

# AOP 2026

## 7<sup>TH</sup> INTERNATIONAL CONFERENCE ON APPLICATIONS OF OPTICS AND PHOTONICS

# Conference Program

Lisbon, Portugal, July 7-10, 2026



## Conference App



**AOP 2026**

7TH INTERNATIONAL CONFERENCE  
**APPLICATIONS OF OPTICS & PHOTONICS**

**OFFICIAL CONFERENCE APP**





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The smartphone screen shows the app interface with the following details:

- Time: 16:05
- Location: Lisbon · Jul 7-10
- Header: 7TH INTERNATIONAL CONFERENCE Applications of Optics & Photonics
- Sub-header: 7th International Conference on Applications of Optics and Photonics
- Event Dates: July 7 - 10, 2026
- Event Location: Lisbon, Portugal
- Statistics: 35 Sessions, 225 Presentations, 207 Presenters
- EXPLORE section:
  - Schedule: Full agenda by day
  - My Agenda: Your saved sessions
  - Presenters: Presenter directory
  - Technical Exhibition: Exhibitors & booths
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**THE APP PROVIDES**

 <b>CONFERENCE PROGRAMME</b> Explore the full conference programme.	 <b>TECHNICAL SESSIONS</b> Browse sessions, tracks and presentations.	 <b>SPEAKER INFORMATION</b> View speaker profiles and affiliations.	 <b>PRACTICAL INFORMATION</b> Find important details for your visit.	 <b>PERSONAL SCHEDULE</b> Build your agenda and stay organized.	 <b>FAVOURITES</b> Save your favourite sessions and items.
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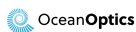
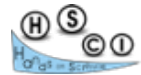
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# Conference Venue Map





Version: July 6, 2026

Venue:

Instituto Superior de Engenharia de Lisboa,  
Rua Conselheiro Emídio Navarro, 1  
1959-007 Lisboa, Portugal

## Committees

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#### Optical Communications

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## Track Codes

<b>Code</b>	<b>Track Description</b>
BIOOPTPH	Biomedical and Medical Applications of Optics and Photonics
ENSSC	Energy, Sustainability and Smart Cities
INTPH	Integrated Photonics
LNOPT	Lasers and Nonlinear Optics
MATPRCH	Materials Processing and Characterization
NANPHOPT	Nano-photonics and Optoelectronics
O3CVS	Optometry, Ophthalmic Optics, Color and Visual Sciences
OPTCOM	Optical Communications
OPTFSA	Optical Fibers, Sensors and Applications
OPTINSTSA	Optical Instrumentation for Space and Astronomy
OPTMAT	Optical Materials
OPTMETIMP	Optical Metrology, Image Processing and Industrial Applications
PPV	Photonics for Photovoltaics
QOPT	Quantum Optics
THEOCOMPOPT	Theoretical and Computational Optics

## Presentation Time Allocation

<b>Presentation Type</b>	<b>Talk</b>	<b>Q&amp;A</b>	<b>Total</b>
Plenary	40 min	5 min	45 min
Keynote	25 min	5 min	30 min
Invited	15 min	5 min	20 min
Oral	12 min	3 min	15 min

Day	Time	Event Type	Room
<b>Tuesday, July 7</b>	09:00 12:30	Registration	Foyer
	12:00	Lunch	
	13:45	Opening Ceremony	Auditorium
	14:45	Plenary Session 1 [LNOPT]	Auditorium
	15:30	Plenary Session 2 [INTPH]	Auditorium
	16:15	Coffee Break	
	17:00	Parallel Session 1 [INTPH1]	Auditorium
	17:00	Parallel Session 1 [OPTMETIMP1]	Maxwell Room
	17:00	Parallel Session 1 [BIOOPTPH1]	Fresnel Room
	18:30	Welcome Reception and Poster Session 1	Main Hall
	20:00	End of the day	
<b>Wednesday, July 8</b>	08:00	Registration	Foyer
	08:45	Plenary Session 3 [INTPH]	Auditorium
	09:30	Parallel Session 2 [INTPH2]	Auditorium
	09:30	Parallel Session 2 [OPTMETIMP2]	Maxwell Room
	09:30	Parallel Session 2 [NANPHOPT1]	Fresnel Room
	11:00	Coffee Break	
	11:30	Parallel Session 3 [BIOOPTPH2]	Auditorium
	11:30	Parallel Session 3 [OPTMETIMP3]	Maxwell Room
	11:30	Parallel Session 3 [THEOCOMPOPT1]	Fresnel Room
	13:00	Lunch	
	14:30	Parallel Session 4 [BIOOPTPH3]	Auditorium
	14:30	Parallel Session 4 [OPTFSA1]	Maxwell Room
	14:30	Parallel Session 4 [O3CVS1]	Fresnel Room
	16:00	End of Sessions	
	17:00	Social Program - Visit to Mosteiro de São Vicente	
	19:00	Conference Dinner	Voz do Operário
	23:00	End of the day	

Day	Time	Event Type	Room
<b>Thursday, July 9</b>	08:00	Registration	Foyer
	08:45	Plenary Session 4 [LNOPT]	Auditorium
	09:30	Parallel Session 5 [OPTFSA2]	Auditorium
	09:30	Parallel Session 5 [OPTINSTSA1]	Maxwell Room
	09:30	Parallel Session 5 [QOPT1]	Fresnel Room
	11:00	Coffee Break	
	11:30	Parallel Session 6 [OPTFSA3]	Auditorium
	11:30	Parallel Session 6 [OPTMAT1]	Maxwell Room
	11:30	Parallel Session 6 [QOPT2]	Fresnel Room
	13:00	Lunch	
	14:30	Plenary Session 5 [PPV]	Auditorium
	15:15	Parallel Session 7 [PPV1]	Auditorium
	16:00	Parallel Session 7 [ENSSC1]	Auditorium
	15:15	Parallel Session 7 [NANPHOPT2]	Maxwell Room
	15:15	Parallel Session 7 [LNOPT1]	Fresnel Room
	16:45	Poster Session 2 and Coffee Break	Main Hall
	18:15	SPOF General Assembly	
	20:00	End of the day	
	<b>Friday, July 10</b>	08:00	Registration
08:45		Plenary Session 6 [MATPRCH]	Auditorium
09:30		Parallel Session 8 [MATPRCH1]	Auditorium
09:30		Parallel Session 8 [OPTCOM1]	Maxwell Room
09:30		Parallel Session 8 [OPTINSTSA2]	Fresnel Room
10:50		Coffee Break	
11:10		Parallel Session 9 [MATPRCH2]	Auditorium
11:10		Parallel Session 9 [OPTCOM2]	Maxwell Room
11:10		Parallel Session 9 [OPTFSA4]	Fresnel Room
12:30		Awards & Closing Ceremony	
13:00		Lunch	
14:30		Guided Tour to RTP Museum	

**Tuesday, July 7**

<b>09:00</b>	<b>Registration</b>	<i>Foyer</i>
<b>12:30</b>		
<b>12:00</b>	<b>Lunch</b>	
<b>13:45</b>	<b>Opening Ceremony</b> President of IPL, Prof. António Belo President of ISEL, Prof. José Manuel Peixoto Nascimento President ICO, Dr. Eric Rosas President EOS, Prof. Ignacio Moreno President RIAO, Prof. Maria Sagrario Millan Garcia Varela President SEDOPTICA, Prof. Maria Teresa Flores Arias President SPF, Prof. Pedro Morais Teixeira de Abreu Sponsor Pitch: ERT-OCEAN OPTICS President SPOF/AOP2026 Chair, Prof. Manuel Filipe Costa Local Committee, Prof. Paula Louro	<i>Auditorium</i>
<b>14:45</b>	<b>Plenary Session 1 [LNOPT]</b> Chair: Manuel F. M. Costa (University of Minho) 203 Precision Optical Spectroscopy of Magnetoelectric Interactions in Quantum Materials – <i>Edoardo Baldini</i>	<i>Auditorium</i>
<b>15:30</b>	<b>Plenary Session 2 [INTPH]</b> Chair: Manuel F. M. Costa (University of Minho) 280 Photonic Computing & Applications – <i>Bhavin Shastri</i>	<i>Auditorium</i>
<b>16:15</b>	<b>Coffee Break</b>	
<b>17:00</b>	<b>Parallel Session 1 [INTPH1]: Reconfigurable Photonic Integrated Circuits</b> Chair: Marco Piccardo (IST) 110 Phase-Change Materials as an Enabling Platform for Memory-Enabled Silicon Photonics – <i>Bharathi Rajeswaran</i> - (Invited) 48 Computational Design of a TE/TM-Pass Polarization Controller on SOI Photonic Integrated Circuits – <i>Kenan Cicek</i> 56 A Reconfigurable Free-Space Optical Fabric for Chip-to-Chip Interconnects – <i>John Sanford</i> 283 3D printing of optical interconnects for PICs – <i>Alexander Legant (Nanoscribe)</i>	<i>Auditorium</i>
<b>17:00</b>	<b>Parallel Session 1 [OPTMETIMP1]: High-Speed Photonic, Quantum, and AI-Enabled Optical Systems</b> Chair: Sandra Franco (University of Minho) 126 High-speed trace gas detection based on all-optical pattern matching using precise phase control of an optical frequency comb – <i>Kaoru Minoshima</i> - (Keynote) 95 A Gigahertz Thin-Film Lithium Niobate Phase-SLM Architecture for True Matrix–Matrix Multiplication in Photonic AI Accelerators – <i>Eran Gur</i>	<i>Maxwell Room</i>

- 144 Adaptive Lighting Control System for Automotive Headlights Based on Computer Vision – *Enrique Sánchez del Ángel*

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**17:00 Parallel Session 1 [BIOOPTPH1]: Advanced Optical Imaging and Microfluidic Platforms for Biophotonics** *Fresnel Room*

Chair: Nélia Alberto (IT-Aveiro)

- 68 Light Sheet Fluorescence Microscopy for Biophotonics – *Alessia Candeo* - (Invited)  
 76 Holographic endoscopy: challenging the limits of conventional imaging – *André Gomes* - (Invited)  
 270 Microfluidics model to analyze formation of intracranial aneurysm: fabrication challenges with optical technologies – *Carmen Bao Varela* - (Invited)

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**18:30 Welcome Reception and Poster Session 1**

*Main Hall*

**BIOOPTPH**

- 99 Digital Holographic Microscopy for Tissue Analysis across Malignancy Grades: A Label-Free Approach to Cancer Diagnostics in Digital Pathology – *Violeta Liuba Calin*  
 111 From Bacterial Fingerprints to Renal Biomarkers: Deep Learning in Raman Spectroscopy – *Rima Mansour*  
 132 Fabrication and structural characterization of dexamethasone-loaded SZ2080 structures via two-photon polymerization – *Marta Rodriguez-Lorenzo*  
 133 Dimensionality reduction in hyperspectral profiles classification of cells from serous cavities – *Violeta Liuba Calin*  
 134 A Single-Stage Approach to Dynamic Focusing for High-NA Full-Field OCT – *Taylor Sanderson*  
 135 Acute Kidney Injury/Chronic Kidney Disease diagnosis through Optoelectronic-based urine analysis – *Ana Moreno*  
 156 In Vitro Time-Correlated Near-Infrared Photon Counting for Direct Detection of Singlet Oxygen in 5-ALA-Sensitized Glioblastoma Cells – *Iva Popović*  
 160 Label Free TCMPC Quantification of Singlet Oxygen Phosphorescence in 5 ALA PDT Glioma Models – *Maja Nesic*  
 166 Light-based analysis of voice frequency – *Nelia Alberto*  
 182 Fiber Bragg gratings in PDMS membranes for real-time respiratory monitoring using edge filtering – *Eduarda Marinho*  
 215 Carbon dot-based optical sensor for ferritin detection: preliminary insights – *Nelia Alberto*  
 235 Optimization of Machine Learning Algorithms for Color Prediction in Anatomically Shaped Resin-Based Dental Materials: A Pilot Study. – *Maria Tejada Casado*  
 244 Chromatography-on-a-chip: UV-VIS detection using miniaturized amorphous silicon photosensors – *Rodolfo G. Rodrigues*  
 248 Estimation of the Electric Dipole Moment in the First Excited State of Trypan Blue Molecule from Solvatochromic Data – *Mihaela Miron*  
 263 Photonic integrated circuit for Salmonella species determination – *Sara Costa*  
 269 Outdoor Evaluation of Low-Resolution LiDAR Representations for Assistive Obstacle Detection – *Nuno Bezelga*

**INTPH**

- 49 Development of an all optical 1 X 4 switch – *Paulo Lourenço*  
 141 Reconfigurable Optical Switching using Sb<sub>2</sub>Se<sub>3</sub> Phase-Change Material – *Iñigo Lopez-Mulet*  
 253 Silicon Nitride Ring Resonator Simulation for Visible-Band Integrated Photonics – *Martim Lemos*  
 260 Graphene Based Modulator – *Diogo Martins*  
 274 Optimization of Optical Coupling from Free Space to Photonic Waveguides under Alignment and Turbulence Constraints – *Ileida Veiga*

**OPTMETIMP**

- 117 Experimental Techniques for Measuring MTF – *Héctor Aira*  
137 YOLO Based Method for Defect Detection in Painted Surfaces – *João Fontoura*  
138 Logistic Regression-Based Method for Defect Detection in Painted Surfaces – *Rodrigo Rito*  
186 Integrated Software Tool for Batch 3D Reconstruction Using Fringe Projection Profilometry – *Juan Vildary*  
217 Optical Drone-Mounted Payload for In-Flight Detection of Airborne Microplastics – *Guilherme Pereira*  
259 Optimization of Lens Design for Spot Size Stability Under Irregular Surface Topologies – *Diogo Martins*  
262 Hierarchical Classification of Polymer Pellets using Short-Wave Infrared Hyperspectral Imaging for Recycling Applications – *Rui Carvalho*

**NANPHOPT**

- 46 Tuning Chemical Interface Damping in Single Au–Ag Heterostructured Nanodumbbells by Adjusting the Au–Ag Atomic Ratio and the d-Band Center Position – *Ji Won Ha*  
113 Nanowires for Enhanced Biosensing: Tapered Geometry to Improve Fluorescence Signal and Imaging – *Farhana Akter Mou*  
55 Broadband THz Polarization Conversion with All-Silicon Metasurface – *Rebeca Tudor*

**THEOCOMPOPT**

- 201 LIDAR beam steering via 2D amorphous silicon photonic optical phase controlled array – *Gabriele Farina*  
242 Analysis of control mechanisms for directional-coupler-based 2×2 photonic switches in amorphous silicon waveguides. – *Ernesto Velazquez*

**OPTMAT**

- 90 Photonic Plasmonic Paper Platform for Multimodal Optical Sensing – *Caterina Serafinelli*  
168 Azobenzene Relief Gratings for Reconfigurable Photonic Applications – *Paulo Ribeiro*

**O3CVS**

- 104 Modulation of Pupillary Constriction by Commercial LED: Effects of CCT and background Luminance – *Beatriz Martinez Matesanz*  
105 Colour Temperature and Glare in Pseudophakic with Depth-of-Focus Lenses – *Isabel Arranz de La Fuente*  
163 Ocular Optical Quality During Accommodation and Post-Stimulus Across Refractive States – *Sandra Franco*  
165 Spherical Aberration Outcomes Following Vision Therapy in Patients with Accommodative Insufficiency – *Sandra Franco*  
223 Peripheral Defocus Myopia Control Lenses: Effects on Visual Function, Eye Movements, and Hazard Detection in Driving – *Sonia Ortiz Peregrina*

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**20:00 End of the day**

**Wednesday, July 8**

- 
- 08:00 Registration** **Foyer**
- 
- 08:45 Plenary Session 3 [INTPH]** **Auditorium**  
 Chair: Manuela Vieira (CTS-ISEL)  
 264 Photonic Interfaces for Weak Dynamics in Nature – *Imran Avci*
- 
- 09:30 Parallel Session 2 [INTPH2]: Integrated Photonics: From PIC Design and Fabrication to Quantum Applications** **Auditorium**  
 Chair: Alessandro Fantoni (CTS-ISEL)  
 251 Integrated Photonics for Quantum Applications – *Jorge Barreto* - (Keynote)  
 190 Industry-compatible, hands-on training modules for PIC design, fabrication, and testing – *Emre Kaplan* - (Invited)  
 62 A Photonic Journey: From Systems to Devices – *Senthil Vinodh*  
 187 How Luceda empowers the PIC value chain – *Ana Filipa Gonçalves de Carvalho*
- 
- 09:30 Parallel Session 2 [OPTMETIMP2]: Optical Spectroscopy and Sensing for Environmental, Material, and Food Analysis** **Maxwell Room**  
 Chair: Paulo Tavares (University of Porto)  
 66 Photoacoustic Spectroscopy for Ambient Aerosols Characterization – *Abdul Rahman* - (Keynote)  
 207 Development of a multispectral spatially resolved light logger – *Francisco Afonso*  
 181 Overcoming the Limitations of Pd Thin Films in SPR Hydrogen Sensors with Au@Pd Nanoparticles – *Miguel A. S. Almeida*  
 153 Real-time temperature monitoring in a diode-pumped alkali laser via NIR methane absorption spectroscopy – *Fengjie Xi*
- 
- 09:30 Parallel Session 2 [NANPHOPT1]: Resonant Nanophotonics, Wave Control, and Photonic Computing** **Fresnel Room**  
 Chair: João Pinto Coelho (University of Lisbon)  
 47 Controlled Suppression of Anderson Modes in a Three-Dimensional Disordered Optical Waveguide – *Belkıs Gökbulut*  
 52 Paired exceptional points and a q-BIC on a bulk Fermi arc in a single dielectric ring resonator – *Nikolay Solodovchenko*  
 169 Nanophotonic Resonant Tunneling Diodes for Neuromorphic Applications – *Francisco Várzea Figueiras*  
 210 Extreme Learning Machine in Artificial Sensory Oscillator Photonic Neurons – *Juan Silva*  
 243 Spatial Encoding and Multimode Fiber-Based Photonic Extreme Learning Machines for Efficient Optoelectronic Computing – *Pedro Miguel Sousa Coelho*
- 
- 11:00 Coffee Break**
- 
- 11:30 Parallel Session 3 [BIOOPTPH2]: Advanced Optoelectronic Sensing: From Quantum Technologies to Biomedical Diagnostics** **Auditorium**  
 Chair: João Costa (CTS-ISEL)  
 96 Are Thin Film Devices Ready for Biomedical Optoelectronics? – *Domenico Caputo* - (Keynote)  
 255 Quantum sensing forever – *Jana Nieder* - (Keynote)
-

- 162 Calibration of a Time-Resolved Near-Infrared Detection System for Singlet Oxygen – *Mioľjub Nesic*
- 236 Molecularly Imprinted Polymer-Based Dual-Transduction Biosensor for Albumin Detection: Toward Point-of-Care Monitoring of Hypertension Biomarkers – *Ana Sofia Matos Assunção*

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**11:30 Parallel Session 3 [OPTMETIMP3]: Computational, Holographic, Maxwell Room and Wavefront Imaging**

Chair: António Baptista (University of Minho)

- 61 Decoupling Imaging Geometry from Optics Using Digital Holography – *Claas Falldorf* - (Keynote)
- 174 Integrated 3D Imaging and Spectroscopy for Cultural Heritage Analysis – *Luana Pereira*
- 178 Polarization-Holographic Imaging Stokes Spectropolarimeter for Remote Sensing Applications – *Barbara Kilosanidze*

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**11:30 Parallel Session 3 [THEOCOMPOPT1]: Computational Methods in Fresnel Room Photonics, Metrology and Nanostructured Optics**

Chair: Paulo Lourenço (CTS-ISEL)

- 74 Characterizing Structured Polarizing Elements through Matrix-Based Fourier Optics – *Ignacio Moreno* - (Keynote)
- 102 Simulation of optical transmission through planar multilayer dielectric stacks on silicon substrates: a comparative analysis between three numerical approaches – *João Fernandes*
- 208 fastplasmon - A Python toolkit for fast computation of near and far-field quantities for plasmonic nanoparticles – *Paulo Santos*
- 226 Interactive interface Software for color evaluation – *Rafael Vázquez Conejo*

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**13:00 Lunch**

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**14:30 Parallel Session 4 [BIOOPTPH3]: Advanced Optical Imaging and Microfluidic Platforms for Biophotonics Auditorium**

Chair: Domenico Caputo (La Sapienza University Rome)

- 276 Laser-based Technologies for the Advanced Fabrication of Organ-on-a-Chip Devices in Personalized Medicine – *Maria Teresa Flores Arias* - (Keynote)
- 78 Three-dimensional label-free imaging of rapid biological cell dynamics via interferometric multiplexing – *Natan T. Shaked*
- 232 Optically Triggered Plasmonic Lipogels for Precision Melanoma Treatment – *Valéria Gomes*
- 45 Effects of Skin Pores on Photon Propagation in Optical Brain Imaging Systems – *Kenan Nurettin Bilgiçer*
- 247 Solvatochromic Investigation and Quantum-Molecular Modeling of 9-Aminoacridine – *Mihaela Miron*

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**14:30 Parallel Session 4 [OPTFSA1]: Applied Fiber-Optic Sensors for Monitoring and Human Interaction Maxwell Room**

Chair: Marta Ferreira (i3N/UA)

- 67 From Ultralow-Concentration Biosensing to Vibrational Fingerprint Selectivity with Bound States in the Continuum Metasurfaces – *Silvia Romano* - (Keynote)
- 53 Multi-parametric fiber Bragg grating sensor to monitor users of a soft hand-exoskeleton – *Juan Andrés García Zapata*
- 171 Tactile sensor based on multicore fiber Bragg gratings – *Arezo Sheykhan*
- 240 In Situ Monitoring of Critical Safety Parameters in Lithium-Ion Batteries via Hybrid Fiber-Optic Sensing – *Micael Nascimento*

254 Sensing Batteries via Optical Fiber Sensors: Operando Monitoring in-cell Refractive Index and Temperature – *Tiago Amaral*

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**14:30 Parallel Session 4 [O3CVS1]: Ocular Optics, Imaging and Visual Performance Fresnel Room**

Chair: Paula Louro (CTS-ISEL)

114 Precision sight: The Optics behind the intraocular lens – *Maria S. Millán García-Varela* - (Keynote)

230 Anterior segment OCT image features in the retro-iris space – *António Baptista* - (Invited)

119 Subclinical Ocular Effects of Digital Blue Light Exposure: An Integrated Optical and Functional OCT Study – *Vladimiro Hipólito*

164 Ocular optical quality in reduced accommodation: accommodative dysfunction vs pre-presbyopia – *Jessica Gomes*

245 Deriving Individualized Color Matching Functions in Color Vision Deficiency with a 3D-printed Colorimeter – *Rodrigo Lecanda Rodriguez*

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**16:00 End of Sessions**

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**17:00 Social Program - Visit to Mosteiro de São Vincente**

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**19:00 Conference Dinner**

*Voz do Operário*

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**23:00 End of the day**

**Thursday, July 9**

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- 08:00 Registration** **Foyer**
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- 08:45 Plenary Session 4 [LNOPT]** **Auditorium**  
 Chair: Paula Louro (CTS-ISEL)  
 69 Liquid Solitons in Photonic and Quantum Systems – *Humberto Michinel*
- 
- 09:30 Parallel Session 5 [OPTFSA2]: Advanced Fiber-Optic Devices, Distributed Sensing, and Optical Measurement Platforms** **Auditorium**  
 Chair: Orlando Frazão (University of Porto)  
 149 High Transmission in Step-Index Multimode Fibre Tapers – *Piyamas Choochalerm*  
 250 Acoustic Detection and Source Localization with Event-Based Fiber Speckle Sensing – *Sofia Marques Duarte*  
 256 Going Around The Core: Ultra-Sensitive Refractometry Based on Cladding Multimode Interference – *Mariline Costa*  
 211 Innoaqua: Innovative Approaches for an Integrated use of Algae in Sustainable Aquaculture Practices and High-Value Food Applications – *João Mendes*
- 
- 09:30 Parallel Session 5 [OPTINSTSA1]: Optical Systems and Components for Space Applications** **Maxwell Room**  
 Chair: Alexandre Cabral (University of Lisbon)  
 81 Reliability of opto-electronic components in space – *Heinz-Christoph Neitzert* - (Keynote)  
 184 Gallium oxide UV photodetectors for solar-blind and space applications – *Steve Reynolds* - (Invited)  
 97 Optical System Design and Performance Analysis of a Star Tracker – *Tuğba Güvercin*  
 93 PoET: a spatially resolved Sun in a high-resolution spectrograph – *Inês Leite*
- 
- 09:30 Parallel Session 5 [QOPT1]: Quantum Photonic Networks, QKD, and Secure Communication** **Fresnel Room**  
 Chair: Miguel Fernandes (CTS-ISEL)  
 72 Quantum Photonic Chips for Quantum Entanglement Distribution Networks – *Wei Zhang* - (Keynote)  
 94 Single-Photon Detectors for Satellite-Earth QKD Links – *Jaime Vieira*  
 147 High-Speed Lithium Niobate Polarization Control for Polarization-Encoded QKD – *Hugo Costa*  
 227 Experimental Bell Inequality Violation Using Constrained Measurement Geometry – *Piyush Saklani*  
 285 Analytical Modeling And Control Of Nonlinear Light–Matter Interactions In Ultracold Quantum Systems – *Mariam Gevorgyan*
- 
- 11:00 Coffee Break**
- 
- 11:30 Parallel Session 6 [OPTFSA3]: Advanced Optical Fiber Systems for Sensing, Metrology, and Communications** **Auditorium**  
 Chair: Heinz C. Neitzert (University of Salerno)  
 22 Design of a Photonic Synopsis Multiplexer Based on Multicore Polymer Optical Fiber – *Dror Malka* - (Invited)
-

- 143 Exploring New Frontiers in Optical Interferometric Sensing: Vernier effect and White Light Interferometry for Harsh Environments – *Paulo Robalinho* - (Invited)
- 60 Emerging Trends in Optical Metrology for Optical Communication Systems. – *Modesto de Moraes* - (Invited)
- 157 Integrated Sensing and Communications: Coexistence of a 400G Coherent Link and Raman-based Distributed Temperature Sensing at 1064 nm – *Joana Vieira*
- 228 Two Optical-Fiber Approaches to Embeddable Concrete Monitoring: Interferometric and Intensity-Based Methods – *Rita Pereira de Faria*

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**11:30 Parallel Session 6 [OPTMAT1]: Functional and Active Photonic Materials** *Maxwell Room*

Chair: Paulo António Ribeiro (Universidade Nova de Lisboa)

- 71 High-energy meta-optics for structured laser-matter interactions – *Marco Piccardo* - (Keynote)
- 185 CoherentStack: Modelling and Characterization of Optical Multilayer Structures Using the Transfer Matrix Method – *Yuriy Vygranenko*
- 58 Hybrid Metallic-Dielectric Systems for Sensitive Optical and Biological Detection – *Andrea Chiappini*
- 116 All-optical reservoir computing enabled by luminescent materials with intrinsic synaptic dynamics – *Ana Rita da Naia Bastos*
- 161 Enhanced Fluorescence-Based Sulfite Detection in Acidic Media with Platinum(II) Porphyrins – *Guilherme Costa*

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**11:30 Parallel Session 6 [QOPT2]: Quantum Light Sources, Coherent Control, and Quantum-Enhanced Sensing** *Fresnel Room*

Chair: Jana Nieder (INL)

- 73 Towards the quantum noise limit in mid-infrared Quantum and Interband Cascade Lasers – *Paolo de Natale* - (Keynote)
- 200 Beyond Single Lasers: 2-Dimensional VCSEL Arrays – *Kent Choquette* - (Keynote)
- 257 Quantum-based polarization imaging: from quantum to nonlinear interference – *Carolina Ramos Goncalves*
- 258 All-optical coherent quantum control for quantum-enhanced photonic sensing – *Jonas Junker*

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**13:00 Lunch**

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**14:30 Plenary Session 5 [PPV]** *Auditorium*

Chair: Miguel Fernandes (CTS-ISEL)

- 75 Current density management in modern silicon-based solar cells – *Kaining Ding*

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**15:15 Parallel Session 7 [PPV1]: Advanced Photonics for Solar Cells and Optical Power Transfer** *Auditorium*

Chair: Steve Reynolds (University of Dundee)

- 59 Machine Learning-Driven Design of Photonic Crystals for Enhanced Back-Reflectors in Photovoltaic Cells – *Cosme Eustaquio Rubio Mercedes*
- 183 Will Carrier Mobilities and Lifetimes in SnS Thin Films Lead to Competitive Solar Cells ? – *Reinhard Schwarz*
- 209 Experimental Validation and Numerical Simulation of a 520 nm Optical Wireless Power Transmission System – *Elisa Casal Gómez*
-

**16:00 Parallel Session 7 [ENSSC1]: Photonics for Industrial Sensing and Autonomous Systems Auditorium**

Chair: Micael Nascimento (i3N/UA)

212 Novel Applications of LIBS in Recycling – *Amy Bauer*249 Optical Wireless AGV Navigation and Coordination Using Visible Light Communication – *Paula Louro***15:15 Parallel Session 7 [NANPHOPT2]: Optoelectronic Materials, Photodetectors, and Light–Matter Characterization Maxwell Room**

Chair: José Figueiredo (University of Lisbon)

176 Influence of different wavelengths on the operation of gallium oxide-based photomemristors – *Marina Sparvoli* - (Keynote)86 Emergent chiral phenomena in in-plane hyperbolic van der Waals  $\text{MoOCl}_2$  – *Meri Hayrapetyan*106 Optoelectronic Study and Optimization of a Hybrid Nanograting-Enhanced GaAs MSM Photodetector with Metallic Adhesion Layers – *Mohamed Khadraoui*79 Temperature-Dependent Spectromicroscopy of Single Quantum Emitters as a Basis for Luminescence Nanothermography – *Andrei Naumov* - (Invited)**15:15 Parallel Session 7 [LNOPT1]: Ultrafast Optical Diagnostics, Spectroscopy, and Real-Time Measurement Fresnel Room**

Chair: Paulo Antunes (i3N/UA)

65 Real time processing for ultra fast Optical Coherence Tomography – *Adrian Podoleanu* - (Keynote)158 Intensity scaling of rotational anisotropy for detection of wave-mixing processes – *Hugo Pires*131 Generalised Thomson scattering for relativistic plasma optics – *Rafael Russo de Almeida*150 Advances in diode-pumped metastable rare gas lasers – *Rui Wang*154 The Impact of Ambient Gas Conditions and Delay Time on Emission Characteristics of Al Plasma Generated using Nanosecond Laser-Induced Breakdown Spectroscopy (nsLIBS) – *Atif Hussain***16:45 Poster Session 2 and Coffee Break****Main Hall****OPTFSA**98 A Stability Enhanced EDF Ring Laser Interrogator for FBG Sensing: Linear Response, Low Cost Design and Practical Optimization – *Nikolaos Stathopoulos*107 BathLiDAR: Privacy-Preserving Bathroom Fall Detection with a Single ToF Sensor – *Gunzung Kim*108 Five Wavelengths, Five Distances : A Concentric Structured-Light Sensor for Long-Range Forward Profiling in Gas Pipelines – *Gunzung Kim*115 Optimization of a fluorescence sensing setup for water contaminants – *Catarina Novo*118 Surface Plasmon Resonance (SPR) sensor study for contaminant sensing – *Gonçalo Alves*121 Tapered Erbium Fiber Laser Using FBG Mirrors – *Jose Costa*124 Torsion Sensing in Optical Fibers via Polarization State Evolution – *Virginia Linhares*136 Fiber Bragg Grating Biaxial Displacement Sensors for Long-Term Monitoring of Wooden Panel Paintings – *Luis Pereira*140 Optical fibre sensor for water contaminant detection - PFAS case study detection – *Catarina Novo*146 Laser-processed  $\text{WO}_3$ /graphene oxide nanocomposites for Raman-active fiber Fabry–Perot hydrogen sensing – *Jorge Moura*159 Engineered Plasmonic Substrates for Surface-Enhanced Raman Spectroscopy Applications – *Angela Baracu*177 LiDAR-Based Monitoring of Railway Bogie Springs – *Francisco José Lacerda Frade*

- 188 Hydrogen Leak Detection with Optical Fibers: Implementation and Validation in Industrial Settings – *André Santos*
- 219 Enhancing Optical Fibre Sensing with Zinc Oxide Tetrapod Layer Deposition – *Lucas Pereira*
- 220 Differential optical sensing platform based on strong-coupled interactions between plasmonic and excitonic materials – *João Pedro Carvalho*
- 222 Modeling of active waveguide Bragg gratings for thermal sensing and temperature gradient threshold detection – *Ángel Sanz Felipe*
- 229 Interchangeable-Spring FBG Extensometer for Adaptive Strain and Displacement Monitoring – *Gustavo Saturno*
- 231 Tantalum-Enhanced Fabry-Perot Fiber Sensor for Intensity-Based Refractive Index Detection – *Guilherme Pereira*
- OPTINSTSA**
- 120 A software tool for the alignment and characterization of cross-dispersed echelle spectrographs – *Gonçalo Blanco*
- 122 Low-Cost Minimal RA Tracking System for Deep-Sky Astrophotography – *Raul Casquinha*
- QOPT**
- 216 Quantum-Kinetic Modeling of Cooperative Photoluminescence From Coupled Lifetime-Limited Organic Molecules – *Maxim Gladush*
- LNOPT**
- 112 Investigation of the Nonlinear Response of Photonic Crystals for Applications in Laser Protection Systems – *Abdelmoumen Guessoum*
- 129 Yb driven few-cycle, mJ-level 3  $\mu\text{m}$  laser source – *Gonçalo Vaz*
- 266 Introducing Dual-Cell Photoacoustic Spectroscopy For Studying Quantitative Absorption Spectrum Of Aerosols – *Jamshed Saeed Shah*
- 273 Development and operation of laser spectroscopy of lanthanides at KU Leuven – *Sughra Mohamed*
- 152 Study on the amplification of diode pumped alkali vapor laser – *Hongyan Wang*
- ENSSC**
- 80 Application of Photonics-Based Spectroscopy and Machine Learning in Rare Earth Element Prospectivity Modelling – *Avery Inyangala*
- 123 VLC-Based Traffic Coordination: Physical Layer Modeling and System Design – *Susana Amaral*
- 175 Distributed Adaptive Road Lighting System with Predictive Anticipation Based on Edge Computing – *Tiago Moreno*
- 189 Optical Wireless Communication for Cooperative Traffic Control: A VLC-Enabled Multi-Agent Reinforcement Learning Approach – *Astride Morais*
- 214 Characteristic-curve tracer and electrical-parameter measurement system for a photovoltaic panel powering IoT-connected devices – *Gonçalo Machado*
- 237 Visible Light Communication-Enabled Reinforcement Learning for Data-Calibrated Urban Traffic Control in Lisbon – *João Evaristo*
- 241 An Optical Fiber-based System for Charging Batteries by Wireless Power Transfer – *Micael Nascimento*
- 278 Multiwavelength Photoacoustic Spectroscopy for Emission-Based Fuel Development. – *Rana Khawar Ashfaq*
- MATPRCH**
- 103 Friction Behaviour of Femtosecond Laser Textured DLC Coatings – *Vitor Oliveira*
- 127 Color Adjustment Potential in One-shade restorative materials: Thickness and Shade Interaction – *Marina Chacón Werner*
- 233 Optical Characterization of Squid Gladius Biomaterials for Cornea Tissue Engineering – *Juan de La Cruz Cardona Pérez*
- 261 Nd:YAG Pulsed Laser Deposition Platform for Thin-Film and Nanostructured Material Fabri-

cation for Photonic Applications – *André Moreira*

275 Femtosecond Laser Ablation of Flexdym Elastomeric Polymer for Biomedical Surface – *Maria Teresa Flores Arias*

272 Laser technology in the injection moulds industry – *Nuno Ferreira*

282 Photoanisotropy in a Non-Azobenzene Composition with an Extended Operating Range – *Barbara Kilosanidze*

### **OPTCOM**

145 Visible Light Communication System Integrated with SUMO Simulation – *João Marques*

167 Optical Links for CubeSat Communications - Technologies and Challenges – *Erica Alves*

194 Cellular VLC-Based Vehicle Localization Integrated with SUMO Traffic Simulation – *David Almeida*

196 VLC-Enabled Multi-Agent Reinforcement Learning with Dynamic Phase Timing for Traffic Optimization – *Gonçalo Galvão*

252 Experimental Evaluation of Power-over-Fiber Topologies for IoT Sensor Deployment Over Single-Mode Fiber at 1550 nm – *Daniel Graça*

265 End-to-End Visible Light Communication Vehicular Prototype: Design and Experimental Validation – *Duarte Cruz*

142 Classical Emulation of the BB84 Quantum Key Distribution Protocol over Optical Fibers – *Rodrigo Cosme*

225 Joint Computer Vision and Multicore-Fiber Sensing for Automatic FSO Alignment – *Pedro Pereira*

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**18:15 SPOF General Assembly**

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**20:00 End of the day**

## Friday, July 10

### 08:00 Registration

### 08:45 Plenary Session 6 [MATPRCH]

*Auditorium*

Chair: Alessandro Fantoni (CTS-ISEL)

281 The Rise of Sustainable Advanced Materials for Electronics and Energy Applications – *Rodrigo Ferrão Paiva Martins*

### 09:30 Parallel Session 8 [MATPRCH1]: Advanced Optical Thin Films, Nanostructures and SERS for Sensing Applications

*Auditorium*

Chair: Steve Reynolds (University of Dundee)

239 The impact of noble metal thin films on SERS substrates for pesticide detection – *Oana Raşoga*

246 Investigations of the properties of some organic and hybrid layers deposited on flat and patterned substrates – *Oana Raşoga*

238 Semiconductors-based Pervious Concrete for Photocatalytic Performance – *Fabiula Pereira Lessa*

51 Composite structures based on shape-controlled Ag nanoparticles embedded in c-Si as a promising SERS substrate – *Anna Ermina*

195 Coherence and superradiance from a plasma-based quasiparticle accelerator – *Bernardo Malaca* - (Invited)

### 09:30 Parallel Session 8 [OPTCOM1]: Quantum Communications and Advanced LiDAR Systems

*Maxwell Room*

Chair: Manuela Vieira (CTS-ISEL)

199 The Development of Quantum Communication Links – *Yaseera Ismail* - (Keynote)

213 First Experimental Demonstration of Chaos-Based LiDAR in the Long-Wave Infrared Exploiting Photonic Chaos – *Sara Zaminga* - (Invited)

172 Receiver Lens System Design Considerations for Wide-Angle FMCW LiDAR – *Marcus Baumgart*

### 09:30 Parallel Session 8 [OPTINSTSA2]: Astronomical Instrumentation and Optical Design

*Fresnel Room*

Chair: Manuel Abreu (University of Lisbon)

100 Advancing Optical Astronomy at ESO: Portuguese Contributions from the Institute of Astrophysics and Space Sciences – *Alexandre Pereira Cabral* - (Keynote)

125 Model-Based Systems Engineering for the Front-End of ANDES, the High-Resolution Spectrograph for the ESO Extremely Large Telescope – *Daniel Santos*

128 Towards the miniaturization of cross-dispersed echelle spectrographs: Parametric modelling and trade-off analysis of three optical designs – *Nuno M. Gonçalves*

130 Reaching the milli-arcseconds level in atmospheric dispersion correction for astronomical instruments. – *Pedro José Barreto Pereira*

### 10:50 Coffee Break

### 11:10 Parallel Session 9 [MATPRCH2]: Session 2: Materials, Thermal, and Photocatalytic Applications

*Auditorium*

Chair: Reinhard Schwarz (IST)

- 109 Ion Beams for Materials Processing and Characterization – *Katharina Lorenz* - (Invited)  
202 Optical Methods for Self-Cleaning Assessment Across Multiple Substrates – *Orlando Lima Jr.*  
170 Design and Synthesis of Magneto-Plasmonic Liposomes: Towards Dual-Mode Hyperthermia –  
*Fábio Alberto da Costa Lopes*  
271 Laser processing of oxides for energy applications – *Nuno Ferreira* - (Invited)
- 

**11:10 Parallel Session 9 [OPTCOM2]: Advanced Optical Communications Maxwell Room and Photonic Networking**

Chair: Ana Rocha (i3N-Aveiro)

- 63 LUMIRing: the Largest Terrestrial Multicore Fiber Testbed Enabling Real-World SDM at Scale – *Adolfo Cartaxo* - (Keynote)  
197 Photonic Enabled Multi Agent Traffic Orchestration Using Visible Light Communication for Adaptive Urban Mobility – *Manuela Vieira* - (Invited)  
193 Overcoming Nonlinearities in High Power EDFAs for Coherent Ground-to-LEO Optical Links – *Ricardo Cotrim*  
224 Modelling Rate-Adaptive LEO-to-Ground Coherent WDM FSO Links with Throughput and Power Optimization – *Diogo Malheiro*
- 

**11:10 Parallel Session 9 [OPTFSA4]: Light-to-Energy Conversion in Nanos- Fresnel Room tructures**

Chair: Vitor Oliveira (CEFEMA/ISEL)

- 279 Analytical Technique for the Quantification of C<sub>2</sub>H<sub>4</sub> and CH<sub>4</sub> – *Arthur George Tissi Batista*  
218 Optimization of Hybrid Electrodes for Integrated Electrochemical Surface Plasmon Resonance (eSPR) Systems – *José Lucas Camacho Monteiro*
- 

**12:30 Awards & Closing Ceremony**

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**13:00 Lunch**

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**14:30 Guided Tour to RTP Museum**

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## Social Program

### Cultural Visit

The cultural visit of the conference will take place at the *Mosteiro de São Vicente de Fora*, one of Lisbon's most remarkable historical and architectural landmarks. Founded in 1147 and rebuilt during the 16th and 17th centuries, the monastery is widely recognized for its Mannerist architecture, magnificent cloisters decorated with traditional Portuguese *azulejos*, and its outstanding historical significance.

Located in the historic Graça district, the monastery offers participants an exceptional opportunity to experience Portugal's rich cultural and artistic heritage in a unique setting.



*Mosteiro de São Vicente de Fora*

### Conference Dinner

The AOP2026 Conference Dinner will take place in the beautiful *Salão Nobre* of *Voz do Operário*, one of Lisbon's most emblematic cultural institutions. Located in the historic Graça district, this distinguished venue combines architectural elegance with a rich legacy of civic and cultural engagement dating back to the nineteenth century.

Participants will enjoy an evening of fine dining and conversation in an elegant atmosphere that has long hosted important artistic, cultural, and social events in Lisbon.



*Salão Nobre - Voz do Operário*

### RTP – Radio and Television Museum Collection

The RTP Radio and Television Museum Collection showcases some of the most iconic items from RTP's extensive and valuable museum collection. The exhibition invites visitors on a journey through time, tracing the technological evolution of radio and television. The exhibits are arranged chronologically, presenting historic radio and television equipment in a way that highlights the development of these two communication media.



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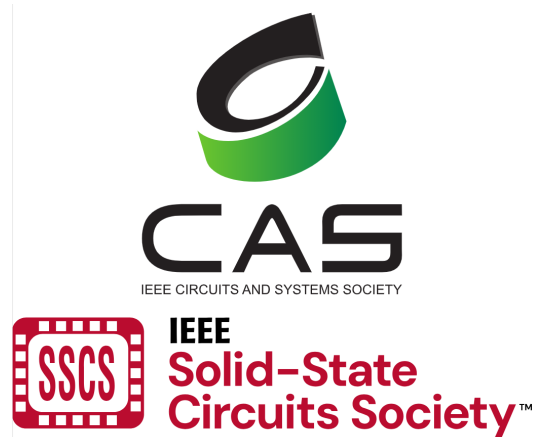
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