

2015 Photonics North

**Ottawa, Ontario, Canada
9-11 June 2015**



IEEE Catalog Number: CFP1509V-POD
ISBN: 978-1-4673-6806-3

TABLE OF CONTENTS

BROADBAND SECOND HARMONIC GENERATION IN GAAS SLAB OF HYPERBOLIC UPPER SURFACE USING TIR-QPM	1
<i>Saha, Ardhendu ; Banik, Smita</i>	
PHOTONIC NANOJET EFFECT OF SURFACE NANOSTRUCTURED DIELECTRIC MICRO-CYLINDERS	2
<i>Chen, Ran ; Cada, Michael ; Ma, Yuan ; Lin, Jie ; Jin, Peng</i>	
QUANTUM KEY DISTRIBUTION WITH COHERENT LASER PULSE TRAIN: SECURITY WITHOUT MONITORING DISTURBANCE	3
<i>Koashi, Masato</i>	
FAST BEAM MANIPULATION: ELLIPTICAL BEAM HANDLING FOR ACOUSTO-OPTIC DEFLECTORS (AOD) IN INDUSTRIAL LASER PROCESSING	4
<i>Kleinert, Jan ; Xu, Qian ; Brookhyser, Jim</i>	
BIOMEDICAL PHOTOACOUSTIC IMAGING SENSOR BASED ON ORBITAL ANGULAR MOMENTUM MULTIPLEXING	5
<i>Weng, Yi ; Wang, Ting ; Pan, Zhongqi</i>	
HILBERT TRANSFORMERS BASED ON FIBER BRAGG GRATINGS IN TRANSMISSION	6
<i>Fernandez-Ruiz, M. R. ; Azana, Jose ; Carballar, Alejandro ; Wang, Lixian ; Laroche, Sophie</i>	
FDTD METHOD AND HPC FOR PLASMONIC NANOANTENNAS	8
<i>Lesina, Antonino Cala ; Vaccari, Alessandro ; Berini, Pierre ; Ramunno, Lora</i>	
EVALUATION OF OPTICAL PROPERTIES AND BIOCOMPATIBILITY OF POLYMER MATERIALS FOR MICROFLUIDIC APPLICATIONS	9
<i>Fanous, Michael ; Ozhikandathil, Jayan ; Badilescu, Simona ; Packirisamy, Muthukumaran</i>	
DEMULTIPLEXING BY INDEPENDENT COMPONENT ANALYSIS IN COHERENT OPTICAL TRANSMISSION: THE POLARIZATION CHANNEL ALIGNMENT PROBLEM	13
<i>Nabavi, Neda ; Hall, Trevor J.</i>	
NANO-PATTERNING OF SINGLE- AND BI-LEVEL SURFACE-RELIEF GRATINGS USING A COMMERCIAL THERMAL SCANNING PROBE LITHOGRAPHY SYSTEM	14
<i>Ristic, S. ; Nannini, M. ; Grutter, P. ; Holzner, F. ; Paul, P.</i>	
TUNABLE FBGS FOR WAVELENGTH SCANNING	15
<i>Long, Pin ; Abtahi, Mohammad ; Thomas, Saju</i>	
MEASURING THE FULLY VECTORIAL NATURE OF LIGHT AT THE NANOSCALE	16
<i>Banzer, Peter ; Bauer, Thomas ; Orlov, Sergejus ; Leuchs, Gerd</i>	
A TUNABLE NANOPLASMONIC HIGH PASS WAVELENGTH FILTER EMBEDDED IN A MIM WAVEGUIDE	18
<i>Ebadi, Seyed Morteza ; Sajjadi, S. Salman ; Bayati, M. Sajjad ; Ram, Siamak Bonyadi</i>	
QUANTUM COHERENT INTERACTION OF ELECTRONS WITH OPTICAL NEAR-FIELDS IN AN ULTRAFAST ELECTRON MICROSCOPE	19
<i>Feist, A. ; Echterkamp, K. E. ; Schauss, J. ; Yalunin, S. V. ; Schafer, S. ; Ropers, C.</i>	
SELECTIVE DETECTION OF BACTERIA IN URINE WITH A LRSPP WAVEGUIDE BIOSENSOR	20
<i>Beland, Paul ; Krupin, Oleksiy ; Berini, Pierre</i>	
OPTICAL FREQUENCY COMB GENERATION VIA CASCADED BRILLOUIN SCATTERING IN A NONLINEAR MEDIA	21
<i>Kayes, Md Imrul ; Rochette, Martin</i>	
EXCITATION OF VECTOR MODES IN FEW-MODE FIBER USING WIRE-BASED MECHANICAL LONG PERIOD FIBER GRATING	22
<i>Pradhan, Prabin ; Sengupta, Dipankar ; Rehouma, Haythem ; Francois, Veronique ; Tremblay, Christine ; Ung, Bora</i>	
A QUANTUM MEMORY BASED ON A COLD ATOMIC ENSEMBLE FOR ORBITAL ANGULAR MOMENTUM QUBITS	23
<i>Giner, Lambert ; Nicolas, Adrien ; Veissier, Lucile ; Giacobino, Elisabeth ; Moxelin, Dominik ; Laurat, Julien</i>	
MOLECULAR STRUCTURE FROM ALIGNED POLYATOMIC MOLECULES USING LASER-INDUCED ELECTRON DIFFRACTION	24
<i>Sclafani, M. ; Pullen, M. G. ; Wolter, B. ; Lee, A. T. ; Baudisch, M. ; Hemmer, M. ; Senftleben, A. ; Schroter, C. D. ; Ullrich, J. ; Moshhammer, R. ; Lin, C. D. ; Biegert, J.</i>	

TWO-COLOR ASSISTED FIELD ENHANCEMENT FOR VACUUM TUNNELING OF A METALLIC-TIP/SUBSTRATE SYSTEMS	25
<i>Meng, Xiang ; Yang, Hao ; Dadap, Jerry I. ; Osgood, Richard M. ; Camillone, N.</i>	
ON-CHIP NONLINEAR PLASMONICS WITH GRAPHENE-METAL NANOSTRUCTURES	27
<i>Ghamsari, Behnood G. ; Olivieri, Anthony ; Variola, Fabio ; Berini, Pierre</i>	
CHALCOGENIDE WAVEGUIDES FOR MID-INFRARED BIOMEDICAL SENSING APPLICATIONS	28
<i>Murugan, Ganapathy Senthil ; Mittal, Vinita ; Craig, Chris ; Hewak, Dan ; Wilkinson, James S</i>	
MID-INFRARED RAMAN FIBER LASER IN CHALCOGENIDE MICROWIRE	29
<i>Abdukerim, Nurmemet ; Li, Lizhu ; Rochette, Martin</i>	
SYNTHESIS OF TRANSITION METAL DOPED ZINC SELENIDE NANOPARTICLES FOR BIOIMAGING	30
<i>Aleksandrova, O. A. ; Mazing, D. S. ; Matyushkin, L. B. ; Musikhin, S. F. ; Nikiforova, A. V. ; Moshnikov, V. A. ; Musikhin, S. F. ; Barzda, V.</i>	
NUMERICAL RESEARCH ON A DUAL-MODE SAMPLED-GRATING QUANTUM-DOT-BASED INP/INGAAS/INGAASP DFB LASER FOR W-BAND ROF APPLICATION	31
<i>Li, Ran</i>	
DESIGN, FABRICATION AND CHARACTERIZATION OF POLYMER-COATED AS₂SE₃ MICROWIRES	39
<i>Li, Lizhu ; Kadry, Alaa Al ; Rochette, Martin</i>	
CONTINUOUS-WAVE YB:CALGO LASER WITH TUNABLE DUAL-WAVELENGTH OUTPUT	40
<i>Manjooran, S. ; Akbari, R. ; Major, A.</i>	
HIGHLY NONLINEAR LIQUID-FILLED PHOTONIC CRYSTAL FIBERS	41
<i>Monfared, Yashar E. ; Ponomarenko, Sergey A.</i>	
ANALYTICAL STUDY FOR HYBRID GUIDED MODES IN A 7-LAYER PLASMONIC WAVEGUIDE	42
<i>Aldawsari, Sarah ; Liu, Wing-Ki ; Wei, Li</i>	
LOW-ENERGY-THRESHOLD MID-INFRARED SUPERCONTINUUM GENERATION IN AS₂SE₃ MICROWIRES	43
<i>Al-Kadry, Alaa ; Rochette, Martin ; El-Amraoui, Mohammed ; Messaddeq, Younes</i>	
NEW PARADIGMS IN ACTIVE MAGNETOPLASMONIC DEVICES AND HIGH-RESOLUTION PLASMONIC FIELD MAPPING	44
<i>Elezzabi, A. Y. ; Firby, C. J.</i>	
SILICON MODULATOR USING SEGMENTED RING RESONATOR	45
<i>Shahin, Mahmoud M. ; Khilo, Anatol</i>	
OPTOMECHANICS OF RANDOM MEDIA: LARGE SCALE MASSIVELY-PARALLEL ANALYSIS OF OPTICAL PRESSURE IN DISORDERED SYSTEMS	46
<i>Gentilini, Silvia ; Conti, Claudio</i>	
DUAL-WAVELENGTH OPERATION OF A DIODE-PUMPED YB:KGW LASER	48
<i>Akbari, R. ; Zhao, H. ; Major, A.</i>	
AN FSR-FREE SILICON RESONATOR REFLECTOR USING A CONTRA-DIRECTIONAL COUPLER AND A BRAGG REFLECTOR	49
<i>Boeck, Robert ; Caverley, Michael ; Chrostowski, Lukas ; Jaeger, Nicolas A. F.</i>	
TASK-SPECIFIC SIMULATION STRATEGIES FOR THE OPTIMIZED DESIGN OF PHOTONIC KEY COMPONENTS	50
<i>Hainberger, R. ; Muellner, P. ; Wahlbrink, T.</i>	
COMPACT POLARIZATION ROTATOR DESIGN BASED ON ASYMMETRICAL PERIODIC LOADED SOI WAVEGUIDES	51
<i>Sun, Yao ; Ye, Winnie N.</i>	
GERMANATE-TELLURITE COMPOSITE FIBERS FOR SUPERCONTINUUM GENERATION IN THE MID-INFRARED	52
<i>Boivin, Mathieu ; El-Amraoui, Mohammed ; Cote, Francois ; Vallee, Real ; Messaddeq, Younes</i>	
RECOVERY OF QUANTUM COHERENCE BY SPATIAL PROPAGATION	53
<i>Harris, Jeremie ; Bouchard, Frederic ; Mand, Harjaspreet ; Bent, Nicolas ; Santamato, Enrico ; Boyd, Robert ; Karimi, Ebrahim</i>	
QUANTUM NANOPHOTONICS	54
<i>Vuckovic, Jelena</i>	
SPONTANEOUS EMISSION AND REFLECTIVITY MEASUREMENTS FOR THE CHARACTERIZATION OF FACET-COATINGS OF SEMICONDUCTOR LASERS	55
<i>Chang, Shoude ; Liu, Jiaren ; Lu, Zhenguo ; Poitras, Daniel ; Barrios, Pedro ; Poole, Philip ; Janz, Siegfried</i>	
GENERATION OF OVER 200MW LASER RADIATION AT 177.3NM IN KBe₂BO₃F₂ CRYSTAL	56
<i>Xu, Bo ; Liu, Lijuan ; Wang, Xiaoyang ; Chen, Chuangtian ; Zhang, Xin ; Lin, Shujie</i>	

DIODE-PUMPED CONTINUOUS WAVE MULTI-WATT YB:KYW LASER WITH HIGH EFFICIENCY AND EXCELLENT BEAM QUALITY	58
<i>Manjooran, S. ; Major, A.</i>	
THE SATURABLE LORENTZ MODEL FOR AB INITIO NONLINEAR OPTICS	59
<i>Varin, Charles ; Bart, Graeme ; Emms, Rhys ; Brabec, Thomas</i>	
QUANTUM-DOT SATURABLE ABSORBER AND KERR LENS MODE-LOCKED YB:KGW LASER WITH >300 KW OF PEAK POWER.....	60
<i>Akbari, R. ; Zhao, H. ; Major, A. ; Fedorova, K. A. ; Rafailov, E. U.</i>	
REDUCING THE DIVERGENCE OF A LIGHT SHEET BELOW DIFFRACTION LIMIT	61
<i>Golub, Jonathan ; Chebbi, Brahim ; Golub, Ilya</i>	
LASER BESSEL VELOCIMTERY	62
<i>Sakah, Mahmud ; Chebbi, Brahim</i>	
CHARACTERIZATION OF LONG-RANGE SURFACE PLASMON BRAGG GRATINGS WITH MICROFLUIDIC CHANNELS	63
<i>Khodami, Maryam ; Berini, Pierre</i>	
QUANTUM COMMUNICATIONS WITH OPTICAL PHASE SENSITIVE AMPLIFIERS	64
<i>Dailey, James M. ; Agarwal, Anjali ; Toliver, Paul ; Peters, Nick A.</i>	
SILK FOAM TERAHERTZ WAVEGUIDES	65
<i>Guerboukha, Hichem ; Yan, Guofeng ; Skorobogata, Olga</i>	
ENHANCED CONTINUOUS-WAVE FWM WAVELENGTH CONVERSION IN ALGAAS RESONATORS.....	67
<i>Kultavewuti, Pisek ; Aitchison, J. Stewart ; Pusino, Vincenzo ; Sorel, Marc</i>	
MAGNETLESS GRAPHENE-FERRITE INFRARED PLASMONIC ISOLATOR	68
<i>Chamanara, Nima ; Caloz, Christophe</i>	
DYNAMIC MEASUREMENTS AT TERAHERTZ FREQUENCIES WITH A FAST ROTARY DELAY LINE	70
<i>Guerboukha, Hichem ; Markov, Andrey ; Qu, Hang ; Skorobogatiy, Maksim</i>	
SILICON PHOTONIC INTERCONNECTION NETWORKS IN HIGH PERFORMANCE DATACOM SYSTEMS.....	71
<i>Nikolova, Dessislava ; Bergman, Keren</i>	
SUB-CYCLE STRONG-FIELD ELECTRON DYNAMICS IN A BULK SEMICONDUCTOR TRACED BY HIGH-ORDER HARMONIC GENERATION.....	72
<i>Langer, F. ; Hohenleutner, M. ; Schubert, O. ; Lange, C. ; Urbanek, B. ; Knorr, M. ; Huber, R. ; Huttner, U. ; Koch, S. W. ; Kira, M.</i>	
UNIAXIAL FIBER BRAGG GRATING ACCELEROMETER: ENHANCED SENSITIVITY AND BANDWIDTH.....	73
<i>Angel, Casas-Ramos Miguel ; Eduardo, Sandoval-Romero Gabriel</i>	
STUDIES OF LONG-PERIOD FIBER GRATING DEVICES COATED WITH THE LIQUID CRYSTAL LAYER TUNED NEAR THE PHASE-MATCHING TURNING POINT.....	74
<i>Czapla, Aleksandra ; Mikulic, Predrag ; Bock, Wojtek J. ; Wolinski, Tomasz R.</i>	
LONG-RANGE SURFACE PLASMON MULTIPLE OUTPUT MACH-ZEHNDER INTERFEROMETERS.....	76
<i>Fan, Hui ; Berini, Pierre</i>	
IMAGING MASS SPECTROMETRY AT AMBIENT PRESSURE USING FEMTOSECOND LASER PULSES.....	77
<i>Geisler, Dominik ; Rayner, David M. ; Corkum, Paul B.</i>	
ELECTROCHROMIC AND ELECTRICAL PROPERTIES OF LAYERED AND TUBULAR VANADIUM PENTOXIDE THIN FILMS	78
<i>Almoabadi, Afaf ; Badilescu, Simona ; Truong, Vo-Van ; Alsawafta, Mohammed ; Stancovski, Victor ; Sharma, Tanu ; Bruning, Ralf</i>	
THE FREQUENCY DEPENDENCE OF THIRD HARMONIC GENERATION IN UNDOPED MONOLAYER GRAPHENE AT TERAHERTZ FREQUENCIES	86
<i>Al-Naib, Ibraheem ; Sipe, J. E. ; Dignam, Marc M.</i>	
FIBER LASER: A NEW TECHNIQUE FOR THE DETECTION OF TRACE GASES (INVITED TALK)	87
<i>Das, Gautam</i>	
HOMOGENIZATION OF NANOSTRUCTURE WAVEGUIDES IN THE NON-RESONANT AND RESONANT REGIMES	88
<i>Samadian, Parya ; Hall, Trevor J.</i>	
LASER ATTACKS AGAINST AIRCRAFT: PAST, PRESENT AND FUTURE	89
<i>Kallos, Efthymios ; Palikaras, George</i>	

EMERGING PLASMONIC APPLICATIONS EXPLORED WITH CLUSTER PARALLEL COMPUTING	90
<i>Meng, Xiang ; Grote, Richard ; Dadap, Jerry I. ; Osgood, Richard M. ; Panoiu, Nicolae ; Camillone, Nick ; Lu, Deyu</i>	
THERMAL HEATING IN GAAS NANOWIRE SOLAR CELLS	92
<i>Wu, Shao-Hua ; Povinelli, Michelle L.</i>	
FEMTOSECOND LASER-INDUCED NANOGRAINGS FORMATION ASSISTED BY SILVER IONS IN A GALLOPHOSPHATE GLASS AND CORRELATED OPTICAL PROPERTIES	93
<i>Vangheluwe, M. ; Petit, Y. ; Liang, F. ; Hee, P. ; Ledemi, Y. ; Thomas, S. ; Fargin, E. ; Cardinal, T. ; Messaddeq, Y. ; Canioni, L. ; Vallee, R.</i>	
BROADBAND SUPERCONTINUUM GENERATION IN ALL-NORMAL DISPERSION CHALCOGENIDE MICROWIRES	99
<i>Al-Kadry, Alaa ; Li, Lizhu ; North, Thibault ; Rochette, Martin ; El-Amraoui, Mohammed ; Messaddeq, Younes</i>	
A NOVEL PLASMONIC HIGH PASS WAVELENGTH FILTER BASED ON TRIANGULAR ARRAYS IN A MIM WAVEGUIDE	100
<i>Ebadi, Seyed Morteza ; Sajjadi, S. Salman ; Bayati, M. Sajjad ; Ram, Siamak Bonyadi</i>	
WHITE MATTER INJURY IN A NEWBORN RAT MODEL ANALYZED WITH RESTING-STATE OPTICAL IMAGING OF INTRINSIC SIGNALS (RSOIS)	101
<i>Guevara, Edgar ; Sirpal, Parikshat ; Abran, Maxime ; Pouliot, Philippe ; Lesage, Frederic ; Jin, Chen ; Londono, Irene ; Lodygensky, Gregory A.</i>	
MEASUREMENT OF OPTICAL LOSSES IN SILICON PHOTONIC CONTRA-DIRECTIONAL COUPLERS	102
<i>Caverley, Michael ; Jaeger, Nicolas A. F. ; Chrostowski, Lukas</i>	
SWITCHING AND DYNAMIC MEMORY APPLICATIONS USING NONUNIFORM SYSTEM OF COUPLED WAVEGUIDES WITH LOCAL PARITY-TIME SYMMETRY	103
<i>Lupu, Anatole ; Konotop, Vladimir V. ; Benisty, Henri</i>	
NONLINEAR OPTOMECHANICAL PADDLE NANOCAVITIES	104
<i>Kaviani, H. ; Healey, C. ; Wu, M. ; Barclay, P. E. ; Hryciw, A.</i>	
GE/SIGE MULTIPLE QUANTUM WELLS FOR PHOTONIC INTEGRATED CIRCUITS ON SILICON	106
<i>Chaisakul, Papichaya ; Vakarin, Vladyslav ; Marris-Morini, Delphine ; Frigerio, Jacopo ; Wada, Kazumi ; Isella, Giovanni ; Vivien, Laurent</i>	
ALUMINIUM GALLIUM ARSENIDE WAVEGUIDE DESIGNS FOR EFFICIENT FOUR-WAVE MIXING	107
<i>Awan, Kashif M. ; Feher, Norbert ; Boyd, Robert ; Dolgaleva, Ksenia</i>	
ENHANCEMENTS TO SURFACE PLASMON RESONANCE IMAGING FOR BIOSENSING	108
<i>Charette, Paul G.</i>	
AN ULTRA-COMPACT NANOPLASMONIC HIGH-PASS WAVELENGTH FILTER AT TELECOMMUNICATION WAVELENGTHS BASED ON A MIM WAVEGUIDE	109
<i>Ebadi, Seyed Morteza ; Ghadiri, Nahid ; Sajjadi, S. Salman ; Bayati, M. Sajjad ; Ram, Siamak Bonyadi</i>	
INVESTIGATING THE EFFECT OF MUX BANDWIDTH ON HYBRID COMMUNICATION SYSTEMS PERFORMANCE	111
<i>Atieh, Ahmad ; Wa'Ad, Mais ; Mansour, Ibrahim</i>	
A NEW PLASMONIC LONG WAVELENGTH CUTOFF FILTER BASED ON TRIANGULAR ARRAYS IN A MIM WAVEGUIDE	112
<i>Ebadi, Seyed Morteza ; Sajjadi, S. Salman ; Nouri, Sarah ; Bayati, M. Sajjad ; Ram, Siamak Bonyadi</i>	
FIBER-MIRROR INTEGRATED COMPLIANT MECHANICAL SYSTEM FOR MEASURING FORCE AND DISPLACEMENT SIMULTANEOUSLY	113
<i>Marzban, Mostapha ; Packirisamy, Muthukumaran ; Dargahi, Javad</i>	
PROPAGATION LOSS IN SUB-WAVELENGTH GRATING WAVEGUIDES	121
<i>Sherwali, Ahmed ; Donzella, Valentina ; Chrostowski, Lukas</i>	
GRATING ASSISTED SEMICONDUCTOR PLASMONIC WAVEGUIDES	122
<i>Chochol, J. ; Cada, M. ; Postava, K. ; Pistora, J.</i>	
A TUNABLE WAVELENGTH BAND PASS PLASMONIC FILTER BASED ON TRIANGULAR ARRAYS IN A MIM WAVEGUIDE	123
<i>Ebadi, Seyed Morteza ; Sajjadi, S. Salman ; Bayati, M. Sajjad ; Ram, Siamak Bonyadi</i>	
ALL-OPTICAL HALF-ADDER BASED ON A HYDROGENATED AMORPHOUS SILICON MICRORING RESONATOR	124
<i>Gostimirovic, Dusan ; Ye, Winnie N.</i>	
EXPERIMENTAL OBSERVATION OF SUBLUMINAL LIGHT CARRYING ORBITAL ANGULAR MOMENTUM IN VACUUM	125
<i>Bouchard, Frederic ; Harris, Jeremie ; Mand, Harjaspreet ; Karimi, Ebrahim ; Boyd, Robert W.</i>	

SYMMETRIC DUAL POLARIZATION DIVERSE DIGITAL OPTICAL COHERENT RECEIVER.....	126
<i>Nabavi, Neda ; Abdul-Majid, Sawsan ; Hall, Trevor J.</i>	
SUPER-CRITICAL PHASE-MATCHING IN NONLINEAR OPTICS.....	127
<i>Saaltink, Rebecca Y. ; Giner, Lambert ; Boyd, Robert W. ; Karimi, Ebrahim ; Lundeen, Jeff. S.</i>	
A DUAL BAND-PASS PLASMONIC FILTER BASED ON STUB STRUCTURE	
IN A MIM WAVEGUIDE AT OPTICAL CHANNELS.....	128
<i>Seyed Morteza Ebadi, Siamak Bonyadi Ram</i>	