

2022 Italian Conference on Optics and Photonics (ICOP 2022)

**Trento, Italy
15-17 June 2022**



**IEEE Catalog Number: CFP22W76-POD
ISBN: 978-1-6654-8882-2**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22W76-POD
ISBN (Print-On-Demand):	978-1-6654-8882-2
ISBN (Online):	978-1-6654-8881-5

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
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Deep Learning Regression Vs. Classification for QoT Estimation in SMF and FMF Links.....	1
<i>M. A. Amirabadi, M. H. Kahaei, S. A. Nezamalhoseini, A. Carena</i>	
A Machine Learning Approach to the Classification of Chemo-Structural Determinants in Label-Free SERS Detection of Proteins.....	4
<i>Andrea Barucci, Cristiano D'Andrea, Edoardo Farnesi, Martina Banchelli, Chiara Amicucci, Marella De Angelis, Chiara Marzi, Roberto Pini, Byungil Hwang, Paolo Matteini</i>	
On-Chip Wireless Interconnection Through Reconfigurable Optical Phased Arrays	8
<i>Loredana Gabriele, Gaetano Bellanca, Jacopo Nanni, Marina Barbiroli, Franco Fuschini, Giovanni Serafino, Davide Bertozzi, Velio Tralli, Vincenzo Petruzzelli, Giovanna Calò</i>	
UV-C LED Sources Design and Characterization.....	12
<i>Sarah Bollanti, Giorgio Di Giorgio, Paolo Di Lazzaro, Ivan Di Piazza, Francesco Flora, Gian Piero Gallerano, Emilio Giovenale, Luca Mezi, Daniele Murra</i>	
Evaluation of Strain Sensing Cables for Brillouin Optical Time Domain Analysis Through Swept Wavelength Interferometry.....	16
<i>Filippo Bastianini, Francesco Falcetelli, Pawel Bochenski, Leonardo Rossi, Raffaella Di Sante, Gabriele Bolognini</i>	
Linewidth Narrowing and Stabilization from a Short Cavity Ring Laser Source Design for Fibre Sensor Applications.....	20
<i>Leonardo Rossi, Filippo Bastianini, Gabriele Bolognini</i>	
Gold Nanorods for Paper-Based Genetic Assays	24
<i>Claudia Borri, Sonia Centi, Sofia Chioccioli, Patrizia Bogani, Filippo Micheletti, Marco Gai, Paolo Grandi, Serena Laschi, Francesco Tona, Andrea Barucci, Nicola Zoppetti, Roberto Pini, Fulvio Ratto</i>	
SERS Detection of Polycyclic Aromatic Hydrocarbons using Coral-Like Nanostructured Ag-Films.....	28
<i>Angela Capaccio, Antonio Sasso, Giulia Rusciano</i>	
Leveraging Lithium Niobate on Insulator Technology for Photonic Analog Computing	32
<i>Lorenzo De Marinis, Emilio Paolini, Giampiero Contestabile, Nicola Andriolli</i>	
Optical Nanocavity Enabling Hyper Resolution in 2D and 3D Two Photon Direct Writing Lithography Towards Flat Metalens.....	36
<i>Giuseppe Emanuele Lio, Antonio Ferraro, Tiziana Ritacco, Dante Maria Aceti, Antonio De Luca, Michele Giocondo, Roberto Caputo</i>	
High Efficient Plasmonic Nano Heaters.....	40
<i>Antonio Ferraro, Giuseppe Emanuele Lio, Abdelhamid Hmina, Giovanna Palermo, Joseph Marae Djouda, Thomas Maurer, Roberto Caputo</i>	
A Microstructured Fiber for Streptavidin Detection.....	43
<i>Foroogh Khozaymeh, Federico Melli, Sabrina Capodaglio, Roberto Corradini, Fetah Benabid, Luca Vincetti, Annamaria Cucinotta</i>	
Analysis of a Silicon Subwavelength Grating Ring Resonator as a Refractometric Sensor.....	46
<i>Foroogh Khozaymeh, Federica Poli, Mohammad Razaghi</i>	

Innovative Optical System for Online Monitoring Sag, Rotation and Ice Accretion in HV Lines.....	49
<i>Daniele Bartalesi, Elena Golinelli, Gian Mario Ogliari</i>	
Photonic Circuits Monolithically Integrated with Silicon Photodiodes.....	52
<i>Martino Bernard, Mher Ghulinyan, Fabio Acerbi</i>	
Optimization of 50G-PON APD-Based Receivers.....	57
<i>Leonardo Minelli, Ahmed Abdellatif, Roberto Gaudino</i>	
End-To-End Deep Learning for VCSEL's Nonlinear Digital Pre-Distortion.....	61
<i>Leonardo Minelli, Fabrizio Forghieri, Roberto Gaudino</i>	
Fiber-Based Microwave Interferometer Monitoring the Delay of Fiber-Optic Antenna Downlinks in Radioastronomic Scenarios	65
<i>Jacopo Nanni, Enrico Lenzi, Federico Perini, Jader Monari, Giovanni Tartarini</i>	
Exploitability of Butt-Coupling Between Single Mode/Multi Mode VCSEL and G.652 SSMF for Future Green Radio-Over-Fiber Infrastructures	69
<i>Jacopo Nanni, Giada Saderi, Gaetano Bellanca, Gianni Bosi, Antonio Raffo, Valeria Vadalà, Pierluigi Debernardi, Jean-Luc Polleux, Giovanni Tartarini</i>	
Deep Learning-Based Phase Retrieval Scheme for Minimum Phase Signal Recovery.....	73
<i>Daniele Orsuti, Cristian Antonelli, Alessandro Chiuso, Marco Santagiustina, Antonio Mecozzi, Andrea Galtarossa, Luca Palmieri</i>	
Optical Bench for Multi-Lane High-Rate Transceiver Testing	77
<i>Maurizio Valvo, Efstathios Andrianopoulos, Panos Groumas, Roberto Mercinelli, Annachiara Pagano, Hercules Avramopoulos</i>	
Applicability of a New Generation of Photonic Devices in Backbone Network Scenarios	81
<i>Marco Quagliotti, Anna Chiadò Piat, Roberto Morro, Annachiara Pagano</i>	
MMF-Based Data Center Interconnect using Commercial Coherent Transceivers.....	85
<i>Giuseppe Rizzelli, Fabrizio Forghieri, Roberto Gaudino</i>	
Novel Generation Schemes for Stable Soliton States in Optical Microcavities	89
<i>Francesco Rinaldo Talenti, Tobias Hansson, Stefan Wabnitz</i>	
Terabit Direct-Detection Optical Engines and Switching Circuits in Multi-Chip Modules for Data- Center Networks and the 5G Optical Fronthaul	93
<i>Efstathios Andrianopoulos, Maria Massaouti, Panos Groumas, Anna Chiadò Piat, Annachiara Pagano, Marijn Verbeke, Christos Kouloumentas, Ronald Dekker, Zerihun Tegegne, Martin Kresse, Paraskevas Bakopoulos, Hercules Avramopoulos</i>	
Light at Work at Nanoscale: Tip-Enhanced Raman Spectroscopy.....	97
<i>Giulia Rusciano, Angela Capaccio, Antonio Sasso</i>	
The Influence of Photoinitiator Concentration on the Two-Photon Polymerization Threshold of Pentaerythritol Triacrylate (PETIA) Monomer	101
<i>Seyyedhossein McKee, Adrian H. A. Lutey, Corrado Sciancalepore, Federica Poli, Stefano Selleri, Annamaria Cucinotta</i>	

Author Index