

8th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2020)

Valletta, Malta
27 – 29 February 2020

Editors:

**Pablo Albella
Maria Raposo**

**David Andrews
Paulo Ribeiro**

ISBN: 978-1-7138-4038-1

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© (2020) by SCITEPRESS – Science and Technology Publications, Lda.
All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

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

- Nonlinear, Tunable and Light-Emitting All-Dielectric Metasurfaces
Isabelle Staude 5
- Optical Tweezers on Nanostructures
Onofrio M. Maragò 7
- Infrared Signatures of Interactions between Molecules and Free Charge Carriers in Nanostructures
Annemarie Pucci 9
- Ultrafast Dynamics of Two-dimensional Materials
Giulio Cerullo 11

PAPERS

FULL PAPERS

- Optical Frequency Comb Generated with an Amplitude Modulated Pump in Silicon Nitride Ring-resonators
Jose M. Chavez Boggio, Daniel Bodenmüller, S. A. Ahmed, Adnan M. Baig and Martin M. Roth 17
- Interactions of Gap Solitons in Coupled Bragg Gratings with Cubic-quintic Nonlinearity and Dispersive Reflectivity
Afroja Akter and Javid Atai 22
- Image Reconstruction by the Method of Convex Projections
Tomohiro Aoyagi, Kouichi Ohtsubo and Nobuo Aoyagi 26
- Surface Plasmons Phase Imaging Microscopy using Deep Learning
Suejit Pechprasarn, Suvicha Sasivimolkul, Chayanisa Sukkasem, Phitsini Suvarnaphaet and Nuntachai Thongpance 33
- Effect of Temperature Change on the Performance of Laser Diode at 450 nm for Submarine Optical Communications
Chiara Lodovisi, Silvello Betti, Andrea Reale and Luigi Salamandra 40
- Antimonide-based Superlattice Infrared Barrier Photodetectors
U. Zavala-Moran, R. Alchaar, J. P. Perez, J. B. Rodriguez, M. Bouschet, V. H. Compean, F. de Anda and P. Christol 45
- The Role of Plasma Kinetic Processes during High Intense THz Pulses Generation
A.V. Bogatskaya, N. E. Gnezdovskaia and A. M. Popov 52
- Evaluation of Simulator Incorporating Non-equilibrium Green's Function and Improvement of Quantum Cascade Lasers Output using the Simulator
Shigeyuki Takagi, Hirotaka Tanimura, Tsutomu Kakuno, Rei Hashimoto, Kei Kaneko and Shinji Saito 58
- Microchannels Fabricated by Laser: From the Nanosecond to the Femtosecond Pulse Duration
María Aymerich, Javier R. Vázquez de Aldana, David Canteli, Carlos Molpeceres and M. Teresa Flores-Arias 64

SHORT PAPERS

Optimization of Coupling Efficiency of Fiber Optic Rotary Joint by Ray Tracing <i>Chun-Han Chou, Rou-Jhen Chen, Hsin-Yi Tsai, Kuo-Cheng Huang and Chih-Chung Yang</i>	71
Solitons in a Dual-core System with a Uniform Bragg Grating and a Bragg Grating with Dispersive Reflectivity <i>Bellal Hossain and Javid Atai</i>	76
A Study on Double-sided Optical Focusing Alignment of Transparent Substrate <i>Chia-Lien Ma, Chih-Chung Yang, Yu-Hsuan Lin and Kuo-Cheng Huang</i>	80
A New View on Acousto-optic Laser Beam Combining <i>Konstantin Yushkov and Vladimir Molchanov</i>	86
Photoinactivation of Methicillin-Resistant <i>S. Aureus</i> Biofilm using a New Chlorin as Photosensitizer <i>L. S. Amaral, I. A. P. Linares and J. R. Perussi</i>	92
High Speed Measurement in Spectral Drill using Q-plate and Camera <i>Seigo Ohno, Katsuhiko Miyamoto, Shin'ichiro Hayashi and Norihiko Sekine</i>	97
Registration Method of 3-D Laser Point Cloud Data of Snow Field <i>Haiyang Zhang, Siqi Chen, Zilong Zhang and Changming Zhao</i>	100
Characterization Procedure of the Flight Laser Modules for the ExoMars Raman Laser Spectrometer <i>Marina Benito-Parejo, Pablo Rodríguez-Pérez, Ángel Marín, José A. Rodríguez-Prieto, Rosario Canchal, Andoni Moral and Fernando Rull</i>	107
Fabrication of Micro Spiral Phase Plates in Fused Silica using F2-Laser Microstructuring <i>Sebastian Buettner, Michael Pfeifer and Steffen Weissmantel</i>	114
Transmission of PAM4 Signals in ICXT-impaired Intra-datacenter Connections with PAM2 Signal Interference <i>Inês C. Jorge, João L. Rebola and Adolfo V. T. Cartaxo</i>	122
Raman Spectroscopy for Tumor Diagnosis in Mammary Tissue <i>S. Pimenta, M. J. Maciel, A. Miranda, M. F. Cerqueira, P. Alpuim and J. H. Correia</i>	131
Elements of Hybrid Opto-superconducting Convolutional Neural Networks <i>A. E. Schegolev, N. V. Klenov, M. V. Tereshonok and S. S. Adjemov</i>	135
Influence of Sampling Point Setting on Fitting Error of Ideal Gaussian Beam <i>Yan Baozhu, Liu Wenguang, Zhou Qiong, Sun Quan and Yang Yi</i>	140
Dielectric Relaxation and Photo-electromotive Force in Ge-Sb-Te/Si Structures <i>R. A. Castro-Arata, M. A. Goryaev, A. A. Kononov, Y. Saito, P. Fons, J. Tominaga, N. I. Anisimova and A. V. Kolobov</i>	146
Solution Concentration and Temperature Measurements by Long-path Optical Coherence Tomography <i>Tatsuo Shiina</i>	151
Cascaded Tunable Optical Delay Line based on a Racetrack Resonator with Tunable Coupling and Stable Wavelength <i>Solomon Getachew Hailu and San-Liang Lee</i>	157
Homogeneous Light Source for Surface Plasmon Resonance Imaging <i>Peter Hausler, Simon Jobst, Johannes Fischer, Carina Roth and Rudolf Bierl</i>	163

A High Stroke Actuator Micro-mirror Array Designed for Adaptive Optics <i>Quan Sun, Baozhu Yan and Yi Yang</i>	168
Vertical Optical Waveguide Comprising Square Base Cuboid Cores with Size Modulation for Multilayer Chip-to-Chip Interconnection <i>Songpin Ran, Takaaki Kakitsuka and Kiyoto Takahata</i>	174
Analysis of Surface Plasmon-Polariton Modes with Metallic Structures and Polarized Light across Gapped Plasmonic Waveguides <i>Guhwan Kim, Sung-Ryoung Koo and Myung-Hyun Lee</i>	180
Development of Hybrid Solar Cells based on TiO ₂ or ZnO- Graphene Oxide Heterojunctions <i>D. Carreira, P. A. Ribeiro, M. Raposo and S. Sério</i>	185
Optimization of Graphene Oxide Layer-by-Layer Films to Be Used as an Enhancer Coating of Optical Fibers Sensors <i>Carlota Xavier, Paulo Zagalo, Paulo A. Ribeiro and Maria Raposo</i>	192
SPECIAL SESSION ON BIOMEDICAL OPTICS	
FULL PAPER	
Optimization of a Cold Atmospheric Plasma Treatment to Selectively Affect the Viability of Skin Cancer Cells <i>Sara Pereira, Paulo António Ribeiro and Susana Sério</i>	201
AUTHOR INDEX	209