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BOOK OF ABSTRACTS



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Table of Contents

Nanophotonics for a Green Internet	1
<u>Prof. Dieter Bimberg</u>	
Nano-Photonics of Super-Oscillations	2
<u>Prof. Nikolay Zheludev</u>	
Exciton diffusion of directed assembly of perovskite nanocrystals on patterned surfaces	3
<u>Dr. Stefano Cabrini</u> , Dr. Erika Penzo, Dr. Alexander Weber Bargioni	
Optical properties of metallic nanoparticles: from field enhancement to molecular detection	5
<u>Prof. Lamy de la Chapelle Marc</u>	
Three-dimensional disordered hyperuniform networks with a photonic bandgap	6
<u>Dr. Jakub Haberkowicz</u> , Dr. Nicolas Muller, Dr. Catherine Marichy, Dr. Luis Froufe, Prof. Frank Scheffold	
Linear and nonlinear optical properties of silicate oxide glasses containing metallic gold and silver nanoparticles	8
<u>Dr. Krzysztof Dzierzega</u> , Dr. Nadia Pellerin, Ms. Aleksandra Gorczyca, Dr. Jean-philippe Blondeau, Dr. Witold Zawadzki, Dr. Stephane Pallerin, Mr. Babacar Diallo	
Electrochemical investigation of plasmonic near-field and hot electron effects promoted by aluminium nanostructures	9
<u>. Madasamy Thangamuthu</u> , Dr. Christian Santschi, Prof. Olivier Martin	
On the use of Genetic Algorithm to Design and Optimize Graphene-based Absorbers	11
<u>Mr. Hamidreza Taghvaei</u> , Dr. Sergi Abadal, Prof. Albert Cabellos-Aparicio, Prof. Eduard Alarcón	
Novel Phenomena in Optical Manipulation due to Magnetic-Field-Induced Resonant States	12
<u>Ms. Shulamit Edelstein</u> , Dr. R. M. Abraham Ekeroth, Dr. P. A. Serena, Prof. J. J. Saenz, Dr. A. García-Martín, Prof. M. I. Marques	
Light creation without pump: tuning plasmonic resonance for surface enhanced chemiluminescence	13
<u>Mr. Daler Dadadzhanyan</u> , Dr. Tigran Vartanyan, Dr. Alina Karabchevsky	
Effects of manifold gaps on SERS enhancement in coupled plasmonic nanoantennas	14
<u>Prof. Patrizio Candeloro</u> , Dr. Marialaura Coluccio, Dr. Gerardo Perozziello, Dr. Mario Russo, Prof. Enzo Di Fabrizio	
Stimulated emission of dye molecules coupled to localized plasmons in Ag nanoparticles	16
<u>Dr. Nikita Toropov</u> , Ms. Aisylu Kamaliev, Dr. Tigran Vartanyan	
Influence of angular momentum of light on excitation of near field hot spots	17
<u>Dr. Marco Allione</u> , Dr. Andrea Giugni, Dr. Bruno Torre, Prof. Enzo Di Fabrizio	
Optical Waveguides in Oxidised Porous Silicon	18
<u>Mr. Alexander Kellarev</u> , Prof. Shlomo Ruschin	

SERS studies on DNA: optimization of experimental conditions.	20
<u>Ms. Edyta Pyrak, Dr. Aleksandra Jaworska, Prof. Tomasz Wilanowski, Prof. Andrzej Kudelski</u>	
Triple dyes-labeled polyelectrolyte microcapsules@gold nanoparticles for anthocyanins delivery as topical administration for tumor skin cells	21
<u>Ms. Raluca Flavia Ghiman, Dr. Dumitrita Rugina, Dr. Monica Focsan, Ms. Andreea Campu, Prof. Adela Pinte, Prof. Simion Astilean</u>	
Simple and Reliable Patterning of Plasmonic Nanostructures by Spontaneous Adhesion Lithography	22
<u>Dr. Sihai Luo, Prof. Bård Helge Hoff, Prof. John De Mello</u>	
Tunable degree of second order coherence for radiation of plasmonic structure excited by single photon source	23
<u>Mr. Nikita Nefedkin, Dr. Evgeny Andrianov, Prof. Alexander Pukhov, Prof. Alexey Vinogradov</u>	
An Intensity Enhanced High-Resolution Spectrometer In “Water Window”.	24
<u>Mr. Zhuo Li, Dr. Bin Li</u>	
Collective Enhanced IR Absorption plasmonic device for conformational studies of biomolecules in physiological conditions	25
<u>Mr. Paolo Zucchiatti, Dr. Andrea Cerea, Dr. Marta Semrau, Dr. Giovanni Birarda, Dr. Andrea Toma, Dr. Paola Storici, Dr. Lisa Vaccari</u>	
A 3D finite element model for waveguide-based plasmonic sensors	27
<u>Dr. Guillaume Demesy, Prof. Gilles Renversez</u>	
Decay-rate enhancement of spontaneous emitters coupled to Bloch Surface Waves on one-dimensional photonic crystals.	29
<u>Dr. Angelo Angelini, Mr. Ugo Stella, Dr. Francesca Frascella, Dr. Natascia De Leo, Dr. Luca Boarino, Prof. Emiliano Descrovi</u>	
Optimizing band-edge slow light in Silicon-On-Insulator grating waveguides	30
<u>Prof. Lucio Andreani, Mr. Marco Passoni, Prof. Dario Gerace, Dr. Liam O’Faolain</u>	
Ultra-Narrow Bandwidth Acousto-Optic Filter	32
<u>Prof. Nikolai Petrov, Prof. Vladislav Pustovoit</u>	
Influence of strains on the structural and optical properties of nanoheterostructures with quantum island arrays and quantum wells based on group IV elements Ge, Si and Sn	34
<u>Dr. Vyacheslav Timofeev, Dr. Alexander Nikiforov, Dr. Vladimir Mashanov, Dr. Ivan Loshkarev, Ms. Natalia Baidakova</u>	
Magnetic and optical properties of gold coated iron oxide nanoparticles	35
<u>Mr. Alexander Omelyanchik, Ms. Maria Efremova, Mr. Maxim Abakumov, Dr. Alexander Majouga, Dr. Ilia Samusev, Dr. Natalya Myslitskaya, Mr. Andrey Zyubin, Dr. Valeria Rodionova</u>	
Chromogen-free color interference-based biosensors for visual detection of viruses.	36
<u>Ms. Ana Frosiniuk, Dr. Vladimir Vinogradov</u>	
Upconversion metal oxide aerogels for diagnostics and sorption of toxicants	37
<u>Mr. Daniil Ilatovskii, Dr. Pavel Krivoshapkin, Dr. Elena Krivoshapkina, Mr. Grigoriy Kiselev, Dr. Vladimir Vinogradov</u>	

Diagnose of biomolecules using Raman interactions of the light	38
Prof. Enachi Nicolae, <u>Dr. Turcan Marina</u> , Dr. Ristoscu Carmen, Prof. Mihailescu Ion	
Nonlinear behavior of silver nano-films in cw regime	39
<u>Prof. Husam Abu-Safe</u>	
Enhancing, controlling and guiding light with high refractive index dielectric nanoantennas	40
Ms. Angela I. Barreda, Dr. Toshihiko Shibamura, Prof. Stefan A Maier, Prof. Francisco Gonzalez, Prof. Fernando Moreno, <u>Dr. Pablo Albella</u>	
On chip resonant optical sensors	42
<u>Prof. Yves-Alain Peter</u>	
Effect of local time-periodic perturbations on the topological edge mode of the SSH-model	44
<u>Prof. Stefan Linden</u> , Mrs. Zlata Cherpakova	
Encoded SERS nanotags for multiplex bioassays	45
<u>Prof. Xiangwei Zhao</u>	
Oxidation effects on the SERS response of silver nanoprism arrays	46
Dr. Niccolò Michieli, <u>Dr. Roberto pilot</u> , Dr. Valentina Russo, Dr. Carlo Scian, Dr. Francesco Todescato, Prof. Raffaella Signorini, Prof. Stefano Agnoli, Prof. Tiziana Cesca, Prof. Renato Bozio, Prof. Giovanni Mattei	
Raman of Nano-objects at subwavelength scales	47
<u>Prof. bernard Humbert</u> , Dr. Angéline D'orlando, Dr. Maxime Bayle, Prof. Guy Louarn	
Towards DNA biosensors: SERS studies on oligonucleotides	48
<u>Dr. Aleksandra Jaworska</u> , Ms. Edyta Pyrak, Prof. Andrzej Kudelski	
Optical paddle - a new microtool for optical tweezers	50
<u>Ms. Weronika Lamperska</u> , Dr. Sławomir Drobczyński, Dr. Piotr Wasylczyk, Dr. Jan Masajada	
2D nanomaterials enhanced surface plasmon resonance for sensing applications	51
<u>Dr. Shuwen Zeng</u>	
Nanoplasmonic NO₂ sensing with a Au-WO₃ Nanocomposite	52
<u>Dr. Irem Tanyeli</u> , Dr. Olof Andersson, Prof. Christoph Langhammer	
GFP-based Nanothermometry at the Mitochondria	53
<u>Dr. Oleksandr A. Savchuk</u> , Dr. Oscar F. Silvestre, Mr. Ricardo M. R. Adão, Dr. Jana B. Nieder	
Enhancing hydrodynamic nonlocal resonances in semiconductor plasmonics	55
Ms. Tahereh Golestanizadeh, Dr. Johan Maack, Prof. N. Asger Mortensen, Dr. Tahmineh Jalali, Dr. Abbas Zarifi, <u>Dr. Martijn Wubs</u>	
Transverse Anderson localization of channel plasmon polaritons	57
<u>Dr. Jiří Petráček</u> , Dr. Vladimír Kuzmiak	
Single-emitter and collective effects in light emission from ordered arrays of InGaN-GaN nanowires	59
<u>Dr. Duncan Allsopp</u> , Dr. Chris Lewins, Dr. Szymon Lis, Dr. Simon O'kane, Dr. Pierre-marie Coulon, Dr. Emmanuel Le Boulbar, Dr. Margaret Hopkins, Dr. Philip Shields	

Whispering gallery modes in novel silicon nanophotonic resonators	60
<u>Dr. Sebastian Schmitt</u> , Dr. Klaus Schwarzburg, Mr. Christian Appelt, Dr. Hanno Kröncke, Mr. Sven Wiesner, Prof. Catherine Dubourdieu	
Attojoule Modulators for Photonic Neuromorphic Computing	61
Mr. Jonathan George, Mr. Amin Mehrabian, Mr. Rubab Armin, Prof. Tarek El-Ghazawi, Prof. Paul Prucnal, Prof. Volker Sorger	
Nano-scale luminescence imaging and properties of radially-heterostructured III-V nanowires	63
<u>Dr. PAOLA PRETE</u> , Prof. Nico Lovergine	
Amplified spontaneous emission, Purcell effect, lasing, and light emitting diodes from perovskite nanocrystal films	64
<u>Dr. Roman Krahne</u>	
Nonlinear THz Plasmonics in Bi₂Se₃ Topological Insulator	65
<u>Dr. Paola Di Pietro</u> , Dr. Nidhi Adhlakha, Dr. Federica Piccirilli, Dr. Alessandra Di Gaspare, Prof. Seangshik Oh, Dr. Andrea Perucchi, Prof. Stefano Lupi	
Structural and transport investigation of two different types of organic-inorganic halide perovskite structures.	66
<u>Dr. Andrea Giugni</u> , Dr. Bruno Torre, Dr. Marco Allione, Dr. Ayan Zhumekenov, Prof. Osman Bakr, Mrs. Erlin Nurlianti, Prof. Jr-Hau He, Prof. Enzo Di Fabrizio	
Light Controlled Assembly of Silver Nanoparticles	67
<u>Mr. Ivan Shutsko</u> , Mr. Andreas Polywka, Mr. Christian Tückmantel, Prof. Patrick Görrn	
Does location matter? Hot-electron driven selective photosynthesis of catalytic nanoparticles	68
<u>Ms. Evgenia Kontoleta</u> , Dr. Sven Askes, Prof. Erik Garnett	
Chiroptical Response of Geometrically Symmetric Nanoscopic Heterostructures	69
<u>Mr. Rene Barczyk</u> , Dr. Sergey Nechayev, Dr. Peter Banzer	
Possible polaritons-mediated light emission from nanostructured polyaniline with no external resonant microcavity	70
<u>Prof. Jerzy J. Langer</u> , Ms. Ewelina Frąckowiak, Ms. Katarzyna Ratajczak	
Carrier cooling dynamics in inorganic perovskites	72
<u>Prof. Anna Vinattieri</u> , Dr. Fabio Gabelloni, Dr. Francesco Biccari, Dr. Giulia Andreotti, Dr. Nicola Calisi, Dr. Stefano Caporali	
Nanopatterning of sol-gel derived luminescent thin films as a promising tool to enhance extraction efficiency in LEDs devices	73
Dr. Jeff NYALOSASO, <u>Dr. Audrey Potdevin</u> , Dr. Rachid Mahiou, Dr. François Réveret, Prof. Pierre Disseix, Prof. Geneviève Chadeyron	
Optical properties of III-V nanostructures for optoelectronic applications	74
<u>Dr. Nabiha Ben Sedrine</u> , Mr. J. Cardoso, Dr. J. Rodrigues, Ms. J. P. Teixeira, Ms. A. Alves, Dr. R. Ribeiro-andrade, Prof. A. Gustafsson, Dr. P. M. P. Salomé, Prof. J. C. González, Mr. D. Nd. Faye, Dr. M. Belloeil, Prof. Bruno Daudin, Prof. M. Bockowski, Prof. V. Hoffmann, Prof. M. Weyers, Dr. Eduardo Alves, Prof. Katharina Lorenz, Prof. A. J. Neves, Prof. J. P. Leitão, Prof. M. R. Correia, Prof. Teresa Monteiro	

Graphene to Graphite; a Layer by Layer Experimental and Simulation Investigation of Electric and Optical Properties	76
<u>Prof. Maher Amer, Mr. Mohammed Mohammed, Prof. Udo Schwingenschloegl</u>	
Structural studies of nonpolar (10-10) ZnO/ZnMgO monolithic multiquantum well structures	78
<u>Prof. Adrian Kozanecki, Mr. Jacek Sajkowski, Dr. Eduardo Alves, Dr. Sergio Magalhaes, Dr. Serhii Kryvyi, Ms. Agnieszka Pieniazek, Ms. Anna Reszka, Mr. Dawid Jarosz, Dr. Marcin Stachowicz, Dr. Ewa Przewdziecka, Dr. Mieczyslaw Pietrzyk</u>	
Ultra-broadband directive scattering of silicon nanoparticles in the optical range	79
<u>Dr. Kseniia Baryshnikova, Mr. Pavel D. Terekhov, Mr. Hadi K. Shamkhi, Mr. Dmitry N. Gulkin, Mr. Benyimin Hadad, Dr. Vladimir O. Bessonov, Dr. Alina Karabchevsky, Dr. Andrey A. Fedyanin, Dr. Alexander S. Shalin</u>	
Dynamic functional metasurfaces at optical frequencies	80
<u>Dr. Ping Yu, Dr. Jianxiong Li, Prof. Shuang Zhang, Dr. Michael Hirscher, Prof. Na Liu</u>	
Cavities of monolithic subwavelength grating VCSELs	81
<u>Prof. Tomasz Czyszanowski, Dr. Marcin Gębski, Prof. James Lott</u>	
Utilizing of holographic principles for efficient excitation of plasmonic waveguide	83
<u>Prof. Alexander Merzlikin, Dr. Anton Ignatov</u>	
From optical magnetism to second-order spatial dispersion in self-assembled metamaterials	84
<u>Prof. Alexandre Baron, Dr. Quentin Flamant, Dr. Philippe Richetti, Prof. Serge Ravaine, Dr. Virginie Ponsinet, Dr. Philippe Barois, Mrs. Veronique Many, Prof. Etienne Duguet, Prof. Mona Treguer-delapierre, Mrs. Sara De Cicco, Dr. Jean-baptiste Salmon, Dr. Jacques Leng</u>	
Size and host-medium effects on topologically protected surface states in bi-anisotropic 3D optical waveguides	85
<u>Prof. Vasily Klimov</u>	
All-semiconductor plasmonic metamaterials for mid-infrared perfect absorption and selective thermal emission	87
<u>Dr. Franziska Barho, Dr. Fernando Gonzalez-Posada Flores, Dr. Laurent Cerutti, Prof. Thierry Taliercio</u>	
Latest Progress in Spasers	89
<u>Prof. Mark Stockman</u>	
The DNA origami route for nanoplasmonics	90
<u>Prof. Na Liu</u>	
Quantum and non-linear optics with semiconductor microcavities	91
<u>Prof. Aristide Lemaitre</u>	
Semiconductor Hetero-Nanowires on Silicon for Photonic Applications	92
<u>Prof. Gerhard Abstreiter</u>	
Semiconductor plasmonic resonances in the mid-IR range adjusted by thermal annealing	93
<u>Mr. Guilhem Pacot, Dr. Maria Jose Milla Rodrigo, Dr. Fernando Gonzalez-Posada Flores, Dr. Franziska Barho, Mr. Mario Bomers, Dr. Laurent Cerutti, Prof. Eric Tournié, Prof. Thierry Taliercio</u>	
Shannon entropy and avoided crossings in optical microcavities	95
<u>Dr. Park Kyuwon, Dr. Moon Songki, Dr. Shin Younghoon, Mr. Kim Jinuk, Dr. Jeong Kabgyun</u>	

Plasmon enhanced generation of stimulated emission of laser dyes in pores of Al₂O₃	97
Prof. Aitbek Aimukhanov, Prof. <u>Niyazbek Ibrayev</u>	
Near-field imaging of surface-plasmon vortex-modes on a gold film with a single elliptical nanohole	98
Dr. <u>Claudia Triolo</u> , Prof. Salvatore Savasta, Dr. Sebastiano Trusso, Prof. Rosalba Saija, Dr. Nisha Agarwal, Prof. Salvatore Patanè	
A Parametric Analysis of Phase-gradient Meta-tips for Label-free Sensing Applications	99
Dr. <u>Maria Principe</u> , Prof. Marco Consales, Prof. Giuseppe Castaldi, Prof. Vincenzo Galdi, Prof. Andrea Cusano	
Improved stability and sensitivity of plasmonics metal layers with MPTS adhesion layer and CVD grown graphene transfer in water	101
Mr. <u>Quaid Zaman</u> , Mr. André Do Nascimento Barbosa, Dr. Omar Pandoli, Dr. Ricardo Queiroz Aucélio, Dr. Marco Cremona, Dr. Fernando Lázaro Freire Júnior, Dr. Tommaso Del Rosso	
Fluorescence Magnetic Immunoassays Using Graphene Quantum Dots and Fe₂O₃@SiO₂ Composite for AFP Detection	103
Ms. <u>Yun TENG</u> , Prof. Philip W. T. Pong	
Strain sensitivity of surface plasmon-polaritons excitation by attenuated total reflection in graphene	105
Mr. <u>Maksim Usik</u> , Dr. Dmitry Kuzmin, Prof. Igor Bychkov, Prof. Vladimir Shavrov	
710 nm red light source based on cascaded nonlinear optical processes for use in biomedical application.	106
Dr. <u>Juan Gonzalez</u> , Dr. Liliana Martinez, Dr. Roger Cudney, Dr. Jose Enriquez, Dr. Rurik Farias, Mr. Eduardo Melendez	
Identification of bacteria using surface-enhanced Raman spectroscopy	107
Dr. Dmitry Kopitsyn, Mr. Maksim Gorbachevskii, Dr. Ekaterina Botchkova, Ms. Maria Bychenko, Dr. Pawel Gushchin, Dr. <u>Andrei Novikov</u>	
Rough silver films for surface plasmons generation and SERS optical properties study	108
Dr. <u>Ilya Samusev</u> , Dr. Anna Tcibulnikova, Ms. Elizaveta Konstantinova, Mr. Andrey Zyubin, Dr. Vasily Slezhkin, Prof. Valery Bryukhanov, Ms. Polina Medvedskaya, Mr. Ivan Lyatun, Mr. Aleksandr Vinichenko, Dr. Maksim Demin	
Numerical simulation of light extraction efficiency of GaN-based blue micro-LED structures	109
Prof. <u>Han-Youl Ryu</u>	
Planar focusing reflectors based on high contrast gratings	110
Dr. <u>Paulina Komar</u> , Dr. Marcin Gębski, Dr. Maciej Dems, Prof. Tomasz Czyszanowski, Dr. Michał Wasiak	
Observation of Surface Plasmons in Subwavelength Gratings	111
Prof. <u>Nikolai Petrov</u> , Mr. Victor Danilov, Dr. Vladimir Popov, Mr. Boris Usievich	
Enhanced Raman spectroscopy of proteins on native cell membranes stretched on super-hydrophobic surface.	112
Dr. <u>Manola Moretti</u> , Dr. Marco Allione, Dr. Maria Teresa De Angelis, Prof. Giovanni Cuda, Prof. Enzo Di Fabrizio	
Dynamic Metasurface based optical cavity for enhanced optical phase modulation	113
Mr. <u>Tayyab Nouman</u> , Prof. Jae-hyung Jang, Mr. Ji Hyun Hwang, Mr. Gyejung Lee	
Particle sizing and concentration through elastic light scattering at small angles	115
Prof. <u>MIGUEL CASAS-RAMOS</u> , Dr. Eduardo Sandoval-romero	

Hydrogel-based plasmonic sensor system	116
<u>Mr. Christoph Kroh, Mr. Roland Wuchrer, Dr. David Ulkoski, Dr. Margarita Günther, Prof. Carmen Scholz, Prof. Thomas Härtling, Prof. Gerald Gerlach</u>	
Thermoplasmonic maskless lithography assisted by gold nanostars	117
<u>Dr. Eduardo Martínez, Prof. Ricardo Urbano, Prof. Carlos Rettori</u>	
High efficiency gradient index GaN metasurfaces	119
<u>Mr. Gauthier Briere, Mr. Nikolai Schmitt, Mr. Niklas Georg, Mr. Dimitrios Loukrezis, Dr. Patrice Genevet, Dr. Stéphane Lanteri, Prof. Ulrich Römer, Prof. Claire Scheid</u>	
Raman scattering for InAsSb	120
<u>Mr. Krzysztof Murawski, Dr. Kacper Grodecki, Mr. Krystian Michalczewski, Mr. Bogusław Budner, Prof. Piotr Martyniuk</u>	
Numerical investigation on metamaterial side of epoxy resins at visible light	121
<u>Ms. HANAN ALI</u>	
Indirect nanoplasmonic sensing.	122
<u>Dr. Benjamin Demirdjian, Dr. Igor Ozerov, Mr. Alain Ranguis, Mr. Frédéric Bedu, Dr. Claude R. Henry</u>	
Numerical modelling of green and red emitting quantum dot based optical films by Monte Carlo ray tracing method for smartphone display applications	123
<u>Mr. S. Efdal Mutcu, Dr. Güneş Aydınoğan, Mr. Sezer Caynak, Mr. Sadra Sadeghi, Mr. Kivanç Karşlı, Prof. Sedat Nizamoglu</u>	
Inkjet printing of anisotropic structures by cellulose nanocrystals	125
<u>Ms. Elena Eremeeva, Prof. Alexandr Vinogradov, Prof. Vladimir Vinogradov</u>	
Numerical computation of plasmonic resonances in dispersive media: Application to metallic gratings	126
<u>Dr. Guillaume Demesy, Dr. Boris Gralak, Prof. André Nicolet</u>	
Multipole analysis of metasurfaces composed of nanoparticles supporting electric and magnetic optical resonances	127
<u>Dr. Andrey B. Evlyukhin</u>	
Pixel-level Microsecond Electrical Switching of Infrared Transparent Phase Change Materials	128
<u>Dr. Vladimir Liberman, Mr. Yifei Zhang, Dr. Mikhail Shalaginov, Mr. Paul Robinson, Dr. Christopher Roberts, Dr. Myungkoo Kang, Dr. Yadav Anupama, Prof. Kathleen Richardson, Prof. Juejun Hu, Dr. Jeffrey Chou</u>	
Transitions between States in Topological Waveguide Systems by Time-Periodic Driving	130
<u>Ms. Christina Jörg, Mr. Christoph Dauer, Mr. Fabian Letscher, Prof. Sebastian Eggert, Prof. Michael Fleischhauer, Prof. Georg Von Freymann</u>	
Metamaterials for manipulating light polarization	132
<u>Dr. Jakub Haberkowicz, Dr. Michal Nawrot, Dr. Lukasz Zinkiewicz, Dr. Piotr Wasylczyk</u>	
Switchable Holographic Device Using Electrochemical Method	134
<u>Dr. Seong M. Cho, Ms. Sujung Kim, Dr. Yong-Hae Kim, Dr. Tae-Youb Kim, Dr. Sang Hoon Cheon, Dr. Joo Yeon Kim, Dr. Chil Seong Ah, Ms. Juhee Song, Dr. Hojun Ryu, Dr. Chi-Sun Hwang, Dr. Jeong-Ik Lee</u>	

Nanoparticles obtained via solid state dewetting of silver thin film	136
Dr. Iryna Gozhyk, Dr. Paul Jacquet, Ms. Barbara Bouteille, Dr. Renaud Podor, Mr. Johann Ravaux, Mr. Joseph Lautru, Dr. Morten Kildemo, Dr. Romain Dezert, Dr. Alexandre Baron, Dr. Jacques Jupille, Dr. Rémi Lazzari, Dr. Jeremie Teisseire	
Superradiant properties of Collective plasmon modes in ultra-dense film of silver nanoparticles	137
Dr. Julien Laverdant, Mr. Gérard Colas Des Francs, Mr. Hugo Varguet, Dr. Jean-michel Benoit, Mr. Ruben Mascart, Dr. Jeremie Margueritat, <u>Dr. Alice Berthelot</u>	
Fundamental Limits in the Coupling between Light and 2D Polaritons	138
<u>Mr. Eduardo Brioso Dias</u> , Prof. Javier García de Abajo	
Characterization of Airy Surface Plasmon Polaritons by Photoemission Electron Microscopy	139
<u>Mr. Matthias Falkner</u> , Mr. Amit V. Singh, Dr. Goran Isic, Prof. Thomas Pertsch	
Nonlinear semiconductor superlattices for the Gigahertz to the Mid Infrared ranges	140
<u>Prof. Mauro Fernandes Pereira</u> , Dr. Apostolos Apostolakis, Mr. Vladimir Anfertev, Prof. Vladimir Vaks	
Clusters of nanoparticles as isotropic Huygens sources for metasurfaces applications	142
Mr. Romain Dezert, Dr. Philippe Richetti, <u>Prof. Alexandre Baron</u>	
Plasmonic Luneburg lens characterization with phase detection	143
<u>Dr. César E. García-Ortiz</u> , Dr. Rodolfo Cortés-Martínez, Dr. Jesus Gomez-Correa, Dr. Eduardo Pisano, Dr. Jacek Fiutowski, Dr. Victor Ruiz-cortes, Dr. Víctor M. Coello-Cárdenas	
Polymer distributed Bragg reflectors: an old structure with unexpected sensing capabilities	146
<u>Dr. Paola Lova</u> , Prof. Alberto Servida, Prof. Davide Comoretto	
Imaging-based molecular barcoding with pixelated dielectric metasurfaces	148
<u>Dr. Andreas Tittl</u> , Mr. Aleksandrs Leitis, Dr. Mingkai Liu, Dr. Filiz Yesilkoy, Prof. Duk-Yong Choi, Prof. Dragomir Neshev, Prof. Yuri Kivshar, Prof. Hatice Altug	
Silver Nanoparticle Films with Highly Tunable Plasmon Properties: Tuning the Plasmon Resonance Band for X-Ray Detection	150
<u>Dr. Eder Guidelli</u> , Prof. David Clarke, Prof. Oswaldo Baffa	
Flexible SERS Membrane: a Universal Platform for Quantitative SERS Analysis	151
<u>Dr. Qi Hao</u> , Dr. Libo Ma, Prof. Oliver G. Schmidt	
LAB ON FIBER SERS OPTRODES BY NANOSPHERE LITHOGRAPHY	152
Dr. Giuseppe Quero, Dr. Gianluigi Zito, Dr. Stefano Managò, Dr. Francesco Galeotti, <u>Dr. Marco Pisco</u> , Dr. Anna Chiara De Luca, Prof. Andrea Cusano	
Hot carriers on organic semiconductors: relating mechanics and electronic properties.	154
<u>Dr. Bruno Torre</u> , Dr. Andrea Giugni, Dr. Marco Allione, Ms. Xinyu Zhang, Prof. Enzo Di Fabrizio	
Chiral coupling of atoms near plasmonic and photonic interfaces	155
<u>Dr. Mihail Petrov</u> , Mr. Danil Kornovan, Dr. Ivan Iorsh	
Nonlinear atom-plasmon interactions enabled by nanostructured graphene	157
<u>Dr. Joel Cox</u> , Prof. Javier García De Abajo	
Bright and Stable Single-Photon Emission from Single Molecules in Organic Nanocrystals	158
<u>Mrs. Sofia Pazzagli</u>	

Fine structure splitting energy correction for single quantum dot via quadrupole potential	159
<u>Mr. Mohd Zeeshan</u> , Mr. Nachiket Sherlekar, Mr. Arash Ahmadi, Dr. Sandra Gibson, Prof. Michael Reimer	
Quantum Nonlinear Optics in Nanoscale Waveguides	161
<u>Dr. Hashem Zoubi</u>	
Weak Measurement of the Dipolar Emitter Polarization State via its Far-Field Polarization Singularities	163
<u>Dr. Sergey Nechayev</u> , Dr. Martin Neugebauer, Mr. Martin Vorndran, Prof. Gerd Leuchs, Dr. Peter Banzer	
Urban Heat Island Mitigation with PbS quantum dots	164
<u>Ms. Samira Garshasbi</u> , Prof. Mat Santamouris, Prof. Shujuan Huang	
Revealing local material properties with high resolution optical microscopy	165
Dr. Marius Van Den Berg, Mr. Tobias Koeninger, Mr. Yu-ting Chen, Dr. Anke Horneber, Prof. Alfred Meixner, <u>Dr. Dai Zhang</u>	
Enhanced multimodal biosensing using plasmonic paper-based nanoplatfoms	166
<u>Ms. Andreea Campu</u> , Mr. Filip Orzan, Dr. Frederic Lerouge, Prof. Stephane Parola, Prof. Simion Astilean, Dr. Monica Focsan	
The SERS performance optimization with coupled modes and low-loss metals	167
Mr. Kang Qin, Prof. Yongyuan Zhu, Prof. Yanqing Lu, <u>Prof. Xuejin Zhang</u>	
Surface-enhanced Raman spectra and higher order scattering in Bi₂O₃-Ag nanoplasmonic eutectic composite	168
<u>Dr. Piotr Piotrowski</u> , Mr. Kamil Szlachetko, Mr. Paweł Osewski, Dr. Katarzyna Sadecka, Dr. Dobrosława Kasprowicz, Prof. Dorota A. Pawlak	
Probing out of-equilibrium optical excitations with fast electrons	170
<u>Mr. Valerio Di Giulio</u> , Dr. Vahagn Mkhitaryan, Prof. Javier García de Abajo	
Upgraded nanoparticle-based SERS substrates: superhydrophobicity and oxidative treatment	171
<u>Dr. Andrei Novikov</u> , Mr. Maksim Gorbachevskii, Dr. Dmitry Kopitsyn, Dr. Mikhail Kotelev, Ms. Alexandra Kuchierskaya, Dr. Evgenii Ivanov, Prof. Vladimir Vinokurov	
Two-Color Fluorescent Cross-Correlation Spectroscopy as a valuable tool to evaluate the loading efficiency of DNA liposome complexes to improve cell reprogramming	173
<u>Dr. Aline Marie Fernandes</u> , Mr. Matej Siketanc, Dr. Ana Isabel Gómez Varela, Dr. Juliane Assis, Dr. Adelaide Miranda, Prof. Rafael Valverde, Prof. Marcelo Einicker Lamas, Dr. Pieter De Beule	
Thermoplasmonics of Platinum nanoparticles	175
<u>Dr. Akbar Samadi</u> , Dr. Henrik Klingberg, Dr. Liselotte Jauffred, Prof. Andreas Kjaer, Dr. Poul Martin Bendix, Prof. Lene B. Oddershede	
Detecting plasmonic heating via liquid crystals thermometry	177
<u>Dr. Luciano De Sio</u> , Dr. Ugo Cataldi, Dr. Alexa Guglielmelli, Prof. Thomas Bürgi, Dr. Nelson Tabiryan, Dr. Timothy J. Bunning	
Light-Emitting Halide Perovskite Nanoantennas	178
<u>Ms. Ekaterina Tiguntseva</u> , Mr. George Zograf, Prof. Anvar Zakhidov, Dr. Sergey Makarov, Prof. Yuri Kivshar	
Plasmonic behavior of spherical core-shell structures in the tunneling regime	180
<u>Dr. Muhammad Khalid</u> , Dr. Fabio Della Sala, Dr. Cristian Ciraci	

Hybrid Longitudinal-Transverse Modes in Surface Phonon Polariton Systems	181
<u>Dr. Christopher Gubbin, Dr. Simone De Liberato</u>	
Plasmonic magneto-optical 1D nanostructure: Wood's anomaly and the Faraday rotation for biosensing	182
<u>Mr. Alexey Shaymanov, Dr. Nikolay Orlikovsky, Mr. Eldar Khabushev, Mr. Alexander Zverev, Ms. Anastasiya Pishimova, Dr. Georg Sharonov, Dr. Georgii Yankovskii, Dr. Ilya Rodionov, Dr. Alexander Baryshev</u>	
One-dimensional spherical photonic crystal	184
<u>Mr. Lewis Asilevi, Mrs. Ségolène Péliisset, Ms. Myriam Bailly, Mrs. Leila Ahmadi, Prof. Emiliano Descrovi, Prof. Matthieu Roussey</u>	
Plasmonic nanoparticle doping of the active layer for enhancing efficiency and stability in organic photovoltaic devices	185
<u>Dr. Barbara Paci, Dr. Amanda Generosi, Dr. Emmanuel Stratakis, Dr. Emmanuel Kymakis</u>	
Diode-like asymmetric transmission in hyperbolic epsilon-near-zero media	187
<u>Dr. Carlo Rizza, Dr. Xin Li, Dr. Andrea Di Falco, Prof. Elia Palange, Dr. Andrea Marini, Dr. Alessandro Ciattoni</u>	
Hybrid photonic-plasmonic devices for enhanced sensitivity biosensors	188
<u>Dr. Lucia Fornasari, Dr. Paola Pellacani, Dr. Miguel Manso, Dr. Chloe Rodriguez, Dr. Vicente Torres-costa, Prof. Franco Marabelli</u>	
Plasmonic Photodetector Incorporating SrTiO₃ Interfacial Layer	190
<u>Dr. Takayuki Matsui, Dr. Yi Li, Prof. Rupert F Oulton, Prof. Lesley F Cohen, Prof. Stefan A Maier</u>	
Preparation of plasmonic HfN nanoparticle arrays for hot-electron photochemistry	192
<u>Dr. Sven Askes, Prof. Erik Garnett, Ms. Evgenia Kontoleta</u>	
Random lasers for spectroscopy applications	193
<u>Mrs. Alice Boschetti, Dr. Andrea Taschin, Dr. Paolo Bartolini, Dr. Lorenzo Pattelli, Prof. Renato Torre, Prof. Diederik Wiersma</u>	
Efficient Generalized Mie Theory Analysis of Nano Silver Dimers for Optical Field Enhancement in the Plasmonic Photoconductive THz Antenna	194
<u>Ms. Faezeh zarrinkhat, Prof. Jordi Romeu, Prof. Juan Rius, Prof. Lluís Jofre</u>	
Controlling Light at the Atomic Scale	196
<u>Prof. Javier García de Abajo</u>	
Charge transfer in nanoplasmonics as an avenue for control of chemical SERS enhancement and molecular self-assembly	197
<u>Prof. Stefan A Maier</u>	
Plasmonics for high quality light sources	198
<u>Prof. Femius Koenderink</u>	
Polariton quantum fluids	199
<u>Prof. Daniele Sanvitto</u>	
Polarization state transfer and photon routing with discrete high-index dielectric nanowaveguides	200
<u>Mr. Roman Savelev, Mr. Vitaly Yaroshenko, Mr. Danil Kornovan, Dr. Mihail Petrov</u>	

Switching of surface plasmon-polariton transmittance through the graphene stub nanoresonator with quantum dot	201
<u>Dr. Alexei Prokhorov, Dr. Mikhail Gubin</u>	
Stabilization of quantum dots on modified natural aluminosilicate nanotubes for biological application	202
<u>Dr. Anna Stavitskaya, Dr. Andrei Novikov, Dr. Elvira Rozhina, Mrs. Fereshtech Pouresmaeil, Mr. Danila Logvinenko, Dr. Pawel Gushchin, Prof. Rawil Fakhruilin, Prof. Yuri Lvov, Prof. Vladimir Vinokurov</u>	
Passively Q-switched fiber laser using PtS₂ microflakes saturable absorber	203
<u>Mr. Xinyu Wang, Mr. Ping Kwong Cheng, Mr. Chun Yin Tang, Mr. Wayesh Qarony, Dr. Yuen Hong Tsang</u>	
Strong coupling between excitons in transition metal dichalcogenides and optical bound states in the continuum	204
<u>Ms. Zarina Sadrieva</u>	
Self-trapping of optical solitons in double Josephson junctions formed by spatially coupled soliton and surface-plasmons	206
<u>Dr. Güneş Aydınođan, Prof. Kaan Güven</u>	
Fabrication of Fluorescence Graphene Quantum Dots/CoFe₂O₄@SiO₂ Nanoparticles and Potential Application for Targeted Drug Delivery and Fluorescence Imaging of Cancer Cells	207
<u>Ms. Yun TENG, Prof. Philip W. T. Pong</u>	
Experimental Demonstration of the Purcell Effect in Silicon Mie-resonators with Embedded Ge(Si) Quantum Dots	209
<u>Ms. Viktoriia Rutckaia, Dr. Mihail Petrov, Dr. Frank Heyroth, Dr. Alexey Novikov, Dr. Vadim Talalaev, Prof. Joerg Schilling</u>	
Cellulose based photonic architectures	211
<u>Ms. Camilla Dore, Dr. André Espinha, Mr. Cristiano Matricardi, Dr. Maria Isabel Alonso, Dr. Alejandro Goni, Dr. Johann Osmond, Dr. Agustin Mihi</u>	
Ultrahigh Purcell factor achieved in a single sphere-gap-cone hybrid nanoantenna	213
<u>Ms. Yali Sun, Dr. Sergey Makarov, Dr. Dmitry Zuev</u>	
Dynamic plasmonic metasurface holograms	214
<u>Dr. Jianxiong Li, Prof. Na Liu</u>	
Temperature-dependent optical properties of plasmonic nanosystems	216
<u>Mr. Michele Magnozzi, Ms. Marzia Ferrera, Dr. Francesco Bisio, Prof. Maurizio Canepa</u>	
Tunable MIM plasmonic near-infrared transmissive metasurface	217
<u>Mr. Arash Nemati, Prof. Minghui Hong, Dr. Jinghua Teng</u>	
Development of a rapid measurement method of bacterial concentration by light-induced assembly based on photothermal effect	219
<u>Mr. Yasuyuki Yamamoto, Prof. Shiho Tokonami, Prof. Takuya Iida</u>	
Generation of shear waves in a soft medium by 2.1 μm light source based on periodically poled ferroelectric crystal	220
<u>Dr. Liliana Martinez, Dr. Juan Gonzalez, Mr. Amaury Garcia, Dr. Luis Rios, Dr. Rurik Farias, Dr. Jose Enriquez</u>	

Combined effect of Etched diameter and thickness of Reduced Graphene Oxide coating on the sensitivity of Fiber Bragg Grating sensors for DNA application	221
<u>Mrs. Kavitha Srinivasan, Prof. Asokan Sundarrajan, Ms. Radhika Nambannor</u>	
A new fluorescent 1,8-naphthalimide based chemosensor for detection of dinitrobenzene	223
<u>Dr. Jiri Zednik, Prof. Vladimir Sedlarik, Dr. Diana Harea</u>	
Nanostructured Si- and Al for advanced microLED imaging	224
<u>Prof. Aliaksandr Smirnov, Dr. Andrey Stepanov, Mr. Yauhen Mukha, Mr. Boris Kazarkin, Mr. Ilya Zacharchenya</u>	
Plasmon-enhanced Förster resonance energy transfer in Langmuir-Blodgett films based on organic dyes	225
<u>Prof. Niyazbek Ibrayev, Dr. Evgeniya Selivertsova, Ms. Nazerke Zhumabay</u>	
Improvement of the photoinduced birefringence in azopolymer PAZO doped with TiO₂ via thermal annealing	227
<u>Mr. Georgi Mateev, Prof. Lian Nedelchev, Prof. Dimana Nazarova, Dr. Anton Georgiev</u>	
Nonlinear optical behavior of metallic nanoparticle suspensions at high laser fluences	228
<u>Ms. Stefanie Dengler, Dr. Bernd Eberle</u>	
Assessment of the optical properties of two cover materials of greenhouse on the heat transfer	229
<u>Dr. LALMI Djemoui</u>	
Fundamental study of the size-dependent optical properties of periodic arrays of nanoscale semiconducting fin structures	230
<u>Mr. Andrzej Gawlik, Dr. Janusz Bogdanowicz, Dr. Andreas Schulze, Prof. Jan Misiewicz, Prof. Wilfried Vander-vorst</u>	
Coherent reflectance of light from confined nanocolloid films: Modeling, experiment and applications	231
<u>Mr. Gesuri Morales-Luna, Dr. Augusto García-Valenzuela</u>	
Optical and electrical properties of coupled silver nanocrystal based flexible transparent nano-mesh film	232
<u>Ms. Mihyun KIM, Mr. Hyungmok Joh, Mr. Sunghoon Hong, Prof. Soong Ju Oh</u>	
Application of portable nanogenerator using friction charging	233
<u>Dr. Dongseob Kim</u>	
Hydrogenated amorphous silicon for nano-photonic devices from visible to mid-infrared	234
<u>Prof. Duk-Yong Choi</u>	
Large Area Optics with Silver Nanoparticles	236
<u>Mr. Ivan Shutsko, Mr. Maik Meudt, Mr. Andreas Polywka, Mr. Christian Tückmantel, Prof. Patrick Görrn</u>	
Second harmonic generation from zero-diffraction-order AlGaAs metasurfaces	237
<u>Dr. Giuseppe Marino, Mr. Carlo Gigli, Dr. Ivan Favero, Mr. Stéphan Suffit, Dr. Arnaud Garnache, Dr. Isabelle Sagnes, Prof. Giuseppe Leo</u>	
Intersubband plasmons induced negative refraction at mid-IR frequency in heterostructured semiconductor metamaterials	238
<u>Mr. Mario Ferraro, Dr. Miguel Montes Bajo, Mr. Julen Tamayo-Arriola, Prof. Massimo Giudici, Dr. Angela Vasanelli, Dr. Jean Michel Cheuveau, Dr. Adrian Hierro, Dr. Patrice Genevet</u>	

Plasmonic Metasurface Absorber by Transfer Printing	240
<u>Mr. Maik Meudt, Mr. Timo Jakob, Mr. Andreas Polywka, Mr. Luca Stegers, Mr. Stefan Kropp, Mr. Simon Runke, Mr. Martin Zang, Prof. Markus Clemens, Prof. Patrick Görrn</u>	
Gain-loss hyperbolic plasmonic metasurfaces	241
<u>Dr. Dmitry Kuzmin, Prof. Igor Bychkov, Prof. Vladimir Shavrov, Dr. Vasily Temnov</u>	
Optical properties and reliability studies of gradient alloyed green and red emitting quantum dots for white light-emitting diodes	242
<u>Dr. Rachod Boonsin, Dr. Florian Donat, Dr. Damien Boyer, Prof. Raphael Schneider, Prof. Philippe Boutinaud, Dr. Rachid Mahiou, Prof. Geneviève Chadeyron</u>	
Plasmon-induced in-plane band gap engineering in hydrogenated dilute nitrides	243
<u>Dr. Giorgio Pettinari, Mr. Loris Angelo Labbate, Dr. Silvia Rubini, Prof. Antonio Polimeni, Dr. Marco Felici</u>	
Control of light emission by diamond nanoantennas	245
<u>Ms. Anastasia Zalagina, Mr. Dmitry Zuev, Mr. Roman Savelev, Prof. Ilya Shadrivov</u>	
Nanoplasmonic Sensing by Silver Nanoplates Generated by Pulsed Laser Ablation and Reirradiation in Liquids	246
<u>Dr. vittorio scardaci, Mr. Marcello Condorelli, Dr. Luisa D'urso, Prof. Orazio Puglisi, Prof. Giuseppe Compagnini</u>	
Self-assembling of nanomaterials via droplet manipulation for multifunctional optoelectronics	247
<u>Dr. Meng Su</u>	
Color centers in diamond: from single-photons to nanoscale sensing	248
<u>Dr. Paolo Traina, Dr. Ekaterina Moreva, Dr. Jacopo Forneris, Dr. Sviatoslav Ditalia Tchernij, Dr. Federico Piccolo, Dr. Ivo Degiovanni, Prof. Valentina Carabelli, Dr. Paolo Olivero, Dr. Marco Genovese</u>	
Designing plasmonic eigenstates for optical signal transmission and logic gates nanodevices.	249
<u>Mr. Upkar Kumar, Mrs. Sviatlana Viarbitskaya, Mr. Aurélien Cuche, Mr. Alexandre Bouhelier, Mr. Gérard Colas Des Francs, Mr. Christian Girard, Mr. Erik Dujardin</u>	
Phase-matching-free micron-sized parametric oscillators by two-dimensional media	250
<u>Dr. Andrea Marini, Dr. Alessandro Ciattoni, Dr. Carlo Rizza, Prof. Claudio Conti</u>	
Active dielectric nanoantennas for directional lasing	251
<u>Dr. Son Tung Ha, Dr. Yuan Hsing Fu, Dr. Naresh K. Emani, Dr. Zhenying Pan, Dr. Reuben M. Bakker, Dr. Ramon Paniagua-Dominguez, Dr. Arseniy I. Kuznetsov</u>	
Mixed Frequency Generation in a Gold Antenna enables Double Blind Ultrafast Pulse Characterization	252
<u>Dr. Sylvain Gennaro, Dr. Yi Li, Prof. Stefan A Maier, Prof. Rupert F Oulton</u>	
Superfluid Brillouin Laser	254
<u>Dr. Andreas Sawadsky, Dr. Christopher Baker, Mr. He Xin, Prof. Warwick Bowen</u>	
The role of corners in the second harmonic scattering origin response from silver nanocubes	256
<u>Dr. christian jonin, Dr. Isabelle Russier-antoine, Prof. Emmanuel Benichou, Prof. Pierre-françois Brevet, Prof. Hye Jin Lee, Dr. Alastair Wark, Dr. Jérémy Butet, Prof. Olivier Martin</u>	
Raman spectroscopy of a single gold nanoparticle dimer	257
<u>Dr. Adrien Girard, Dr. Hélène Gehan, Dr. Alain Mermet, Dr. Christophe Bonnet, Dr. Jean Lermé, Dr. Alice Berthelot, Dr. Emmanuel Cottancin, Dr. Aurélien Crut, Dr. Jeremie Margueritat</u>	

Dynamics of electric dipoles in fluctuating light fields: From gravity-like interactions to accelerated expansion	258
<u>Prof. M. I. Marques, Dr. Jorge Luis-hita, Mr. Victor Jose Lopez Pastor, Dr. Nuno De Sousa, Dr. Luis Froufe, Prof. Frank Scheffold, Prof. Rafael Delgado-Buscalioni, Prof. J. J. Saenz</u>	
Optical Modulation of Flexible Pre-Structured Metallo-Dielectric Films	260
<u>Mr. Ali El-Hadi Zeineddine, Prof. Nazir Kherani</u>	
Optomechanical Kerker effect	261
<u>Dr. Alexander Poshakinskiy, Dr. Alexander Poddubny</u>	
Light Control using Microlens Arrays	262
<u>Prof. Nikolai Petrov, Mrs. Galina Petrova</u>	
Surface profile 3D visualization from thickness map reconstruction of thin films using scattering of surface plasmon polaritons	264
<u>Dr. Rodolfo Cortés-Martínez, Dr. César E. García-Ortiz, Dr. Raúl Hernández-Aranda, Dr. Felix Aguilar-Valdez, Dr. Víctor M. Coello-Cárdenas</u>	
Nanodisk lasers for internalisation by live cells	265
<u>Mr. Alasdair Fikouras, Dr. Marcel Schubert, Mr. Markus Karl, Dr. Dinesh Kumar, Dr. Simon Powis, Dr. Andrea Di Falco, Prof. Malte Gather</u>	
Dust particles contamination monitoring in the backscattering light experiment for the LISA mission	267
<u>Dr. Sibilla Di Pace, Dr. Arwa Dabbech, Mr. Vitalii Khodnevykh, Dr. Michel Lintz, Dr. Nicoleta Dinu-jaeger</u>	
Localized surface plasmon studies on Au@Ag cuboids by electron energy-loss spectroscopy (EELS). Application to SERS experiments.	269
<u>Dr. Israa Haidar, Dr. Guillaume Radtke, Dr. Markus Krug, Dr. Andreas Hohneau, Dr. Viktor Kapetanovic, Prof. Joachim R. Krenn, Dr. Matthieu Bugnet, Prof. Gianluigi Botton, Dr. Leïla Boubekeur-lecaque, Prof. Nordin Felidj</u>	
Time-resolved four-wave mixing using Laguerre-Gauss modes	270
<u>Dr. Pierre Gilliot, Mr. Marc Ziegler, Prof. Bernd Hönerlage, Dr. Mathieu Gallart</u>	
Trigonal symmetric plasmonic array of standing wires for broadband, polarization insensitive molecular sensing.	271
<u>Dr. Andrea Giugni, Dr. Bruno Torre, Dr. Marco Allione, Dr. Giovanni Marinaro, Dr. Gobind Das, Prof. Jurgen Kosel, Prof. Enzo Di Fabrizio</u>	
Low Frequency Raman spectroscopy of small gold clusters: limits of Lamb model ?	272
<u>Mr. Quentin Martinet, Dr. Adrien Girard, Dr. Alice Berthelot, Dr. Baira Donoeva, Ms. Clothilde Comby-zerbino, Dr. Franck Bertorelle, Ms. Marte Van Der Linden, Dr. Nathalie Tarrat, Prof. Nicolas Combe, Dr. Jeremie Margueritat</u>	

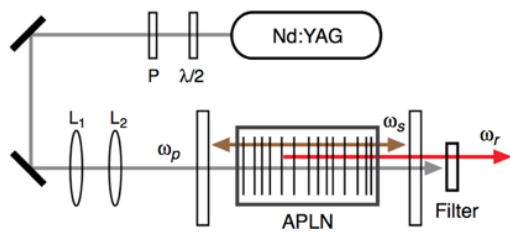
710 nm red light source based on cascaded nonlinear optical processes for use in biomedical application.

Tuesday, 2nd October @ 13:30: Poster Session (HALL & ROOM 3) - Poster - Abstract ID: 463

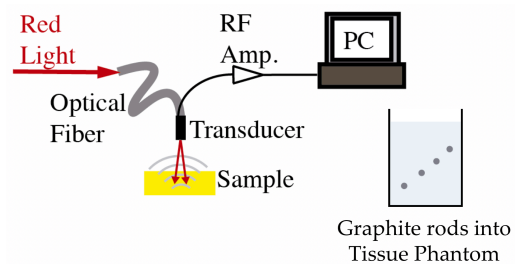
Dr. Juan Gonzalez¹, Dr. Liliana Martinez¹, Dr. Roger Cudney², Dr. Jose Enriquez¹, Dr. Rurik Farias¹, Mr. Eduardo Melendez¹

1. Universidad Autónoma de Ciudad Juárez, 2. CICESE

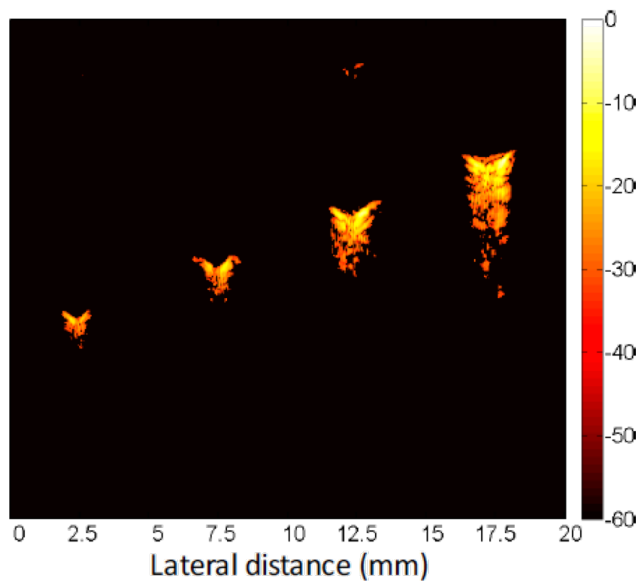
Photoacoustic imaging is a diagnostic technique which is based on the detection of acoustic waves induced in tissue by the absorption of electromagnetic radiation, usually from pulsed sources on a nanosecond timescale and with wavelengths between 600 and 900 nm. This technique can be used to detect microcalcifications in breast tissue and a wavelength between 600 and 800 nm is optimal for this particular case. In this work we present a scheme for an inexpensive and simple device that emits 9 nanosecond pulses over 1 mJ at a 710 nm wavelength which is based on an aperiodically poled ferroelectric crystal (Lithium Niobate, LiNbO_3) pumped with a Nd:YAG pulsed laser source to obtain the red beam and is a viable source for biomedical applications like Photoacoustic imaging. The wavelength conversion from 1064 nm to 710 nm was achieved by two cascaded nonlinear optical processes within the Lithium Niobate crystal. First by optical parametric generation at degeneracy point a signal wave with 2128 nm wavelength is generated and simultaneously a sum-frequency generation process between the pump and signal waves results in the red beam.



Red source.png



Pai 1.png



Pai 2.png