

AOP2024, 6th International Conference on Applications of Optics and Photonics

Preface

The Portuguese Society for Optics and Photonics, SPOF (*Sociedade Portuguesa para a Investigação e Desenvolvimento em Óptica e Fotónica*), successfully organized, July 16 to 19, 2024, in Aveiro, Portugal, its 6th International Conference on Applications of Optics and Photonics, AOP2024.

Meeting with colleagues from all over the world, the Portuguese Optics and Photonics community celebrated the remarkable contribution of Optics and Photonics to the development of our societies and humankind, reviewing the state-of-the-art and foreseeing the future evolution and developments in the field.

In a friendly relaxed and nurturing environment, we foster the establishment of a large range of cooperation projects and relationships with colleagues and institutions from all around the world while increasing the external visibility of Portugal' Optics and Photonics research.

174 effective participants from 31 countries attended the conference that counted 185 presentations including 5 plenaries, 13 keynote and 32 invited lectures by world renowned researchers and scholars as well as top level young researchers in diverse fields of Optics and Photonics.

From these, 30 full papers in different fields of optics and photonics were submitted and accepted, after careful peer review by independent reviewers and revision, for inclusion at the EDP Sciences proceedings book of the AOP2024 conference as follows:

- D-Shaped Photonic Crystal Fiber SPR Sensor for Humidity Monitoring in Oils
Amanda F. Romeiro, Hudson J. B. Rodrigues, Cauã C. Miranda, Markos P. Cardoso, Anderson O. Silva, João C. W. A. Costa, M. Thereza R. Girdali, Jose L. Santos, and Ariel Guerreiro
- Coil-shaped Optical Fiber Sensor for Compression Measurements
Amanda F. Romeiro, Victor H. R. Cardoso, Marcos F. C. de Souza, Paulo Caldas, M. Thereza R. Girdali, Orlando Frazão, José L. Santos and João C. W. A. Costa
- Enzymatic Plasmonic Optical Fiber Biosensor for Uric Acid Detection
Ana Sofia Assunção, Mariana Sebastião, António J. S. Fernandes, António J. S. Teixeira, Florinda M. Costa, Cátia Leitão, and Sónia O. Pereira
- Vegetation health evaluation using cost-effective aerial reflectance measurements
Anáisa Lucena, Rodrigo Rendeiro, and Carlos Marques
- Manipulation of Microparticles in Optofluidic Devices Fabricated by Femtosecond Laser Micromachining
Carolina Cameira, João M. Maia, and P. V. S. Marques
- Design and Development of a Color Picker System to Integrate in POC Device Systems
Caterina Serafinelli, Alessandro Fantoni, Miguel Tavares Fernandes, Elisabete C. B. A. Alegria and Manuela Vieira

- Fully Connected Feedforward Neural Network for the Prediction of Amorphous Silicon Grating Couplers Efficiency
Daniel Almeida, Alessandro Fantoni, João Costa, Manuela Vieira and José Fonseca
- Use of laser technology for the postural classification of bedridden people
David S. Canzobre, Pablo Pardiñas Torrado, Javier Lamas Vigo and Alberto Ramil Rego
- WDM C-band four channel demultiplexer using cascaded multimode interference on SiN strip waveguide structure
Dror Malka
- High photoinduced birefringence in thermally treated layers of the azopolymer PAZO with significantly changed absorbance spectrum
Georgi Mateev, Deyan Dimov, Dimana Nazarova, Elena Stoykova, Keehoon Hong and Lian Nedelchev
- Mobile system to detect plastic particles in critical scenarios: potential approach for attachment in UAVs
Guilherme Pereira and Carlos Marques
- Emulation and Testbed Prototyping of Laser Beam Propagation Characteristics through Atmospheric Turbulence for Optical Satellite Feeder Links
Haider M. Al-Juboori
- Modelling Investigation of Atmospheric Turbulence-Induced Beam Deviation for LEO/GEO FSO Communication Link
Haider Al-Juboori
- Nanoparticles Enhanced Laser-Induced Breakdown Spectroscopy for Characterisation and Discrimination of Gemstones
Haider Al-Juboori, Zhaib Haider, Wei Hang and Sufi Roslan
- Comparative Analysis of Ethanol Gas Sensors Based on Bloch Surface Wave and Surface Plasmon Resonance
João P. M. Carvalho, Miguel A. S. Almeida, João P. Mendes, Luís C. C. Coelho and José M. M. M. de Almeida
- Efficient generation of two coherent spectral lines using two mutually injection locked DFB lasers
Leonardo Rama, Manuel Violas and Miguel Drummond
- Smartphone Interrogation of Narrow Bragg Gratings in G.652 Fibre
Marcos Madeira, Álvaro Santos, Valmir Oliveira and Hypolito Kalinowski
- POF Sensor for Dynamic Physiological Evaluation in a Dog-Assisted ASD Therapy: A Case Study
María Gaitán-Padilla, Daniela Farfal, Patricio Barria, Marcelo Eduardo Vieira Segatto, Carlos A. Cifuentes, Maria Jose Pontes and Camilo A. R. Diaz
- A Comparative Study of Surface Plasmon and Tamm Plasmon Polaritons for Hydrogen Sensing
Miguel A. S. Almeida, João P. M. Carvalho, Isabel Pastoriza-Santos, José M. M. M. Almeida and Luís C. C. Coelho

- Numerical evaluation of strain transfer model for steel-reinforced optical fiber cable embedded in a cylindrical concrete beam with two void inclusions
Mira Kabbara, Xavier Chapeleau, Qinghua Zhang and Frédéric Bourquin
- Development of a High-Precision, Portable and Automated Mobile Laser Scanner for the Recording and Digitation of Texture and Micro-marks in Archaeological and Heritage Stone
Pablo Pardiñas, David S. Canzobre, Javier Lamas, Micaela Gómez-Coronel, Alberto Ramil, David M. Freire Lista and Ana J. López
- Refractive index and thickness analysis of planar interfaces by prism coupling technique
Paulo Lourenço, Yuri Vygranenko, Miguel Fernandes, Alessandro Fantoni and Manuela Vieira
- Monitoring Reinforced Concrete Structures Using Iron Thin Film Coated Optical Fibre Sensors
Pedro M. da Silva, João P. M. Carvalho, João P. Mendes, José M. M. de Almeida and Luís C. C. Coelho
- An affordable optical detection scheme for LSPR sensors
Rima Mansour, Catarina Serafinelli, Alessandro Fantoni and Rui Jesus
- Lighting preferences of Iberian sausages for Spanish observers
Shino Okuda, Masahito Nagata, Katsunori Okajima, Francisco José Rodríguez-Pulido, Francisco José Heredia, Rocío Ortega-Velázquez, María Dolores Gaviño-Nadal, Jesús Casado-González, Pedro Antonio García, María José Rivas, María Tejada-Casado, Ana Yebra and Manuel Melgosa
- A LiDAR based obstacle detection framework for railway
Susana Dias, Pedro Sousa, Francisco Afonso, Nuno Viriato, Paulo Tavares and Pedro Moreira
- Design and fabrication of asymmetric Mach-Zehnder interferometers based on EpoClad and EpoCore strip waveguides
Tiago E.C. Magalhães, Jérôme Borme, Temple Douglas, Christian Maibohm and Jana B. Nieder
- Unlocking Traffic Control: Exploring Intersection Dynamics with Visible Light Communication
Manuel Augusto Vieira, Manuela Vieira, Gonçalo Galvão, Paula Louro, Mário Véstias
- Enhancing Urban Traffic Management with Visible Light Communication and Reinforcement Learning
Gonçalo Galvão, Manuel Augusto Vieira, Manuela Vieira, Paula Louro, Mário Véstias
- Enhancing Airport Navigation Using Visible Light Communication
Manuela Vieira, Manuel Augusto Vieira, Gonçalo Galvão, Paula Louro, Alessandro Fantoni

The high-quality standard of a varied and exciting scientific program was complemented with an enjoyable social program creating the right atmosphere for a most fruitful exchange of ideas and experiences.

In a novel special session “Optics and Photonics Research Labs and Centers in Portugal and International Cooperation”, participated by eleven major Portuguese and one foreign research institute center or lab, the current research achievements were presented and the prospects of future cooperation and development were explored and discussed with the conference participants.

The AOP20204 was organized by SPOF, the University of Aveiro, I3N and the ICO' Territorial Committee of Portugal in cooperation with the International Commission for Optics, ICO, the IberoAmerican Optics Network, RIAO, the European Optical Society, EOS, and the Portuguese Physics Society, SPF. IberOptics, MTB, ADMedida were the main sponsors of the conference that was also supported and or endorsed by the Portuguese universities of Minho, Porto, Lisbon, Algarve, Madeira, ISEL, Nova of Lisbon and Beira Interior as well as CICECO – University of Aveiro, IT the Institute of Telecommunications, INESCtec, IPFN, Instituto de Astrofísica e Ciências do Espaço, CENIMAT, the OPTICA student' chapter of the University of Aveiro and the SPIE' student' chapter of the University of Porto, FISUA, FÁBRICA Centro Ciência Viva, SPM, Ordem dos Engenheiros, and at international level by SEDOPTICA Sociedad Española de Óptica (Spain), CTOM Mexico' Territorial Committee of ICO (Mexico), RCO-Red Colombiana de Óptica (Colombia), OPSS Optics and Photonics Society of Singapore (Singapore), CVO Comité Venezolano de Optica (Venezuela), Societé Tunisiene d' Optique (France), Societé Française d' Optique (France), Photonics Finland (Finland), PHOTONICS21, Hands-on Science Network, Laser World of Photonics (Germany), MDPI' journals Sensors, Applied Sciences, Photonics and Micromachine (Switzerland) as well as the Journal of the European Optical Society-Rapid Publications (France) and EDP Sciences (France).

The committees that served the conference were,

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The 7th International Conference on Applications of Optics and Photonics is set to take place in the summer of 2026 in Lisbon. With high anticipation and enthusiasm, we are looking forward to have the pleasure to welcome again our friends and colleagues from all over the world in the capital city of Lisbon for a most exciting productive and enjoyable AOP2026 conference!

Aveiro, October 7, 2024.

Manuel Filipe Costa
Carlos Alberto Ferreira Marques