



ICOP

Italian Conference on
Optics and Photonics

Firenze, 17-19 June 2024

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The Italian Conference on Optics and Photonics aims to bring together researchers from all over Italy and worldwide, networking and exchanging their research developments in the field of Optics and Photonics, in a stimulating and multidisciplinary forum.

The Conference will establish as a high-level meeting in the areas of Nano and Quantum Sciences, Optical Communication Systems, Optical Imaging and Sensing, Laser and Nonlinear Optics, Applications of Photonic Technology and new Emerging Topics.

The program will feature invited lectures, oral and poster sessions and workshops.

ICOP 2024 Chair – Ambra Giannetti

Istituto di Fisica Applicata Nello Carrara – CNR, Sesto Fiorentino, Italy

17 June 2024

10:00-10:30	Opening		
10:30-11:55	Plenary session/Round table "Which Future of Photonics in Italy and in Europe"		
	S1 COMPONENTS FOR TLC	S2 BIOIMAGING	S3 LASER PROCESSING AND APPLICATIONS
12:00-12:30	INV_01-Tunesi	INV_02-Mazzamuto	O_05-Rossi L O_06-Mckee
12:30-12:45	O_01-Vincetti	O_03-Cicchi	O_07-Surdo
12:45-13:00	O_02-Rosa	O_04-Khadem	O_08-Boynukara
Lunch break			
	S4 QUANTUM AND SENSING NETWORKS	S5 PLASMONIC BIOSENSING	S6 ARTIFICIAL INTELLIGENCE AND NEUROMORPHIC COMPUTING
14:30-15:00	INV_03-Bacco	INV_05-Chiavaoli	INV_06-Biasi
15:00-15:15	INV_04-Gaudino	O_11-Granata	INV_07-Foradori
15:15-15:30		O_12-Renzullo	
15:30-15:45	O_09-Pellegrini	O_13-Tavoletta	O_15-Ciacci
15:45-16:00	O_10-Fasano	O_14-Nocerino	O_16-D'Ingillo
Coffee break			
	S7 NETWORK AND TRANSMISSION	S8 CHEMICAL AND BIOCHEMICAL SENSORS I	S9 MATERIALS AND COMPONENTS I
16:30-17:00	INV_08-Casasco	INV_10-Nava	INV_11-Lavista
17:00-17:15	INV_09-Ambrosone	O_19-Banchelli	INV_12-Campopiano
17:15-17:30		O_20-Calabria	
17:30-17:45	O_17-Andrenacci	O_21-Esposito A	O_24-Caputo
17:45-18:00	O_18-Velha	O_22-Martino	O_25-Trapani
18:00-18:15		O_23-Zaheer	O_26-Pini

18 June 2024

09:00-10:30	Plenary session/Round table "Photonics for AI and AI for Photonics, present and future"		
Coffee break			
	S10 DIRECT-MODULATION BASED COMMUNICATIONS	S11 OPTICAL SENSING I	S12 APPLICATIONS IN MEDICINE
11:00-11:30	INV_13-Staffoli	INV_14-Berneschi	INV_16-Rella
11:30-11:45	O_27-Marchisio	INV_15-Elaskar	O_35-Magni
11:45-12:00	O_28-Staffoli		O_36-Pandayil
12:00-12:15	O_29-Brusin	O_32-Bassi	O_37-Cavigli
12:15-12:30	O_30-Galani	O_33-Minardo	O_38-Rossi B
12:30-12:45	O_31-Saderi	O_34-Aitkulov	O_39-Ratto
12:45-13:00			O_40-Polykretis
Lunch break			
	S13 NON LINEAR OPTICS	S14 OPTICAL SENSING II	S15 QUANTUM OPTICS
14:30-15:00	O_41-Brameri O_42-Federico	INV_17-Frigenti	INV_18-Salamon
15:00-15:15	O_43-Mauro	O_46-Cavagnetto	O_49-Sanna
15:15-15:30	O_44-Principe	O_47-Janneh	O_50-Marchesini
15:30-15:45	O_45-Talenti	O_48-Castellano	O_51-Baldazzi
Coffee break			
16:00-17:30	Poster session		
20:00-00:30	Social dinner		

19 June 2024

	S16 DEVICES FOR TLC	S17 CHEMICAL AND BIOCHEMICAL SENSORS II	S18 MATERIALS AND COMPONENTS II
09:00-09:30	O_52-Wobuyaga O_53-Imran	INV_19-Corsi	INV_20-Ruffato
09:30-09:45	O_54-Alasio	O_58-Baldini	O_62-Janner
09:45-10:00	O_55-Gioannini	O_59-Esposito C	O_63-Bartoli
10:00-10:15	O_56-Ferraresi	O_60-Farnesi	O_64-Filograno
10:15-10:30	O_57-Tunesi	O_61-Samà	O_65-Virgili
Coffee break			
	S19 NON FIBER-BASED COMMUNICATIONS	S20 SIOF/IEEE	S21 MATERIALS AND COMPONENTS III
11:00-11:30	INV_21-Sambo	O_70-Granchi O_71-Loconsole O_72-Pirone O_73-Vernuccio O_74-Skubisz O_75-Rabolini O_76-Miranda	INV_22-Balestrieri
11:30-11:45	O_66-Cincotti	SIOF Career Award Ceremony SIOF and IEEE Master and PhD Award Ceremony	INV_23-Vincetti
11:45-12:00	O_67-Lodovisi/Betti		O_77-Massarelli
12:00-12:15	O_68-Ciaramella		O_78-Gökbulut
12:15-12:30	O_69-Brugnoni		
Award Ceremony and closings			

17th JUNE

10:00-11:55	Room: Auditorium A
10:00-10:30	Opening Plenary session/Round table "Which Future of Photonics in Italy and in Europe" Chair: Dr. Francesco Baldini - Istituto di Fisica Applicata "N. Carrara" – CNR, Sesto Fiorentino (FI), Italy
10:30-11:55	Confirmed speakers: Prof. Roberta Ramponi - Dipartimento di Fisica, Politecnico di Milano, Milan, Italy Ing. Antonio Raspa - Luxinar, Ultrashort Laser Product Manager, Milan, Italy Prof. Hugo Thienpont - Faculty of Engineering of the Vrije Universiteit Brussel (VUB), Belgium

Parallel Sessions

S1 COMPONENTS FOR TLC	
12:00-13:00	Room: 001. <u>Chair: Giovanni Tartarini</u>
12:00-12:30	INV_01 Integrated Multi-band WSS: from design to transmission level simulations <u>L. Tunesi, I. Khan, M.U. Masood, E. Ghillino, A. Carena, V. Curri, P. Bardella</u>
12:30-12:45	O_01 Ultimate Loss Limit in Ideal Hollow-Core Inhibited Coupling Fibers and the Impact of Non-Idealities <u>F. Melli, K. Vasko, L. Rosa, F. Benabid, L. Vincetti</u>
12:45-13:00	O_02 Hollow-core inhibited-coupling fibers for quantum photon sources <u>L. Rosa, W. Belardi, F. Melli, A. Cucinotta, L. Vincetti</u>

S2 BIOIMAGING

12:00-13:00 | Room: *Auditorium A* | Chair: Francesco Baldini

12:00-12:30 | **INV_02** High-resolution mapping of neural tissue with Light-Sheet Fluorescence Microscopy
G. Mazzamuto, I. Costantini, D. Di Meo, F. Cheli, M. Sorelli, S. Bradley, J. Ramazzotti, C. Checcucci, L. Silvestri, A. Franceschini, F. S. Pavone

12:30-12:45 | **O_03** Discrimination of fresh gastrointestinal tumor biopsies using a fiber-based fluorescence lifetime imaging probe
D. Suraci, L. Tirloni, E. Baria, J.L. Lagarto, S. Pillozzi, L. Antonuzzo, A. Taddei, R. Cicchi

12:45-13:00 | **O_04** Quantitative Morphological Analysis of Lipid Droplets in Prostate Cancer Cells: Insights from Holotomography and Raman Spectroscopy
H. Khadem, M.A. Ferrara, M. Mangini, A. Luini, G. Coppola, A.C. De Luca

S3 LASER PROCESSING AND APPLICATIONS

12:00-13:00 | Room: *002* | Chair: Annamaria Cucinotta

12:00-12:15 | **O_05** Feature Optimization for Direct Laser Writing Two Photon Polymerization Setup
L. Rossi, A. Giovannini, D. Marini, M. Archimi, F.M. den Hoed, A. Ottomaniello, O. Tricinci, V. Mattoli, G. Bolognini

12:15-12:30 | **O_06** Fabrication of continuous-relief micro- and nanoscale structures using maskless grayscale lithography
S. Mckee, A.H.A. Lutey, D. Chorvát, D. Kuhness, D. Haško, C. Schuster, A. Voigt, V. Ferraro, A. Cucinotta, L. Kuna

12:30-12:45 | **O_07** Closely-packed microlens arrays by laser catapulting of polymeric microdiscs
S. Surdo, M. Duocastella

12:45-13:00 | **O_08** Advanced Laser Cleaning of Artificially Soiled Papers: A Non-Destructive Conservation Approach Explored through Attenuated Total Internal Reflection Spectroscopy
C.Y. Boynukara, V. Graziani, M. Uguryol, L. Tortora, P. Antici

13:00-14:30 | Lunch Break

Parallel Sessions

S4 QUANTUM AND SENSING NETWORKS

14:30-16:00 | Room: 001 | Chair: Gaetano Bellanca

14:30-15:00 | **INV_03** An Industry 4.0 Quantum Testbed in Turin
N. Corrias, I. Vagniluca, S. Francesconi, C. De Lazzari, N. Biagi, M. Menchetti, E. Redolfi, R. Mercinelli, A. Pagano, M. Valvo, G. Lombardi, A. Scordato, V. Gionco, O. Tovar, G. Giacalone, P. Brizzi, T. Occhipinti, A. Zavatta, D. Bacco

15:00-15:30 | **INV_04** Overview on optical sensing techniques over deployed telecom networks
R. Gaudino, G. Rizzelli, A. M. Rosa Brusin, S. Pellegrini, V. Ferrero, G. Bosco, D. Pileri, P. Parolari, P. Boffi

15:30-15:45 | **O_09** Polarization sensing in metropolitan areas
S. Pellegrini, G. Rizzelli, L. Andrenacci, L. Minelli, D. Pileri, G. Bosco, C. Crognale, S. Piciaccia, A. Tanzi, R. Gaudino

15:45-16:00 | **O_10** Urban sensing by deployed uncoupled multicore fiber
M. Fasano, T. Hayashi, T. Nagashima, A. Mecozzi, C. Antonelli, P. Boffi

S5 PLASMONIC BIOSENSING

14:30-16:00 | Room: Auditorium A | Chair: Martina Banchelli

14:30-15:00 | **INV_05** Unveiling multiple biomarker analysis for Alzheimer's disease by combined plasmonic and microfluidic fiber sensing technologies
F. Chiavaioli, L. Zu, X. Wang, P. Liu, J. Xie, X. Zhang, W. Liu, Z. Li, S. Zhang, K. Li, A. Giannetti, F. Baldini, W. Bi, L. Shi, T. Guo

15:00-15:15 | **O_11** Development of a flexible plasmonic device for biochemical detection
F. Granata, M. Iodice, F. Gentile, G. Coppola

15:15-15:30 | **O_12** Plasmonic Optical Fiber Biosensors for Periodontitis Detection
L.P. Renzullo, L. Guida, D. Bencivenga, E. Stampone, M. Annunziata, F. Arcadio, A. Borriello, F. Della Ragione, A. Formisano, A. Piccirillo, L. Zeni, N. Cennamo

15:30-15:45 | **O_13** Point-of-care test for cytokines via Plasmonic biosensors
I. Tavoletta, A. Piccirillo, D. Bencivenga, E. Stampone, F. Arcadio, M. Annunziata, F. Della Ragione, L. Guida, L. Zeni, A. Borriello, N. Cennamo

15:45-16:00	<p>O_14 Hybrid Plasmonic/Dielectric Nanostructured Devices Exhibiting High Sensitivity for Biosensing Applications <u>V. Nocerino, B. Miranda, P. Dardano, M.G. Manera, R. Rella, A. Colombelli, D. Lospinoso, L. De Stefano</u></p>
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S6 ARTIFICIAL INTELLIGENCE AND NEUROMORPHIC COMPUTING

14:30-16:00	Room: 002	<u>Chair: Andrea Barucci</u>
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14:30-15:00	<p>INV_06 Silicon microresonators as spiking neurons for event detection <u>S. Biasi, A. Lugnan, L. Pavesi</u></p>
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15:00-15:30	<p>INV_07 Reservoir computing with a silicon microring resonator matrix for image classification <u>A. Foradori, A. Lugnan, L. Pavesi, P. Bienstman</u></p>
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15:30-15:45	<p>O_15 The ubiquity of Machine Learning in Biophotonics <u>G. Ciacci, C. D'Andrea, P. Matteini, M. Banchelli, E.M. Alessi, S. Di Ruzza, M.A. Pascali, S. Colantonio, A. Barucci</u></p>
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15:45-16:00	<p>O_16 Towards Digital Twin of Photonic Integrated Circuits: AI and Machine Learning Application for InP Mach-Zehnder Modulators Control <u>R. D'Ingillo, S. Straullu, R. Siano, V. Curri</u></p>
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16:00-16:30	Coffee Break
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Parallel Sessions

S7 NETWORK AND TRANSMISSION

16:30-18:00	Room: 001	<u>Chair: Pierpaolo Boffi</u>
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16:30-17:00	<p>INV_08 Metro-Access convergence scenario: Experimental Demonstration in an in-field 400 Gb/s Full Coherent Transmission <u>M. Casasco, A. Pagano, G. Rizzelli, V. Ferrero, R. Gaudino</u></p>
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17:00-17:30	<p>INV_09 AI-empowered Optical Network Self-Healing relying on the Digital Twin as-a-Service <u>R. Ambrosone, R. D'ingillo, V. Curri</u></p>
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17:30-17:45	<p>O_17 PDL Localization and Estimation through Longitudinal Power Monitoring: a Comparison between Least Squares and Correlation Methods <u>L. Andrenacci, G. Bosco, D. Pilori</u></p>
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17:45-18:00

O_18 Radiation-hard silicon photonic-based transceiver architectures beyond 100 Gb/s
S. Cammarata, P. Velha

S8 CHEMICAL AND BIOCHEMICAL SENSORS I

16:30-18:15

Room: Auditorium A

Chair: Sara Tombelli

16:30-17:00

INV_10 Label-free interferometric imaging biosensor for the digital detection of single virus particles
G. Nava, L. Casiraghi, T. Carzaniga, G. Zanchetta, M. Chiari, F. Damin, V. Bollati, L. Signorini, S. Delbue, T. Bellini, M. Buscaglia

17:00-17:15

O_19 Development of a miRNA biosensor based on the signal-off SERS of a molecular beacon
M. Banchelli, S. Tombelli, C. D'Andrea, M. de Angelis, C. Trono, F. Baldini, A. Giannetti, P. Matteini

17:15-17:30

O_20 Chemiluminescence biosensors for H₂O₂ detection employing a peroxidase-mimicking, guanosine-based self-assembled hydrogel
D. Calabria, A. Pace, E. Lazzarini, M. Zangheri, M. Guardigli, S. Pieraccini, S. Masiero, M. Mirasoli

17:30-17:45

O_21 Raman and SERS single-cell screening on BC cell-lines expressing different levels of HER2 receptor
A. Esposito, S. Spaziani, G. Barisciano, G. Quero, M. Leo, V. Colantuoni, M. Mangini, M. Pisco, L. Sabatino, A.C. De Luca, A. Cusano

17:45-18:00

O_22 Detection of microRNAs as circulating biomarkers via Flexible Optical Biosensor
S. Martino, D. Yilmaz, C. Tamaro, G. Misso, E. Amler, R. Divin, A. Giannetti, L. De Stefano, I. Rea, A.C. De Luca, M. Caraglia

18:00-18:15

O_23 Robust 2D Ti₃C₂-MXene/AuNPs composite for sensing E-Coli in drinking water
A. Zaheer, Z.U.D Babar, F. Pisani, R. Velotta, B. Della Ventura, V. Iannotti

S9 MATERIALS AND COMPONENTS I

16:30-18:15

Room: 002

Chair: Gabriele Bolognini

16:30-17:00

INV_11 Optical Control of Energy Transfer in Strongly Coupled Organic Microcavities
L. Lavista, A. Cargioli, M. Lednev, A. Camposeo, A. Sassella, D. Pisignano, A. Tredicucci, F. J. Garcia-Vidal, J. Feist, L. Persano

17:00-17:30

INV_12 Mechanically induced long period gratings: recent progresses
S. Zahra, E. De Vita, F. Esposito, A. Iadicicco, S. Campopiano

17:30-17:45

O_24 Spectral tunability of amorphous silicon photosensors for lab-on-chip applications
D. Caputo, N. Lovecchio, A. Nascetti, F. Costantini, S. Casalnuovo, G. de Cesare

17:45-18:00

O_25 Investigation on precursor molar ratio to fabricate carbon dot-based electroluminescent devices
D. Trapani, F. Saiano, I. Crupi, R. Macaluso, M. Mosca

18:00-18:15

O_26 Time-resolved light transport in structurally anisotropic media
E. Pini, P. Naglič, M. Bürmen, A. Gatto, H. Schäfer, D.S. Wiersma, L. Pattelli

18th JUNE

09:00-10:30	Room: Auditorium A
09:00-10:30	<p>Plenary session/Round table "Photonics for AI and AI for Photonics, present and future" <i>Chair: Dr. Giacomo Mazzamuto - Istituto Nazionale di Ottica – CNR, Sesto Fiorentino (FI), Italy</i></p> <p>Confirmed speakers: Dr. Andrea Barucci – Istituto di Fisica Applicata “N. Carrara” – CNR, Sesto Fiorentino (FI), Italy Prof. Kristen Mariko Meiburger - Dipartimento di Elettronica e Telecomunicazioni, Politecnico di Torino, Italy Prof. Lorenzo Pavesi - Dipartimento di Fisica, Università di Trento Prof. Ricard Martinez - Universitat de València, Spain</p>
10:30-11:00	Coffee Break

Parallel Sessions

S10 DIRECT-MODULATION BASED COMMUNICATIONS	
11:00-12:45	Room: 001 <i>Chair: Roberto Gaudino</i>
11:00-11:30	INV_13 Reducing the computational effort for optical OFDM equalization via a photonic neural network <i>E. Staffoli, G. Maddinelli, P.R.N. Marciano, M.E.V. Segatto, L. Pavesi</i>
11:30-11:45	O_27 Evolutionary algorithm-enabled VCSEL characterization from power and frequency response measurements <i>A. Marchisio, E. Ghillino, V. Curri, A. Carena, P. Bardella</i>
11:45-12:00	O_28 Equalization of a 20Gbps PAM4 signal using a photonic neural network <i>G. Maddinelli, E. Staffoli, L. Pavesi</i>
12:00-12:15	O_29 800G intra-data center transceiver requirements for SWDM VCSEL-MMF links <i>A.M.R. Brusin, F. Forghieri, A. Carena</i>

12:15-12:30	O_30 VCSEL-based Single-Sideband Transmission for Sustainable Metro-Access Links <i>S. Gaiani, P. Parolari, A. Gatto, P. Boffi</i>
12:30-12:45	O_31 Impact of Butt-Coupling on the Two-Mode Propagation in Optical Systems using 850nm Vertical Cavity Surface Emitting Lasers and Standard Single Mode Fibers <i>J. Nanni, G. Saderi, G. Bellanca, G. Bosi, V. Vadalà, A. Raffo, P. Debernardi, A.-L. Billabert, J.-L. Polleux, M.N. Esfahani, G. Tartarini</i>

S11 OPTICAL SENSING I

11:00-12:45 | Room: Auditorium A | Chair: Cosimo Trono

11:00-11:30	INV_14 All-silica integrated optofluidic refractometer based on microbubble resonators <i>V.A. Amorim, F. Baldini, S. Berneschi, D. Farnesi, G. Frigenti, G. Nunzi Conti, P.A.S. Jorge, J.M. Maia, P.S.S. dos Santos, P.V.S. Marques</i>
11:30-12:00	INV_15 Miniaturizing Fiber Bragg Grating Interrogators on Chip <i>J. Elaskar, F. Bontempi, P. Velha, R.M.A. Ayaz, L. Tozzetti, S. Faralli, F. Di Pasquale, C.J. Oton</i>
12:00-12:15	O_32 Development of a low-cost opto-fluidic platform for refractive index sensing based on glass micro-capillaries <i>I. Bassi, V. Bello, E. Bodo, S. Merlo</i>
12:15-12:30	O_33 A novel NA-OFDR method for distributed vibration sensing based on I/Q demodulation <i>A. Loayssa, R. Zahoor, R. Vallifuoco, L. Zeni, A. Minardo</i>
12:30-12:45	O_34 Twist Detection through Polarization-Sensitive Reflectometry in Distributed Multi-Core Fiber Configurations <i>A. Aitkulov, M. Cappelletti, D. Orsuti, L. Schenato, T. Hayashi, M. Santagiustina, A. Galtarossa, L. Palmieri</i>

S12 APPLICATIONS IN MEDICINE

11:00-13:00 | Room: 002 | Chair: Ivo Rendina

11:00-11:30	INV_16 Bacteria optical detection in microdroplets for Radiopharmaceuticals Quality Testing <i>A. Colombelli, D. Lospinoso, V. Arima, L. Carbone, E. Perrone, A. Zizzari, M. Bianco, V. Guarino, M.G. Manera, R. Rella</i>
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11:30-11:45	O_35 Experimental evidence on the effects of blue LED light in wound healing <i>G. Magni, M. Banchelli, F. Cherchi, P. Nardini, D. Guasti, S. Bacci, A.M. Pugliese, F. Rossi</i>
11:45-12:00	O_36 Bioresorbable fibres for drug distribution monitoring in photodynamic therapy <i>J.T. Pandayil, S. Šušnjar, M.D. Ghauri, N.G. Boetti, J. Swartling, D. Janner</i>
12:00-12:15	O_37 Hybrid materials containing biogenic and plasmonic dye particles for inclusive skin-tissue phantoms for photoacoustic imaging <i>F. Ratto, S. Centi, F. Rossi, K.M. Meiburger, S. Seoni, F. Molinari, L. Cavigli</i>
12:15-12:30	O_38 Advanced Lab-on-Tip Devices for Ultrasound Diagnostic: A Numerical Investigation <i>B. Rossi, M. A. Cutolo, G. Breglio, A. Cusano, M. Giaquinto, A. Cutolo</i>
12:30-12:45	O_39 Sponges based on polydimethylsiloxane as pulmonary phantoms for photoacoustics and diffuse optics <i>F. Ratto, A. Bossi, L. di Sieno, L. Cavigli, S. Centi, A. Dalla Mora</i>
12:45-13:00	O_40 Optical and morphological investigation of the A β 1-42 fibrillogenesis timeline <i>P. Polykretis, C. D'Andrea, M. Banchelli, L. Napolitano, R. Cascella, M. de Angelis, P. Matteini</i>

13:00-14:30 Lunch Break

S13 NON LINEAR OPTICS

14:30-15:45	Room: 001	<u>Chair: Claudio Oton</u>
14:30-14:45	O_41 Tuneable Mid-Infrared Generation in Periodically-Poled Lithium Niobate Ridge Waveguides <i>R. Brameri, V. Vitali, L. Gauthier-Manuel, M. Chauvet, I. Cristiani</i>	
14:45-15:00	O_42 Enhancing Cascade Lasing in Yellow Dy:ZBLAN Fiber Lasers <i>M. Federico, F. Poli</i>	
15:00-15:15	O_43 Core Pumped High- Power 1900 nm Tm Fiber Laser <i>A. Mauro, V. Serafini, M. Cavagnetto, G. Perrone</i>	
15:15-15:30	O_44 Optical fiber meta-tips based on holey metasurface for wavefront manipulation	

	<i>M. Principe, P. Vaiano, G. Berruti, A. Micco, M. Consales, A. Cusano</i>
15:30-15:45	O_45 Multipeak dissipative solitons in $\chi(2) + \chi(3)$ optical cavities <i>F.R. Talenti, S. Wabnitz, Y. Sun, T. Hansson, P. Parra-Rivas</i>

S14 OPTICAL SENSING II

14:30-15:45	Room: Auditorium A	<u>Chair: Aldo Minardo</u>
14:30-15:00	INV_17 Photoacoustic detection and photothermal spectroscopy using microbubble resonators <i>G. Frigentì, L. Cavigli, F. Ratto, S. Centi, T. Garcia-Fernández, D. Farnesi, S. Pelli, G. Nunzi Conti, S. Soria</i>	
15:00-15:15	O_46 Multicore fiber devices for sensing applications <i>M. Olivero, M. Cavagnetto, A. Vallan, G. Perrone</i>	
15:15-15:30	O_47 Fiber optic acoustic hydrophone for underwater monitoring <i>F.A. Bruno, M. Janneh, A. Gunda, R. Kyselica, P. Stajanca, S. Werzinger, G. Gruca, N. Rijnveld, G.V. Persiano, A. Cutolo, M. Pisco, A. Cusano</i>	
15:30-15:45	O_48 The GINGERino Ring Laser Gyroscope, studies and optimizations <i>S. Castellano, A. Basti, N. Beverini, G. Carelli, G. Di Somma, F. Fuso, E. Maccioni, P. Marsili, A.D. Di Virgilio</i>	

S15 QUANTUM OPTICS

14:30-15:45	Room: 002	<u>Chair: Stefania Campopiano</u>
14:30-15:00	INV_18 Quantum information with integrated photonics <i>A. Salamon</i>	
15:00-15:15	O_49 Silicon Nitride: A versatile platform for biphoton state generation and manipulation across the Visible to Near-Infrared Spectrum <i>M. Sanna, A. Baldazzi, N. Broseghini, G. Piccoli, M. Ghulinyan, S. Azzini, L. Pavesi</i>	
15:15-15:30	O_50 All-fiber, near-infrared, laser system at 780nm for atom cooling <i>M. Marchesini, M. Dondi, L. Rossi, G. Bolognini, M. Prevedelli, F. Minardi</i>	
15:30-15:45	O_51 Swap test algorithm implemented on the photonic platform <i>A. Baldazzi, N. Leone, M. Sanna, S. Azzini, L. Pavesi</i>	

15:45-16:00

Coffee Break

POSTER SESSION

16:00-17:30

Atrium

20:00-00:30

SOCIAL DINNER
Palazzo Borghese Firenze

19th JUNE

Parallel Sessions

S16 DEVICES FOR TLC

09:00-10:30 | Room: 001 | Chair: Gabriella Cincotti

09:00-09:15 | **O_52** Integrating Real-World Metrics for best Architectural evaluation of Photonic Accelerators
D. Wobuyaga, F. Vella, P. Velha

09:15-09:30 | **O_53** Modelling Tunable Integrated Optoelectronic Oscillators
G. Pandey, M. Imran, C. Porzi, A. Malacarne, P. Ghelfi, A. Bogoni

09:30-09:45 | **O_54** Multiphysics modelling of ultrawide-bandwidth lateral waveguide Ge-on-Si photodetectors: is drift-diffusion still an option?
M.G.C. Alasio, D. Abbondandolo, G. Divincenzo, A. Fronteddu, M. Zhu, E. Bellotti, M. Goano

09:45-10:00 | **O_55** Design Microring with various waveguide cross sections to minimize nonlinear effects in SISCAP platform
S. Cucco, M. Novarese, M. Gioannini

10:00-10:15 | **O_56** Design of a PIN Phase Shifter for Optical Phased Arrays
S. Ferraresi, L. Ramini, M. Fiorentino, R.G. Beausoleil, G. Bellanca, D. Bertozzi

10:15-10:30 | **O_57** Bandwidth tunability in segmented Grating-assisted Contra-Directional Couplers
L. Tunesi, M.A. Mahdian, A. Carena, V. Curri, M. Nikdast, P. Bardella

S17 CHEMICAL AND BIOCHEMICAL SENSORS II

09:00-10:30 | Room: Auditorium A | Chair: Luigi Zeni

09:00-09:30 | **INV_19** Implantable and bioresorbable nanostructured fluorescence sensor for in-vivo pH monitoring
M. Corsi, A. Paghi, S. Mariani, G. Golinelli, A. Debrassi, G. Egri, G. Leo, E. Vandini, A. Vilella, L. Dahne, D. Giuliani, G. Barillaro

09:30-09:45 | **O_58** Optical fibres as a winning tool for continuous monitoring of clinical parameters in the gastroesophageal apparatus

		<i>F. Baldini, F. Chiavaioli, G. Bartolozzi, K. Schroeder, T. Habisreuther, M. Hahn, M. Satzke, S. Goerlich, J. Gäbler, A. Taddei, P. Cecchi, D. Bovio</i>
09:45-10:00	O_59	Raman Spectroscopy and Artificial Intelligence for rapid identification and classification of primary liver cancer cells <i>C. Esposito, M. Janneh, S. Spaziani, V. Calcagno, M. L. Bernardi, M. Iammarino, C. Verdone, M. Tagliamonte, L. Buonaguro, M. Pisco, L. Aversano, A. Cusano</i>
10:00-10:15	O_60	The JUNCTION project: Joining time domain diffuse optics and surface enhanced raman scattering technique for advanced breast cancer detection <i>D. Farnesi, M. de Angelis, S. Pelli, F. Baldini, S. Berneschi, C. D'Andrea, A. Giannetti, G. Nunzi Conti, P. Matteini, D. Janner, N. G. Boetti, A. Dalla Mora, L. Di Sieno</i>
10:15-10:30	O_61	Improving chemical sensors on chip: effects of polarization and wavelength <i>F. Samà, F. Piretta, F. Bontempi, J. Elaskar, D. Angeloni, C. J. Oton</i>

S18 MATERIALS AND COMPONENTS II

09:00-10:30		Room: 002	<i>Chair: Luigi Vincetti</i>
09:00-09:30	INV_20	Dual-functional silicon metaoptics for highly-structured light beams <i>G. Ruffato, A. Vogliardi, D. Bonaldo, S. Dal Zilio, F. Romanato</i>	
09:30-09:45	O_62	Laser-Induced Fabrication of Micro-Optics on Bioresorbable Calcium Phosphate Glass <i>D. Janner, N. Boetti, D. Meena Narayana Menon, A. Rovera</i>	
09:45-10:00	O_63	Photonics Technologies for Smart Eyewear's displays <i>P. Bartoli, A. Cerioni, A. Scandelli, F. Zappa</i>	
10:00-10:15	O_64	Transparent polymer-based metasurfaces for augmented reality display <i>F. Filograno, I. Marasco, B. Dagens, O. Gauthier-Lafaye, V. Petruzzelli, G. Calò, G. Magno</i>	
10:15-10:30	O_65	Colloidal Glasses for Photonic systems <i>T. Virgili, A. Chiappini, A. Carpentiero, M. Bollani, D. Florio, D. Faccialà, N.I. Novikova, S. Sardar, C. D'Andrea, G. Scavia, C. Botta</i>	
10:30-11:00		Coffee Break	

S19 NON FIBER-BASED COMMUNICATIONS

11:00-12:30

Room: 001

Chair: Dario Piloni

11:00-11:30

INV_21 Orchestration and control of non-terrestrial networks employing free space optics
N. Sambo, F. Matera, M. Settembre, G. Cossu, A. Gotta, E. Ciaramella

11:30-11:45

O_66 Optical multiplexers for intersatellite WDM links: the ASTROMUX project
G. Cincotti, G. Incerti, P.I. Danca, G. Guidi, A. Alvino, P. Boffi

11:45-12:00

O_67 Underwater optical communication in turbid waters for different wavelengths: performance evaluation
C. Lodovisi, F. Gerardi, M. Aurizzi, S. Betti

12:00-12:15

O_68 Visible-Light Indoor Positioning with Arduino Signal Processing
S. Macri, L. Foucher, G. Cossu, L. Gilli, N. Vincenti, E. Ciaramella

12:15-12:30

O_69 SiN Frequency Locker for Thermally-Stable sub-THz Waves Generation
A. Brugnoli, V. Vitali, K. Bottrill, A.E. Kaplan, M. Re, C. Lacava, P. Petropoulos, I. Cristiani

S20 SIOF/IEEE

11:00-12:30

Room: Auditorium A

Chairs: Antigone Marino, Luca De Stefano

11:00-11:10

O_70 Imaging of subwavelength light localization in all-dielectric complex nanostructures
N. Granchi

11:10-11:20

O_71 Design of devices for integrated systems based on optical and microwave technologies for 5G: presentation of PhD thesis results
A.M. Loconsole

11:20-11:30

O_72 Tomographic phase microscopy in flow cytometry for advanced single-cell analysis
D. Pirone

11:30-11:40

O_73 High-speed multiplex CARS microscopy in the entire Raman-active region through supercontinuum generation in bulk media
F. Vernuccio

11:40-11:50	O_74 Characterization of eutectic materials with photothermal and photoacoustic techniques <u>C. Skubisz</u>
11:50-12:00	O_75 High-speed Wide-field Broadband Coherent Raman microscopy <u>A. Rabolini</u>
	O_76 Multifunctional Hybrid Nanoresonators for Biosensing Applications: Design, Fabrication, and Characterization <u>B. Miranda</u>
12:00-12:30	SIOF Career Award Ceremony for activity in Optics and Photonics: <i>Prof. Anna Consortini</i> <i>Prof. Mario Bertolotti</i> <i>Prof. Giancarlo Cesare Righini</i>
	SIOF and IEEE Master and PhD Award Ceremony

S21 MATERIALS AND COMPONENTS III

11:00-12:30	Room: 002	<u>Chair: Roberto Pini</u>
11:00-11:30	INV_22 Plasmonic Nanodevice for Nanoparticles Optical propulsion <u>S. Balestrieri, M. Iodice, G. Zito, G. Coppola</u>	
11:30-12:00	INV_23 Hollow core dielectric waveguides for particle acceleration <u>L. Vincetti, R. Palmeri, G.S. Mauro, A. Bacci, S.C. Pavone, N. Salerno, C.F. Fiore, D. Guarnera, G. Torrisi, G. Sorbello, A. Locatelli</u>	
12:00-12:15	O_77 Nonlinear liquid-crystal materials for cryptography and photonics <u>F. Massarelli, D. Sybolt Wiersma, F. Riboli, S. Nocentini</u>	
12:15-12:30	O_78 Plasmonic Nanoclusters: Fast Dynamics Surface-Enhanced Fluorescence <u>B. Gökbulut</u>	
12:30-13:00	Room: Auditorium A	
12:30-13:00	Award Ceremony and Closings	

POSTER SESSION (18th JUNE)

16:00-17:30

Atrium

- P_01** X-band Photonics FMCW Radar for ISAR Imaging of Structural Model sUAV targets
N. Akhter, D.i Baro, A.A. Bazil Raj
- P_02** Three Coupled Waveguides Structures for Photons Routing in Integrated Photonics Systems
S. Ali, S. Biasi, R. Franchi, B. Aslan, L. Pavesi
- P_03** Numerical model of an Yb:Er:Tm:Ho co-doped germanate glass
R. Ballarini, M. Kochanowicz, A.M. Loconsole, D. Dorosz, F. Prudenzano, S. Taccheo
- P_04** Delayed Differential Equation Based Study of Harmonic Mode-Looking in Multi-Section Quantum Dot Ring Lasers
M. Tapinetto, P. Bardella
- P_05** Real-time temperature measurement for Endo-Venous Laser Ablation (EVLA)
A. Bellone, M. Zeleny, M. Olivero, V. Fabián, R. Kulluri, A. Vallan, G. Perrone
- P_06** Optical properties and oxidation states of the LTB: Er³⁺ crystal
A.L. Benmaiza, A. Mahieddine, R. Belhoucif
- P_07** Germanate glass for laser applications in ~ 2.1 μm spectral region
N.G. Boetti, M. Segura, A. Ishaya, D. Janner, X. Matteos, J. Lousteau
- P_08** Programmable optical interferometer based on tunable tilted liquid crystal gratings
A. Buzzin, N. Hanine, A. Mannetta, A. Alaeddini, V. Ferrara, R. Asquini
- P_09** Absorption-based, label-free urea detection in water solutions
C. Anelli, V. Bello, V. Pellicorio, S. Merlo
- P_10** Architectural lighting design, the definition and the value of the perceptual subject within the design process
R. Caratti-Zarytkiewicz
- P_11** Investigating the Impact of Signal and Pump Power Evolution in Yellow Emitting Dy-Doped Fiber Lasers for Advanced Eye Treatment
W. Chowdhury, F. Khozeymeh, A. Cucinotta
- P_12** Shining light on olive trees: pocket-size fluorescence spectroscopy unveils leaf antioxidants

L. Ciaccheri, B. Adinolfi, A.A. Mencaglia, G. Sani, L. Bonora, N. Mulinacci, L. Cecchi, T. Ugolini, I. Digiglio, A.G. Mignani

- P_13** Silicon Photonic Integrated Circuit for Linear Optics Quantum Computing
T.H. Dao
- P_14** Experimental Analysis of Photonics-Assisted Wideband RF-Receiver for Electronic Warfare
S. De, A.A. Bazil Raj
- P_15** Comparison of Sputtering and PECVD Amorphous Silicon Deposition Techniques for the Realization of High-Performance Photonics Waveguides
F. di Croce, L. Migliaccio, V. Vitali, I. Cristiani, C. Lacava, M. Urbanek, P. Pintus
- P_16** Towards Optical Fiber Sensing with Fluoride Glasses
F. Anelli, A. Annunziato, A.M. Loconsole, V.V. Francione, Md. Imran Khan, F. Prudenzano
- P_17** Error Propagation of Noise at Different Points in Shape Reconstruction with Optical Fiber Sensors
F. Falcetelli, A. Ramponi, L. Rossi, F. Bastianini, G. Bolognini, R. Di Sante
- P_18** Statistical analysis of imperfections in OPA fabrication
S. Ferraresi, M. Khalid, G. Calò, G. Bellanca, V. Petruzzelli
- P_19** Integrated Silicon Microlenses for LWIR sensing applications
F. Grossi, S. Nicoli, F. D'Ercoli, F. Morichetti, A.I. Melloni, L. Tentori, G. Bruno
- P_20** Triangular Fabry-Pirot Resonator Embedding a Nanograting Mirror
S. Hava
- P_21** Evaluation on the effect of nonlinear preamplification for interferometric ϕ -OTDR
L. Rossi, L.K. Cheng, W. De Jong, R. Jansen, G. Bolognini
- P_22** Temperature actuation with Liquid Crystal Cantilever Structures Fabricated By Direct Laser Writing Two Photon Polymerization
F.M. den Hoed, L. Rossi, A. Giovannini, D. Marini, M. Archimi, A. Ottomaniello, O. Tricinci, G. Bolognini, V. Mattoli
- P_23** Design of a Photonic Strain Sensor based on a Suspended Bragg Grating Reflector
M. Maleki, N. Saha, G. Brunetti, C. Ciminelli
- P_24** Hybrid optical-electrochemical-capacitive sensors for high versatile biosensing

N. Marcucci, B. Andò, F. Arcadio, S. Berneschi, N. Cennamo³, M. Manenti, D. Greco, M. R. Guascito, G. Liberti, L. Martina, L. Pasquardini, S. Tombelli, L. Zeni, C. Trono

- P_25** A hybrid BOFDA/BOCDA system for static and dynamic strain measurements
R. Vallifuoco, L. Zeni, A. Minardo
- P_26** Implementation of Low-cost microwave photonic interferometric systems for measuring the fiber-delay-transfer in Radio instrumentation
J. Nanni, E. Lenzi, F. Perini, J. Monari, G. Maccaferri, A. Orfei, G. Tartarini
- P_28** An FPGA-based Syndrome Encoder accelerating QKD reconciliation
M. Origlia, M. Pinaud, L. Maggiani, P. Castoldi, N. Andriolli
- P_29** HoloTomography for label free high-resolution imaging of biological samples
G. Preziosi, G. Coppola, M.A. Ferrara
- P_30** Toward the Development of AI Enhanced Optical Sensors for Water Contamination Monitoring
C. Bellezza Prinsi, R. Kulluri, M. Olivero, A. Vallan, G. Perrone
- P_31** Coherent mode coupling in elliptical multimode VCSELs
C. Rimoldi, L.L. Columbo, A. Tibaldi, P. Debernardi, S. Romero García, C. Raabe, M. Gioannini
- P_32** Response Modelling and Performance Assessment of a Photothermal Photonic Microfluidic Biochip
A. d'Alessandro, L. De Sio, F. Petronella, M.L. Sforza, F. Zaccagnini, A. Avitabile, C. Santini
- P_33** Realization of low-loss, low-PDL, and wideband 3D tapered waveguides through novel gray-scale lithography technique
S. Salimian, C.M. Thomas, T. Fabio, S. Giulia, D. Elena, P. Georg, A.O.M. Douglas, G. Emanuele
- P_34** Towards a future generation of antibody-free (bio)assays: imprinted bio-polymers based on serotonin
D. Sestaioni, P. Palladino, C. Trono, A. Barucci, S. Tombelli, S. Scarano
- P_35** Characterization of depth-dependent loss for visible light propagation in underwater optical wireless links
A. Ugolini, F. Poli, D. Croce, S. Mangione
- P_36** Self-reference sensing scheme by mode splitting in a three-turn microfiber coil resonator
F. Zhang, X. Chen, Y. Zhong, Q. Li, M. Sha