

ECIO 2022

4th May – 6th May

Milan, Italy

23rd European Conference on
Integrated Optics



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WELCOME TO ECIO 2022

Dear participants,

it is a great pleasure for us to welcome you to the 23rd edition of the European Conference on Integrated Optics - ECIO 2022.

Our pleasure is made particularly deep by the fact that, three years after the 2019 edition in Ghent, ECIO is back as a full-in-presence conference. We made the decision to go with this traditional format well aware of the possible risks, but fully supported by the entire Steering Committee and strongly motivated by the honor of hosting this first post-pandemic edition. At the end we are here, so we share with you our happiness in saying "Welcome to Milano!".

We would like to thank you all for the great participation, far beyond our best expectations. The number of ECIO 2022 attendants is in line with pre-pandemic editions, meaning that our community was really waiting for a return to live events with face-to-face interactions. The conference program is very rich with 8 plenary and keynote speakers, 14 invited speakers, 52 oral contributions, 67 posters and 14 exhibitors. A shared opinion by the Steering Committee is that the technical level of the contributions is very high. This means that scientific research has not slowed down, despite all the difficulties and limitations we have had to face in recent years. Browsing through the conference program you will see how much integrated optics has progressed and penetrated into new fields of application, such as photonic computing and neural networks, quantum communications and processing, advanced sensing and spectroscopy, extending also to new wavelength ranges (from extreme UV to Terahertz). This evolution guided our choice to organize the conference program according to "application-oriented" technical sessions.

The conference will be held at the Politecnico di Milano, the largest technical university in Italy, with more than 40,000 students. We hope you will find here a pleasant and lively environment, where to spend three days full of science, culture and social events (without ever forgetting the health regulations).

We warmly thank the sponsors for their support and all the members of the Local Organizing Committee who have given a fundamental contribution to make all this possible.

Enjoy ECIO 2022, enjoy Milano,

Andrea and Francesco



Steering Committee

Conference Chairs

Andrea Melloni, Politecnico di Milano, Italy

Francesco Morichetti, Politecnico di Milano, Italy

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Kevin Williams, Eindhoven University of Technology, The Netherlands



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Local Organizing Committee

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polifab
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Invited Speakers ECIO 2022

Plenary Speakers

Volker Sorger, George Washington University, USA
Photonic Black-box Modules for Machine Intelligence

Paul Prucnal, Princeton University, USA
Prospects and Applications of photonic neural networks

Keynote Speakers

David Marpaung, Twente University, *Brillouin scattering in silicon nitride photonic circuits*

Haisheng Rong, Intel, *Recent advances in silicon integrated photonics for high-bandwidth and energy-efficient optical interconnects*

Laurent Vivien, CNRS and Univ. Paris Saclay, *Advances and trends of Si photonics*

Meint Smit, TU/e Eindhoven University, *History and perspectives of an InP-based generic foundry approach*

Rajeev Ram, EECS MIT, *High-Performance CMOS Photonic Interfaces: From AI to IoT and Everywhere Between*

Thomas Krauss, York University, *What to do, and what not to do, to get published in OPTICA*

Invited Speakers

Antonella Bogoni, SSSA and Inphotec, *Integrated microwave photonics*

Christine Silberhorn, University of Paderborn, *Quantum photonics based on nonlinear integrated optics*

De Angelis Costantino, Università di Brescia, *Integrated THz-photonics transceivers by all-dielectric phonon-polariton nonlinear nanoantennas*

Fredric Boeuf, STm, *Beyond Interconnects Applications using a 300mm Silicon Photonics Technology*

Helene Debregeas, Almae Technologies, *Towards passive hybridization of high-power and high-speed InP transmitters*

Hugh Podmore, Honeywell Aerospace, *Waveguide Fourier Transform Spectrometers for Remote Sensing and Raman Spectroscopy*

Jaime Garcia, Nanophotonics Technology Center - UPV, *High performance photonic devices based on photonic crystal bimodal interferometers*

Lorenzo Pavesi, Università di Trento, *Silicon photonics neural networks in optical communications*

Nathalie Picqué, Max-Planck Institute of Quantum Optics, *On-chip frequency comb interferometry*

Paolo Villioresi, Università di Padova, *Quantum Communications protocols enhanced by Integrated Optics*

Peter Banzer, University of Graz, *Rethinking Sensing – Developing Next Generation Camera Technology*

Renato Lombardi, Huawei, *Advances on 5G, research directions and role of optical technologies - An industry view*

Tian Gu, MIT, *Integrated optical interfacing using a freeform 3-D coupling platform*

Wim Bogaerts, Ghent University - IMEC, *Does the world need general-purpose programmable photonics?*



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Program at a glance

	Umanitaria	Politecnico di Milano	
	Wednesday May 4 th	Thursday May 5 th	
08:30		Registration	08:30
09:00		Keynote T.K.1	09:00
09:30	Registration	T.A PICs for quantum optics	09:45
		T.B Sensing & ranging	
		Coffee Break	11:15
		T.C Comb & supercontinuum generation	11:45
		T.D Periodic structures & Meta-Devices	
12:30	Lunch	Lunch	13:15
14:00	Opening Ceremony	Lunch, Poster T.P & Exhibitors Session	13:45
14:30	Plenary P1 & P2		
16:00	Coffee Break	Keynote T.K.2 & T.K.3	15:45
16:30	High Score Session	T.E Laser Integration	16:45
		T.F Spectroscopy & MID-IR	
18:00	OPTICA		
18:30	Poster W.P		
19:15	Welcome cocktail	Gala Dinner	19:15

Program at a glance

Politecnico di Milano		
Friday May 6 th		
Registration		08:30
Keynote F.K.1		09:00
F.A Microwave photonics & Terahertz	F.B Waveguide technology & coupling	09:45
Coffee Break		11:15
F.C Advances in silicon photonics	F.D Neural networks & quantum sources	11:45
Lunch		13:15
F.D Programmable photonics	F.F Integrated platforms for visible & XUV	14:30
Coffee Break		16:00
Keynote F.K.2 & F.K.3		16:30
Closing Ceremony & Awards		17:30



Room: 3.0.3



Room: De Donato



Chiostro & Room: 3.0.2



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Scientific Program

Wednesday, 4th May 2022

Umanitaria

09:30 to 12:30 REGISTRATION

12:30 to 14:00 LIGHT LUNCH

14:00 to 14:30 OPENING CEREMONY

14:30 to 16:00 PLENARY

Session Chair: Andrea Melloni, Politecnico di Milano

- P.1 Photonic Black-box Modules for Machine Intelligence**
Volker Sorger, George Washington University, USA
- P.2 Prospects and Applications of photonic neural networks**
Paul Prucnal, Princeton University, USA

16:00 to 16:30 COFFEE BREAK

16:30 to 18:00 HIGH SCORE SESSION

Session Chair: Wolfgang Freude, Karlsruhe Institute of Technology

- W.B.1 Monolithically Integrated Electronics in Zero-Change Silicon Photonics**
Francesco Zanetto, Politecnico di Milano, Italy
- W.B.2 Multi-channel optical coherence tomography with a CMOS silicon nitride photonic integrated circuit**
Stefan Nevlacsil, AIT Austrian Institute of Technology GmbH, Austria
- W.B.3 Hybridly Integrated Photonic Integrated Circuit for Wavelength and Polarization Determination**
Axel Schoenau, Fraunhofer-Institut für Nachrichtentechnik, Germany
- W.B.4 Generation of high-frequency phonons in silicon optomechanical crystal**
Jianhao Zhang, Centre de Nanosciences et de Nanotechnologies, France

18:00 to 18:30 What to do, and what not to do, to get published in OPTICA
Thomas Krauss, York University, UK

18:30 to 20:00 POSTER SESSION (The Chiostro)

- W.P.1 A Hybrid Optical Waveguide Platform for High-Performance Integrated Photonic Devices**
Hamed Nikbakht, Bob van Someren, Chunyu Lu, B. Imran Avci

- W.P.2 Thermal and wiring optimizations of dense SOA arrays on an adhesively bonded InP membrane**
Yi Wang, Jorn van Engelen, Victor Dolores-Calzadilla, Kevin Williams, Meint Smit, Yuqing Jiao
- W.P.3 Practical characterization of InP Waveguides and MMI couplers using Mach-Zehnder interferometers**
Amer Bassal, Guillaume Binet, Wouter Diels, Axel Schönau, Oliver Abdeen, Moritz Baier, Martin Schell
- W.P.4 Compact ring resonator at 8 μm wavelength**
Natnicha Koompai, Thi Hao Nhi Nguyen, Jacopo Frigerio, Andrea Ballabio, Virginia Falcone, Xavier Le Roux, Carlos Alonso-Ramos, Laurent Vivien, Adel Bousseksou, Giovanni Isella, Delphine Marris-Morini
- W.P.5 Subwavelength engineered silicon Bragg gratings for on-chip filtering with high optical rejection and narrow bandwidth**
Dorian Oser, David E. Medina Quiroz, Diego Perez Galacho, Xavier Le Roux, Sebastien Tanzilli, Laurent Vivien, Laurent Labonte, Eric Cassan, Carlos Alonso Ramos
- W.P.6 Performance tradeoffs in low-loss Si₃N₄ waveguides for linear and nonlinear applications**
Marcello Girardi, Victor Torres-Company, Anders Larsson
- W.P.7 Mitigating Polarization Rotation Effects in Thin-Film Lithium Niobate Waveguides**
Gabriele Cavicchioli, Maziyar Milanizadeh, Giuseppe Cusmai, Roberto Longone, Francesco Morichetti, Andrea Melloni
- W.P.8 Minimisation of Parasitic Capacitance in Electro-Absorption Modulators for High-Speed Operation**
Jack Mulcahy, Xing Dai, John McCarthy, Frank Peters
- W.P.9 New and efficient sacrificial layer for transfer printing technology**
Hemalatha Muthuganesan, Fatih Bilge Atar, Agnieszka Gocalinska, Emanuele Pelucchi, Brian Corbett
- W.P.10 Fabrication and characterization of symmetric Au-nanostructures with SERS activity**
M. Lafuente, E.J.W. Berenschot, R.M. Tiggelaar, A. Susarrey-Arce, R. Mallada, M.P. Pina, S.M. García-Blanco, N.R. Tas
- W.P.11 Comparison of Gaussian Process Kernels for Surface Roughness Modelling**
Samuel Hörmann, Jakob Wilhelm Hinum-Wagner, Jürgen Sattelkow, Desiree Rist
- W.P.12 Designing a GaN photonic platform for near-IR applications**
Megan O'Brien, Nicola Maraviglia, Vitaly Zubialevich, Brian Corbett
- W.P.13 Micro-Transfer-Printed O-band GaAs QD III-V-on-Si DFB Laser**
Jing Zhang, Igor Krestnikov, Ruggero Loi, Peter Ossieur, Guy Lepage, Peter Verheyen, Joris Van Campenhout, Gunther Roelkens
- W.P.14 Iron Doping for Transfer Printed High Speed EAM**
Shengtai Shi, Jack Mulcahy, Xing Dai, Frank H. Peters
- W.P.15 Monolithic integration of photonic integrated circuits with silicon photodiodes**
Martino Bernard, Fabio Acerbi, Mher Ghulinyan
- W.P.16 Photonic flip-chip assembly of InP on TriPleX with laser soldering**
Wenjing Tian, Lucas Beste, Alexander Khachikyan, Christoph Mittelstädt, Ronald Dekker, Kerstin Wörhoff, Joost van Kerkhof, Rui Santos, Kevin Williams, Xaveer Leijten



- W.P.17 Low-stress Si₃N₄ waveguides on sapphire substrate**
Kai Wang, E.J.W. Berenschot, M. Dijkstra, R.M. Tiggelaar, S.M. Martinussen, L. Chang, W.A.P.M. Hendriks, B.T.H. Borgelink, R.N. Frentrop, V.V. Tkachuk, N. Tas, S.M. Garcia-Blanco
- W.P.18 A thick silicon photonics platform for quantum technologies**
Matteo Cherchi, Arijit Bera, Antti Kemppinen, Jaani Nissilä, Kirsi Tappura, Marco Caputo, Lauri Lehtimäki, Janne Lehtinen, Joonas Govenius, Mika Prunnila, Timo Aalto
- W.P.19 Low Limit of Detection in Bulk Liquids Using a Fibre-Packaged Waveguide-Enhanced Raman Sensor**
Jérôme Michon, Priscille Bonnassies, Derek Kita, Carlos Alonso-Ramos, Laurent Vivien, Juejun Hu
- W.P.20 Wideband and large optical throughput Fourier-transform spectrometer implemented on a silicon nitride chip**
David González-Andrade, Thi Thuy Duong Dinh, Sylvain Guerber, Nathalie Vulliet, Sébastien Cremer, Stephane Monfray, Eric Cassan, Delphine Marris-Morini, Frédéric Boeuf, Pavel Cheben, Laurent Vivien, Aitor V. Velasco, Carlos Alonso-Ramos
- W.P.21 Deep-learning algorithms for resilience to fabrication imperfections in integrated Fourier-transform spectrometer**
Zindine Mokeddem, Daniele Melati, David González-Andrade, Thi Thuy Duong Dinh, Eric Cassan, Yuri Grinberg, Pavel Cheben, Dan-Xia Xu, Jens Schmid, Laurent Vivien, Delphine Marris-Morini, Aitor V. Velasco, Carlos Alonso-Ramos
- W.P.22 On-chip silicon nitride ring resonator for background suppression in Brillouin spectroscopy**
Giuseppe Antonacci, Kareem Elsayad, Dario Polli
- W.P.23 Performance comparison of polarization rotator designs on 800 nm thick silicon nitride platform**
Georgios Patsamanis, Dimitra Ketzaki, Dimitrios Chatzitheocharis, Konstantinos Vysokinos
- W.P.24 Photonic chip based biosensing system with fully automatic alignment and parallel detection capability**
L. Chang, W.A.P.M. Hendriks, I. Hegeman, R.N. Frentrop, M. Dijkstra, J.P. Korterik, N.A. Schilder, H.A. Seubers, S.M. García-Blanco
- W.P.25 Integrated optical readout layer for ultrafast real-time delay reservoir computing**
Tigers Jonuzi, Mirko Goldmann, Apostolos Argyris, Ingo Fischer, Miguel C. Soriano, David Domenéch
- W.P.26 Dynamic labelling for enhanced biosensing with microring resonators**
Piero Borga, Francesca Milesi, Nicola Peserico, Chiara Groppi, Antonio Fincato, Riccardo Bertacco, Andrea Melloni
- W.P.27 Towards an integrated optic-electronic-optic interferometer**
Alexander Schindler, Felix Ganzer, Patrick Runge, Md Salek Mahmud, Sebastian Randel, Martin Schell
- W.P.28 Enhancing Sensitivity and Reducing Temperature Dependence of Contactless Light Sensors**
Vittorio Grimaldi, Francesco Zanetto, Fabio Toso, Francesco Morichetti, Andrea Melloni, Giorgio Ferrari, Marco Sampietro



W.P.29 Photonic time-delay reservoir computing based on an asymmetric Mach-Zehnder interferometer with reconfigurable memory capacity

Mohab Abdalla, Clément Zrounba, Raphael Cardoso, Guanghui Ren, Andreas Boes, Arnan Mitchell, Alberto Bosio, Ian O'Connor, Fabio Pavanello

W.P.30 Experimental Characterization of sub-THz Wireless Communications Building Blocks on a Silicon Platform

Kalliopi Spanidou, Robinson Guzmán, Luis Orbe, Luis González Guerrero, Guillermo Carpintero

W.P.31 Design of a modular and scalable photonic-integrated WSS for multi-band applications

Lorenzo Tunesi, Ihtesham Khan, Muhammad Umar Madood, Enrico Ghillino, Andrea Carena, Vittorio Curri, Paolo Bardella

W.P.32 Programmable Integrated Photonic Circuits: applications for 5G, Computing, Data Center and Sensing

Daniel Pérez López

19:15 WELCOME COCKTAIL & POSTER



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Thursday, 5th May 2022

Politecnico di Milano

From 08:30 REGISTRATION

09:00 to 09:30 PLENARY (Room: 3.0.3)

Session Chair: Andrea Melloni, Politecnico di Milano

T.K.1 High-Performance CMOS Photonic Interfaces: From AI to IoT and Everywhere Between

Rajeev Ram, EECS MIT, USA

09:45 to 11:15 PICS FOR QUANTUM OPTICS (Room: 3.0.3)

Session Chair: Roberto Osellame, Politecnico di Milano

T.A.1 Quantum Communications protocols enhanced by Integrated Optics - INVITED

Paolo Villorresi, Università di Padova, Italy

T.A.2 PIC Technologies for Quantum Secure Communications

Taofiq Paraiso, Thomas Roger, Davide Marangon, Innocenzo De Marco, Mirko Sanzarp, Robert Woodward, James Dynes, Zhiliang Yuan, Andrew Shields

T.A.3 Mid-infrared Ghost spectroscopy application using an entangled photons source in silicon

Matteo Sanna, Davide Rizzotti, Stefano Signorini, Lorenzo Pavesi

T.A.4 Quantum photonics based on nonlinear integrated optics - INVITED

Christine Silberhorn, University of Paderborn, Germany

09:45 to 11:15 SENSING AND RANGING (Room: De Donato)

Session Chair: Marc Sorel, University of Glasgow

T.B.1 Rethinking Sensing – Developing Next Generation Camera Technology - INVITED

Peter Banzer, University of Graz, Austria

T.B.2 Integrated Computer Generated Waveguide Hologram for Versatile Free-Space Beam Projection

David De Vocht, Tianran Liu, Yuqing Jiao, Erwin Bente

T.B.3 Broadband optical beam steering over a wide field of view with a silicon quadratic metalens

Yang Liu, Jianhao Zhang, Xavier Le Roux, Cedric Villebasse, Eric Cassan, Delphine Marris-Morini, Laurent Vivien, Carlos Alonso-Ramos, Daniele Melati

T.B.4 Carbon Dioxide Sensing with a Photonic Integrated Differential Absorption LiDAR Transmitter

Antonio Perez-Serrano, Clara Quevedo-Galan, Victor R. Aguilera-Sanchez, Jose Manuel G. Tijero, Ignacio Esquivias

T.B.5 Low-noise frequency-agile photonic integrated lasers for coherent ranging

Grigory Lihachev, Johann Riemensberger, Wenle Weng, Junqiu Liu, Hao Tian, Anat Siddhart, Viacheslav Snigirev, Vladimir Shadymov, Andrey Voloshin, Rui Ning Wang, Jijun He, Sunil A. Bhave, Tobias J. Kippenberg

11:15 to 11:45 COFFEE BREAK

11:45 to 13:00 COMB AND SUPERCONTINUUM GENERATION (Room: 3.0.3)

Session Chair: Mariangela Gioannini, Politecnico di Torino

- T.C.1 On-chip frequency comb interferometr - INVITED**
Nathalie Picqué, Max-Planck Institute of Quantum Optics, Germany
- T.C.2 Impact of the saturable absorber on the linewidth enhancement factor of hybrid silicon quantum dot comb lasers**
Thibaut Renaud, Heming Huang, Geza Kurczveil, Raymond G. Beausoleil, Frédéric Grillot
- T.C.3 Low Noise 2.6 to 26 GHz Tenfold Frequency Multiplication by an InP Broadly Tunable Optical Comb**
Nicola Andriolli, Eduardo Saia Lima, Evandro Conforti, Giampiero Contestabile, Arismar Cerqueira Sodré Junior
- T.C.4 Heterogeneously integrated low-loss lithium niobate photonic platform**
Mikhail Churaev, Annina Riedhauser, Rui N. Wang, Charles Möhl, Terence Blésin, Miles H. Anderson, Viacheslav Snigirev, Anat Siddharth, Youri Popoff, Ute Drechsler, Danilele Caimi, Simon Hönl, Johann Riemensberger, Junqiu Liu, Paul Seidler, Tobias J. Kippenberg
- T.C.5 Mid-Infrared Supercontinuum Generation in a Tapered SiGe/Si Waveguide for Multi-Species Gas Spectroscopy**
Alberto Della Torre, Rémi Armand, Milan Sinobad, Kokou Firmin-Fiaboe, Barry Luther-Davies, Stephen Madden, Arnan Mitchell, Thach Nguyen, David J. Moss, Jean-Michel Hartmann, Vincent Reboud, Jean-Marc Fedeli, Christelle Monat, Christian Grillet

11:45 to 13:00 PERIODIC STRUCTURES AND META-DEVICES (Room: De Donato)

Session Chair: Gonzalo Wangüemert Perez, Universidad de Málaga

- T.D.1 High performance photonic devices based on photonic crystal bimodal interferometer - INVITED**
Jaime Garcia, Nanophotonics Technology Center - UPV, Spain
- T.D.2 Curved waveguide grating demultiplexer (CWG) with a flattened response via bimodal output waveguides**
Abdelfettah Hadij-ElHouati, Robert Halir, Alejandro Ortega-Moñux, J. Gonzalo Wangüemert-P, Jens H. Schmid, Pavel Cheben, Iñigo Molina-Fernandez
- T.D.3 Subwavelength metamaterials for broadband mode multiplexing and power splitting in silicon waveguides**
Aitor V. Velasco, David González-Andrade, Raquel Fernández de Cabo, Jaime Vilas, Irene Olivares, Antonio Dias, José Manuel Luque-González, J. Gonzalo Wangüemert-Pérez, Alejandro Ortega-Moñux, Iñigo Molina-Fernández, Robert Halir, Pavel Cheben
- T.D.4 Metamaterial-engineered silicon devices fabricated with deep UV immersion lithography**
Daniele Melati, Vladyslav Vakarin, Thi Thuy Duong Dinh, Xavier Le Roux, Warren Kut King Kan, Cécilia Dupré, Bertrand Szelag, Stéphane Monfray, Frédéric Boeuf, Pavel Cheben, Eric Cassan, Delphine Marris-Morini, Laurent Vivien, Carlos Alonso-Ramos
- T.D.5 Design of autocorrective interferometers using the Bloch sphere**
Matteo Cherchi



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13:15 LUNCH

13:45 to 15:45 POSTER SESSION (Garden)

- T.P.1 Topological control of light spectrum using dynamically modulated optical waveguides**
Francesco S. Piccioli, Alexander Szameit, Iacopo Carusotto
- T.P.2 Bound States in the Continuum in LiNbO₃ Waveguides: An Assessment**
Jiří Čtyroký, Jiří Petráček, Vladimír Kuzmiak, Ivan Richter
- T.P.3 Spontaneous polarization reversal induced in α -phase lithium niobate channel waveguides by proton exchange**
Alicia Petronela Rambu, Vasile Tiron, Eugen Oniciuc, Sorin Tascu
- T.P.4 Optimization of Brillouin Gain in Subwavelength Silicon Membrane Waveguides using a Genetic Algorithm**
Paula Nuño Ruano, Jianhao Zhang, Daniele Melati, David González Andrade, Xavier Le Roux, Eric Cassan, Delphine Marris-Morini, Laurent Vivien, Norberto Daniel Lanzillotti-Kimura, Carlos Alonso Ramos
- T.P.5 Nonlocal Fourier modal method**
Pavel Kwiecien, Milan Burda, Ivan Richter
- T.P.6 Nonlocal interactions in planar metal layers**
Milan Burda, Pavel Kwiecien, Ivan Richter
- T.P.7 Comparative performance evaluation of transparent conducting oxides with moderate mobility for all-optical switching in silicon**
Juan Navarro-Arenas, Jorge Parra, Pablo Sanchis
- T.P.8 Supercontinuum generation in ultra-low loss silicon nitride waveguides**
Yijun YANG, Christian Lafforgue, Quentin Wilmart, Thibaut Sylvestre, Sylvain Guerber, Xavier Le Roux, Eric Cassan, Delphine Marris-Morini, Carlos Alonso-Ramos, Bertrand Szelag, Laurent Vivien
- T.P.9 Intersubband Absorption in p-type Ge Multiple Quantum Wells for Mid-IR Sensing Applications**
Andrea Barzaghi, Virginia Falcone, Stefano Calcaterra, Raffaele Giani, Andrea Ballabio, Daniel Chrastina, Giovanni Isella, Jacopo Frigerio
- T.P.10 Static and Dynamic Nonlinear Effects in Silicon Micro-Rings: Impact of Trap Assisted Shockley Read Hall Carrier Recombination**
Marco Novarese, Stefania Cucco, Sebastian Garcia Romero, Jock Bovington, Rongqing Hui, Mariangela Gioannini
- T.P.11 Integrated electro-optical modulator operating in the long-wave infrared spectral range**
Thi Hao Nhi Nguyen, Natnicha Koompai, Miguel Montesinos-Ballester, Lucas Deniel, Jacopo Frigerio, Andrea Ballabio, Virginia Falcone, Xavier Le Roux, Carlos Alonso-Ramos, Laurent Vivien, Adel Bousseksou, Giovanni Isella, Delphine Marris-Morini
- T.P.12 1x5 reconfigurable optical wireless routers for on-chip interconnection**
Loredana Gabriele, Gaetano Bellanca, Jacopo Nanni, Marina Barbiroli, Franco Fuschini, Velio Tralli, Davide Bertozzi, Giovanni Serafino, Vincenzo Petruzzelli, Giovanna Calò

- T.P.13 Compact and Alignment-Tolerant Vertical Coupler for Heterogeneous Photonic Integration**
Chunhui Yao, Qixiang Cheng, Richard V. Penty
- T.P.14 Lithium-niobate-based frequency-agile integrated laser sources**
V. Snigirev, A. Riedhauser, G. Likhachev, J. Riemensberger, R. N. Wang, C. Moehl, M. Churaev, A. Siddharth, G. Huang, Y. Popoff, U. Drechsler, D. Caimi, S. Hoenl, J. Liu, P. Seidler, T. J. Kippenberg
- T.P.15 A Monolithically Integrated Tunable Comb Source and Filter**
John McCarthy, Maryam Shayesteh, Frank H. Peters
- T.P.16 Silicon photonic mode demultiplexer enabled by on-chip beamforming**
David González-Andrade, Xavier Le Roux, Thi Thuy Duong Dinh, Dorian Oser, Diego Pérez-Galacho, Eric Cassan, Delphine Marris-Morini, Laurent Vivien, Carlos Alonso-Ramos
- T.P.17 Plasmonic slot ferroelectric MZIR modulator on Si₃N₄ in the O-band**
Dimitrios Chatzitheocharis, Dimitra Ketzaki, Georgios Patsamanis, Konstantinos Vyrsokinos
- T.P.18 Integrated Wavelength Filter on thin-film Lithium Niobate for a Photonic-enabled Radiometer**
Jessica César Cuello, Robinson C. Guzmán, Alberto Zarzuelo, Jeffrey Holzgrafe, Marko Lončar, Gabriel Santamaria, Luis E. García, Guillermo Carpintero
- T.P.19 Thermally tunable Silicon polarization rotator based on mode hybridization**
Theoni Prousalidi, Giannis Pouloupoulos, Carmelo Scarcella, Harry Zervos, Daisy Bergin, Anthony Bulling, Stéphane Detraz, Milana Lalović, Leonardo Marcon, Lauri Olanterä, Ulrik Sandven, Christophe Sigaud, Csaba Soos, Jan Troska, Hercules Avramopoulos
- T.P.20 Demonstration of self-spiking neuron behavior in a monolithically integrated two-section laser**
Lukas Puts, Kevin Williams, Daan Lenstra and Weiming Yao
- T.P.21 Compact, spatial-mode-interaction-free, ultralow-loss, nonlinear photonic integrated circuits**
Xinru Ji, Junqiu Liu, Jijun He, Rui Ning Wang, Zheru Qiu, Johann Riemensberger, Tobias J. Kippenberg
- T.P.22 Ultra-broadband polarization beam splitter with a gradual anisotropy engineered subwavelength metamaterial**
José Manuel Luque-González, Robert Halir, J. Gonzalo Wangüemert-Pérez, Pavel Cheben, Íñigo Molina-Fernández, Alejandro Ortega-Moñux
- T.P.23 Stokes-vector receivers on an indium phosphide membrane**
Sander Reniers, Jos van der Tol, Kevin Williams, Yuqing Jiao
- T.P.24 Ge/Si Electrically Tunable VIS/SWIR Photodetector**
Andrea Ballabio, Andrea De Iacovo, Jacopo Frigerio, Andrea Fabbri, Giovanni Isella, Lorenzo Colace
- T.P.25 Mode Overlap Simulations for Quantification of Bend Loss in Silicon Nitride Strip Waveguides for Sensing**
Anton Buchberger, Desiree Rist, Jakob Hinum-Wagner, Samuel Hörmann, Jochen Kraft, Alexander Bergmann
- T.P.26 In-line photo-thermal plasmonic detectors integrated in TiO₂ optical waveguides**
Andres Martinez, Vittorio Grimaldi, Deepak Kumar Sharma, Christian De Vita, Francesco Morichetti, Alexandre Bouhelier, Marco Sampietro



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- T.P.27 Numerical Analysis of Digital Pulse Modulation of Strongly Injection-Locked Whistle-Geometry Microring Lasers**
Gennady A. Smolyakov, Marek Osieński
- T.P.28 Characterization of Passively Mode-Locked Lasers and Saturable Absorbers based on an InP quantum well amplifier suitable for active-passive integration at 1300 nm**
Joel Hazan, Aser Nassar, Steven Kleijn, Kevin Williams, Erwin Bente
- T.P.29 Freeform optical arrays for free-space coupling into photonic integrated circuits**
Rakan E. Alsaigh, Martin P.J. Lavery
- T.P.30 Inverse Design of Nanophotonic Circuitry Components based on Reinforcement Learning**
Marco Butz, Alexander Leifhelm, Marlon Becker, Benjamin Risse, Carsten Schuck
- T.P.31 Polarization mode converter based on hybrid integration of nanowires on a silicon waveguide**
Ali Emre Kaplan, Valerio Vitali, Francesco Rossella, Valeria Demontis, Andrea Fontana, Periklis Petropoulos, Vittorio Bellani, Cosimo Lacava, Ilaria Cristiani
- T.P.32 Numerical calculation of active waveguide Bragg gratings amplification dependences**
Ángel Sanz-Felipe, Manuel Macías-Montero, Rocío Ariza, Juan A. Vallés, Javier Solís
- T.P.33 SiP Waveguide-Embedded Electronic Devices controlled by Substrate/Gate Potential Tuning**
Alessandro Perino, Francesco Zanetto, Matteo Petrini, Francesco Morichetti, Andrea Melloni, Giorgio Ferrari, Marco Sampietro
- T.P.34 Low loss SiN optical modulator for kHz-rate switching applications**
Alessandro Brugnoli, Ali Emre Kaplan, Michele Re, Cosimo Lacava, Ilaria Cristiani
- T.P.35 Miniaturization of 90-degree hybrid optical couplers**
Alessio Miranda, Weiming Yao, Jos van der Tol, Kevin Williams

13:45 to 15:35 EXHIBITORS SESSION (Room: 3.0.2)

Note: See pag. 27 for the complete program

15:45 to 16:30 INDUSTRIAL KEYNOTES (Room: 3.0.3)

Session Chair: Francesco Morichetti, Politecnico di Milano

- 15:45 T.K.2 Recent advances in silicon integrated photonics for high-bandwidth and energy-efficient optical interconnects**
Haisheng Rong, Intel, USA
- 16:15 T.K.3 Advances on 5G, research directions and role of optical technologies - An industry view**
Renato Lombardi, Huawei, Italy

16:45 to 18:30 LASER INTEGRATION (Room: 3.0.3)

Session Chair: Kevin Williams, Eindhoven University of Technology

- T.E.1 Towards passive hybridization of high-power and high-speed InP transmitters**
INVITED
Helene Debregeas, Almae Technologies, France



- T.E.2 Micro-Transfer-Printed III-V-on-Si Laser with 120nm tuning range**
Emadreza Soltanian, Grigorij Muliuk, Sarah Uvin, Dongbo Wang, Guy Lepage, Peter Verheyen,, Joris Van Campenhout, Stefan Ertl, Johanna Rimböck, Nicolas Vaissiere, Delphine Néel, Joan Ramirez, Jing Zhang, Gunther Roelkens
- T.E.3 CW emission and self-pulsing in III/V SiN hybrid laser with narrowband mirror**
Cristina Rimoldi, Lorenzo Columbo, Sebastian Romero-García, Jock Bovington, Mariangela Gioannini
- T.E.4 Integration of Quantum Dot Lasers with SOI Waveguides using Micro-Transfer Printing**
Ali Uzun, Fatih Atar, John Justice, Brian Corbett, Ruggero Loi, Alex Farrell, Peter Ossieur, Jing Zhang, Gunther Roelkens, Igor Krestnikov, Johanna Rimböck, Stefan Ertl, Marianna Pantouvaki, Guy Lepage, Joris Van Campenhout
- T.E.5 Long cavity hybrid mode-locked laser with improved modulation efficiency**
Yasmine Ibrahim, Sylvain Boust, Quentin Wilmar, Jean-François Paret, Alexandre Garreau, Karim Mekhazni, Catherin Fortin, François Duport, Ghaya Baili, Corrado Sciancalepore, Stéphanie Garcia, Laurent Vivien, Frédéric van Dijk
- T.E.6 GaSb/SOI flip-chip integrated DBR laser at 2 μ m wavelength region**
Nouman Zia, Jukka Viheriala, Heidi Tuorila, Samu-Pekka Ojanen, Eero Koivusalo, Joonas Hilska, Mircea Guina

16:45 to 18:30 SPECTROSCOPY AND MID-IR (Room: De Donato)

Session Chair: Sonia Garcia Blanco, University of Twente

- T.F.1 Waveguide Fourier Transform Spectrometers for Remote Sensing and Raman Spectroscopy - INVITED**
Hugh Podmore, Honeywell Aerospace, Canada
- T.F.2 Mid-infrared Fourier-transform spectrometer based on suspended silicon metamaterial waveguides**
Thi Thuy Duong Dinh, Xavier Le Roux, Natnicha Koompai, Daniele Melati, Miguel Montesinos-Ballester, David González-Andrade, Pavel Cheben, Aitor V. Velasco, Eric Cassan, Delphine Marris-Morini, Laurent Vivien, Carlos Alonso-Ramos
- T.F.3 Germanium quantum wells for mid-infrared integrated photonics**
Andrea Barzaghi, Virginia Falcone, Stefano Calcaterra, Raffaele Giani, Andrea Ballabio, Giovanni Isella, Daniel Chrastina, Michele Ortolani, Michele Virgilio, Jacopo Frigerio
- T.F.4 Mid-Infrared High Q Factor Silicon-Germanium Ring Resonator**
Marko Perestjuk, Rémi Armand, Alberto Della Torre, Milan Sinobad, Arnan Mitchell, Andreas Boes, Jean-Michel Hartmann, Jean-Marc Fedeli, Vincent Reboud, Christelle Monat, Christian Grillet
- T.F.5 Ge micro-crystals photodetectors with enhanced infrared responsivity**
Virginia Falcone, Andrea Ballabio, Andrea Barzaghi, Carlo Zucchetti, Luca Anzi, Federico Bottegoni, Jacopo Frigerio, Roman Sordan, Paolo Biagioni, Giovanni Isella
- T.F.6 Etchless Pedestal Chalcogenide Waveguides for Mid-IR On-Chip Sensing and Spectroscopy Applications**
Vasileios Mourgelas, Ben Rowlinson, James Wilkinson, Ganapathy Senthil Murugan

**18:30 & 19:15 CASTELLO VISIT
19:30 GALA DINNER**



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Friday, 6th May 2022
Politecnico di Milano

08:00 to 09:00 REGISTRATION

09:00 to 09:30 KEYNOTE (Room: 3.0.3)

Session Chair: Delphine Marris-Morini, Université Paris-Sud

F.K.1 Brillouin Scattering in Silicon Nitride Photonic Circuits
David Marpaung, Twente University, Netherlands

09:45 to 11:15 MICROWAVE PHOTONICS AND TERAHERTZ (Room: 3.0.3)

Session Chair: Delphine Marris-Morini, Université Paris-Sud

F.A.1 Photonic integration for microwave photonics systems - INVITED
Antonella Bogoni, SSSA and Inphotec, Italy

F.A.2 Microwave-optical transduction using high overtone bulk acoustic resonances
Terence Blésin, Anat Siddharth, Hao Tian, Rui Ning Wang, Alaina Attanasio, Sunil A. Bhavé, Tobias J. Kippenberg

F.A.3 Widely Tunable Flat-Top Integrated Microwave Photonic Passband Filter
Claudio Porzi, Manuel Reza, Paolo Ghelfi, Marc Sorel, Antonella Bogoni

F.A.4 Integrated THz-photonics transceivers by all-dielectric phonon-polariton non-linear nanoantennas - INVITED
De Angelis Costantino, Università di Brescia, Italy

09:45 to 11:15 WAVEGUIDE TECHNOLOGY AND COUPLING (Room: De Donato)

Session Chair: Carlos Alonso Ramos, Université Paris-Saclay

F.B.1 Integrated optical interfacing using a freeform 3-D coupling platform - INVITED
Tian Gu, MIT, USA

F.B.2 3D printed on-chip parabolic mirror for chip-to-fiber and chip-to-chip coupling
Yujia Kong, Herman Offerhaus, Meindert Dijkstra, Sonia García Blanco, Lantian Chang

F.B.3 Demonstration of an on-chip optical circulator for TE mode light
Rui Ma, Sander Reniers, Yuya Shoji, Tetsuya Mizumoto, Kevin Williams, Yuqing Jiao, Jos Van Der Tol

F.B.4 Assessment of electro- and thermo-optics response of thin film lithium niobate with phase shifted Bragg gratings
Alessandro Prencipe, Katia Gallo

F.B.5 Enhanced all-optical reading of subwavelength magnetic bits on a photonic integrated device using magneto-plasmonic effects
Hamed Pezeshki, Figen Ece Demirer, Reinoud Lavrijsen, Jos van der Tol, and Bert Koopmans



11:15 to 11:45 COFFEE BREAK

11:45 to 13:15 ADVANCES IN SILICON PHOTONICS (Room: 3.0.3)

Session Chair: Pablo Sanchis, Universitat Politècnica de València

**F.C.1 Beyond Interconnects Applications using a 300mm Silicon Photonics Technology
INVITED**

Fredric Boeuf, STm, France

F.C.2 Automatic Testing of Silicon Photonic Add/Drop Multiplexer

Matteo Petrini, Rita Baldi, Moritz Seyfried, Francesco Morichetti, Andrea Melloni

F.C.3 Micro transfer printing of electronic integrated circuits on Silicon photonics substrates

Ruggero Loi, Prasanna Ramaswamy, Alex Farrell, Antonio Jose Trindade, Alin Fecioru, Johanna Rimböck, Stefan Ertl, Marianna Pantouvaki, Guy Lepage, Joris Van Campenhout, Tinus Pannier, Ye Gu, David Gomez, Patrick Steglich, Peter Ossieur

F.C.4 Integrated Electronic Control of Silicon Mach-Zehnder Interferometers

Fabio Toso, Francesco Zanetto, Maziyar Milanizadeh, Andrea Melloni, Marco Sampietro, Francesco Morichetti, Giorgio Ferrari

F.C.5 Optical modulation based on DC Kerr effect in silicon waveguide

Jonathan Peltier, Léopold Viot, Christian Lafforgue, Lucas Deniel, Delphine Marris-Morini, Guy Aubin, Farah Amar, Dehn Tran, Callum G. Littlejohns, David J. Thomson, Weiwei Zhang, Laurent Vivien

11:45 to 13:15 NEURAL NETWORKS AND QUANTUM SOURCES (Room: De Donato)

Session Chair: Taofiq Paraíso, Toshiba

F.D.1 Silicon photonics neural networks in optical communications - INVITED

Lorenzo Pavesi, Università di Trento, Italy

F.D.2 Quantifying Hidden Noise in Integrated Nonlinear Sources

Ben M. Burridge, Imad I. Faruque, John G. Rarity, Jorge Barreto

F.D.3 Strong Pump Rejection Filter for Polarization-Diverse Silicon Platforms

Jérôme Michon, Xavier Le Roux, Alexandre Huot de Saint-Albin, Dorian Oser, Sébastien Tanzilli, Laurent Labonté, Eric Cassan, Laurent Vivien, Carlos Alonso-Ramos

F.D.4 Fully Integrated, Scalable Quantum Entropy Source at 1 Gbps

Miquel Rudé, Domenico Tulli, Waldimar Amaya, Carlos Abellán

F.D.5 Sub-milliwatt and tunable optical power limiters using vanadium dioxide in ultra-compact silicon waveguides

Jorge Parra, Juan Navarro-Arenas, Jean Pierre-Locquet, Pablo Sanchis

13:15 to 14:30 LUNCH

14:30 to 16:00 PROGRAMMABLE PHOTONICS (Room: 3.0.3)

Session Chair: David Marpaung, University of Twente

F.E.1 Does the world need general-purpose programmable photonics - INVITED

Wim Bogaerts, Ghent University - IMEC, Belgium



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F.E.2 Multi-channel free-space optical communication between self-configuring silicon photonics meshes

SeyedMohammad SeyedinNavadeh, Mazyar Milanizadeh, Francesco Zanetto, Vittorio Grimaldi, Christian De Vita, Giorgio Ferrari, David A.B. Miller, Andrea Melloni, Francesco Morichetti

F.E.3 6-mode Universal Photonic Processor fabricated by Femtosecond Laser Writing

Ciro Pentangelo, Francesco Ceccarelli, Simone Piacentini, Riccardo Albiero, Simone Atzeni, Andrea Crespi, Roberto Osellame

F.E.4 A high-index SiON integrated photonic-electronic platform for quantum technologies

Mher Ghulinyan, Martino Bernard, Gioele Piccoli, Matteo Sanna, Massimo Borghi, Stefano Azzini, Fabio Acerbi, Giovanni Paternoster, Alberto Gola, Lorenzo Pavesi, Georg Pucker

F.E.5 A Universal 20-mode Quantum Photonic Processor

Caterina Taballione, Malaquias Correa Anguita, Michiel de Goede, Pim Venderbosch, Ben Kassenberg, Henk Snijders, Narasimhan Kannan, Devin Smith, Jorn Epping, Reinier van der Meer, Pepijn W. H. Pinkse, Hans van den Vlekert, Jelmer J. Renema

14:30 to 16:00 INTEGRATED PLATFORMS FOR VISIBLE & XUV (Room: De Donato)

Session Chair: Giuseppe Cusmai, Advanced Fiber Resources

F.F.1 Integrated distributed feedback (DFB) perovskite lasers in SiN waveguide platform

Federico Fabrizio, Piotr Cegielski, Manuel Runkel, Saeed Goudarzi, Cedric Kreusel, Bartos Chmielak, Lyudmila Staroduptceva, Dmitry Dirin, Viktoriia Morad, Maksym Kovalenko, Thomas Riedl, Max Lemme

F.F.2 TiO₂ channel waveguides with 0.5 dB/cm propagation losses

Alvaro Aguirre Fontenla, Ward A.P.M. Hendriks, Meindert Dijkstra, Sonia M. Garcia-Blanco

F.F.3 Integrated Amorphous-Silicon Photodetector on Silicon Nitride Waveguide

Christian De Vita, Fabio Toso, Natale Giovanni Pruiti, Charalambos Klitis, Giorgio Ferrari, Marc Sorel, Andrea Melloni, Francesco Morichetti

F.F.4 Low-noise near-ultraviolet photonic integrated lasers

Anat Siddharth, Thomas Wunderer, Grigory Lihachev, Andrey S. Voloshin, Camille Haller, Rui Ning Wang, Mark Teepe, Zhihong Yang, Junqiu Liu, Johann Riemensberger, Nicolas Grandjean, Noble Johnson, Tobias J. Kippenberg

F.F.5 Low-loss chemical mechanically polished Al₂O₃ thin films for UV integrated photonics

Soheila Mardani, M. Dijkstra, W.A.P.M. Hendriks, M.P. Nijhuis - Groen, S.M. Garcia-Blanco

F.F.6 Femtosecond Laser Micromachining of Integrated Hollow-core Waveguides for High-order Harmonic Generation and XUV Filtering

Pasquale Barbato, Gabriele Crippa, Anna Gabriella Ciriolo, Michele Devetta, Caterina Vozzi, Salvatore Stagira, Valer Tosa, Roberto Osellame, Rebeca Martinez Vazquez

16:00 to 16:30 COFFEE BREAK



16:30 to 17:30 KEYNOTES F.K.2 (Room: 3.0.3)

Session Chair: Charles Baudot, Ciena Corporation

F.K.2 Advances and trends of Si photonics

Laurent Vivien, isheng Rong, CNRS and Univ. Paris Saclay, France

F.K.3 History and perspectives of an InP-based generic foundry approach

Meint Smit, TU/e Eindhoven University, Netherlands

17:30 to 18:00 CLOSING CEREMONY & AWARDS



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Conference Venue

4th May Opening and technical sessions

Societ  Umanitaria, Via S. Barnaba, 48



How to reach Umanitaria?

You can arrive easily to Via S. Barnaba, 48:

underground: San Babila (M1 line), Crocetta (M3 line)

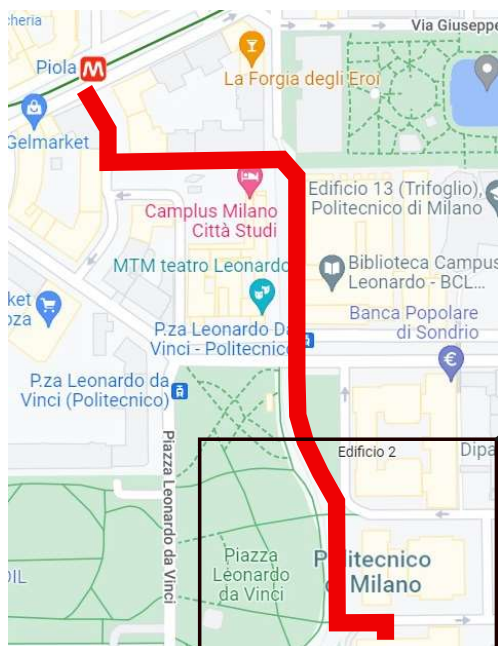
tram: 12, 16, 19, 27

bus: 60, 65, 73, 84, 94

5th & 6th May Technical sessions

Politecnico di Milano, Piazza Leonardo da Vinci

Building 3



How to reach Politecnico?

You can arrive easily to Politecnico di Milano by:

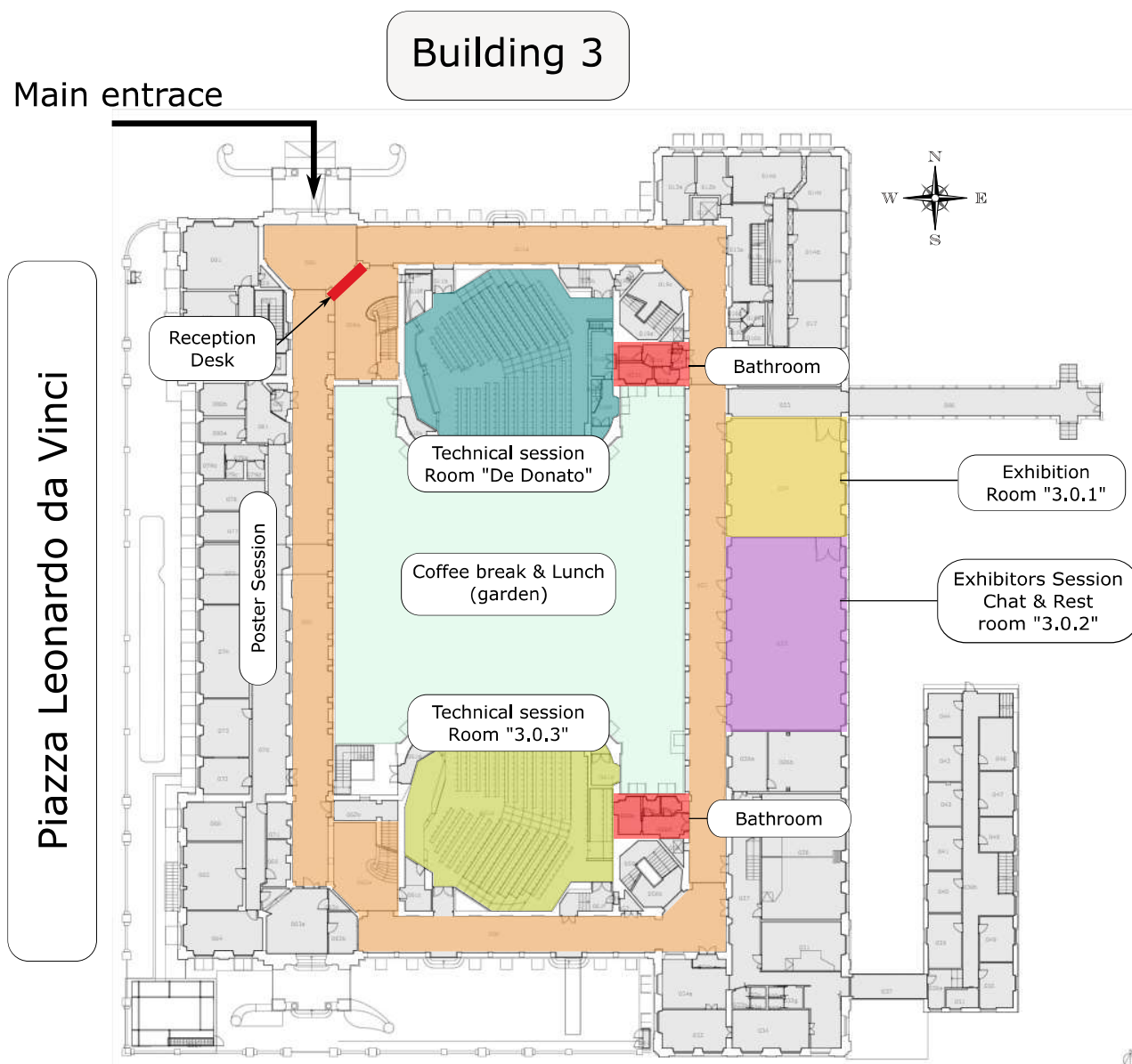
underground: Piola (M2 line)

tram: 19, 33

bus: 39, 81, 90, 91, 965



Building Map





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Conference Dinner

5th May Gala dinner

Castello Sforzesco, Piazza Castello

How to reach Castello?

You can arrive easily to Piazza Castello by:

underground: Cairoli M1 (red line),

Cadorna FN or **Lanza M2 (green line)**

tram: 1, 2, 4, 12, 14, 27

bus: 50, 57, 58, 51, 94



Exhibitors

Thursday & Friday

Room 3.0.1, 09:00 to 18:00



Télefo S.p.A. was founded in 1986 with the purpose of representing and distributing components and instrument to the Italian optical and telecommunication markets. The activity is based on an agreement between the manufacturer and the company, entitling the latter to act on an exclusive basis throughout Italy. The company's goals are: to bring the best products onto the Italian market, to serve as a vehicle for updating technology and to be available to all its Italian customers as a reference for all kinds of information. In order to succeed we are particularly aiming on knowledge, service and product quality.



As the pioneer and market leader in high-precision additive manufacturing, we are your reliable partner for microfabrication systems, software, and solutions. We are a vibrant, award-winning company and a BICO company since June 2021. More than 3,000 system users are driving future-shaping applications with over 1,300 peer-reviewed journal publications. Our latest innovation is the Quantum X align – Best-in-class 3D printer with nano-precision alignment system and the first 3D printer with advanced 3D alignment capabilities that enables the printing of freeform microoptical elements directly onto optical fibers and photonic chips, setting new standards in the design and fabrication of microoptical elements. Auto-aligned 3D printing significantly reduces complex chip-level mode field tuning, eliminates active alignment and enables novel and unprecedented use of freeform microoptics at optical interfaces.



The Synopsys Optical Solutions Group provides design tools that model all aspects of light propagation for high-accuracy optical product simulations and visualizations. With intelligent, easy-to-use solutions and an expert support team anchored by optical engineers, Synopsys helps organizations deliver superior optics to market faster. Learn more at our website. Our Products: Optical Design Solutions: LightTools, Code V, LucidShape, RSoft, Scattering Measurements, Engineering Services



AFR Milan is part of AFR, a leading provider of optical components, designed mainly for telecommunication, fiber laser, data center, autonomous vehicle, fiber sensor and bio-medical equipment applications. AFR Milan is dedicated to design, develop and manufacture bulk and Thin Film Lithium Niobate components and modulators. AFR Milan facility, including R&D labs, state of the art wafer fab and module line is situated in San Donato Milanese, Italy.



sm-optics invests in technology development to create and deliver value based solution consolidating today's network into a solid base to build upon. sm-optics liaises over the consolidated Software capabilities and over 20 years experience to facilitate customer vision of the future into today's network reality.



LIGENTEC is a Swiss based manufacturing partner, offering low loss SiN Photonic Integrated Circuits (PICs) for industries such as Quantum technologies, LiDAR, Communications, Space and Sensors. Due to its high confinement, the thick nitride waveguides and resonators have low bending losses and excel even in high power applications from the visible to the mid-IR. The main application areas for this advanced silicon photonics low loss technology include coherent telecommunication, LiDAR, metrology, supercontinuum generation, spectroscopy, sensing and microwave photonics. LIGENTEC's All Nitride Core Technology platform is fully CMOS compatible, thus allowing us to offer ramping up to high volumes benefiting from the scale of the semiconductor industry.



VLC Photonics is a world leading engineering company offering full range of services for the development of Photonic Integrated Circuits (PICs), with a focus in design in testing. Current service portfolio includes: techno-economic feasibility studies and consultancy, in-house PIC design, characterization and test, and full PIC prototyping through external manufacturing and packaging/assembly partners. VLC Photonics, as a pure-play fabless design house, works with multiple foundries embracing the generic integration model. VLC Photonics has expertise in all the main Photonic integration technologies, including Silicon-on-insulator, Silica/PLC, SiN/TripleX, InP/GaAs. VLC Photonics also works closely with foundries to contribute to the building of their Process Design Kits (PDKs), allowing external users to easily access their manufacturing capabilities. Since 2020, VLC Photonics is part of Hitachi, Ltd.



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At VPIphotonics, we believe in empowering you to define the cutting edge. We do this by providing software that is integrated, interoperable and industry-leading. We provide professional simulation software for photonic devices and waveguides, optoelectronics, integrated photonics and fiber optics applications, optical transmission system and network applications. We also deliver comprehensive training courses and provide consulting services addressing customer-specific design and configuration requirements. VPIphotonics partners actively with leading international companies and institutions in various private and publicly funded research projects. Our University Partner Program supports research and education at hundreds of universities worldwide. We offer award-winning simulation tools that are cited in over 1550 technical conference and journal papers. Visit our website and contact us today for a free software demo and evaluation



Raith is a leading precision technology manufacturer for nanofabrication, electron beam lithography, FIB SEM nanofabrication, nanoengineering, and reverse engineering applications. Customers include universities and other organizations involved in various fields of nanotechnology research and materials science – as well as industrial and medium-sized enterprises that use nanotechnology for specific product applications or produce compound semiconductors. Founded in 1980 and headquartered in Dortmund, Germany, Raith employs more than 250 people. The company works as closely as possible with customers in the most important global markets through subsidiaries in the Netherlands, the USA, and Asia and through an extensive partner and service network.



CORNERSTONE is an open source, license free silicon photonics rapid prototyping foundry based in the UK. The prototyping platform utilises industrially-compatible deep-UV projection lithography to enable seamless scaling-up of production volumes, but also retains device level innovation capability using high-resolution e-beam lithography and flexibility in its process flows. This process versatility and open source, license free model is what differentiates CORNERSTONE from other foundries. Currently CORNERSTONE offers three different silicon-on-insulator platforms, a silicon nitride platform, as well as suspended-silicon and germanium-on-silicon platforms for mid-infrared applications, all via a multi-project-wafer service.



ficonTEC is a recognized market leader for automated assembly and testing systems for high-end optoelectronic components, photonic devices and photonics integrated circuits. Considerable process capability and dedicated technologies have been accumulated in serving the needs of a broad selection of industry segments – including telecom, datacom & 5G, high-power diode laser assembly, sensing from bio-med to automotive lidar, micro-optics, and much more. ficonTEC's flexible and scalable automation options enable customized assembly and test solutions suitable for early device development, for new product introduction (NPI), and all the way up to high-volume production facilities for contract manufacturing or for in-house corporate R&D and production. Today, with a global installation base totaling some 1000 machines, each one is the automated and optimized embodiment of a customer-defined process.



LioniX International is a leading global provider of customized microsystem solutions. We have driven technological and commercial development in our specialist fields—photonic integrated circuits and MEMS—since 2001. As a vertically integrated company, we work across all stages of the production process from design to delivery of a finished module. And with world-class fabrication facilities, we scale production volumes as your requirements grow. Our strength lies in the service we provide as well as the creativity of our problem solving. By building a project team with you at the center and by asking the right questions, we make sure to deliver solutions that not only solve a problem, but drive your business.



Thorlabs, a vertically integrated photonics products manufacturer, was founded in 1989 to serve the laser and electro-optics research market. As that market has spawned a multitude of technical innovations, Thorlabs has extended its core competencies in an effort to play an ever increasing role serving the Photonics Industry at the research end, as well as the industrial, life science, medical, and defense segments. The organization's highly integrated and diverse manufacturing assets include semiconductor fabrication of Fabry-Perot, DFB, and VCSEL lasers; fiber towers for drawing both silica and fluoride glass optical fibers; MBE/MOCVD epitaxial wafer growth reactors; extensive glass and metal fabrication facilities; advanced thin film deposition capabilities; and optomechanical and optoelectronic shops.

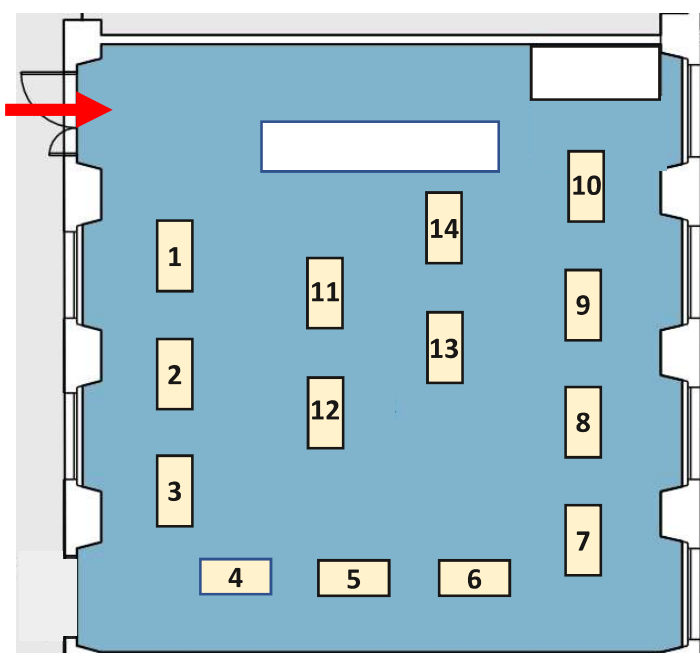


Universitat Politècnica de València (UPV) is a leading Spanish university with world-wide reputed groups in: tele/datacom, instrumentation, environmental sensing, chemistry, bio/life sciences, food & drug analysis among other. Former solar cell manufacturing company Siliken established a 500 square meters class 100-10000 (ISO-5/7) 6" MEMS pilot line clean room at Ciudad Politécnica de la Innovación – UPV. After Siliken stopped operations, UPV owns the clean room which was operated by industrial agents since 2015. From 2018, the clean room is operated by UPV personnel as UPVfab. The cleanroom facility is current part of the research infrastructure by the Institute for Telecommunications and Multimedia Applications (iTEAM) and the Instituto de Tecnología Química (ITQ).



iPronics, Programmable Photonics is a spinoff company from the Universitat Politècnica de València, Spain. iPronics develops the innovative concept of Field Programmable Photonic Gate Arrays (FPPGAs), which are based on a common optical hardware configurable through software to perform multiple functions. iPronics contributes to the development of future information processing systems where electronics and photonics work cooperatively by synergistically exploiting the best capabilities of each technology. It brings the added value of optical reconfigurability to products with broad fields of application including 5 and 6G telecommunications, data center interconnection, artificial intelligence, signal processing, sensing and quantum information.

Exhibition Room 3.0.1



1. Telefo
2. Nanoscribe
3. Synopsys
4. AFR Milan
5. smOptics
6. Ligentec
7. VLC
8. VPIphotonics
9. Raith
10. Cornerstone
11. ficonTEC
12. LioniX
13. Thorlabs
14. UPVfab

Exhibitors Session

Thursday, 5th May 2022

Room 3.0.2, 13:45 to 15:45

13:45 InSpek

13:55 LIGENTEC

14:05 LioniX

14:15 CORNERSTONE

14:25 AFR Milan

14:35 ficonTEC

14:45 Nanoscribe

14:55 RAITH

15:05 iPronix

15:15 VPIphotonics

15:25 VLC PHOTONICS

15:35 SYNOPSYS



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Notes



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