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- **10246** Smart Sensors, Actuators, and MEMS VIII (Fonseca, Prunnila, Peiner) . . . 3
- **10247** Bio-MEMS and Medical Microdevices III (van den Driesche, Giouroudi, Delgado-Restituto) ............................................................ 6
- **10248** Nanotechnology VIII (Tiginyanu, Adelung, Sarua) ............................. 7
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**Plenary Sessions**  
Don’t miss these world-class speakers discussing the latest directions and most promising breakthroughs.

**Special Events**  
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PLENARY PRESENTATIONS

Don’t miss these world-class speakers discussing the latest directions and most promising breakthroughs.

MONDAY 8 MAY  9:00 TO 10:00

8:50: Opening Remarks

Ulrich Schmid, Technische Univ. Wien (Austria)

8:55: Welcome

Carles Cané, Ctr. Nacional de Microelectronica (Spain)

9:00 to 10:00

Smart Integrated Microsystems: The Energy Efficiency Challenge

Luca Benini, Univ. degli Studi di Bologna (Italy)

Abstract: The “internet of everything” envisions trillions of connected objects loaded with high-bandwidth sensors requiring massive amounts of local signal processing, fusion, pattern extraction and classification. From the computational viewpoint, the challenge is formidable and can be addressed only by pushing computing fabrics toward massive parallelism and brain-like energy efficiency levels. CMOS technology can still take us a long way toward this goal, but technology scaling is losing steam. Energy efficiency improvement will increasingly hinge on architecture, circuits, design techniques such as heterogeneous 3D integration, mixed-signal preprocessing, event-based approximate computing and non-Von-Neumann architectures for scalable acceleration.

Biography: Luca Benini holds the chair of Digital Circuits and Systems at ETHZ and is Full Professor at the Universita di Bologna. Dr. Benini received a Ph.D. degree in electrical engineering from Stanford University in 1997 and his research interests are in energy-efficient system design for embedded and high-performance computing. He is also active in the area of energy-efficient smart sensors and ultra-low power VLSI design. Dr. Benini has published more than 700 papers in peer-reviewed international journals and conferences, four books, and several book chapters. He is a Fellow of the IEEE, the ACM, is a member of the Academia Europaea, and is the recipient of the 2016 IEEE CAS Van Valkenburg award.

TUESDAY 9 MAY  9:00 TO 10:00

9:00: Welcome and Introductions

Ulrich Schmid, Technische Univ. Wien (Austria)

9:05: MEMS Microphone Innovations Towards High Signal to Noise Ratios

Alfons Dehé, Infineon Technologies AG (Germany)

Abstract: After decades of research and more than ten years of successful production in very high volumes Silicon MEMS microphones are mature and unbeatable in form factor and robustness. Audio applications such as video, noise cancelation and speech recognition are key differentiators in smart phones. Microphones with low self-noise enable those functions. Backplate-free microphones enter the signal to noise ratios above 70dB(A). This talk will describe state of the art MEMS technology of Infineon Technologies. An outlook on future technologies such as the comb sensor microphone will be given.

Biography: Alfons Dehé is a Senior Principal on MEMS devices at Infineon Technologies. He obtained a diploma on solid state physics from the RWTH Aachen University in 1992. At the Technical University of Darmstadt he finished his PhD in 1997 focusing on compound semiconductor micromachined sensors and actuators for thermal, optical and radio frequency applications. Since 1998 he is with the Infineon Technologies AG where he held different positions in the radio frequency and sensors department. He has started Silicon microphone development and turned it into successful volume production. Today he is leading the MEMS innovation targeting mobile applications. He is the author and co-author of more than 90 papers and holds more than 30 patent families.

WEDNESDAY 10 MAY  9:00 TO 10:00

9:00: Welcome and Introductions

Ulrich Schmid, Technische Univ. Wien (Austria)

9:05: Graphene Technologies for Bioelectronics and Neuroprosthetics

Jose A. Garrido, Inst. Catalá de Nanosciència i Nanotecnologia (ICN2) (Spain)

Abstract: Establishing a reliable bidirectional communication interface between the nervous system and electronic devices is crucial for exploiting the full potential of neural prostheses. Despite recent advancements, current microelectrode technologies evidence important shortcomings, e.g. challenging high density integration, low signal-to-noise ratio, poor long-term stability, etc. Thus, efforts to explore novel materials are essential for the development of next-generation neural prostheses. Graphene and graphene-based materials possess a rather exclusive set of physicochemical properties holding great potential for biomedical applications, in particular neural prostheses. In this presentation, I will provide an overview on fundamentals and applications of several graphene-based technologies and devices aiming at developing an efficient bidirectional communication with electrogenic cells and nerve tissue. The main goal of this talk is to discuss pros and cons of graphene technologies for bioelectronics and neuroprosthetics, and at the same time to identify the main challenges ahead.

Biography: Jose A. Garrido is an ICREA Research Professor at the Catalan Institute of Nanosciences and Nanotechnology (ICN2), and head of the Advanced Electronic Materials and Devices group. He received a master and PhD degree in Telecommunication Engineering from the Technical University of Madrid, in 1996 and 2000, respectively. From 2001 to 2004, he worked as a postdoc at the Walter Schottky Institute, Technical University of Munich, where he obtained his habilitation in experimental physics in 2010. From 2011 to 2015, Jose A. Garrido held a lecturer (privatdoktor) position at the department of electrical and computer physics of the Technische Universität München. Currently, Jose A. Garrido is Deputy of the WP Biomedical Technologies of the EU Graphene Flagship.
SPECIAL EVENTS
Join your colleagues at these relaxed events, including the Welcome Reception and Interactive Poster Session.

Welcome Reception
Monday 8 May 2017 • 19:00 to 20:30
Join your colleagues for a networking event with light refreshments. Please remember to wear your conference registration badge.

Interactive Poster Session
Tuesday 9 May 2017 • 14:30 to 16:30
SETUP
Authors are encouraged to display their posters beginning at 10:00 on Monday for extended viewing. Each poster author will have a 1m x 1m (39 inches x 39 inches) area in which to display their poster presentation.

INTERACTIVE POSTER SESSION
Tuesday ................................. 14:30 to 16:30
Conference attendees are invited to attend the Poster Session on Tuesday afternoon. Come view posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Attendees are required to wear their conference registration badges to the poster session.
Authors of poster papers will be present to answer questions concerning their papers. Posters not removed at the end of the interactive poster session will be considered unwanted and will be discarded.
# Daily Schedule

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| 10:30 | SESSION 1 Modeling and Simulation I  
Session Chair: Michele Pozzi | SESSION 1 Nanoplatelets, Nanotubes, and Nanowires  
Session Chair: Ioan M. Tiginyanu | | |
| 13:40 | SESSION 2 Modeling and Simulation II  
Session Chair: Jacopo Iannacci | | | |
| 15:30 | SESSION 3 Chemical and Biochemical Sensors I  
Session Chair: Mika Prunnila | SESSION 3 Multifunctional Applications and Sensors  
Session Chair: Andrei Sarua | | |
| 16:30 | SESSION 4 Chemical and Biochemical Sensors II  
Session Chair: Jürgen Wöllenstein | | | |
| 19:00 | WELCOME RECEPTION | | | |
| **TUESDAY 9 MAY** | TUESDAY PLENARY PRESENTATION: MEMS Microphone Innovations Towards High Signal to Noise Ratios (Alfons Dehé) | | | |
| 9:00 to 10:00 | | | | |
| 10:30 | SESSION 5 Physical Sensors I  
Session Chair: Robert J. Lad | SESSION 4 Thin Films and Photovoltaics  
Session Chair: Teresa Monteiro | SESSION 1 Biophotonics  
Session Chair: Dan-Xia Xu | |
| 13:00 | SESSION 6 Physical Sensors II  
Session Chair: Sören Fricke | | | |
| 14:30 | POSTER SESSION | | | |
| 16:30 | SESSION 7 Materials and Processes  
Session Chair: Erwin Peiner | SESSION 6 Synthesis  
Session Chair: Carlo Ricci | SESSION 3 Optical Sensing I  
Session Chair: Régis Orobetchou | |
| **WEDNESDAY 10 MAY** | WEDNESDAY PLENARY PRESENTATION: Graphene Technologies for Bioelectronics and Neuroprosthetics (Jose A. Garrido) | | | |
| 9:00 to 10:00 | | | | |
| 10:30 | SESSION 8 Energy Devices I  
Session Chair: Gemma García Mandayo | SESSION 1 Biomedical Sensors and Microfluidics I  
Session Chair: Sander van den Driesche | SESSION 4 Quantum Photonics  
Session Chair: Laurent Vivien | |
| 13:40 | SESSION 9 Energy Devices II  
Session Chair: Nathan M. Jackson | SESSION 2 Biomedical Sensors and Microfluidics II  
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| 15:30 | SESSION 10 Interfacing and System Integration  
Session Chair: Luis Fonseca | SESSION 3 Biomedical Sensors and Microfluidics III  
Session Chair: Manuel Delgado-Restituto | | |
MONDAY 8 MAY

SESSION 1 · MONDAY PLENARY SESSION · MON 8:40 TO 10:00

8:40: Opening Remarks, Ulrich Schmid, Technische Univ. Wien (Austria)
8:50: Welcome, Carles Cané, Ctr. Nacional de Microelectronic (Spain)
9:00: Smart integrated microsystems: the energy efficiency challenge (Plenary Presentation), Luca Benini, Univ. degli Studi di Bologna (Italy)

SESSION 2 · MONDAY 10:30 TO 12:10

Modeling and Simulation I
Session Chair: Michele Pozzi, Newcastle Univ. (United Kingdom)
Multiscale numerical study on ferroelectric nonlinear response of PZT thin films, Hiroki Wakabayashi, Osaka Institute of Technology (Japan) and Tokai Univ. (Japan); Yasutomo Uetsuji, Osaka Institute of Technology (Japan); Kazuyoshi TsujiChi, Tokai Univ. (Japan) .................................................. [10246-1]
Fluid–structure interaction modelling of the roof tile-shaped modes in piezoelectric plate microresonators, Victor Ruiz-Diez, Javier Toledo Serrano, Jorge Hernando García, Univ. de Castilla-La Mancha (Spain); Georg Pflasterschmid, Ulrich Schmid, Technische Univ. Wien (Austria); José Luis Sánchez-Rojas Aldaveiro, Univ. de Castilla-La Mancha (Spain) .................................................. [10246-2]
Optimization of a Piezo–fiber scanning architecture, Ramin Khayatzadeh, Fahmi Civitci, Onur Ferhanoglu, Istanbul Technical Univ. (Turkey) .......................................................... [10246-3]
Optimal design of a microgripper-type actuator, David Ruiz, Alex Diaz, Univ. de Castilla-La Mancha (Spain); Olie Sigmund, Technical Univ. of Denmark (Denmark); José Carlos Bellido, Alberto Donoso, José Luis Sánchez-Rojas Aldaveiro, Univ. de Castilla-La Mancha (Spain) .................................................. [10246-4]
Topologically optimised flexure hinge based XY stage, Adil Han Orta, Bogazici University (Turkey); Evren Samur, Cetin Yilmaz, Bogazici Univ. (Turkey) .......................................................... [10246-5]
Lunch Break ...................................... Mon 12:10 to 13:40

SESSION 3 · MONDAY 13:40 TO 15:00

Modeling and Simulation II
Session Chair: Jacopo Iannacci, Fondazione Bruno Kessler (Italy)
Modelling high signal to noise ratio in a novel silicon MEMS microphone with comb readout, Johannes Marz, Technische Univ. München (Germany); Alfons Dehé, Infineon Technologies AG (Germany); Robert Bosch GmbH (Germany); Gerald Gerlach, Technische Univ. Dresden (Germany); Jorge Fernandez Garcia, Technische Univ. Ilmenau (Germany); Carmen Horrillo-Guemes, GEPI, CSIC (Spain); Jacopo Iannacci, Fondazione Bruno Kessler (Italy); Enrique Ibora, Univ. Politecnica de Madrid (Spain); Nathan M. Jackson, Tyndall National Institute (Ireland); Konrad Kasper, Infineon Technologies AG (Germany); Robert J. Lad, Univ. of Maine (United States); Jeong-Bong Lee, The Univ. of Texas at Dallas (United States); Elie Lefevre, Univ. Paris-Sud 11 (France); Gemma Garcia Mandayo, CEIT-IK4 (Spain); Fernando Martinez, IKERLAN, IK4 (Spain); Dean P. Neikirk, The Univ. of Texas at Austin (United States); Patrick Pons, Lab. d’Analyse et d’Architecture des Systèmes, CNRS (France) ........................................... [10246-6]
Multiphysical simulation of a surface acoustic wave gyro sensing element, Fabio Adami, Cristina Borghesi, Università degli Studi di Perugia (Italy); Diego A. Ferrari, Technische Univ. München (Germany); Jürgen Wöllenstein, Fraunhofer-Institut für Physikalische Messtechnik (Germany) .................................................. [10246-7]
A 3D FE model of a cellular polypropylene: exploring mechanical properties, Pavlos Sgardelis, Michele Pozzi, Newcastle Univ. (United Kingdom); Gabriele Schrag, Regine Behlert, Gerhard Wachutka, Technische Univ. München (Germany) .................................................. [10246-8]
Efficient fluid transport by a bionically inspired micro-flapper: fluidic investigations using fully coupled finite element simulation, Gabriele Schrag, Regine Behlert, Gerhard Wachutka, Technische Univ. München (Germany) .................................................. [10246-9]

SESSION 4 · MONDAY 15:30 TO 16:30

Chemical and Biochemical Sensors II
Session Chair: Jürgen Wöllenstein, Fraunhofer-Institut für Physikalische Messtechnik (Germany)
Direct measurement for organic solvents diffusion using ultra-sensitive optical resonator, Amir R. Ali, Catherine Elias, The German Univ. in Cairo (Egypt) .................................................. [10246-10]
Inkjet-printed dissolved oxygen and pH sensors on flexible plastic substrates, Ana Moya, Miguel Zee, Instituto de Microelectrónica de Barcelona (Spain); Enrico Sowade, Technische Univ. Chemnitz (Germany); Rosa Vila, Eliom Ramon, Instituto de Microelectrónica de Barcelona (Spain); Reinhard R. Baumann, Technische Univ. Chemnitz (Germany); Gemma Gabriel, Instituto de Microelectrónica de Barcelona (Spain) ........................................... [10246-11]
Wax microfluidics light-addressable valve with multiple actuation, Maria Diaz-Gonzalez, Gerard Boix, Cesar Fernandez-Sanchez, Antonio Baldi, Instituto de Microelectrónica de Barcelona (Spain) and Consejo Superior de Investigaciones Científicas (Spain) .................................................. [10246-12]
Development of biosensors for non-invasive measurements of heart failure biomarkers in saliva, Albert Alcacer, Angelos Stroklis, Ctr. Nacional de Microelectrónica (Spain) and Consejo Superior de Investigaciones Científicas (Spain); Abdoulatif Baraket, Nadia Zine, Abdelhamid Ersadhi, Univ. Claude Bernard Lyon 1 (France); Joan Bausells, Ctr. Nacional de Microelectrónica (Spain) and Consejo Superior de Investigaciones Científicas (Spain) .................................................. [10246-13]
SESSION 6 .......................... TUE 13:10 TO 14:30
Physical Sensors II
Session Chair: Sören Fricke,
Ctr. Suisse d’Electronique et de Microtechnique SA (Switzerland)

Highly tensioned SiN Membrane with low recoil losses for quantum optics, António J., Borrelli, Istituto del Materiali per l’Elettronica ed il Magnetismo (Italy); Enrico Serra, Trento Institute for Fundamental Physics and Applications (Italy); Michele Bonardi, Istituto dei Materiali per l’Elettronica ed il Magnetismo (Italy); Lorenzo Marconi, Istituto Nazionale di Ottica (Italy); Francesco Marin, Univ. degli Studi di Firenze (Italy); Bruno Morana, Technische Univ. Delft (Netherlands); Antonio Pontin, Univ. degli Studi di Firenze (Italy); Francesco Marino, Istituto Nazionale di Ottica (Italy); Gregory Pandrau, Technische Univ. Delft (Netherlands); Giovanni A. Prodi, Univ. degli Studi di Trento (Italy); Pasquale M. Sarro, Technische Univ. Delft (Netherlands) ................[10246-21]

Oscillator circuit for monitoring the gas damping effect of piezoelectric microresonators, Javier Toledo Serrano, Victor Ruiz-Diez, Univ. de Castilla-La Mancha (Spain); Patrick Schwarz, Helmut Seidel, Univ. des Saarlandes (Germany); José Luis Sánchez-Rojas Aldavero, Univ. de Castilla-La Mancha (Spain) ................[10246-22]

Comparative assessment of PVDF and PVDF-TrF piezoelectric polymers for flexible actuators applications, Graciela Gutiérrez-Sánchez, Jorge Hernando-García, Óscar Dura, Marco Antonio López de la Torre, José Luis Sánchez-Rojas Aldavero, Univ. de Castilla-La Mancha (Spain) ................[10246-23]

Thin film system with integrated load and temperature sensors for the technical application in deep drawing process, Saskia N. Biehl, Fraunhofer-Institut für Schicht- und Oberflächentechnik (Germany) ................[10246-24]

POSTER SESSION .......................... TUE 14:30 TO 16:30

Conference attendees are invited to attend the Poster Session on Tuesday afternoon. Come view posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference badges to the poster session.

Anti-collision RFID system using passive SAW tags, Alexander Sorokin, Alexander P. Shepeta, Saint-Petersburg State Univ. of Aerospace Instrumentation (Russian Federation) ................[10246-40]

Mini- and microgenerators applicable in the MEMS technology, Pavel J. Fiala, Zoltán Szabó, Petr Marcon, Zdenek Habdas, Jan Smil, Erwin Peiner, Technische Univ. Braunschweig (Germany) ................[10246-41]

Design and development of microfluidic pH sensor created using RF sputtering technique, Ganesh Kumar Mani, Asuka Saito, Kazuyoshi Tsuichiya, Yufuka Yasoda, Tokai Univ. (Japan) ................[10246-42]

Modelling the microstructure of surface by applying BRDF function, Kamal Pichtla, Wroclaw Univ. of Science and Technology (Poland) ................[10246-43]

Actuation control of PiezoMEMS a biomimetic jellyfish robot, Alvaro Alejandre, Oskar Z. Olaszewski, Nathan M. Jackson, Tyndall National Institute (Ireland) ................[10246-44]

Stream cipher with a MEMS-based seed generator, Miguel García-Bosque, Adrián Perez, Carlos Sánchez-Azqueta, Santiago Celma Pueyo, Univ. de Zaragoza (Spain) ................[10246-45]

Analyses of electromagnetic and piezoelectric systems for efficient vertical energy harvesting, Zdenek Habdas, Jan Smil, Erwin Peiner, Technische Univ. Braunschweig (Germany) ................[10246-46]

Gold/polypyrrole nanorods for gas sensing application, Milena Setkä, Jana Drbohlavová, Brno Univ. of Technology (Czech Republic) ................[10246-47]

Four-segment Piezo-based micropump, Rakesh K. Haldkar II, Tanuja Shreyer, Vijay K. Gupta, PDPDM Indian Institute of Information Technology, Design & Manufacturing Jabalpur (India) ................[10246-48]

Computational model and simulation for the whispering gallery modes inside micro-optical cavity, Amir R. All, The German Univ. in Cairo (Egypt) and Southeast University, (United States); Abanoub Erian, The German Univ. in Cairo (Egypt); Kirellos Shokry, The German Univ. in Cairo (Egypt) and Univ. Twente (Netherlands) ................[10246-49]

Thermal analysis of magnetic trapping with alternating magnetic fields, Vania Silverio, Raju Kumar, INESC MN (Portugal); Miguel Amaral, João Gaspar, International Iberian Nanotechnology Lab. (Portugal); Susana Cardoso, INESC MN (Portugal); Paulo P. Freitas, INESC MN (Portugal) and International Iberian Nanotechnology Lab. (Portugal) ................[10246-50]

Influence of binding material of PZT coating on microresonator’s electrical and mechanical properties, Giedrius Janušas, Alfredas Brunius, Enliingas Cekas, Asta Guobiene, Anydas Palevicius, Kaunas Univ. of Technology (Lithuania) ................[10246-51]

Colormetric sensor for bad odor detection using automated color correction, Katrin Schmitt, Karina Tarantik, Carolin Pannek, Fraunhofer-Institut für Physikalische Messtechnik (Germany); Ismail Benito-Altamirano, Olga Casals, Cristian Fabrega, Albert Romanó-Rodríguez, Univ. de Barcelona (Spain); Jürgen Wöllenstein, Univ. of Freiburg (Germany) and Fraunhofer-Institut für Physikalische Messtechnik (Germany); J. Daniel Prades, Univ. de Barcelona (Spain) ................[10246-52]


Metal wafer bonding for microelectronics and MEMS devices, Bernhard Rebhan, Viorel Dragoi, EV Group (Austria) ................[10246-54]

Characterization of oscillator circuits for monitoring the density-viscosity of liquids by means of piezoelectric MEMS microresonators, Javier Toledo Serrano, Victor Ruiz-Diez, Univ. de Castilla-La Mancha (Spain); Georg Pustierschmid, Ulrich Schmid, Technische Univ. Wien (Austria); José Luis Sánchez-Rojas Aldavero, Univ. de Castilla-La Mancha (Spain) ................[10246-55]

Radio link design framework for WSN deployment and performance prediction, Sergio Sapua, Filippo Sanvito, Univ. di Pisa (Italy) ................[10246-56]

User centered integration of Internet of Things devices, Roberto Manione, Media on Line (Italy) ................[10246-57]

SESSION 7 ............................ TUE 16:30 TO 17:50
Materials and Processes
Session Chair: Erwin Peiner,
Technische Univ. Braunschweig (Germany)

Low-cost nanomechanical surfaces stress based sensors fabricated by hybrid materials, Pedro Fernando Escudero Villa, Jose Yeste Lozano, Rosa Villa, Mar Alvarez, Instituto de Microelectrónica de Barcelona (Spain) ................[10246-27]

Micro- and nanostructured membranes used in AIGN/GoN: MEMS and pressure sensors for microfluidic applications in bioengineering and monitoring, Johanni Zehetner, Stephan Kasemann, FH Vorarlberg (Austria); Ondrej Vanisko, Jaroslav Druzh, Ing. Elektrotechnik und Elektronik (Slovakia); Sylvia Nürnberger, Medizinische Univ. Wien (Austria) ................[10246-28]

Zirconium diboride thin films for use in high temperature sensors and MEMS devices, Robert J. Lad, David M. Stewart, George P. Bernhardt, The Univ. of Maine (United States) ................[10246-29]

FT-IR analysis of high temperature annealing effects in a SiC:H thin films, Rakesh K. Haldkar II, Tanuja Shreyer, Vijay K. Gupta, PDPDM Indian Institute of Information Technology, Design & Manufacturing Jabalpur (India) ................[10246-30]

Computational model and simulation for the whispering gallery modes inside micro-optical cavity, Amir R. All, The German Univ. in Cairo (Egypt) and Southeast University, (United States); Abanoub Erian, The German Univ. in Cairo (Egypt); Kirellos Shokry, The German Univ. in Cairo (Egypt) and Univ. Twente (Netherlands) ................[10246-31]

Metal wafer bonding for microelectronics and MEMS devices, Bernhard Rebhan, Viorel Dragoi, EV Group (Austria) ................[10246-32]

Characterization of oscillator circuits for monitoring the density-viscosity of liquids by means of piezoelectric MEMS microresonators, Javier Toledo Serrano, Victor Ruiz-Diez, Univ. de Castilla-La Mancha (Spain); Georg Pustierschmid, Ulrich Schmid, Technische Univ. Wien (Austria); José Luis Sánchez-Rojas Aldavero, Univ. de Castilla-La Mancha (Spain) ................[10246-33]

Radio link design framework for WSN deployment and performance prediction, Sergio Sapua, Filippo Sanvito, Univ. di Pisa (Italy) ................[10246-34]

User centered integration of Internet of Things devices, Roberto Manione, Media on Line (Italy) ................[10246-35]
WEDNESDAY 10 MAY

**WEDNESDAY PLENARY SESSION... WED 9:00 TO 10:00**

- **9:00:** Welcome and Introductions: Ulrich Schmid, Technische Univ. Wien (Austria)
- **9:05:** Graphene technologies for bioelectronics and neuroprosthetics (Plenary Presentation), Jose A. Garrido, Institut Català de Nanociència i Nanotecnologia (ICN2) (Spain)

**SESSION 8 ....................... WED 10:30 TO 12:10**

**Energy Devices I**
Session Chair: Gemma García Mandayo, CEIT-IK4 (Spain)

- Micro solid oxide fuel cells: a new generation of micro-power sources for portable applications (Invited Paper), Albert Tarancón, Institut de Recerca en Energia de Catalunya (Spain) ..........................[10246-29]
- Alkaline fuel cell with nitride membrane, Shen-Huei Sun, Institut für Mikroelektronik Stuttgart (Germany); Moritz Pilaski, Jens Wartmann, ZBT GmbH (Germany); Florian Letzkus, Institut für Mikroelektronik Stuttgart (Germany); Benedikt Funke, Georg Dura, Angelika Heinzel, ZBT GmbH (Germany)[10246-30]
- Parameter identification from frequency response of MEMS energy harvesters, Binh D. Truong, Phu C. Le, Einar Halvorsen, Univ. College of Southeast Norway (Norway) ......................[10246-31]
- Powering a leadless pacemaker using a PiezoMEMS energy harvester, Nathan M. Jackson, Ian O'Murchu, Alan Mathewson, Oskar Z. Olszewski, Tyndall National Institute (Ireland) ............................[10246-32]

**Lunch Break ................................... Wed 12:10 to 13:40**

**SESSION 9 ........................ WED 13:40 TO 15:00**

**Energy Devices II**
Session Chair: Nathan M. Jackson, Tyndall National Institute (Ireland)

- Designing, modelling, and testing of vibration energy harvester with nonlinear stiffness, Ondrej Rubes, Zdenek Hadas, Brno Univ. of Technology (Czech Republic) ..........................[10246-33]
- Comparison of methods for static charge energy harvesting on aircrafts, Michail E. Kiziroglou, Alexander Technological Educational Institute of Thessaloniki (Greece); Thomas Becker, Airbus Group Innovations (Germany); Eric M. Yeaman, Imperial College London (United Kingdom); James W. Evans, Paul K. Wright, Univ. of California, Berkeley (United States) .......[10246-34]
- Improved thermal and electrical design for an all-Si thermoelectric micropower source, Inci Donmez, Marc Salleras, Carlos A. Calaza Cabanas, Institut de Microelectrònica de Barcelona (Spain); Gerard Gadea, Alex Morata, Albert Tarancón, Institut de Recerca en Energia de Catalunya (Spain); Luis Fonseca, Institut de Microelecctronica de Barcelona (Spain). .........[10246-35]
- Integrated TiN coated porous silicon supercapacitor with increased capacitance per footprint, Kestutis Grigoras, Leif Grönberg, Jouni Ahopelto, Mika Prunnila, VTT Technical Research Ctr. of Finland Ltd. (Finland) . [10246-36]

**SESSION 10 .......................... WED 15:30 TO 16:30**

**Interfacing and System Integration**
Session Chair: Luis Fonseca, Ctr. Nacional de Microelectrónica (Spain)

- A programmable differential capacitance to voltage converter for MEMS accelerometers, Guillermo Royo, Univ. de Zaragoza (Spain); Cecilia Gimeno Gazca, Univ. Catholique de Louvain (Belgium); Carlos Sánchez-Azqueta, Concepción Aldea, Santiago Celma Pueyo, Univ. de Zaragoza (Spain)[10246-37]
- Robust design of an inkjet-printed capacitive sensor for position tracking of a MOEMS-mirror in a Michelson interferometer setup, Lisa-Marie Faller, Hubert Zangl, Alpen-Adria-Univ. Klagenfurt (Austria) .........[10246-38]
- Universal and inductorless DC/DC converter for multi-output power supplies in sensor and actuator networks, Sergio Saponara, Gabriele Ciarpi, Univ. di Pisa (Italy). ..........................[10246-39]
CONFERENCE 10247

Tuesday–Wednesday 9–10 May 2017 • Proceedings of SPIE Vol. 10247

Bio-MEMS and Medical Microdevices III

Conference Chair: Sander van den Driesche, Univ. Bremen (Germany)

Conference Co-Chairs: Ioanna Giouroudi, Technische Univ. Wien (Austria); Manuel Delgado-Restituto, Instituto de Microelectrónica de Sevilla (Spain)

Programme Committee: Artur Dybko, Warsaw Univ. of Technology (Poland); Michael Kraft, Univ. de Liège (Belgium); Laura Maria Lechuga, Ctr. d’Investigaciones en Nanociencia i Nanotecnologia (Spain); Konstantinos Misiakos, National Ctr. for Scientific Research Demokritos (Greece); Nicolas Roxhed, Royal Institute of Technology (Sweden); Ramón Ruiz-Merino, Univ. Politècnica de Cartagena (Spain); Josep Samitier Martí, Univ. de Barcelona (Spain); Uwe Schnakenberg, RWTH Aachen (Germany); Winnie E. Svendsen, Technical Univ. of Denmark (Denmark); Angeliki Tserpe, Ioanna Giouroudi, National Ctr. for Scientific Research Demokritos (Greece); Thomas Veiten, Fraunhofer-Institut für Biomedizinische Technik (Germany); Sabeth Verpoorte, Univ. of Groningen (Netherlands); Fernando Vidal-Verdú, Univ. de Málaga (Spain); Jean-Louis Viovy, Institut Curie (France)

Tuesday 9 May

POSTER SESSION .................................... TUE 14:30 TO 16:30

Conference attendees are invited to attend the Poster Session on Tuesday afternoon. Come view posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference badges to the poster session.

Microfluidic systems for monitoring of cardiac (h9c2) cell proliferation, Anna Koubjezeska, Pawan U. Pratap, Eftihia Miskos, Zoiignev Bizikja, Michal Chudy, Warsaw Univ. of Technology (Poland); Philippe Renaud, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Artur Dybko, Warsaw Univ. of Technology (Poland) ............................................................... [10247-11]

Simulation of the novel compact structure of an interferometric biosensor based on multimode interference waveguides, Mosoi Xhouxi, Univ. Politeknik i Tiranes (Albania); Alma Dutia, Aurel Ymeti, Nanoalmyna B.V. (Netherlands) ............................................................... [10247-15]

Design of an embedded sensor system for measuring laser scattering on blood cells, Christodoulos Iosifidis, Alexander Technological Educational Institute of Thessaloniki (Greece); Korina Katalsiaki, International Hellenic Univ. (Greece); Peter Kollensperger, Norwegian Univ. of Science and Technology (Norway); Michail E. Kizyrogou, Imperial College London (United Kingdom) and Alexander Technological Educational Institute of Thessaloniki (Greece) ........................................ [10247-16]

Travelling-wave dielectrophoresis allowing flexible microchannel design for suspended cell handling, Sander van den Driesche, Frank Bunge, Sebastian Tepner, Marcus Kotitschke, Michael J. Vellekoop, Univ. Bremen (Germany) ......................................................... [10247-17]

Wednesday 10 May

WEDNESDAY PLENARY SESSION . . . WED 9:00 TO 10:00

9:00: Welcome and Introductions: Ulrich Schmid, Technische Univ. Wien (Austria)

9:05: Graphene technologies for bioelectronics and neuromicroprosthetics (Plenary Presentation), Jose A. Garrido, Institut Català de Nanociència i Nanotecnologia (ICN2) (Spain)

SESSION 1 ........................................... WED 10:30 TO 11:50

Biomedical Sensors and Microfluidics I

Session Chair: Sander van den Driesche, Univ. Bremen (Germany)

Multilayered tissues model for wave propagation loss assessment in cochlear implants, Maria-Alexandra Paun, Catherine Dehollain, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ........................................ [10247-1]

Integration of a capacitive pressure sensing system into the outer catheter wall for coronary artery FFR measurements, Frank Stam, Tyndall National Institute (Ireland); Feng Gao, Anas Karkkainen, VTT Technical Research Ctr. of Finland Ltd. (Finland); Sebastian Pintal, Brendan Marra, Creganna Medical (Ireland) ........................................ [10247-2]

A novel, scalable microfluidic device for switching of microparticles using dielectrophoresis (DEP), Wiaqas Waheed, Anas Alazzam, Khalifa Univ. of Science, Technology and Research (United Arab Emirates); Bobby Mathew, United Arab Emirates Univ. (United Arab Emirates); Elyad Abu-Nada, Khalifa Univ. of Science, Technology and Research (United Arab Emirates) ........................................ [10247-3]

Microfluidic platform for detection and quantification of magnetic markers, Georgios Kokkini, Technische Univ. Wien (Austria); Susana Cardoso, INESC MN (Portugal); Ioanna Giouroudi, Technische Univ. Wien (Austria) ........................................ [10247-4]

Lunch Break .............................................. Wed 11:50 to 13:20

SESSION 2 ........................................... WED 13:20 TO 15:00

Biomedical Sensors and Microfluidics II

Session Chair: Ioanna Giouroudi, Technische Univ. Wien (Austria)

Easy-to-use microfluidic chip for long-term cultivation of mammalian cells in 3D cell cultures, Frank Bunge, Sander van den Driesche, Michael J. Vellekoop, Univ. Bremen (Germany) ........................................ [10247-5]

Ink-jet printed selective microfluidic bio-sensor using CNTs functionalised by cytochrome P450 enzyme, Raimund Leitner, CTR Hanns Hein Tech Research AG (Austria) ......................................................... [10247-6]

A miniaturised bioanalytical system for rapid quantitative label-free detection of multiple analytes in a single run, Panagiotis Petrou, Michaila Angelopoulou, Varvara Pagkali, Alexandros Salapatas, Eleini Makarana, Ioannis Raptis, Sotiris E. Kakabakos, National Ctr. for Scientific Research Demokritos (Greece); Athanasios Botsialis, ThetaMetrisis S.A. (Greece); Gerhard Jobst, Jobst Technologies GmbH (Germany); Konstantinos Misiakos, National Ctr. for Scientific Research Demokritos (Greece) ........................................ [10247-7]

Real-time phase correlation based integrated system for seizure detection, Manuel Delgado-Restituto, James B. Romaine, Ángel Rodríguez-Vázquez, Instituto de Microelectrónica de Sevilla (Spain) ........................................ [10247-8]

Bio-optical sensor for brain activity measurement based on whispering gallery modes, Amir R. Ali, Yasmin M. Massoud, The German Univ. in Cairo (Egypt) ........................................ [10247-9]

SESSION 3 ........................................... WED 15:30 TO 16:50

Biomedical Sensors and Microfluidics III

Session Chair: Manuel Delgado-Restituto, Instituto de Microelectrónica de Sevilla (Spain)

Dark field imaging system for size characterization of magnetic micromarkers, Anna Malec, Technische Univ. Wien (Austria); Christoph Haiden, Technische Univ. Wien (Austria) and Austrian Ctr. of Competence for Tribology (acht) (Austria); Georgios Kokkini, Technische Univ. Wien (Austria) ........................................ [10247-10]

Infrared spectroscopy as a screening technique for colitis, A. G. U. Perera, Jitto Titus, Henendra Ghimire, Emilie Viennois, Didier Merlin, Georgia State Univ. (United States) ........................................ [10247-12]

Nano-photonic and -plasmonic characteristics of DNA complexes with intercalators, silver nanoparticles, and atoms, Vasil Bregadze, Iv. Javakhishvili Tbilisi State Univ. (Georgia); Zaza G. Melikishvili, Georgian Technical Univ. (Georgia); Tamar G. Giorgadze, Iv. Javakhishvili Tbilisi State Univ. (Georgia); Irine Khutsishvili, Iv. Javakhishvili Tbilisi State Univ. (Georgia) ........................................ [10247-13]

Micro-resonator-based electric field sensors with long duration of sensitivity, Amir R. Ali, The German Univ. in Cairo (Egypt) and Southern Methodist Univ. (United States) ........................................ [10247-14]
SESSION 4 .................................... TUE 10:30 TO 11:55
Thin Films and Photovoltaics
Session Chair: Teresa Monteiro, Univ. de Aveiro (Portugal)
Carbon nanotube transparent charge collectors for hybrid perovskite photovoltaics (Invited Paper), Anvar A. Zakhidov, Univ. of Texas Dallas (United States); Ross Haroldson, The Univ. of Texas at Dallas (United States); Danila Saranin, National Univ. of Science and Technology “MISIS” (Russian Federation); Patricia Martinez, The Univ. of Texas at Dallas (United States); Artur Isetchev, National Univ. of Science and Technology “MISIS” (Russian Federation) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
Integrated Photonics: Materials, Devices, and Applications IV
Conference Chair: Jean-Marc Fédéli, CEA-LETI (France)
Conference Co-Chair: Laurent Vivien, Institut d’Électronique Fondamentale (France)
Programme Committee: Pavel Cheben, National Research Council Canada (Canada); Norbert Grote, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); Giovanni Isella, Lab. for Epitaxial Nanostructures on Silicon (Munich) (Germany); Laura Maria Lechuga, UNED2 (Spain); Andrea I. Melloni, Politecnico di Milano (Italy); Inigo Molina-Fernandez, Univ. de Malaga (Spain); Régis Orobitchou, Institut National des Sciences Appliquées de Lyon (France); Richard V. Penty, Univ. of Cambridge (United Kingdom); Lorenzo Pavesi, Univ. degli Studi di Trento (Italy); Günther Roelkens, Univ. Gent (Belgium); Kazumi Wada, The Univ. of Tokyo (Japan); Dan-Xia Xu, National Research Council Canada (Canada)

TUESDAY 9 MAY

TUESDAY PLENARY SESSION ........... TUE 9:00 TO 10:00
9:00: Welcome and Introductions: Ulrich Schmid, Technische Univ. Wien (Austria)
9:05: MEMS microphones innovations towards high signal to noise ratios (Plenary Presentation), Alfonso Dehe, Infinneon Technologies AG (Germany)

SESSION 1 ............................ TUE 10:30 TO 11:45
Biophotonics
Session Chair: Dan-Xia Xu, National Research Council Canada (Canada)
Co-integrating plasmonics with SiN wires for a generic CMOS-compatible PIC platform for high-sensitivity multi-channel biosensors: the hZ202 PlasmaFob project approach (Invited Paper), Dimitris M. Tsiokos, George Dabos, Dimitra Ketzaki, Aristote Univ. of Thessaloniki (Greece); Jean-Clau de Weeber, Pavel Cheben, National Research Council Canada; Andrea I. Melloni, Régis Orobtchouk, CIN2 (Spain); Íñigo Molina-Fernández, Univ. de Malaga (Spain); Régis Orobitchou, Institut National des Sciences Appliquées de Lyon (France); Richard V. Penty, Univ. of Cambridge (United Kingdom); Lorenzo Pavesi, Univ. degli Studi di Trento (Italy); Günther Roelkens, Univ. Gent (Belgium); Kazumi Wada, The Univ. of Tokyo (Japan); Dan-Xia Xu, National Research Council Canada (Canada)

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Temperature behavior of air-suspended polymer surface grating couplers, Christoph Prokop, Hochschule Karlsruhe Technik und Wirtschaft (Germany); Bert Lægsgaard, Sandra Wolff, Technische Univ. Kaiserslautern (Germany); Anjan Mitchell, RMIT Univ. (Australia); Christian Karnutsch, Hochschule Karlsruhe Technik und Wirtschaft (Germany) ....................... [10249-12]

SESSION 4 .............................. WED 10:30 TO 11:45

Quantum Photonics
Session Chair: Laurent Vivien,
Ctr. de Nanosciences et de Nanotechnologies (France)
Squeezed light quantum sensing with Heisenberg scaling (Invited Paper), Clemens Schäfermeier, Timur Iskhakov, Technische Univ. Delft (Denmark); U. Busk-Hoff, Tobias Gehring, Ulrik Lund Andersen, Technical Univ. of Denmark (Denmark) ........................................ [10249-13]

Optical signal processing and tracking of whispering gallery modes in real time for sensing applications, Amir R. Ali, The German Univ. in Cairo (Egypt) and Southern Methodist Univ. (United States); Amr N. Affifi, The German Univ. in Cairo (Egypt) and Sapienza Univ. di Roma (Italy); Hazem Tahra, The German Univ. in Cairo (Egypt) ........................................ [10249-14]

Noninvasive monitoring and control in silicon photonics (Invited Paper), Francesco Morichetti, Politecnico di Milano (Italy) ....................... [10249-15]

Lunch Break ...................................... Wed 11:45 to 13:15

SESSION 5 .............................. WED 13:15 TO 15:15

Optical Sensing II
Session Chair: Laurent Vivien,
Ctr. de Nanosciences et de Nanotechnologies (France)
Integrated photonics for infrared spectroscopic sensing (Invited Paper), Derek Kita, Zhaohong Han, Peter Su, Anu Agarwal, Massachusetts Institute of Technology (United States); Anupama Yadav, Kathleen Richardson, University of Central Florida (United States); Lionel C Kimerling, Hongtao Lin, Tian Gu, Juejun Hu, Massachusetts Institute of Technology (United States) ................ [10249-16]

Characterising the geometrical tolerances of optimised vertical-cavity thermal emitter stack configurations for the mid-infrared via Monte Carlo testing, Gerald Pühringer, Bernhard Jakoby, Johannes Kepler Univ. Linz (Austria) ........................................ [10249-17]

N-type Induced junction black silicon photodiode for UV detection, Mikko A. Juntunen, Juha Heinonen, Ville Vähänissi, Päiviikki Repo, Hele I. Savin, Aalto Univ. (Finland) ........................................... [10249-18]

Millimeter wave photonic emitter using antenna-integrated UTC photodiode on Si lens, Muhsin Ali, Univ. Carlos III de Madrid (Spain); Longfei Shen, Technische Univ. Eindhoven (Netherlands); Robinson C. Guzmán Martínez, Mu-Chieh Lo, Alejandro Rivera, Univ. Carlos III de Madrid (Spain); Jos J. G. M. van der Tol, Technische Univ. Eindhoven (Netherlands); Luis Enrique García Muñoz, Guillermo Carpintero, Univ. Carlos III de Madrid (Spain) .......................... [10249-19]

Design and fabrication of broadband long wavelength resonator-quantum well infrared photodetectors, Jason N. Sun, Kwong-Kit Choi, Kimberley A. Oliver, Richard X. Fu, U.S. Army Research Lab. (United States) ....... [10249-20]

Tunable multiple peak modulation in multi-cavity-coupled graphene-based waveguide system, Jicheng Wang, Xiaosai Wang, Hongyan Shao, Jiangnan Univ. (China) .......................... [10249-21]

A graphene-based electrically controllable directional coupler, Sangin Kim, Tran Quyet Tran, Ajou Univ. (Korea, Republic of) .......................... [10249-22]
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Sunday 7 May 2017 .................. 15:00 to 17:00 hrs.
Monday 8 May 2017 ................... 7:00 to 17:00 hrs.
Tuesday 9 May 2017 ................... 7:30 to 17:00 hrs.
Wednesday 10 May 2017 ............... 8:00 to 16:00 hrs.

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All conference rooms have a computer workstation, projector, screen, lapel microphone, and laser pointer. All presenters are requested to come to their conference room during the breaks with their memory devices or laptops to confirm their presentation display settings.

POSTER SETUP INSTRUCTIONS
Authors are encouraged to display their posters beginning at 10:00 on Monday for extended viewing. Each poster author will have a 1m x 1m (39 inches x 39 inches) area in which to display their poster presentation. Presenters who have not set up by 14:30 on Tuesday will be considered a “no show” and their manuscript will not be published. Posters not removed at the end of the interactive poster session will be considered unwanted and will be discarded.
Onsite Services

INTERNET ACCESS
Complimentary Internet will be available. Connection speeds will depend on the number of users. Please read the SPIE Wireless Internet Service Policy.

SPIE CONFERENCE APP
Download the free SPIE Conference App, available for iPhone and Android phones. Search and browse the programme, special events, participants, exhibitors, and more.

SPIE PUBLICATIONS
At SPIE Registration Desk
Browse the latest SPIE Press Books and Proceedings.

SPIE LUGGAGE + COAT CHECK
Hotel Alimara Concierge Desk
Luggage, package, and coat storage are available at the concierge desk.

URGENT MESSAGE LINE
An urgent message line is available during registration hours:
+34 – 93 – 427 0000 and ask to be directed to the SPIE Microtechnologies Registration Desk. Attendees should check the message board in the registration area for any messages held for them.

AIRLINE CHECK-IN AND BOARDING PASS KIOSK
Hotel Alimara Front Desk
Use this service to check in for your flight and print your boarding pass. The charge is €0.10 for black and white copies per page and €0.20 for colour copies per page.

Food and Beverage Services

COFFEE BREAKS
Conference Garden
Complimentary coffee will be served twice daily, at 10:00 and 15:00 hrs. Check individual conference listings for exact times and locations.

FOOD & REFRESHMENTS FOR PURCHASE
The Hotel Alimara offers lunch to guests at the hotel. Please use the hotel reservation form to book the lunch direct with the hotel. There are some restaurants available in the area where lunch can be bought.

Car Rental
Call the Hertz International Reservation Center at 1-800-654-3001 in the USA or your local Hertz Reservations Center to receive a special discount for SPIE. Reservations may also be placed on-line at www.hertz.com. You will receive 15% off qualifying Affordable rates at participating locations in Spain. Be sure to identify yourself as a SPIE attendee. The PC#137480 must be on your advance reservation to receive this special offer. You must present this coupon at the time of rental in order to receive this discount. This special offer is available for rentals from May 1-31 2017.

Hotels
Hotel rooms are available to attendees to book at the Hotel Alimara on a first-come, first-served basis before 26th April. Cost is €82 in the single and €92 in the double room including breakfast, and a tax city will be added. A lunch option is also available. To book a room, please use the hotel reservation form (link to this form). The early bird discount expires on 26th April 2017.
For other hotel options, please use hotel search engines or other offers available to you.

Travel to Barcelona

AIRPORT INFORMATION
Getting to Barcelona is easy. A total of 94 scheduled airlines service the location, including low-cost carriers such as Vueling and Spanair Easyjet, Ryanair, and others. For more detailed information, visit the Barcelona airport website.

AEROBUS AIRPORT SHUTTLE SERVICE
The Aerobus airport shuttle is a bus service that runs every 5 - 10 - 20 minutes, depending on the time of day and route. At the time of writing, tickets cost EU 5.65 for a single and EU 9.75 for a return journey (return within 9 days). Tickets can be bought at vending machines in front of the bus stop or from the driver. Private transfers are also available for groups of travellers, but need to be pre-booked with the relevant company. Taxis are also available at a cost of EU 40 - 50 depending on the time of day. To transfer from the airport directly to the venue, please leave the bus at Plaza Cataluña where you will find the Urquinaona metro station on the yellow line (line 4). This leads directly to the CCCB (Maresme- Fòrum station).

Transportation from the Airport

FROM THE AIRPORT:
By Taxi / Car: From C-328 road, (direction to Barcelona), drive trough the C-32 road and then take B-20 road called “Ronda de Dalt”, (direction to “Besòs”) until exit #5 “Vall d’Hebrón”. Continue along the side lane, called “Passeig de la Vall d’Hebrón”, until finding the hotel. (approximate cost by taxi: 35 €)

By Train: From the airport take “RENFE” until “Pg de Gràcia” or “Barcelona Sants” station. Take the underground green line #3, direction to “Trinitat Nova”, and get off at called “Mundet” station.

By Bus: There is a shuttle bus service which stops outside each terminal and goes to central Placa Catalunya every 15 minutes. The “Aerobus” is the most comfortable and easy way to travel between the city centre and the airport, it stops at Placa d’Espanya, Urgell, and Placa Catalunya. A single ticket costs EUR 3.20. The Transports Metropolitans de Barcelona (TMB) public bus on line 46 runs every 16 minutes from Placa Espanya.


PUBLIC TRANSPORTATION:
• Underground Take the green line #3 (direction to “Trinitat Nova”), getting off at “Mundet” station.
• RENFE trains Take the “Cercanías” line, getting off at “Passeig de Gràcia/Catalunya”. Then take the underground green line #3 (direction to “Trinitat Nova”), getting off at “Mundet” station.
• FGC trains From Sabadell/Terrasa: Get off at Provença/Catalunya stations. Then take the underground green line #3 (direction to “Trinitat Nova”), getting off at “Mundet” station.
• Bus Get off at the stop called 236 -Arquitecte Moragues-Francesc Manrique
Acceptance of Policies and Registration Conditions

The following Policies and Conditions apply to all SPIE Events. As a condition of registration, you will be required to acknowledge and accept the SPIE Registration Policies and Conditions contained herein.

Granting Attendee Registration and Admission
SPIE, or their officially designated event management, in their sole discretion, reserves the right to accept or decline an individual’s registration for an event. Further, SPIE, or event management, reserves the right to prohibit entry or remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, who in their sole opinion are not, or whose conduct is not, in keeping with the character and purpose of the event. Without limiting the foregoing, SPIE and event management reserve the right to remove or refuse entry to any attendee, exhibitor, representative, or vendor who has registered or gained access under false pretenses, provided false information, or for any other reason whatsoever that they deem is cause under the circumstances.

SPIE Safe Meeting and Misconduct Policy
SPIE is a professional, not-for-profit society committed to providing valuable and safe conference and exhibition experiences. SPIE is dedicated to equal opportunity and treatment for all its members, meeting attendees, staff, and contractors. Attendees are expected to be respectful to other attendees, SPIE staff, and contractors. Harassment and other misconduct will not be tolerated; violators will be addressed promptly and seriously. Consequences up to and including expulsion from the event as appropriate will be implemented immediately.

The SPIE anti-harassment policy can be found at http://spie.org/policy.

Reporting of Unethical or Inappropriate Behavior
SPIE is an organization with strong values of responsibility and integrity. Our Harassment Policy, Ethics Statement, and Code of Professional Conduct contain general guidelines for behavior and for conducting business with the highest standards of ethics.

Onsite at a SPIE meeting, contact any SPIE Staff member with concerns or questions for thorough follow-up. If you feel in immediate danger, please dial 911 for police intervention.

SPIE has established a confidential reporting system for staff and all meetings participants to raise concerns about possible unethical or inappropriate behavior within our community. Complaints may be filed by phone at +1-888-818-6898 or at www.SPIE.ethicspoint.com and, if preferred, may be made anonymously.

Identification
To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued Photo ID at registration to collect registration materials.

Individuals are not allowed to pick up badges for attendees other than themselves. Further, attendees may not have some other person participate in their place at any conference-related activity. Such other individuals will be required to register on their own behalf to participate.

Access to Technical and Networking Events
All technical and networking events require a conference badge for admission. Registered attendees may bring their children with them as long as everyone is badged. Registration badges for children under 18 are free and available at the SPIE registration desk onsite. Children under 14 years of age must be accompanied by an adult at all times, and guardians are asked to help maintain a professional, disturbance-free conference environment.

Exhibition Hall Policy
Everyone who attends the exhibition must be registered and have a badge. Badges for children are free and available onsite at the registration desk. Children under 14 years of age must be accompanied by an adult at all times. Guards are asked to help maintain a professional, disturbance-free exhibition environment. For safety and insurance reasons, children under 18 are not allowed in the exhibition area during exhibition move-in and move-out.

Payment Method
Registrants for paid elements of the event, who do not provide a method of payment, will not be able to complete their registration. Individuals with incomplete registrations will not be able to attend the conference until payment has been made. SPIE accepts VISA, MasterCard, American Express, Discover, Diner’s Club, checks and wire transfers. Onsite registrations can also pay with Cash.

Authors/Coauthors
By submitting an abstract, you agree to the following conditions:

• An author or coauthor (including keynote, invited, and solicited speakers) will register at the author registration rate, attend the meeting, and make the presentation as scheduled.

• A manuscript (minimum 6 pages, maximum 20 pages) for any accepted oral, invited, keynote, or poster presentation will be submitted for publication in the Proceedings of SPIE in the SPIE Digital Library. Some SPIE events have other requirements that the author is made aware of at the time of submission.

• Only papers presented at the conference and received according to publication guidelines and timelines will be published in the Proceedings of SPIE in the SPIE Digital Library (or via the requirements of that event).

Audio, Video, Digital Recording Policy
Conferences, courses, and poster sessions: For copyright reasons, recordings of any kind are prohibited without prior written consent of the presenter or instructor. Attendees may not capture or use the materials presented in any meeting/course room or in course notes on display without written permission. Consent forms are available at Speaker Check-In. Individuals not complying with this policy will be asked to leave a given session and/or asked to surrender their recording media.

EXHIBITION HALL: For security and courtesy reasons, recordings of any kind are prohibited unless one has explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their recording media and to leave the exhibition hall.
Capture and Use of a Person’s Image

By registering for an SPIE event, I grant full permission to SPIE to capture, store, use, and/or reproduce my image or likeness by any audio and/or visual recording technique (including electronic/digital photographs or videos), and create derivative works of these images and recordings in any SPIE media now known or later developed, for any legitimate SPIE marketing or promotional purpose.

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Laser Pointer Safety Information/Policy

SPIE supplies tested and safety-approved laser pointers for all conference meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers.

Use of a personal laser pointer represents user’s acceptance of liability for use of a non-SPIE-supplied laser pointer. If you choose to use your own laser pointer, it must be tested to ensure <5 mW power output. Laser pointers in Class II and IIIa (<5mW) are eye safe if power output is correct, but output must be verified because manufacturer labeling may not match actual output. Come to Speaker Check-In and test your laser pointer on our power meter. You are required to sign a waiver releasing SPIE of any liability for use of potentially non-safe, personal laser pointers. Misuse of any laser pointer can lead to eye damage.

Unauthorized Solicitation Policy

Unauthorized solicitation in the Exhibition Hall is prohibited. Any non-exhibiting manufacturer or supplier observed to be distributing information or soliciting business in the aisles, or in another company’s booth, will be asked to leave immediately.

Unsecured Items Policy

Personal belongings should not be left unattended in meeting rooms or public areas. Unattended items are subject to removal by security. SPIE is not responsible for items left unattended.

Wireless Internet Service Policy

At SPIE events where wireless is included with your registration, SPIE provides wireless access for attendees during the conference and exhibition but cannot guarantee full coverage in all locations, all of the time. Please be respectful of your time and usage so that all attendees are able to access the internet.

Excessive usage (e.g., streaming video, gaming, multiple devices) reduces bandwidth and increases cost for all attendees. No routers may be attached to the network. Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation. SPIE is not responsible for computer viruses or other computer damage.

Mobile Phones and Related Devices Policy

Mobile phones, tablets, laptops, pagers, and any similar electronic devices should be silenced during conference sessions. Please exit the conference room before answering or beginning a phone conversation.

Smoking

For the health and consideration of all attendees, smoking, including e-cigarettes, is not permitted at any event elements, such as but not limited to: plenaries, conferences, workshops, courses, poster sessions, hosted meal functions, receptions, and in the exhibit hall. Most facilities also prohibit smoking and e-cigarettes in all or specific areas. Attendees should obey any signs preventing or authorizing smoking in specified locations.

Hold Harmless

Attendee agrees to release and hold harmless SPIE from any and all claims, demands, and causes of action arising out of or relating to your participation in the event you are registering to participate in and use of any associated facilities or hotels.

Event Cancellation

If for some unforeseen reason SPIE should have to cancel the event, registration fees processed will be refunded to registrants. Registrants will be responsible for cancellation of travel arrangements or housing reservations and the applicable fees.

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