.es

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16:00-18:00 **Th-6.74**

Calibrating ITER-fibre optic current sensor, P. Dandu[a], A. Gusarov[b], M. Wuilpart[a,*]; [a]University of Mons, Dept. of Electromagnetism & Telecommunications, Blvd. Dolez 31, 7000 Mons, Belgium; [b]Belgian Nuclear Research Centre SCK-CEN, Boeretang 200, 2400 Mol, Belgium.

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16:00-18:00 **Th-6.75**

Extreme temperature fiber Bragg grating sensors for superconducting magnet and spacecraft applications, Richard J. Black[1], Adam (Yo-Yuan) Cheng[1], Fumio Furuta[3], Behzad Moslehi[1], Jesse Off[1,2], Keo Sourichanh[1], Andrei Zagrai[4], Mehrdad Moslehi[2], William Price[1], Homi Fatemi[2]; [1]Intelligent Fiber Optic Systems Corporation (IFOS), 1533 California Circle, Milpitas, CA 95035, USA - rjb@ifos.com; bm@ifos.com; [2]Opterro Inc., 1533 California Circle, Milpitas, CA 95035, USA - mehrdad@opterro.com; homi@opterro.com; [3]Fermi National Accelerator Laboratory (FNAL), P.O. Box 500, Batavia, IL 60510-0500, USA; [4]Dept. of Mechanical Engineering, New Mexico Institute of Mining and Technology, 801 Leroy Pl., 124 Weir Hall, Socorro, NM 8780, USA

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16:00-18:00 **Th-6.76**

Reaching mGy resolution in radiation sensing with a slow-light FBG, Bastien Van Esbeen[a,b,*], Chun-Wei Chen[b], Tommy Boilard[c], Martin Bernier[c], Christophe Caucheteur[a], Mateusz Śmietana[d], Jan Mrazek[e], Andrei Stancalie[f], Razvan Mihalcea[f], Daniel Negut[g], Michel J. F. Digonnet[b]; [a]Advanced Photonics – ERC Unit, University of Mons, Mons, 7000, Belgium; [b]Edward L. Ginzton Laboratory, Stanford University, Stanford, California 94305, USA; [c]Centre d'optique, photonique et laser (COPL), Université Laval, Québec, Canada QC G1V 0A6; [d]Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, Koszykowa 75, 00-662 Warsaw, Poland; [e]Institute of Photonics and Electronics of the Czech Academy of Sciences, Chaberska 57, 182 57 Prague 8, Czech Republic; [f]Center for Advanced Laser Technologies (CETAL), National Institute for Laser, Plasma and Radiation Physics, Magurele RO-077125, Romania; [g]"Horia Hulubei" National Institute for R&D in Physics and Nuclear Engineering, Magurele RO-077125, Romania. *bastien.vanesbeen@umons.ac.be

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16:00-18:00 **Th-6.77**

Optical fiber apta-biosensor for Alzheimer's disease via amyloid-β oligomers sensing based on polished microsphere-LSPR, H. Bagheri[a], M. I. Zibaii[a,*], L. Dargahi[b], A. Layeghi[a], O. Ranjbar[a], P. Jorge[c], O. Frazao[c], H. Latifi[a]; [a]Laser and Plasma Research Institute, Shahid Beheshti University, Tehran, Iran; [b]Neuroscience Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran; [c]INESC-Porto, Rua do Campo Alegre 687, 4169-007 Porto, Portugal. m_zibaye@sbu.ac.ir

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16:00-18:00 **Th-6.78**

Discrimination of strain and temperature using Bragg gratings in sidehole rectangular fiber and embedded reduced-cladding fibers, Lin Htein, Jingxian Cui*, Chern Yang Leong, Linyue Lu and Hwa-Yaw Tam; Photonics Research Institute, Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR.*jingxian.cui@connect.polyu.hk

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16:00-18:00 **Th-6.79**

FBG-based temperature and fire sensors for use in industrial microwave ovens, K. Yüksel[a], O.D. Merdin[b], D. Kinet[c,d], M. Merdin[b], C. Guyot[c], C. Caucheteur[d,*]; [a]Electronics Engineering Department, Izmir Institute of Technology, Urla, TR-35430 Izmir, Türkiye; [b]MET Advanced Technologies, TR-35430 Izmir, Türkiye; [c]B-SENS SRL, 7000 Mons, Belgium; [d]Advanced Photonic Sensors Unit, University of Mons, 7000 Mons, Belgium. *christophe.Caucheteur@umons.ac.be

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16:00-18:00 **Th-6.80**

Artificial skin using photothermal optical fibers for material identification, Chern Yang Leong[a,b], Jingxian Cui[a,b,*], Xin Cheng[a], Hwa-Yaw Tam[a,b,c]; [a]Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong S.A.R; [b]Photonics Research Institute, The Hong Kong Polytechnic University, Hong Kong S.A.R; [c]School of Chinese Medicine, Hong Kong Baptist University, Hong Kong S.A.R

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16:00-18:00 **Th-6.81**

Hydrogen optical sensors based on magnesium thin films for leak detection in industrial settings, André D. Santos[a*], José M. M. M. de Almeida[a,b], João P. Mendes[a], Miguel A. S. Almeida[a], Luís C. Coelho[a]; [a]INESC TEC - Institute of Systems and Computer Engineering, Technology and Science (Centre for Applied Photonics), and Department of Physics and Astronomy, Faculty of Sciences, University of Porto, Rua do Campo Alegre, 4169-007 Porto, Portugal; [b]Department of Physics, School of Sciences and Technology, University of Trás-os-Montes e Alto Douro, 5001-801 Vila Real, Portugal. *andre.d.santos@inesctec.pt

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16:00-18:00 **Th-6.82**

Monitoring the manufacturing process and the operation of high voltage bushings with fiber optics, Joao M. B. Pereira[a,*], Christos Athanasopoulos[b], Magnus Lindblom[a], Jens Kanje Nordberg[b], Kenny Hey Towa, Roger Hedlund[b], Zoltan X. Repasi[b], Francisco Penayo[b]; [a]RISE - Research Institutes of Sweden, Isafjordsgatan 22, 194 32 Kista, Sweden; [b]Hitachi Energy Sweden AB, Lyviksvägen 4,771 80 Ludvika, Sweden. *joao.pereira@ri.se

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16:00-18:00 **Th-6.83**

Simultaneous measurement of position and vibration in correlation-domain LiDAR, Soshi Yoshida[a,*], Takaki Kiyozumi[b], Sze Yun Set[b,c], Shinji Yamashita[b,c], Yosuke Mizuno[a,d]; [a]Faculty of Engineering, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan; [b]Graduate School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan; [c]Research Center for Advanced Science and Technology, The University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo 153-8904, Japan; [d]Institute of Multidisciplinary Sciences, Yokohama National University, 79-5 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan

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16:00-18:00 **Th-6.84**

In situ monitoring and sensing of gas generation during internal short circuits in Li-ion batteries using Raman spectroscopy and fiber bundle signal collection, Qilu Nie[a,b], Mengen Cheng[a,b], Dexun Yang[a,b], Shilong Pei[a,b], Yajie Li[a], Rong Ge[a,b], Donglai Guo[a,*], Minghong Yang[a,*]; [a]National Engineering Research Center of Fiber Optic Sensing Technology and Networks, Wuhan University of Technology, Wuhan, Hubei province 430070, China; [b]School of Materials Science and Engineering, Wuhan University of Technology, Wuhan, Hubei province 430070, China.*dlguo@whut.edu.cn; *minghong.yang@whut.edu.cn

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16:00-18:00 **Th-6.85**

Study of a long-range perimeter intrusion detection system using deep learning based optical fiber distributed acoustic sensor, Myoung Jin Kim*, Hyojong Kim, Young Ho Kim, Donjung Lee, Joo-young Lee, Youngkuk Choi, Hyoyoung Jung, Jun Geun Shin, Hyeongyong Hwang, Huioon Kim; Optical Precision Measurement Research Center, Korea Photonics Technology Institute, Cheomdanventure-ro 108Beon-gil 9, Buk-gu, Gwnagju, 61006, Republic of Korea.mjinkim@kopti.re.kr

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16:00-18:00 **Th-6.86**

Effect of gamma radiation on variously fabricated FBGs to verify the applicability of optical fiber sensors in radioactive environments, Petr Dejdara, Stepan Foralb, Petr Munstera, Lukas Nesvadbab, Petr Gallusc, Jakub Krejcic; Brno University of Technology, Faculty of Electrical Engineering and Communications, Dept. of Telecommunications, Technicka 12, 616 00 Brno, Czech Republic. optolab@vut.cz

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16:00-18:00 **Th-6.87**

Lab-Around-Fiber for rapid biological agent detection, Marine Poret[a,*], Julie Somkhit[b], Karla Perez Toralla[b], Guillaume Laffont[a]; [a]Université Paris-Saclay, CEA, List, F-91120, Palaiseau, France; [b]Paris-Saclay University, CEA, INRAE, Medicines and Healthcare Technologies Department (DMTS), SPI, Gif-sur-Yvette, France. *marine.poret@cea.fr

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16:00-18:00 **Th-6.88**

High-performance fiber-optic hot-wire flowmeter based on surface plasmon resonance and PDMS, Weinan Liu*, Shengli Pu; College of Science, University of Shanghai for Science and Technology, Shanghai 200093, China.*2448171287@qq.com

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16:00-18:00 **Th-6.89**

Single-mode helical sapphire fiber Bragg grating sensors fabricated by femtosecond laser direct writing technology, Jun He[a,b,*], Xizhen Xu[a,b], Jia He[a,b], Jiafeng Wu[a,b], Zhiyong Bai[a,b], Yiping Wang[a,b]; [a]State Key Laboratory of Radio Frequency Heterogeneous Integration, Key Laboratory of Optoelectronic Devices and Systems of Ministry of Education/Guangdong Province, College of Physics and Optoelectronic Engineering, Shenzhen University, Shenzhen 518060, China; [b]Shenzhen Key Laboratory of Photonic Devices and Sensing Systems for Internet of Things, Guangdong and Hong Kong Joint Research Centre for Optical Fibre Sensors, Shenzhen University, Shenzhen 518060, China.*hejun07@szu.edu.cn

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16:00-18:00 **Th-6.90**

Optical fiber sensor for glyphosate detection combining the functionality of gold and plasmonic properties of silver thin films, João P. Mendes[a,*], Paulo S. S. dos Santos[a], José M. M. M. de Almeida[a,b], Luís C. C. Coelho[a,c]; [a]INESC TEC – Institute for Systems and Computer Engineering, Technology and Science, Rua Dr. Alberto Frias, 4200-465, Porto, Portugal; [b]UTAD – University of Trás-os-Montes and Alto Douro, Department of Physics, 5001801, Vila Real, Portugal; cFCUP – Faculty of Sciences, University of Porto, Rua do Campo Alegre, 4169-007, Porto, Portugal

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16:00-18:00 **Th-6.91**

Etched single-crystal sapphire fiber Bragg gratings for simultaneous temperature and strain sensing at 1500 ℃, Jun He[a,b,*], Zhuoda Li[a,b], Zhiwei Qin[a,b], Xizhen Xu[a,b], Zhiyong Bai[a,b], Yiping Wang[a,b]; [a]State Key

Laboratory of Radio Frequency Heterogeneous Integration, Key Laboratory of Optoelectronic Devices and Systems of Ministry of Education/Guangdong Province, College of Physics and Optoelectronic Engineering, Shenzhen University, Shenzhen 518060, China; [b]Shenzhen Key Laboratory of Photonic Devices and Sensing Systems for Internet of Things, Guangdong and Hong Kong Joint Research Centre for Optical Fibre Sensors, Shenzhen University, Shenzhen 518060, China.*hejun07@szu.edu.cn

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16:00-18:00 **Th-6.92**

Next-generation photonic crystal fiber based plasmonic sensor for heavy metal detection via spectroscopy and refractive index integration, Ayushman Ramola[a,*], Amit Kumar Shakya[b], Anurag Vidyarthi[c], Surinder Singh[d], Eliran Talker[a], Arik Bergman[a]; [a]Dept. of Electrical and Electronics Engineering, Ariel University, Ariel, Israel; [b]The Iby and Aladar, Fleischman Faculty of Engineering, School of Electrical Engineering, Tel Aviv University, Tel Aviv-Yafo, Israel; [c]Dept. of Electronics and Communication Engineering, Graphic Era (Deemed to be University), Dehradun, Uttarakhand, India; [d]Dept. of Electronics and Communication Engineering, Sant Longowal Institute of Engineering and Technology, Sangrur, Punjab, India

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16:00-18:00 **Th-6.93**

Development of a multi-core fiber Bragg grating-based axial tip force sensor for left-atrial appendage closure procedure, X.T.Ha[a,*], J.Van Roosbroeck[a], M.Ourak[b], E.Vander Poorten[b], J.Vlekken[a]; [a]FBGS International NV, Bell-Telephonelaan 2H, 2440 Geel, Belgium; [b]Department of Mechanical Engineering, KU Leuven, 3000 Leuven, Belgium.*xtha@fbgs.com

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16:00-18:00 **Th-6.94**

Fiber laser LIBS as a sensing tool for chemical mapping of heritage tiles, Diana Capela[a,b,*], Marta Manso[c,d], Tomás Lopes[a,b], Rafael Cavaco[a,b], Joana Teixeira[a,b], Pedro A. S. Jorge[a,b], Nuno A. Silva[a,b], Diana Guimarães[a,b]; [a]Center for Applied Photonics, INESC TEC, Rua do Campo Alegre 687, 4169-007, Porto, Portugal; [b]Dept. de Física e Astronomia, FCUP, Rua do Campo Alegre 687, 4169-007, Porto, Portugal; [c]LIBhys-UNL, Physics Dept., NOVA School of Science and Technology, Portugal dVICARTE, Conservation & Restoration Dept., NOVA School of Science and Technology, Portugal. *diana.f.capela@inesctec.pt

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16:00-18:00 **Th-6.95**

Graphene oxide for improved sensitivity and response time of fibre Bragg grating-based humidity sensors, Joanna M Coote[a,*], Matthias Fabian[a,b], Xiaojun Ren[c], Tongxi Lin[c], Rakesh Joshi[c], Heriberto Bustamante[d], Kenneth Grattan[a,b], Tong Sun[a,b]; [a]City Optotech Ltd. 10 Northampton Square, London, EC1V 0HB, United Kingdom; [b]City St. George's, University of London, 10 Northampton Square, London, EC1V 0HB, United Kingdom; [c]University of New South Wales, Sydney, NSW 2052, Australia; [d]Sydney Water Corporation, Paramatta, NSW 2424, Australia. *j.coote@cityoptotech.com

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16:00-18:00 **Th-6.96**

Online monitoring of electric transmission lines using an optical ground wire with Distributed Acoustic Sensing, Susana Silva[a,*], Gonçalo Duarte Nunes[a], João Pereira da Silva[a], António Meireles[b], David Bidarra[b], José Moreira[b], Susana Novais[a], Ireneu Dias[a], Ricardo Sousa[a], Orlando Frazão[a]; [a]INESC TEC – Institute for Systems and Computer Engineering, Technology and Science, Porto, Portugal; [b]REN – Redes Energéticas Nacionais, SGPS, S.A., Lisboa, Portugal.*susana.o.silva@inesctec.pt

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16:00-18:00 **Th-6.97**

SPR-based tapered MCF sensor for monitoring of Poly (T) – Poly (A) binding, V. Hernández-Ambato[a,*], V. Semwal[b], G. Woyessa[b], O. Bang[b], J. Janting[b], D. Barrera[a], S. Sales[a]; [a]Photonics Research Labs, ITEAM, Universitat Politècnica de València, 46022 Valencia, Spain; [b]DTU Electro, Department of Electrical and Photonics Engineering, Technical University of Denmark, 2800 Kongens Lyngby, Denmark. *vheramb@upv.es

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16:00-18:00 **Th-6.98**

Staphylococcus aureus detection based on tapered MCF, V. Hernández-Ambato[a,*], D. Barrera[a], M. Tormo-Mas[e], E. Aznar[b,d], R. Martínez-Mañez[b,d], S. Sales[a]; [a]Photonics Research Labs, ITEAM, Universitat Politècnica de València, 46022 Valencia, Spain; [b]Instituto Interuniversitario de Investigación de Reconocimiento Molecular y Desarrollo Tecnológico, Universitat Politècnica de València, Universitat de València, 46022 Valencia, Spain; [c]Unidad Mixta de Investigación en Nanomedicina y Sensores, Universitat Politècnica de València, Instituto de Investigación Sanitaria La Fe (IISLAFE), 46022 Valencia, Spain; [d]CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), 28029 Madrid, Spain; [e]Grupo de

Investigación Infección Grave, Instituto de Investigación Sanitaria La Fe (IISLAFE), Hospital Universitari i Politècnic La Fe, 46026 Valencia, Spain. *vheramb@upv.es

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16:00-18:00 **Th-6.99**

Effect of adhesives on the spectral response of Bragg gratings embedded on sapphire wafer in extreme cryogenic temperatures, S M Haneef[a,b,*], T Booth[a], B Ludbrook[a,b], F S Fernandez[a,b], M Davies[a], D Moseley[a], R Badcock[a,b]; [a]Paihau-Robinson Research Institute, Victoria University of Wellington, New Zealand; [b]Dodd-Wall Centre for Photonics and Quantum Technologies, New Zealand

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16:00-18:00 **Th-100**

Simultaneous measurement of temperature and ionizing radiation dose based on type-II FBGs inscribed in P-doped optical fibers, M. Leoschke[a], S. Zilberman[b], W. Lo[a], M. Catellani[a], D. Beck[c], J. Geuther[c], F. Scurti[a]; [a]Ken and Mary Alice Lindquist Department of Nuclear Engineering, The Pennsylvania State University, University Park, PA 16802, USA; [b]Soreq Nuclear Research Center, Yavne, 81800, Israel; [c]Radiation Science & Engineering Center, The Pennsylvania State University, University Park, PA 16802, USA

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16:00-18:00 **Th-6.101**

Fiber optical current sensor for quasi-DC currents during high voltage short-circuit tests, Reinhard Klambauera*, Philipp Peter Trampitsch[a], Johannes Mandl[a], Jurgen Plesch[b], Werner Schoffer[b], Alexander Bergmann[a]; [a]Institute of Electrical Measurement and Sensor Systems, Inffeldgasse 33/1, Graz, Austria; [b]ARTEMES GmbH, Eibiswald 105, Eibiswald, Austria.reinhard.klambauer@tugraz.at

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16:00-18:00 **Th-6.102**

Decoupling temperature and humidity with chitosan-coated tilted FBG sensor, Tiago Amaral[a], Ana I. Freitas[a,b], João M. Leça[a], Marta S. Ferreira[a], Micael Nascimento[a,*]; [a]i3N & Department of Physics, University of Aveiro, Campus de Santiago, Aveiro 3810-193, Portugal; [b]Faculty of Exact Sciences and Engineering, University of Madeira, Campus da Penteada, 9020-105 Funchal, Portugal.*micaelnascimento@ua.pt

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16:00-18:00 **Th-6.103**

High-sensitivity dual-disk fiber-optic vibration sensing with wideband flattened response, Xinyang Ping[a], Shuaifei Tian[a], Kunhua Wen[b,c,d,e], Jun Yang [b,c,d,*], Yuncai Wang[b,c,d], Yuwen Qin[b,c,d]; [a]College of Physics and Optoelectronic Engineering, Harbin Engineering University, Harbin, 150001, China; [b]Institute of Advanced Photonics Technology, School of Information Engineering, Guangdong University of Technology, Guangzhou, 51006, China; [c]Key Laboratory of Photonic Technology for Integrated Sensing and Communication, Ministry of Education of China, Guangdong University of Technology, Guangzhou, 51006, China; [d]Guangdong Provincial Key Laboratory of Information Photonics Technology, Guangdong University of Technology, Guangzhou, 51006, China; [e]School of Physics & Optoelectronic Engineering, Guangdong University of Technology, Guangzhou 510006, Guangdong, China. yangj@gdut.edu.cn

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16:00-18:00 **Th-6.104**

Highly strain sensitivity sensor by long period fiber grating inscribed in multi-mode fiber using CO2 laser, Hang Su, Yunqi Liu*, Yuehui Ma, Siyu Chen, Chengbo Mou; Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Shanghai Institute for Advanced Communication and Data Science, Joint International Research Laboratory of Specialty Fiber Optics and Advanced Communication, Shanghai University, Shanghai, China. *yqliu@shu.edu.cn

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16:00-18:00 **Th-6.105**

Hydrogel-integrated FBG sensors for real-time pH monitoring, Doua Kosaji[a,b], Nazmi B. Alsaafeen[a,b], Mohammad I. Awad[a,b], Kinda Khalaf[a,b], Anna-Maria Pappa[a,b], M. Fatima Domingues[a,b,c,*]; [a]Department of Biomedical Engineering and Biotechnology, Khalifa University, Abu Dhabi, UAE; [b]Healthcare Engineering Innovaation Center, Khalifa University, Abu Dhabi, UAE c Instituto de Telecomunicações-University of Aveiro, Portugal.*fatima.domingues@ua.pt

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16:00-18:00 **Th-6.106**

Torque and rotational speed FBG-based measurements by sensorized FDM support structure for aerospace applications, Gustavo Saturno[1,*], João Cunha[2], Vitorino Biazi-Neto[1], Rui Moreira[2,3,4], Jan Nedoma[5], Andreas Ioannou[6], Kyriacos Kalli[6], Radek Martinek[7], Carlos Marques[1,8]; [1]CICECO – Aveiro Institute of Materials & Physics Department, University of Aveiro, Aveiro, Portugal; [2]Department of Mechanical Engineering, University of Aveiro, Aveiro, Portugal; [3]TEMA – Centre for Mechanical Technology and Automation, University of Aveiro, Aveiro, Portugal; [4]LASI - Intelligent Systems Associate Laboratory, Aveiro-Portugal:[5]Department of Telecommunications, VSB – Technical University of Ostrava, Ostrava, 70800, Czech Republic; [6]Photonics & Optical Sensors Research Laboratory (PhOSLab), Cyprus University of Technology, Limassol 3036, Cyprus; [7]Department of Cybernetics and Biomedical Engineering, VSB – Technical University of Ostrava, Ostrava, 70800, Czech Republic; [8]Department of Physics, VSB – Technical University of Ostrava, Ostrava, 70800, Czech Republic.*Gustavo.saturno@ua.pt

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16:00-18:00 **Th-6.107**

Effect of core breakage on measurement symmetry in shape sensing based on optical fiber sensors, Leonardo Rossi[a,*], Francesco Falcetelli[b], Raffaella Di Sante[b], Gabriele Bolognini[a]; [a]Consiglio Nazionale delle Ricerche, ISMN Institute, Via Gobetti 101, 40129 Bologna, Italy; [b]Department of Industrial Engineering, University of Bologna, Via Fontanelle 40, 47121 Forlì, Italy

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16:00-18:00 **Th-6.108**

Gas sensing inside hollow-core fibers, Michał Nikodem[a,*], Patrycja Gronowicz[a], Piotr Perehiniec[a], Ryszard Buczynski[b,c]; [a]Department of Optics and Photonics, Wroclaw University of Science and Technology, Poland; [b]Łukasiewicz Research Network – Institute of Microelectronics and Photonics, Poland; [c]Faculty of Physics, University of Warsaw, Poland.*michal.nikodem@pwr.edu.pl

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16:00-18:00 **Th-6.109**

Plasmonic immunosensors based on POF D-shaped for detection of ochratoxin A, Thais de Andrade Silva[1,*], Francesco Arcadio[2], Nunzio Cennamo[2], Luigi Zeni[2], Servio Tulio Cassini[1], Jairo Pinto de Oliveira[1],

Carlos Marques[3,4]; [1]Federal University of Espírito Santo, Av Marechal Campos 1468, Vitória, ES 29.040-090, Brazil; [2]University of Campania Luigi Vanvitelli, Department of Engineering, Via Roma 29, 81031, Aversa, Italy; [3]CICECO – Aveiro Institute of Materials & Physics Department, University of Aveiro, Campus Universitário de Santiago, 3810-193, Aveiro, Portugal; [4]Department of Physics, Faculty of Electrical Engineering and Computer Science, VSB—Technical University of Ostrava, Ostrava, Czech Republic. *thaisandrade1213@hotmail.com

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16:00-18:00 **Th-6.110**

FBG-based optical extensometer for high-precision mechanical tests, Tulio Gonçalves[1,*], Gustavo Saturno[1], Carlos Marques[1,2]; [1]CICECO – Aveiro Institute of Materials & Physics Department, University of Aveiro, Aveiro, Portugal; [2]Department of Physics, VSB – Technical University of Ostrava, Ostrava, 70800, Czech Republic.*Tuliomanuel.pg@ua.pt

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16:00-18:00 **Th-6.111**

Estimating fiber borehole seismometer orientation using active-source P-wave particle motion analysis, Guoheng Qi[a,b], Kunbi Zhu[a,b], Wenzhu Huang[a,b], Wentao Zhang[a,b,*], Fang Li[a], Liwei Wang[c], Li Li[d]; [a]Institute of Semiconductors, Chinese Academy of Sciences, Beijing 100083, China; [b]Center of Materials Science and Optoelectronic Engineering, University of Chinese Academy of Sciences, Beijing, 100049, China; [c]China Earthquake Administration Key Laboratory of Earthquake Monitoring and Disaster Mitigation Technology, Guangdong Earthquake Agency, Guangzhou 510070, China; [d]Institute of Geophysics, China Earthquake Administration, Beijing 100017, China. *zhangwt@semi.ac.cn

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16:00-18:00 **Th-6.112**

Cell movement monitoring using microcavity Mach-Zehnder interferometer, Tomasz Gabler[a,*], Joanna Witkowska[b], Monika Janik[a], Mariusz Zdanowicz[c], Marcin Koba[a,c], Anna Grabowska[b], Dariusz Szukiewicz[b], Mateusz Śmietana[a,d]; [a]Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, Koszykowa 75, 00-662 Warsaw, Poland; [b]Medical University of Warsaw, Department of Biophysics, Physiology and Pathophysiology, Chałubinskiego 5, 02-004 Warsaw, Poland; [c]National Institute of Telecommunications, Szachowa 1, 04-894 Warsaw, Poland; [d]Łukasiewicz Research Network – Institute of Microelectronics and Photonics, Department of Glass, al. Lotników 32/46, 02-668 Warsaw, Poland.*tomasz.gabler.dokt@pw.edu.pl

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W7-Conference Banquet
(20h00-24h00)

Friday
(30/05/2025)

F1-Session *Physical, Mechanical and Eletromagnetic Sensors*

(9h30-11h10)

Chairs: ***Dr. Gabriele Bolognini*** (Istituto per la Microelecttronic e Microsistemi, Italy)
Prof. Luc Thévenaz (EPFL, Switzerland)

9:30-10:00 **Dr. Austin Taranta**
(invited) *University of Southampton (United Kingdom)*

F-1.1 **Recent Advances in Antiresonant Hollow Core Fibers for the Next Generation of Gyroscopes and Precision Fiber Sensors**

Antiresonant hollow core fiber (HCF) is reaching large-scale commercial deployment for data transmission, where low latency and ultra-low loss form key advantages over conventional solid core fibre. But the greatest benefits of this rapidly maturing technology will perhaps be realized by optical fiber sensors, such as fibre-optic gyroscopes. Here the tailorable operating window, customizable light-gas interaction, and orders-of-magnitude improvements to backscatter, nonlinearity, and environmental impairments afforded by HCF can be transformative. This review examines the state-of-the-art in HCFs, highlighting recent breakthroughs that make them a compelling platform for advanced fiber-optic gyroscopes and optical systems across a variety of applications.

10:10-10:15 **F-1.2**

Resolving twist-induced errors in fiber optic shape sensing via polarization-sensitive reflectometry, Arman Aitkulov[a]*, Martina Cappelletti[a], Daniele Orsuti[a]†, Luca Schenato[a], Marco Santagiustina[a], Andrea Galtarossa[a], and Luca Palmieri[a]; [a]Department of Information Engineering, Via Gradenigo 6/B, Padova, Italy.*arman.aitkulov@phd.unipd.it

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10:15-10:30 **F-1.3**

Femtosecond laser-inscribed large-scale fiber Bragg grating arrays for distributed sensing in harsh environments, Jun He*[a,b], Baijie Xu[a,b], Yanjie Meng[a,b], Cailing Fu[a,b], Xizhen Xu[a,b], and Yiping Wang[a,b]; [a]State Key Laboratory of Radio Frequency Heterogeneous Integration, Key Laboratory of Optoelectronic Devices and Systems of Ministry of Education/Guangdong Province, College of Physics and Optoelectronic Engineering, Shenzhen University, Shenzhen 518060, China; [b]Shenzhen Key Laboratory of Ultrafast Laser Micro/Nano Manufacturing, Guangdong and Hong Kong Joint Research Centre for Optical Fibre Sensors, Shenzhen University, Shenzhen 518060, China.*hejun07@szu.edu.cn

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10:30-11:45 **F-1.4**

Application of PM-EDF ring laser with cascaded-chirped LPG to intensity-modulation based acoustic sensing, Satoshi Tanaka, Makoto Okano, Atsushi Wada; Department of Communications Engineering, National Defense Academy Hashirimizu 1-10-20, Yokosuka, Kanagawa 239-8686, Japan

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10:45-11:00 **F-1.5**

Transient fiber optical current sensing during high-voltage short-circuit events, Philipp Peter Trampitsch[a], Reinhard Klambauer[a], Johannes Michael Mandl[a], Jurgen Plesch[b], Werner Schoffer[b], and Alexander Bergmann*[a]; [a]Institute of Electrical Measurement and Sensor Systems, Inffeldgasse 33/1, Graz, Austria bArtemes GmbH, Eibiswald 105, Eibiswald 8552, Austria.*alexander.bergmann@tugraz.at

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F2-Post Deadline Session

(11h30-12h45)

Chairs: ***Prof. Jose Miguel Lopez Higuera*** (Universidad de Cantabria, Spain)
Prof. Zuyuan He(Shanghai Jiao Tong University, China)

F3-Closing Cerimony

(12h45-13h15)

Douro River Trip

(16h00-17h00)
