PLASMONICA 2025

June 25-27, 2025 | Modena, Italy

PLASMONICA25

June 25-27, 2025

Complesso San Geminiano
Modena (IT)

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This booklet is based on the AMCOS conference booklet by Maxime Lucas and Pau Clusella. The LaTeX template is freely available at https://github.com/maximelucas/AMCOS_booklet along with examples, additional codes, and information about its use and distribution policy.

The document was compiled on June 19, 2025. You can download the latest version of the booklet from the conference website at https://plasmonica2025.nano.cnr.it/. Please address any comments (e.g., reporting errors) and suggestions on this booklet to luca.bursi@unimore.it.

The digital artwork featured on the cover was created by Susanna Cavicchioli.

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About

Plasmonica

Plasmonica is the annual national workshop organized by the working group *Plasmonics and Nano-Optics* of the Italian Society for Optics and Photonics (SIOF), the Italian branch of the European Optical Society (EOS). Since its first edition in 2013, *Plasmonica* has brought together an average of around 100 participants per year, offering a dynamic forum for researchers active in the fields of plasmonics, nano-optics, and nanophotonics, both in Italy and internationally.

This year's edition — the **11th Workshop on Plasmonics, Nano-Optics and their Applications** *Plasmonica* 2025 — will be held in Modena, Italy, from June 25 to 27, 2025, thanks to the synergy between the Istituto Nanoscienze (Cnr Nano), part of the Italian National Research Council (Cnr), and the University of Modena and Reggio Emilia (UNIMORE).

A distinctive feature of *Plasmonica* is its commitment to supporting early-stage researchers, by fostering their scientific development and providing a platform for them to present and discuss their work. This three-day event will feature cutting-edge research presentations, distinguished invited speakers, and valuable opportunities for networking and collaboration at the heart of the plasmonics and nano-optics community.

Credits

Workshop organizing committee	**Plasmonica steering committee**
Maria Bartolacelli, Cnr Nano, Modena, IT	Antonino Foti, Cnr Ipcf, Messina, IT
Alessandro Belardini, Univ. Sapienza, Roma, IT	Nicoletta Granchi, Univ. di Firenze & LENS, IT
Stefania Benedetti, Cnr Nano, Modena, IT	Chiara Novara, Politecnico di Torino, IT
Luca Bursi, Univ. di Modena e Reggio Emilia, IT	Emilija Petronijevic, Univ. Sapienza, Roma, IT
Arrigo Calzolari, Cnr Nano, Modena, IT	Attilio Zilli, Politecnico di Milano, IT
Susanna Cavicchioli, Cnr Nano, Modena, IT	
Denis Garoli, Univ. di Modena e Reggio Emilia, IT	
Luisa Neri, Cnr Nano, Modena, IT	
Ilaria Rea, Cnr Isasi, Napoli, IT	

Workshop scientific committee	
Alessandro Alabastri, Rice University, Houston, US	Leonetta Baldassarre, Univ. Sapienza, Roma, IT
Paolo Biagioni, Politecnico di Milano, IT	Stefano Corni, Univ. di Padova, IT
Stefania D'Agostino, Cnr Nanotec, Lecce, IT	Emiliano Descrovi, Politecnico di Torino, IT
Carlo Forestiere, Univ. Federico II, Napoli, IT	Francesca Intonti, Univ. di Firenze, IT
Nicolò Maccaferri, Umeå University, SE	Riccardo Sapienza, Imperial College London, UK

Instructions for presenters

Contributed **talks** are allocated a 18 minute time slot (15’ talk + 3’ questions). Please bring your slides in a USB stick and upload them to the lecture hall’s computer well in advance of your talk.

The recommended format for **posters** is A0 or A1 with portrait orientation (poster dimensions should not exceed 90×120 cm – width × height). Please hang your poster at the opening of the Conference. You may leave it displayed on the designated boards until the end of the event.

All participants are welcome to follow and engage with our **social media** accounts, with the handle **@Plasmonica** and **#Plasmonica2025** on LinkedIn – Plasmonica, X–Twitter – @Plasmonica, Bluesky – @plasmonica.bsky.social, and Instagram – @Plasmonica.

Venue

The Workshop will be hosted at the **San Geminiano complex**, a fully renovated 15th-century cloister situated in the historic center of Modena (Via San Geminiano 3). Once part of a Benedictine monastery, the venue now belongs to the University of Modena and Reggio Emilia and offers modern academic facilities within a historically significant setting.

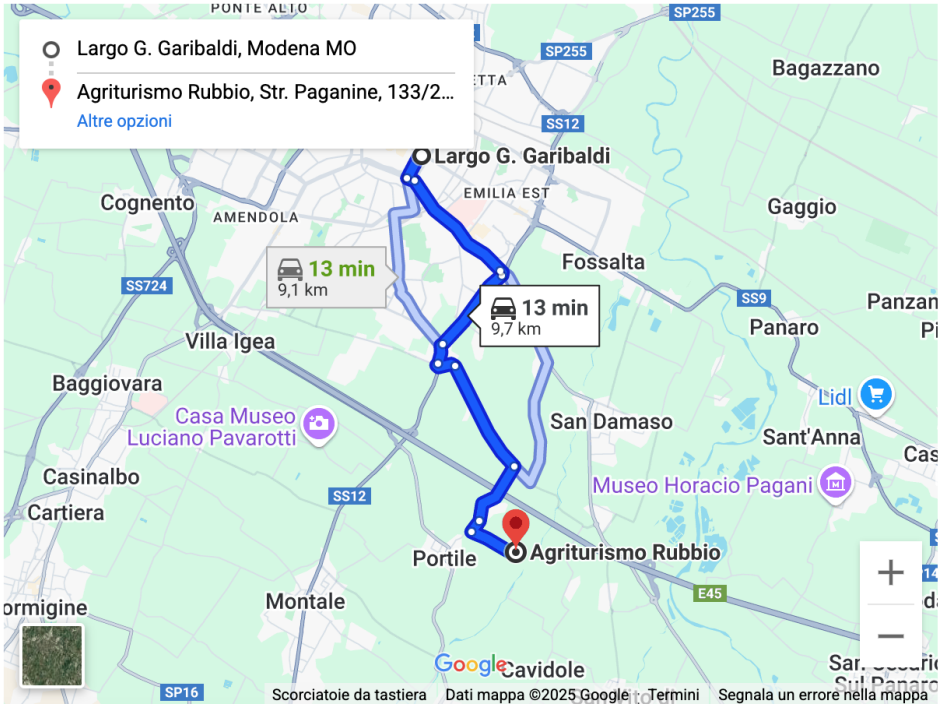
Scientific sessions will be held in the *Aula Convegni*, located on the first floor of the complex. Poster sessions and coffee breaks will take place in the portico of the cloister on the same floor.

The *eduroam* **Wi-Fi** network is available throughout the venue.

Social dinner

The social dinner will take place on **Thursday, 26 June at 20:30** at the **Agriturismo Rubbio** (Strada Paganine, 133/2, 41126 Portile MO), a traditional Modenese-style restaurant located in the countryside, approximately 20 minutes by car from the city center.

To facilitate transportation, a **shuttle bus service** will be provided for all participants. The bus will depart from **Largo Garibaldi** (7 mintues walk from the conference venue) **at 20:00** and will return there after dinner. Participants who wish to use this service are kindly invited to do so.



Timetable

Wednesday, June 25th

12:30–14:00	**Registration and light lunch**	
14:00–14:15	**Opening remarks**	
14:15–14:45 **[Invited]**	**Alejandro Manjavacas** Instituto de Química Física Blas Cabrera IQF-CSIC, ES	Collective lattice resonances in complex arrays of nanostructures
14:45–16:00	**Session I: Ultafast and active plasmonics. Chair: Carlo Forestiere**	
	Sveva Sodomaco Scuola Normale Superiore, Pisa, IT	Towards an integrated QM/classical framework for molecular nanoplasmonics
	Pablo Grobas Illobre Scuola Normale Superiore, Pisa, IT	Plasmon-mediated fluorescence enhancement of chromophores: An atomistically-detailed theoretical perspective
	Tersilla Virgili Cnr Ifn, Milano, IT	Ultrafast spectroscopy on a hybrid plasmonic-photonic platform
	Valeria Giliberti Center for Life Nano- and Neuro-Science, IIT, Roma, IT	Customized infrared nanospectroscopy technique for the study of electric-field-induced molecular dynamics
16:00–16:30	**Coffee break, Poster session, and Sponsors' exhibition**	
16:30–17:45	**Session II: Light-matter interaction and quantum plasmonics. Chair: Monica Bollani**	
	Hira Asif Akdeniz University, Antalya, TR	Stark control of plexcitonic states in incoherent quantum system
	Gabriele Calusi Università di Firenze, IT	Optical mode level repulsion in hyperuniform disordered systems
	Maria Villanueva-Blanco ISOM, Univ. Politécnica de Madrid, ES	Polaritonic hybrid modes in Cd(Zn)O thin films on SiC
	Alessandro Rogai Università di Pisa, IT	Yb^{3+}-doped $CsPbCl_3$ perovskite nanocrystals: Quantum cutting for optoelectronic applications
18:00–19:00	**Round table of *Plasmonica* (in Italian)**	

Thursday, June 26th – Morning

9:00–9:30 **[Invited]**	**Valentina Krachmalnicoff** Institut Langevin, ESPCI Paris, Univ. PSL, CNRS, FR	Sensing 3D electromagnetic landscapes at the nanometer scale with single emitters
9:30–10:30	**Session III: Thermoplasmonics and plasmon-excitonics. Chair: Leonetta Baldassarre**	
	Giorgio Zambito Università di Genova, IT	Hybrid 2D-plasmonic nanoemitters via grayscale thermal-scanning probe lithography
	Alessio Gabbani Università di Firenze, IT	Infrared thermoplasmonics with indium tin oxide nanocrystals
	Francesco Bisio Cnr Spin, Genova, IT	Plasmonic/excitonic hybrid systems for nanoscale thermometry
10:30–11:30	**Coffee break, Poster session, and Sponsors' exhibition**	
11:30–13:00	**Session IV: Hybrid and tunable metasurfaces. Chair: Francesco Pineider**	
	Henning Galinski ETH Zurich, CH	Hybrid resonant metasurfaces combining dielectric nanocup metasurfaces and plasmonic networks
	Yigong Luan Politecnico di Milano, IT	All-optical polarization encoding and modulation by nonlinear interferometry at the nanoscale
	Alberto Santonocito Università di Pisa, IT	Gires Tournois magnetically tunable metasurface for the dynamic control of light
	Yaping Hou Politecnico di Milano, IT	Electrically tunable polarization state of light using lithium niobate-based nanograting
	Ali Douaki Università di Modena e Reggio Emilia, IT	Plasmonic nanopores for nanopores gating
13:00–14:00	**Lunch break**	

Thursday, June 26th – Afternoon

14:00–16:15	**Session V: Metasurfaces for smart vision and imaging. Chair: Tommaso Ongarello**	
	Bert Hecht University of Würzburg, DE	Individually addressable nanoscale OLEDs
	Jonathan Barolak Università di Pavia, IT	Automated design of one-dimensional photonic crystals for all-optical image processing
	Pietro Baldin Politecnico di Milano & Smart Eyewear Lab, IT	Metasurfaces supporting guided mode resonances for holography and eye tracking in future smart eyewear devices
	Jacopo Stefano Pelli Cresi EssilorLuxottica, Milano, IT	In-plane scattering sustaining metasurface for eye-tracking applications
	Costantino De Angelis Università di Brescia, IT	Nonlinear-nonlocal flat optics for space-time image processing
	Andrea Vogliardi Università di Padova, IT	All-dielectric silicon metasurfaces for the generation and manipulation of structured light
	Giuseppe Emanuele Lio Cnr Nano, Pisa, IT	Reconfigurable beamforming metasurfaces for infrared beam steering
16:15–17:00	**Coffee break, Poster session, and Sponsors' exhibition**	
17:00–19:00	**Session VI: Devices and applications. Chair: Nicoletta Granchi**	
	Camilla Gonzini LENS, Università di Firenze, IT	Near-field spectroscopy of photonic crystal cavities with small footprint and high optimized Q-factor
	German Lanzavecchia Istituto Italiano di Tecnologia, Genova, IT	Tailored fabrication of 3D nanopores for advanced nanoscale techniques
	Simone Zanotto Cnr Nano, Pisa, IT	Tailoring thin film absorption and nonlinear transduction in thermomechanical bolometers
	Fritz Berkmann Brandenburg University of Technology, Cottbus, DE	Plasmonic-induced hot carrier generation for MIR detectors
	Ergun Simsek University of Maryland Baltimore County, USA	Excito-plasmonic phototransistors with improved thermal management
	Margherita Angelini ESSS & Ansys	ESSS & Ansys for the academic world: Empowering education, research and innovation
20:30–23:00	**Social dinner**	

Friday, June 27th

9:00–9:30 **[Invited]**	**Emiliano Cortés** Nanoinstitute Munich, Faculty of Physics, Univ. of Munich (LMU), DE	Plasmonics for energy and sustainability
9:30–10:30	**Session VII: Plasmonic biosensing. Chair: Chiara Novara**	
	Agostino Occhicone Università Sapienza, Roma, IT	Detection of anti-SARS CoV-2 antibodies in human serum by localized surface states on 1D photonic crystal biochips
	Valeria Nocerino Università di Napoli Federico II, IT	Engineering gold nanocluster in PEGDA hydrogel for SERS-based on-site dimethoate sensing on olives
	Veronica Zani Università di Padova, IT	Ultra-low frequency surface enhanced Raman scattering of CTAB: Unveiling its detection and exchange mechanism on gold nanorods
10:30–11:30	**Coffee break, Poster session, and Sponsors' exhibition**	
11:30–12:45	**Session VIII: Alternative plasmonic (meta)materials. Chair: Simone Zanotto**	
	Cristina Mancarella Politecnico di Milano, IT	Plasmonic multilayers metamaterials merging nitrides, oxynitrides and transparent conductors with broad and tunable properties
	Naveen Kumar Cnr Nano, Modena, IT	Role of amorphization in tuning the electronic and plasmonic structure of Al-doped zinc oxide
	Antonio Ferraro Istituto di Nanotecnologia Cnr Nanotec, Rende, IT	ENZ metamaterials as platform for different applications
	Gonzalo Álvarez-Pérez Istituto Italiano di Tecnologia, Arnesano, IT	Free-electron optical nonlinearities in heavily doped semiconductors: From fundamentals to integrated photonics
12:45–13:15	**Closing remarks**	

Poster sessions

No.	Presenter and poster title	
1	**Sidahmed Abayzeed** University of Nottingham, UK	Plasmonic bioelectric interfacing
2	**Hanan Ali** Università di Pavia, IT	Strong coupling regime of a quasi-bound state in a continuum in a plasmonic nanohole array with broken symmetry
3	**Francesca Alimonti** Cnr Nano, Modena, IT	Towards plasmon-enhanced photocatalytic efficiency using Cu@Cu_2O core@shell nanoparticles
4	**Eva Almeida** University of Amsterdam, NL	High-efficiency metasurfaces for building-integrated PV
5	**Francesca Argentieri** Università di Trieste, IT	Enhancement of plasmonic dichroism by doping and protecting metal nanoclusters, a TDDFT study
6	**Parwaz Asif** University of Limoges, CNRS, XLIM, FR	Silver nanowire based plasmonic transparent electrodes for optoelectronic application
7	**Ali Azimi** Brandenburg University of Technology, Cottbus, DE	Numerical investigation of plasmon-induced field confinement in engineered nanoantenna arrays from long-wave infrared to THz regime
8	**Leonetta Baldassarre** Università Sapienza, Roma, IT	Antenna-enhanced Raman spectroscopy with a 1550 nm laser excitation
9	**Pietro Baldin** Politecnico di Milano & Smart Eyewear Lab, IT	Advanced theoretical models and simulation techniques for nonlocal metasurfaces
10	**Ghassem Baridi** Università di Modena e Reggio Emilia, IT	Simulation of plasmonic surface resonance of graphene for detecting physiological tissue
11	**Rafael Bellei de Carvalho** Politecnico di Milano, IT	Reducing stitching errors in large-area all-dielectric non-local metasurfaces using multi-pass electron-beam lithography
12	**Paolo Biagioni** Politecnico di Milano, IT	Quantitative estimation of the linear birefringence of a single-stranded DNA layer exploiting Bloch surface waves
13	**Monica Bollani** Cnr Ifn, Milano, IT	Fabrication of silicon-based dual linear polarizer exploiting quasi-bound states in the continuum
14	**Vittorio Bonino** EssilorLuxottica, Milano, IT	Optical computing with passive elements for smart eyewear

15	**Kaushik Brahmachari** University of Calcutta, IN	Influence of silicon material on the performance of bioplasmonic structure comprising of gold nanoparticle film
16	**Luca Bursi** Università di Modena e Reggio Emilia, IT	Defect complexes and charge compensation in Ta-doped anatase TiO_2 transparent conductor
17	**Stefano Campanaro** Università di Modena e Reggio Emilia, IT	Tunable volume plasmon polariton modes in hyperbolic metamaterials based on III-V semiconductors
18	**Filippo Coviello** EssilorLuxottica, Milano, IT	Evaluation of scattering efficiency in large scale simulated optical metasurfaces
19	**Mehmet Atif Durmus** University of Amsterdam, NL	Tunable nonlocal 2D excitonic metasurfaces
20	**Carlo Forestiere** Università Federico II, Napoli, IT	Quantum emitter interacting with a dispersive dielectric object: A model based on the modified Langevin noise formalism
21	**Antonino Foti** Cnr Ipcf, Messina, IT	Nano-imaging of 2D MoS_2 on gold nanostripes by tip-enhanced photo-luminescence
22	**Maria Gambelli** Università Sapienza & Cnr Ifn, Roma, IT	Group-IV SiGe material platform: From ultrastrong coupling toward the development of intersubband-based devices
23	**Shuvaraj Ghosh** Cnr Nano, Modena, IT	Amorphous ITO-ZnO mixed oxide-based transparent conducting films for plasmonics
24	**Maria Caterina Giordano** Università di Genova, IT	Flat-optics 2D TMD semiconductor heterostructures for large-area photoconversion applications
25	**Nicoletta Granchi** Università di Firenze & LENS, IT	Tailoring Fano lineshape in photonic local density of states by losses engineering
26	**Nicoletta Granchi** Università di Firenze & LENS, IT	Scalable nanophotonics: Revolutionizing optical components with advanced coatings & metasurfaces
27	**Claudia Pernilla Hallqvist** Politecnico di Milano, IT	Titanium oxynitride and vanadium dioxide thin films and multilayers for solar and IR light absorption
28	**Shahid Hameed** Government College University Faisalabad, PK	Anticancer and acute toxicity studies of cellulose–coated vanadium oxide nanomaterials
29	**Huatian Hu** Istituto Italiano di Tecnologia, Arnesano, IT	Calculating free-electron nonlinearities in nonclassical plasmonic heavily doped semiconductor systems

30	**Edoardo Mariani** University of Munich (LMU), DE	Plasmon-assisted lithium-ions capture in LiAl-LDHs
31	**Arif Nabizada** Università Sapienza, Roma, IT	Excitation of FF-SH surface plasmon polariton waves by femtosecond pulses at metal-nonlinear medium interfaces
32	**Valeria Nocerino** Università Federico II, Napoli, IT	The UniNano Nanotechnology Center for NanoPhotonics and Quantum Device Engineering
33	**Michele Ortolani** Università Sapienza, Roma, IT	Longitudinal bulk plasmons in heavily doped semiconductors for electrically reconfigurable linear and nonlinear optics
34	**Miranda Parisi** Università Roma Tre, Roma, IT	Functionalized chiral gold nanoparticles for sensing applications
35	**Samuele Pelatti** Cnr Nano, Modena, IT	A procedure to obtain niobium oxide films with variable stoichiometry
36	**Marcello Pozzi** ETH Zurich, CH	Self-assembled hybrid dielectric/plasmonic network metamaterials based on vanadium oxide and copper
37	**Enzo Rotunno** Cnr Nano, Modena, IT	SPEQTEM: A next-generation monochromated TEM for advanced plasmonic investigations
38	**Vaishnavi Sajeev** Politecnico di Milano, IT	Active THz surface plasmon modulation via tungsten oxide hole arrays
39	**Anastasiia Sapunova** Istituto Italiano di Tecnologia, Genova, IT	Study of magneto-plasmonic characteristics of nanopores for particle trapping
40	**Alberto Sivera** Politecnico di Milano, IT	High-index optical materials for all-dielectric non-local metasurfaces
41	**Claudia Skubisz** Università Sapienza, Roma, IT	Metasurface mapping by photoacoustic spectroscopy
42	**Eleonora Spurio** Cnr Nano, Modena, IT	Ultrafast charge transfer dynamics in plasmonic NPs-CeO_2 systems
43	**Shukun Weng** Istituto Italiano di Tecnologia, Genova, IT	Electrically tunable ion transportation of MoS_2/SiN nanochannel

Acknowledgements

Plasmonica 2025, the **11th Workshop on Plasmonics, Nano-Optics and their Applications** is hosted in Modena, Italy thanks to the synergy between the Istituto Nanoscienze (Cnr Nano) and the University of Modena and Reggio Emilia (UNIMORE). The workshop is supported by the following institutions and sponsors.

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