

13th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2025)

Porto, Portugal
22-24 February 2025

Editors:

**Agostino Iadicicco
Maria Raposo**

**Pablo Albella
Paulo Ribeiro**

ISBN: 979-8-3313-1866-6

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2025) by SCITEPRESS – Science and Technology Publications, Lda.
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact SCITEPRESS – Science and Technology Publications, Lda.
at the address below.

SCITEPRESS – Science and Technology Publications, Lda.
Avenida de S. Francisco Xavier, Lote 7 Cv. C,
2900-616 Setúbal, Portugal

Phone: +351 265 520 185
Fax: +351 265520 186

info@scitepress.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

CONTENTS

INVITED SPEAKERS

KEYNOTE SPEAKERS

Compact Optical Spectroscopy: The Future of Food Analytics in Your Pocket <i>Anna G. Mignani and Leonardo Ciaccheri</i>	5
--	---

Plasmonic Nanomaterials for Ultrafast Nonlinear Optics and Photochemistry <i>Anatoly Zayats</i>	7
--	---

Optical and Electronic Fourier Surfaces <i>David J. Norris</i>	9
---	---

PAPERS

FULL PAPERS

Design and Simulation of a Vertical Waveguide Based Polarization Color Routing Device <i>F. Ali, B. Figeys, O. Shramkova, R. MacCiarnain, X. Rottenberg, R. Gehlhaar and J. Genoe</i>	15
--	----

Evaluation of Resin Molds Change in Design and Polymerization by Using a Wavefront Sensor <i>Kazumasa Tatsumi, Kentaro Saeki, Shin Kubota, Yoshikatsu Kaneda, Kenji Uno, Kazuhiko Ohnuma and Tatsuo Shiina</i>	20
---	----

OCT Image Inspections of Indicator Plant Leaves Under Environmental Stresses <i>Hayate Goto and Tatsuo Shiina</i>	28
--	----

Independent Real and Imaginary Spectral Analysis for Improving the Brillouin Frequency Shift Resolution in the Differential Cross-Spectrum BOTDR (DCS-BOTDR) Fiber Sensor <i>Ain Nabihah Mohammad Rihan, Mohd Saiful Dzulkefly Zan, Yosuke Tanaka, Mohd Hafiz Mokhtar, Norhana Arsal and Ahmad Ashrif A. Bakar</i>	35
---	----

Analysis of the Influence of Atmospheric Turbulence on Laser Wireless Power Transmission <i>Guan Huang, Chao Geng and Xinyang Li</i>	41
---	----

Phase Combining Strategies for Polarization-Independent Demodulation in a DAS Using Homodyne Detection with Delayed Self-Mixing in a Non-Stabilized Mach-Zehnder Interferometer <i>Almaz Demise, Fabrizio Di Pasquale and Yonas Muanenda</i>	49
---	----

SHORT PAPERS

Effect of Phase Mismatch on the Dynamics of Bragg Solitons in a Semilinear Coupled Bragg Grating System with Cubic-Quintic Nonlinearity <i>Etu Podder and Javid Atai</i>	59
---	----

MILI: Biophotonics Technology for In-Situ, Fast, Accurate and Cost-Effective Milk Analysis <i>Panayiota Demosthenous, Maria Aspri, Maria Moyseos and Marios Sergides</i>	64
---	----

Advancing Chloride Ion Detection in Edible Oils: Enhanced Sensitivity with NCQD/Ag Nanotriangles via Localized Surface Plasmon Resonance <i>Muhammad Qayyum Othman, Mohd Hafiz Abu Bakar, Nur Hidayah Azeman, Nadhratun Naiim Mobarak and Ahmad Ashrif A. Bakar</i>	74
--	----

Slice Reconciliation in Continuous-Variable Quantum Key Distribution Using Discrete Modulation <i>Margarida Almeida, Armando N. Pinto and Nuno A. Silva</i>	79
All-Fibre Comb Filter with Narrow Bandwidth Based on a Dual-Pass Mach-Zehnder Interferometer <i>Li Wei</i>	87
Advancing Detector Shielding with Thermo-Optic Defocusing in PMMA Integrated on Silicon Nitride <i>Soon Thor Lim, Thomas Ang, Zifeng Yuan, Thanh Xuan Hoang, Dewen Zhang, Ching Eng Png, Aaron Danner and Gandhi Alagappan</i>	92
Early Dental Caries and Demineralization Measurements by Using Portable OCT Scanner <i>Serioh Okaneya and Tatsuo Shiina</i>	95
Broadband Infrared Imaging for Enhanced Gas Leak Detection <i>Jianzhi Fan, Jing Zhou, Qi Zhao, Dong Luo and Wei Chen</i>	102
Millimeter Wave Imaging Using Up-Conversion Detection Method with Glow Discharge Detector and Photoreceiver Combination <i>Arun Ramachandra Kurup, Daniel Rozban, Amir Abramovich, Yitzhak Yitzhaky and Natan Kopeika</i>	109
Microstructure, Extinction Coefficient, and Chlorophyll Content of Philippine Bamboo Leaves by a Portable TD-OCT Scanner <i>Jumar Cadondon, Edgar Vallar, Maria Cecilia Galvez and Tatsuo Shiina</i>	114
The Role of Self-Focusing During the Laser Microstructuring in the Volume of Fused Silica <i>Anna V. Bogatskaya, Ekaterina A. Volkova and Alexander M. Popov</i>	120
Increasing Power Output of Quantum Cascade Lasers (QCLs) Added with AlAs/InAs Layers Through Bandgap Engineering <i>Shigeyuki Takagi, Hirotaka Tanimura, Tsutomu Kakuno, Rei Hashimoto, Kei Kaneko and Shinji Saito</i>	126
Light Communication Technology: An Enabling Technology for Sustainable Wired and Wireless Solutions <i>D. Chiaroni, S. Leroux, M. Fleschen, B. Berde, F. Abdeldayem, N. Serafimovski, H. Nikol, N. Delaunay, B. Béchadergue, B. Azoulay, S. Cordette, S. Clement, J. Tabu, C. Lepers and H. Haas</i>	133
Improved Viewing Angle and Light Extraction Efficiency of Microcavity OLED with Corrugated Capping Layer <i>Byung Doo Chin, Jeong-Yeol Yoo and Sung Min Jo</i>	142
Simulation and Experimental Validation of a Silicon Photonics Ring Assisted Mach-Zehnder Interferometer Filter <i>Ana Clara Marques, Pedro Cabrita, Maria João Carvalhais, Catarina Novo, Mário Lima, Francisco Rodrigues and António Teixeira</i>	147

SPECIAL SESSION ON ADVANCED OPTICAL MATERIALS AND DEVICES

SHORT PAPERS

- Optical Fiber Probe Based on Localized Surface Plasmon Resonance of Gold Nanostructures for Chemical Sensing 157
Amin Moslemi, Lucia Sansone, Flavio Esposito, Carlos Marques, Stefania Campopiano, Michele Giordano and Agostino Iadicicco

- Comparative Analysis of Mechanically Induced Long Period Gratings Using Different 3D Printed Grooved Structure Shapes 163
Sidrish Zahra, Elena De Vita, Flavio Esposito, Agostino Iadicicco and Stefania Campopiano

SPECIAL SESSION ON SPECTROSCOPY AND SPECTRAL IMAGING

SHORT PAPER

- Microplastic Detection in Lawaye River, San Juan, Batangas City, Philippines Using Front-Face Fluorescence Spectroscopy 173
Jowi Rapha Cruz, Jowi Tsikenu Cruz, Jejomar Bulan, Aubrey Razon, Michaelina Smith and Galvez Maria Cecilia

- AUTHOR INDEX 179