

2021 Photonics North (PN 2021)

Toronto, Ontario, Canada
31 May – 2 June 2021



IEEE Catalog Number: CFP2109V-POD
ISBN: 978-1-6654-4484-2

**Copyright © 2021 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:	CFP2109V-POD
ISBN (Print-On-Demand):	978-1-6654-4484-2
ISBN (Online):	978-1-6654-4483-5
ISSN:	2693-8324

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

TIMING PHASE RECOVERY IN DIGITAL MULTI-SUBCARRIER COHERENT OPTICAL COMMUNICATION	1
<i>Md Samiul Alam, Ahmad Abdo, Deng Mao, Mahdi Parvizi, Naim Ben-Hamida, David V. Plant</i>	
IN SITU REAL TIME MEASUREMENT OF SOLIDS CONTENT USING HYBRID OPTICAL AND GAMMA-RAY TECHNIQUES FOR TAILINGS MANAGEMENT	2
<i>J. Zhang, T. Srivastava, B. Yu, T. K. Sraw, A. Feng, W. Wang, X. Liu, C. Kaur, D. Sweeney, J. Pan, S. Patel, M. Z. Islam, R. Fedosejevs, M. Gupta, Y. Y. Tsui, A. Sedgwick, A. Junaid</i>	
AN EXTREMELY EFFICIENT AND COMPACT LONG-WAVELENGTH CUT-OFF PLASMONIC FILTER BASED ON STEPPED IMPEDANCE RESONATORS	3
<i>Seyed Morteza Ebadi, Jonas Örtengren</i>	
DESIGNING A WAVELENGTH-SWEPT RAMAN SPECTROSCOPY SYSTEM FOR OPTICAL GUIDANCE NEUROSURGERY	4
<i>Elahe Parham, Daniel C. Côté</i>	
DEVELOPMENT OF PARABOLIC LUMINESCENT SOLAR CONCENTRATORS BY 3D PRINTING	5
<i>Arash Nikniazi, Jean-Michel Nunzi</i>	
BREAKING THE SYMMETRY TO STRUCTURE LIGHT	6
<i>Svetlana N. Khonina, Ilya Golub</i>	
WHEN MATHEMATICAL MODEL OF DIGITAL IMAGE SENSOR CAN BE NOT CORRECT: A METHODOLOGICAL CONSIDERATION.....	7
<i>Konstantin A. Grebenyuk</i>	
VALLEY-SELECTIVE DIRECTIONAL EMISSION ENABLED BY A PLASMONIC NANOANTENNA	8
<i>Tobias Bucher, Mostafa Abasifard, Isabelle Staude, Emad Najafidehaghani, Antony George, Andrey Turchanin, Thomas Pertsch, Jingshi Yan, Haitao Chen, Khosro Zangeneh Kamali, Mohsen Rahmani, Dragomir Neshev</i>	
CONVOLUTION NEURAL NETWORK FOR 4-COLOR SHIFT KEYING MODULATION OVER AN OPTICAL CAMERA COMMUNICATION SYSTEM	9
<i>Yidan Luo, Songrui Zhao</i>	
FIELD CALCULATION OF GAUSSIAN BEAMS USING SKEW RAYS IN PRESENCE OF ABERRATIONS	10
<i>Paul D. Colbourne, Shafayat Shawqi</i>	
QUANTUM CONTROL OF DECOHERENCE IN SOLID STATE EMITTERS USING FEMTOSECOND PULSE SHAPING	11
<i>K. C. Hall, A. Ramachandran, G. R. Wilbur, S. O'Neal, D. G. Deppe</i>	
SINGLE-PIXEL STRUCTURED LIGHT PROFILOMETRY	12
<i>Patrick Kilcullen, Cheng Jiang, Tsuneyuki Ozaki, Jinyang Liang</i>	

FIELD-DRIVEN ELECTRON PHOTOEMISSION VIA 3D-PRINTED TERAHERTZ RESONANT VERTICAL NANOSTRUCTURES	13
<i>Andrea Rovere, Riccardo Piccoli, Andrea Bertoncini, Young-Gyun Jeong, Stéphane Payeur, François Vidal, O-Pil Kwon, Seung-Heon Lee, Jin-Hong Seok, Roberto Morandotti, Carlo Liberale, Luca Razzari</i>	
PHOTONIC NEURAL NETWORKS APPLICATIONS	14
<i>B. J. Shastri, C. Huang, A. N. Tait, T. Ferreira De Lima, P. R. Prucnal</i>	
LEVERAGING MILLION-SCALE NON VON NEUMANN COMPUTATIONS FOR ACCELERATED MACHINE LEARNING AND HIGH PERFORMANCE COMPUTING	15
<i>Laurent Daudet</i>	
NOVEL STEADY-STATE LIGHT-MATTER PHASE: SPONTANEOUS SYMMETRY BREAKING VIA FORMATION OF AN ASYMMETRIC NONLINEAR SELF-CONSISTENT GRATING IN A LOW-Q CW SUPERRADIANT LASER WITH SYMMETRIC FABRY-PEROT CAVITY	16
<i>Vitaly Kocharovskiy, Vladimir Kocharovskiy, Ekaterina Kocharovskaya, Alexey Mishin</i>	
SATURABLE ABSORPTION IN ERBIUM-DOPED FIBER AND OPTICAL BISTABILITY IN ERBIUM-DOPED FIBER RING LASER	17
<i>Deeksha Jachpure, R. Vijaya</i>	
MULTI-CHANNEL WAVEGUIDES INDUCED BY BESSEL BEAMS IN A PHOTOREFRACTIVE MEDIUM.....	18
<i>Yue Chai, Nicolas Marsal, Delphine Wolfersberger</i>	
TERAHERTZ METALLIC METASURFACES PROTOTYPING USING HOT STAMPING	19
<i>Hichem Guerboukha, Yasith Amarasinghe, Rabi Shrestha, Angela Pizzuto, Daniel M. Mittleman</i>	
COMPARISON OF TWO RARE EARTH DOPING TECHNIQUES FOR LUMINESCENT EUROPIUM DOPED SILICON OXIDE.....	20
<i>Rashin Basiri Namin, Felipe Chibante, Peter Mascher, Zahra Khatami</i>	
IQ SKEW TOLERANCE STUDY OF MODIFIED WIDELY LINEAR FILTER IN 400 GBPS PM-16QAM SYSTEM.....	21
<i>Lakshmi Narayanan Venktasubramani, Rekha Yadav, R. David Koilpillai, Deepa Venkitesh</i>	
TRANSIENT STIMULATED RAMAN CHIRPED-PULSE AMPLIFICATION (TSRCPA) AS AN ALTERNATIVE OR COMPLEMENTARY TO OPCPA	22
<i>Aleksej M. Rodin, Paulius Mackonis, Augustinas Petrukenas</i>	
YB:LUAP CRYSTAL FOR ULTRAFAST LASERS	23
<i>Alexander Rudenkov, Viktor Kisel, Anatol Yasukevich, Nikolay Kuleshov, Karine Hovhannesyanyan, Ashot Petrosyan</i>	
DEFECT SATURATION WITH CARRIERS IN GAN/INGAN LEDS: A POTENTIAL PHENOMENON TO CONFRONT THE GREEN GAP.....	24
<i>Dhiman Nag, Apurba Laha</i>	
STUDY ON THE STABILITY OF 561 NM DIODE-PUMPED SOLID STATE LASERS.....	25
<i>Tyler Kashak, Bin Zhang, Qianli Ma, Chang-Qing Xu, Stewart Clark, Meenu Kajal</i>	
MISALIGNMENT-TOLERANT ULTRA-BROADBAND EDGE COUPLER BASED ON 10 INVERSE TAPERS	26
<i>Essam Berikaa, Santiago Bernal, Yannick D'Mello, Deng Mao, David V. Plant</i>	

A COMPACT SOI MULTIMODE OPTICAL ROUTER.....	27
<i>Dana S. Akil, Muhammad A. Othman, Mohamed A. Swillam</i>	
SILICON PHOTONIC CRYSTAL MEMBRANE BASED OPTOMECHANICS	28
<i>Jayshri Sabarinathan</i>	
DOUBLE RESONANCE AND COHERENT PARAMETRIC SELF-MODE-LOCKING IN CW SUPERRADIANT LASING	29
<i>Vladimir Kocharovsky, Ekaterina Kocharovskaya, Alexey Mishin, Alexey Seleznev, Vitaly Kocharovsky</i>	
DESIGN OF AN OPTICAL TRANSFER FUNCTION CLASSIFIER BASED ON MACHINE LEARNING AND DEEP LEARNING FOR OPTICAL SCANNING HOLOGRAPHY	30
<i>Meril Cyriac, M. K. Sheeja</i>	
210 NM EMITTING LEDS EXPLOITING COMPOSITIONAL FLUCTUATIONS IN ALGAN NANOWIRES	31
<i>Qihua Zhang, Songrui Zhao</i>	
VISUALIZATION OF POTATO STARCH CHIRALITY WITH POLARIZATION SECOND HARMONIC GENERATION MICROSCOPY	32
<i>Richard Cisek, Danielle Tokarz</i>	
HIGH-SPEED BAND-LIMITED ILLUMINATION PROFILOMETRY	33
<i>Cheng Jiang, Patrick Kilcullen, Xianglei Liu, Yingming Lai, Tsuneyuki Ozaki, Jinyang Liang</i>	
END-TO-END POLARIZATION ERROR ANALYSIS OF A TERRESTRIAL FREE-SPACE QUANTUM COMMUNICATION LINK	34
<i>Natasa Pavlovic Tucakovic, Uday Chandrashekar, Andrej Krzic, Fabian Steinlechner</i>	
THERMAL LENSING IN A MICROCHIP ND:YAG LASER.....	35
<i>R. C. Talukder, A. Major</i>	
DUAL-WAVELENGTH ND:YVO LASER.....	36
<i>R. Akbari, A. Major</i>	
SPECTRAL BROADENING OF ULTRASHORT PULSES BY NONLINEAR OPTICAL EFFECTS IN PHOTONIC CRYSTAL FIBER.....	37
<i>Macaulay Harvey, Richard Cisek, Danielle Tokarz</i>	
MULTI-WAVELENGTH CONICAL REFRACTION LASER	38
<i>R. Akbari, X. Xu, J. Xu, K. A. Fedorova, G. S. Sokolovskii, E. U. Rafailov, A. Major</i>	
ULTRAFAST LASER-INDUCED PRECIPITATION AND RESHAPING OF SILVER NANOPARTICLES IN PHOSPHATE GLASS	39
<i>G. Yu. Shakhgildyan, A. S. Lipatiev, S. S. Fedotov, M. P. Vetchinnikov, S. V. Lotarev, V. N. Sigaev</i>	
POWERFUL AND INTENSE TERAHERTZ SOURCE USING LITHIUM NIOBATE PUMPED BY SUB-MILLIJOULE YTTERBIUM LASER	41
<i>L. Guiramand, J. E. Nkeck, X. Ropagnol, T. Ozaki, François Blanchard</i>	
LINEARITY OPTIMIZATION MODELLING AND ANALYSIS OF MULTI-OCTAVE ANALOG PHOTONIC LINKS	42
<i>Wuying Wang, Yangyu Fan, Yongsheng Gao</i>	

CABRERA-MOTT PROCESS APPLIED TO OLED DEVICES	43
<i>Fanomezantsoa L. M. Ratsimbazafy, Serge Gauvin</i>	
DETERMINING THE CARRIER DECAY KINETICS IN QCSE-EXHIBITING MATERIALS: AN ACCURATE INTERPRETATION OF TRANSIENT ABSORPTION SPECTROSCOPY DATA.....	44
<i>Ankit Udai, Tarni Aggarwal, Vikas Pendem, Swaroop Ganguly, Dipankar Saha</i>	
SOLITON SELF-FREQUENCY SHIFT OF HIGH-ORDER.....	45
<i>Robi Kormokar, Md Hosne Mobarok Shamim, Martin Rochette</i>	
ALGAN DEEP ULTRAVIOLET LASERS AT 287 NM BY MOLECULAR BEAM EPITAXY	46
<i>Xue Yin, Songrui Zhao</i>	
MICROWAVE RESONANCES IN AQUEOUS MONOMER AND DIMERS	47
<i>Miao Hu, Aaron D. Slepkov</i>	
PHOTONICS MADE TO ORDER: REVERSE MICELLE TEMPLATING AS A UNIVERSAL APPROACH TO FUNCTIONAL NANOPARTICLES	48
<i>Muhammad Munir, Ramis Arbi, Pedro Oliveria, Lok Shu Hui, Matt Bumstead, Greg Hanta, Kunyu Liang, Amr Ibrahim, Hyeonghwa Yu, Ayse Turak</i>	
NUMERICAL SIMULATION OF LASER GENERATED PHOTOACOUSTIC ULTRASOUND USING COMSOL MULTIPHYSICS	50
<i>Mahta Nazemi, Sivakumar Narayanswamy</i>	
LIGHT EXTRACTION EFFICIENCY OF 225 NM EMITTING ALGAN NANOWIRE LEDS WITH A HONEYCOMB LATTICE.....	51
<i>Jiaying Lu, Mohammad Fazel Vafadar, Songrui Zhao</i>	
QUANTUM-ENHANCED ELECTRO-OPTIC SAMPLING	52
<i>Patrick Cusson, Stéphane Virally, Denis V. Seletskiy</i>	
PHOTONIC WIRELESS LINKS FOR 5G BROADBAND ACCESS NETWORKS	53
<i>Khan Zeb, Zhenguo Lu, Jiaren Liu, Youxin Mao, Mohamed Rahim, Philip J. Poole, Pedro Barrios, Guocheng Liu, Grzegorz Pakulski, Weihong Jiang, Martin Vachon, Xiupu Zhang</i>	
SPECKLED ILLUMINATION HILO MICROSCOPY FOR FAST CALCIUM IMAGING OF ZEBRAFISH BRAIN.....	54
<i>Valérie Pineau Noël, Maxence Larose, Quentin Perry-Auger, Paul De Koninck, Daniel C. Côté</i>	
MEMS ENABLED ASYMMETRIC SLAB WAVEGUIDE FOR CONTINUOUSLY TUNABLE FILTER	55
<i>Mohammadreza FasihaniFard, Pierre Pottier, Muthukumaran Packirisamy</i>	
HIGH-SPEED VISIBLE LIGHT COMMUNICATION SYSTEM BASED ON SUPERLUMINESCENT DIODES (SLDS).....	56
<i>Chao Shen, Junhui Hu, Dong Li, Chicheng Ma, Chenyang Wu, Fangchen Hu, Yuqi Hou, Nan Chi</i>	
EXPERIMENTAL RESULTS FOR SDM COMMUNICATION SYSTEM USING PRISM BASED DE-MULTIPLEXER.....	57
<i>Syed Murshid, Swaroopini Harish, Ce Su</i>	

GENERATION OF SUB-HALF-CYCLE MID-INFRARED PULSES THROUGH FILAMENTATION	58
<i>Takao Fuji</i>	
CONTROL OF FOCUSED LASER BEAMS WITH DIFFERENT SPATIAL POLARIZATION.....	59
<i>Andrey Degtyarev, Mykola Dubinin, Oleg Gurin, Vyacheslav Maslov, Konstantin Muntean, Valery Ryabyh, Vladislav Senyuta</i>	
1020 NM PULSED FIBER LASER FOR HIGH EFFICIENCY SECOND HARMONIC GENERATION	60
<i>Pin Long, Qammar Goher, Maria I. Comanici, Lawrence R. Chen, M. R. Soltanian</i>	
METHODS FOR MEASURING THE POWER OF DFG-BASED MIR.....	61
<i>Xinyang Su, Yi Zheng</i>	
HIGHLY DIRECTIONAL ANTENNAS FOR TERAHERTZ COMMUNICATIONS.....	62
<i>Rabi Shrestha, Hichem Guerboukha, Joshua Neronha, Olivia Ryan, Malachi Hornbuckle, Zhaoji Fang, Daniel M. Mittleman</i>	
HYBRID QUANTUM PHOTONIC INTEGRATED CIRCUITS	63
<i>Edith Yeung, David B. Northeast, Patrick Laferrière, Khaled Mnaymneh, Robin L. Williams, Philip J. Poole, Dan Dalacu</i>	
50 GB/S DUAL POLARIZATION 32QAM-MULTICAP DOWNSTREAM TRANSMISSION USING 10G HETERODYNE RECEPTION WITH DSP BASED POLDEMUX.....	64
<i>Miguel Barrio, David Izquierdo, Ignacio Garces</i>	
DESIGN OF AN ALL REFLECTIVE LINEAR K-SPACE SPECTROMETER.....	65
<i>Sevin Samadi, Sivakumar Narayanswamy, Javad Dargahi, Masoud Mohazzab</i>	
SPIN-ORBIT INTERACTIONS OF LIGHT IN PHOTONIC MATERIALS	66
<i>Graciana Puentes</i>	
PLASMONIC NANOSENSORS FOR FOOD MYCOTOXIN SCREENING: DEVELOPING SAFETY ASSAYS FOR TOXIN DETECTION AND CONTROL IN GRAINS AND CEREALS.....	68
<i>Betty C. Galarreta, Yulán Hernández, Lorena Veliz, Mary Licuona, Sara Cordova, Angeline S. Saldaña</i>	
QUANTIFYING LOSS MECHANISMS IN INGAASP/INP QUANTUM DASH AND QUANTUM WELL LASERS.....	69
<i>Sebastian Schaefer, Ras-Jeevan K. Obhi, Christopher E. Valdivia, Karin Hinzer, Philip J. Poole, Jiaren Liu, Zhenguo Lu</i>	
PHASE-STABLE GENERATION OF POLARIZATION-ENTANGLED PHOTON TRIPLETS BY CASCADED DOWN CONVERSION	70
<i>Zachary M. E. Chaisson, Patrick F. Poitras, Deny R. Hamel</i>	
CARRIER DE-TRAPPING FROM THE SUB-BANDGAP STATES: A NOVEL MECHANISM IN INGAN/GAN SYSTEMS MANIFESTED BY ULTRAFAST PUMP-PROBE SPECTROSCOPY.....	71
<i>Tarni Aggarwal, Swaroop Ganguly, Dipankar Saha</i>	
SUPERCONTINUUM ENHANCEMENT IN DISPERSION-VARYING CHALCOGENIDE TAPER	72
<i>Imtiaz Alamgir, Md Hosne Mobarok Shamim, Wagner Correr, Younès Messaddeq, Martin Rochette</i>	

GENERATION OF DENSELY-SPACED TIME-BIN ENTANGLED QUBITS ON A CHIP.....	73
<i>Mario Chemnitz, Stefania Sciara, Bennet Fischer, Benjamin Crockett, Piotr Roztocki, Hao Yu, Zhiming Wang, Roberto Morandotti, Brent E. Little, Sai T. Chu, David J. Moss</i>	
30 GHZ MMW GENERATION AND QPSK TRANSMISSION EMPLOYING L-BAND QUANTUM-DASH LASER.....	74
<i>Q. Tareq, A. Ragheb, M. Esmail, S. Alshebeili, M. Z. M. Khan</i>	
POLARIZATION-SENSITIVE OPTICAL COHERENCE TOMOGRAPHY FOR TISSUE IMAGING	75
<i>Shuo Tang, Xin Zhou</i>	
ASTROPHOTONIC ABSORPTION CORRELATION SPECTROSCOPY USING SILICON MICRORING RESONATORS	76
<i>Ross Cheriton, Erin Tonita, Adam Densmore, Mohsen Kamandar Dezfouli, Dan-Xia Xu, Jens H. Schmid, Pavel Cheben, Siegfried Janz, Suresh Sivanandam, Ernst De Mooij</i>	
TEMPERATURE-DEPENDENT PHOTOLUMINESCENCE OF A DOT-IN-A-ROD NANOWIRE EMITTING AT 1310NM	77
<i>M. Dhouibi, S. Haffouz, J. Jin, L. Giner, K. Mnaymneh, P. J. Poole, D. Dalacu, A. Kalboussi, R. L. Williams</i>	
WRINKLED FILM OPTICS: FROM INFRARED ELECTROMAGNETIC HOTSPOTS TO PLASMON-ENHANCED ELECTROCHEMISTRY	78
<i>S. Shayan Mousavi M, Sudip Saha, Isobel C. Bicket, Scott Rosendahl, Stuart Read, Leyla Soleymani, Gianluigi A. Botton</i>	
DEEP ULTRAVIOLET LIGHT EMISSION FROM ALGAN NANOWIRES WITH GRAPHENE ELECTRODE.....	79
<i>Heemal Parimoo, Jiaying Lu, Songrui Zhao</i>	
PERSPECTIVES OF PARAMETRIC GENERATION OF COHERENT XUV RADIATION AT ELI BEAMLINES FACILITY	80
<i>O. Hort, M. Jurkovic, J. Nejd, V. Strelkov</i>	
NEUROSURGICAL GUIDANCE WITH DIFFUSE REFLECTANCE SPECTROSCOPY	81
<i>Pegah Eslami, Damon Depaoli, Laurent Goetz, Martin Parent, Daniel Côté</i>	
FABRICATION AND CHARACTERIZATION OF A TERAHERTZ POLARIZER FROM A ROLL-TO-ROLL PRINTER.....	82
<i>M. Mansourian, M. Zhuldybina, X. Ropagnol, N. D. Trinh, C. Bois, F. Blanchard</i>	
APODIZED PI-PSFBG SENSOR IN STRUCTURAL HEALTH MONITORING	83
<i>Farinaz Kouhrangiha, Mojtaba Kahrizi, Khashayar Khorasani</i>	
ENDOSCOPIC OPTICAL COHERENCE TOMOGRAPHY AND AUTOFLUORESCENCE IMAGING OF THE ENDOCERVICAL CANAL FOR CERVICAL CANCER DETECTION	84
<i>Jeanie Malone, Sylvia Lam, Andrea Louise Buenconsejo, Geoffrey Hohert, Jessica N. McAlpine, Dianne M. Miller, Murette Lee, Pierre Lane, Calum Macaulay</i>	
THZ NEAR-FIELD CHARACTERIZATION OF PRINTED ELECTRONICS V-SHAPE ANTENNAS	85
<i>M. Zhuldybina, L.-P. Béliveau, C. Trudeau, T. Arikawa, F. Blanchard, K. Tanaka</i>	

STATIC CHARACTERISTICS OF INAS/INP BURIED HETEROSTRUCTURE QUANTUM DASH MODE-LOCKED LASERS	86
<i>Guocheng Liu, Zhenguo Lu, Jiaren Liu, Youxin Mao, Khan Zeb, Martin Vachon, Philip J. Poole, Pedro Barrios, Mohamed Rahim, Grzegorz Pakulski, Weihong Jiang</i>	
LOW-COST ANTIREFLECTION COATINGS FOR TERAHERTZ LIGHT EMPLOYING MULTILAYERED POLYMER FILMS AND ADHESIVES	87
<i>Akif Ahmed, Aimé Braconnier, Josh Gibbs, Jacob A. J. Burgess</i>	
MOLECULAR BEAM EPITAXY GROWTH AND CHARACTERIZATION OF ALGAN EPILAYER IN THE NITROGEN-RICH CONDITION ON SI SUBSTRATE.....	88
<i>Qihua Zhang, Xue Yin, Songrui Zhao</i>	
MODELING THE NONLINEAR OPTICAL RESPONSE OF INDIUM TIN OXIDE	89
<i>J. Baxter, A. Calà Lesina, I. De Leon, L. Ramunno</i>	
EMERGENCE OF BIASED ERRORS IN IMPERFECT PHOTONIC CIRCUITS.....	90
<i>Fulvio Flamini</i>	
ULTRABROADBAND RECONSTRUCTION OF THE REFRACTIVE INDEX OF NONLINEAR SOFT GLASSES FROM TERAHERTZ TO INFRARED FREQUENCIES	91
<i>Adam Pacewicz, Jaroslaw Cimek, Bartłomiej Salski, Michal Walczakowski, Ryszard Buczynski</i>	
STUDY OF THE ABSORPTION SPECTRUM IN MID-IR RANGE USING CONCENTRIC TUBES METAMATERIAL STRUCTURES	92
<i>Mahmoud A. A. Abouelatta, Muhammad A. Othman, Mai Desouky, Ahmed M. Mahmoud, Mohamed A. Swillam</i>	
DESIGN OF A LINEAR K-SPACE SPECTROMETER WITH GRISM FOR LINE SCANNING OPTICAL COHERENCE TOMOGRAPHY	93
<i>Sevin Samadi, Sivakumar Narayanswamy, Javad Dargahi, Masoud Mohazzab</i>	
SPECTRAL BROADENING OF SUB- μ J YTTERBIUM LASER PULSES IN CADMIUM SULFIDE CRYSTAL WITH SUBSEQUENT FILTERING BY FREQUENCY DOUBLING.....	94
<i>Joel Edouard Nneck, Léo Guiramand, Xavier Ropagnol, François Blanchard</i>	
THZ ULTRA-NARROW RESONANCE METASURFACE BASED ON INSB METAMOLECULES.....	95
<i>Sina Aghili, Aydin Amini, Ksenia Dolgaleva</i>	
PHOTON IN CURVED SPACE-TIME GEOMETRY AND COMMUNICATION NEAR THE EARTH.....	96
<i>Qasem Exirifard, Ebrahim Karimi</i>	
LSPR-BASED BIOSENSOR FOR DENGUE VIRUS DETECTION.....	97
<i>Felipe M. F. Teixeira, Gabriel L. Machado, Gabriel S. C. Ferreira, Alice F. Versiani, Lidia M. Andrade, Flavio G. Da Fonseca, Jhonattan C. Ramirez</i>	
FEMTOSECOND LASER-ASSISTED WET ETCHING OF ND:Y AG CRYSTALS FOR PHOTONICS WAVEGUIDE FABRICATION.....	98
<i>Tatiana O. Lipateva, Andrey G. Okhrimchuk, Alexey S. Lipatiev, Sergey V. Lotarev, Vladimir N. Sigaev</i>	
ORBITAL ANGULAR MOMENTUM SPATIAL DIVISION MULTIPLEXING.....	99
<i>Ahmad Atieh</i>	

CONTINUOUS-WAVE DIODE-PUMPED YB:LLF LASER.....	100
<i>R. Akbari, A. Major</i>	
TRACKING 3D MOVEMENTS OF ZEBRAFISH WITH DISPERSION-ELIMINATED CODED- APERTURE LIGHT FIELD IMAGING.....	101
<i>Jingdan Liu, Charlotte Zaouter, Xianglei Liu, Shunmoogum A. Patten, Jinyang Liang</i>	
PLASMON-ENHANCED STIMULATED RAMAN SCATTERING ON THE SURFACE OF METALLIC FILM	102
<i>Almaz Gazizov, Anton Kharitonov, Myakzyum Salakhov, Sergey Kharintsev</i>	
HIGH POWER DUV LASER FOR BRIGHT HIGH HARMONIC GENERATION IN GAS	103
<i>Ran Qiangdong, Li Hao, Liu Kun, Wang Qi Jie, Zhang Ying</i>	
HIGH-SPEED SILICON-GERMANIUM PHOTODETECTORS FOR CHIP-SCALE PHOTONIC INTERCONNECTS	104
<i>D. Benedikovic, G. Aubin, L. Viro, J.-M. Hartmann, F. Amar, X. Le Roux, C. Alonso-Ramos, E. Cassan, D. Marris-Morini, F. Boeuf, J.-M. Fedeli, C. Kopp, B. Szlag, L. Vivien</i>	
HYPERSPECTRAL STIMULATED RAMAN SCATTERING IMAGE ENHANCEMENT, DENOISING AND SEGMENTATION VIA A DEEP NEURAL-NET.....	105
<i>Pedram Abdolghader, Andy Ridsdale, Tassos Grammatikopoulos, François Légaré, Albert Stolow, Adrian F. Pegoraro, Isaac Tamblyn</i>	
QUANTUM-DOT MULTI-WAVELENGTH LASERS FOR MILLIMETER WAVE GENERATION AND TRANSMISSION	106
<i>Zhenguo Lu, Jiaren Liu, Youxin Mao, Guocheng Liu, Philip J. Poole, Pedro Barrios, Mohamed Rahim, Grzegorz Pakulski, Weihong Jiang, Daniel Poitras, Chunying Song, Martin Vachon, John Weber, Shurui Wang, Ping Zhao, Craig Storey, Khan Zeb, Xiupu Zhang, Jianping Yao, Ke Wu</i>	
OPTICAL BACK PROPAGATION FOR FIBER OPTIC COMMUNICATION SYSTEMS	107
<i>Shiva Kumar</i>	
COMPRESSED-SENSING TWO-DIMENSIONAL ROTATING-MIRROR STREAK CAMERA FOR SINGLE-SHOT ULTRAHIGH-SPEED OPTICAL IMAGING	108
<i>Xianglei Liu, Jingdan Liu, Cheng Jiang, Fiorenzo Vetrone, Jinyang Liang</i>	
LASER LIGHT SCATTERING-BASED LABEL-FREE CYTOMETRY	109
<i>Xiaoxuan Liu, Lina Liu, Md Zahurul Islam, Manisha Gupta, Mrinal Mandal, Ying Yin Tsui, Wojciech Rozmus</i>	
SIMULATION OF SDM CHANNELS USING OPTISYSTEM.....	110
<i>Syed Murshid, Ahmad Atieh, Mingxuan Tu, Swaroopini Harish, Ce Su</i>	
INFRARED METASURFACES AND ARTIFICIAL INTELLIGENCE FOR MONITORING DYNAMICS BETWEEN BIOMOLECULES.....	111
<i>Aurelian John-Herpin, Deepthy Kavungal, Lea Von Mücke, Hatice Altug</i>	
THE DEPENDENCE OF ELECTRICAL PROPERTIES OF MOLYBDENUM TRIOXIDE THIN FILMS ON SUBSTRATE TEMPERATURE.....	112
<i>Bassel Abdel Samad, Christine Duguay</i>	
ENHANCED THIRD-HARMONIC GENERATION BY A MID-INFRARED PHASE-CHANGE METASURFACE.....	116
<i>Fuyong Yue, Riccardo Piccoli, Mikhail Y. Shalaginov, Tian Gu, Kathleen Richardson, Roberto Morandotti, Juejun Hu, Luca Razzari</i>	

SURFACE PLASMON HOT ELECTRON EFFECT IN RECTENNA	117
<i>Rana Poushimin, Jean-Michel Nunzi</i>	
HIGH GAIN THULIUM-DOPED TELLURIUM OXIDE WAVEGUIDE AMPLIFIER FOR OPTICAL COMMUNICATION IN THE $2-\mu\text{m}$ WINDOW	119
<i>Khadijeh Mirabbas Kiani, Henry Frankic, Richard Mateman, Arne Leinse, Andrew P. Knights, Jonathan D. B. Bradley</i>	
DESIGN OF NEAR-EYE DISPLAY MEASUREMENT SYSTEMS TO ENHANCE THE PERFORMANCE	120
<i>Weitao Song, Qingtian Zhang, Hang Xun, Dongdong Weng, Yue Liu Yongtian Wang, Xiang Hu, Kaituo Hu</i>	
A BROADBAND Si_3N_4 POLARIZATION BEAM SPLITTER BASED ON ASYMMETRIC DIRECTIONAL COUPLERS	121
<i>Jiahao Zhan, Mario Dagenais, Guanganlan Yang, Sylvain Veilleux</i>	
DEEP LEARNING FOR THE PREDICTION OF MULTI POLES	122
<i>J. Baxter, J. Desautels, L. Ramunno</i>	
OPTIMIZED DESIGN OF TELLURIUM OXIDE COATED SUBWAVELENGTH GRATING METAMATERIAL WAVEGUIDES	123
<i>C. M. Naraine, J. W. Miller, H. C. Frankis, P. Mascher, A. P. Knights, J. D. B. Bradley, J. H. Schmid, P. Cheben</i>	
DIODE-PUMPED YB:CALGO LASER WITH <100 FS PULSES	124
<i>Md. A. R. Reza, A. Major</i>	
SIMULATION OF LINEAR DEPOLARIZATION EFFECTS DURING SUPERCONTINUUM GENERATION IN OPTICAL FIBER	125
<i>Rachel Ostic, Nicolas Couture, P. Harshavardhan Reddy, Ajoy K. Kar, Mukul C. Paul, Jean-Michel Ménard</i>	
DUAL-WAVELENGTH YB:YAP LASER WITH TUNABILITY	126
<i>R. Akbari, J. Xu, X. Xu, A. Major</i>	

Author Index