

Michele Celebrano, Prof.

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CONTACT INFORMATIONS

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RESEARCH EXPERIENCE

I received my master in Electronic Engineering with full marks in 2004 and the Ph.D. in Physics in 2008 under the supervision of Prof. G. Cerullo in the framework of MIUR-FIRB 2001 project “*Nanotechnologies and Nanodevices for the Information Society*”. I developed a near field microscope (SNOM) to *map the near-field nonlinear response in plasmonic nano-resonators*. For these studies, **I received the Best Talk Award** at the OSA Italian Student Chapter Workshop in Ancona in 2007.

From July 2008 to April 2011, as a Post-Doc position in the Nano-Optics group of Prof. Vahid Sandoghdar in Zurich, I focused on the development of interferometric scattering microscopy and *detect for the first time a single molecule without fluorescence at room temperature*. This result, **published in Nature Photonics**, constituted a milestone of the FP6 Integrated project “Integrated technologies for in-vivo Molecular imaging (Project Reference: 503259)”.

In December 2012 I got a permanent position (Assistant Professor) at the Physics Department of the Politecnico di Milano, where I became Associate Professor in 2018. The same year **I received the habilitation to Full Professor**. I am the PI of the “supra Nano-Optics Milano” sNOm Lab and my research field is Nanophotonics and Plasmonics with a specific focus on the enhancement of light-matter interaction at the nanoscale. In particular, I investigate *the linear and nonlinear optical processes in plasmonic and photonic nanoantennas and metasurfaces* with the aim of exploiting nonlinear photon interaction for sensing and optical logic operations. My early studies on enhanced nonlinear optics at the nanoscale were **funded by the Cariplo Foundation in 2012** (National PI - 200 k€ grant - project: SHAPES) and **published in Nature Nanotechnology**. The extension of this concept to metasurfaces obtained further funding in 2020 **by the Italian Ministry of Research and Education (MIUR)** (Local PI - 700 k€ grant – project: NOMEN).

I spent 3 months as academic guest in 2012 in the Labs of Prof. M. Krishnan at the University Zurich focussing on the manipulation of nano-objects and filing the patent “Device for placing an object in at least a first and a second orientation or spatial location” (European Patent: EP 2891006 A2, US Patent: US 20150212316 A1).

I recently obtained a grant in the framework of the EUR EIPHI project, an international integrated MSc/PhD program, to spend 1 months in 2019 as visiting professor at University Bourgogne Franche-Comté (Dijon).

I am author in **more than 80** among **scientific papers and proceedings** (more than 20 first/co-first and 8 last author) subject to an international review process with **more than 2400 citations** and **H-index = 24** (Google Scholar, 19 according to Web of Science). Among them, I **published 3 Nature Nanotechnology, 1 Nature Photonics and 1 Nature Materials**. My research has been highlighted by the scientific press (**Nature, CE&N News, Physics Today and ACS Highlights**) and received **4 covers**.

PERIOD	POSITION
09/2019- 10/2019	Visiting Professor Laboratoire Interdisciplinaire Carnot de Bourgogne, University Bourgogne Franche-Comté, 9 avenue Alain Savary BP 47870, 21078 Dijon Cedex (France)
02/2018-Present	Associate Professor Department of Physics – Politecnico di Milano, P.zza L. Da Vinci 32, 20133 Milano (Italy)
12/2011-02/2018	Assistant Professor Department of Physics – Politecnico di Milano, P.zza L. Da Vinci 32, 20133 Milano (Italy)
04/2011- 11/2011	Post-Doc Department of Physics – Politecnico di Milano, P.zza L. Da Vinci 32, 20133 Milano (Italy)
07/2008- 04/2011	Post-Doc ETH Zurich, Laboratory of Physical Chemistry, (Research group: Prof. V. Sandoghdar) Nano-Optics and Nano-Plasmonics
03/2008- 07/2008	Post-Doc Department of Physics –Politecnico di Milano, P.zza L. Da Vinci 32, 20133 Milano (Italy)

EDUCATION

2005-2008	Ph. D. degree in Physics Department of Physics – Politecnico di Milano (Italy), Ph.D. thesis title: “Near- and far-field imaging and spectroscopy of single nanoparticles” Mentors: Prof. Giulio Cerullo and Prof. Sandro De Silvestri.
2007	Exchange PhD Student ETH Zurich, Laboratory of Physical Chemistry, (Research group: Prof. V. Sandoghdar) Nano-Plasmonics
1998-2004	Master degree in Electronic Engineering – with full marks Politecnico di Milano, Piazza Leonardo Da Vinci 32, 20133 Milano (Italy), Master thesis title: “Development of a near-field optical microscope coupled to ultrashort pulses” Mentor: Prof. Giulio Cerullo.

TEACHING EXPERIENCE

While at ETH Zurich I was involved as a teaching assistant in a Bio-photonics, Molecular Optics and Spectroscopy courses taught in English, and **I supervised a master student**.

At Politecnico di Milano, since 2012 I am lecturer in electromagnetism courses. I supervised several bachelor students and 2 master students (Giulia Grancini, Agostino di Francescantonio). **I have also supervised 2 Ph.D. students** (Lavinia Ghirardini, Milena Baselli) **and 2 postdoc researchers** (Dr. Lavinia Ghirardini, Dr. Attilio Zilli).

PERIOD	POSITION
2019 – 2021	Lecturer Scanning and Electron Microscopies (5 Credits) at Politecnico di Milano
2017 – 2021	Lecturer Principles of Experimental Physics: Mechanics, Thermodynamics, Electromagnetism (12 Credits) at Politecnico di Milano.
2014 - 2017	Lecturer Principles of Experimental Physics: Electromagnetism (5 Credits) at Politecnico di Milano.
2012 - 2021	Teaching Assistant Physics Lab Courses at Politecnico di Milano.
2011 - 2014	Teaching Assistant Principles of Experimental Physics: Classical Mechanics, Thermodynamics and Electromagnetism (12 Credits) (Politecnico di Milano)
2008 – 2011	Teaching Assistant Advanced Optics and Spectroscopy: Biophotonics course Spectroscopy course, Chemistry Lab courses (ETH Zurich)
2006 – 2007	Teaching Assistant Fundamental Physics: Classical Mechanics, Thermodynamics and Electromagnetism (Politecnico di Milano)

COMMUNITY WORK

I attended several national and international conferences and workshops, giving **more than 30 oral presentations (13 Invited Talks)**. I organized **1 national Workshop** (Plasmonica 2013 in Milan) and **1 international Topical Meeting** on Nonlinear Plasmonics (within the Nanospectroscopy Conference in Rome in 2015) and a Special Focus Session at PIERS 2019 Conference in Rome. I **chaired and served in the scientific committee of 3 international conferences**, the OSA Advanced Photonics Congress 2018 in Zurich, SPIE Photonics Europe Congress 2020 and the upcoming EOS Annual Meeting 2021 in Rome.

Reviewer activity

- Nature Nanotechnology, Scientific Reports, Light: Science and Applications (NPG);
- ACS Photonics, ACSNano, Nanoletters (ACS);
- Nanoscale (RCS);
- Physical Review Letters, Phys. Rev. B (APS);
- Journal of Optics (IOP);
- J. Applied Physics (AIP);
- Optics Express (OSA);
- Optics Materials (Elsevier);
- Applied Surface Science (Elsevier);
- Plasmonics (Springer);
- Belstein Journal of Nanotechnology (Belstein);
- Nanomaterials (MPDI);

Organization and scientific committee of Conferences

- Scientific Committee: SPIE Photonics Europe, Strasburg (France), 2022.
- Scientific Committee: "EOS Annual Meeting", Rome (Italy), 13 - 17 September 2021.
- Scientific Committee: "Nanophotonics VIII Conference" at SPIE Photonics Europe, Strasburg (France), 29 March - 2 April 2020.
- Chair of the Scientific Sub-Committee for the conference "Advanced Photonics Congress" of the OSA in Zurich (Switzerland), 01-05 July 2018.
- Scientific Committee: "Optical Nanospectroscopy III", Rome (Italy), 22-25 March 2016.
- Organizer: "Topical Meeting on Nonlinear Plasmonics and Its Applications", Rome (Italy), March 21st 2016;
- Organizer: "Plasmonica2013", Milan (Italy), 01-03 July 2013;
- Organizer: "PIERS 2019", Rome (Italy), 17-21 June 2019.

Memberships

Member of Società Italiana di Ottica e Fotonica (SIOF)

Member of the Steering Committee of "Plasmonica" – Working Group of SIOF (Italian Society of Optics and Photonics)

LANGUAGES

Italian	Mother tongue
English	Fluent, (TOEFL Certificate)
German	Basic (A1.1 Certificate of ETH language course)

PATENTS

"Device for placing an object in at least a first and a second orientation or spatial location" (EP 2891006 A2, US 20150212316 A1). *Patent dropped.*

FUNDED PROJECTS**PAST**

- Project "Second Harmonic Plasmon-Enhanced Sensing (SHAPES)" (2013-0736) funded by Cariplo Foundation (200k€) (Principal Investigator)

ONGOING

- Project “METAFAST” funded by the European Union Horizon 2020 Research and Innovation programme under Grant Agreement No.899673
- Project "High-index dichalcogenide nanoantennas" Funded by the Molecular Foundry (Proj. Number 5387) – Team Member
- Project PRIN “NOMEN”: NOnlinear photonics with MEtal-less Nanoantennas and metasurfaces” Prot. 2017MP7F8F, funded by the Italian Ministry for Research and Education (MIUR) – 700k€ (Principal Investigator of research unit Polimi)
- Project “QUASIX: Sorgente integrata di singoli fotoni in silicio per comunicazioni quantistiche nello spazio” Funded by the Italian Space Agency (ASI) – 350 k€ (Principal Investigator of research unit Polimi)
- Project EUR EIPHI for international integrated MSc/PhD exchange. Visiting professorship grant (3 k€).

Michele Celebrano



Milano, 19/03/2021

I am author of more than 50 scientific papers published in international peer-reviewed journals and conference proceedings, in which I appear both as first/second (18) and last author (4):

SELECTED SCIENTIFIC PUBLICATIONS ON INTERNATIONAL PEER-REVIEW JOURNALS

1. A. Fedotova, L. Carletti, A. Zilli, F. Setzpfandt, I. Staude, A. Toma, M. Finazzi, C. De Angelis, T. Pertsch, D. N. Neshev, and M. Celebrano
“Lithium Niobate Meta-Optics”
ACS Photonics Article ASAP, DOI: 10.1021/acsp Photonics.2c00835
2. M. Celebrano
“Plasmonics: the future is ultrafast and ultrasmall”
FRONTIERS IN PHOTONICS, 34 (2022)
3. G. Bianca, C. Trovatiello, A. Zilli, M. I. Zappia, S. Bellani, N. Curreli, I. Conticello, J. Buha, M. Piccinni, M. Ghini, M. Celebrano, M. Finazzi, I. Kriegel, N. Antonatos, Z. Sofer, and F. Bonaccorso
“Liquid-Phase Exfoliation of Bismuth Telluride Iodide (BiTeI): Structural and Optical Properties of Single-/Few-Layer Flakes.”
ACS APPLIED MATERIALS & INTERFACES **14**, 34963-74 (2022)
4. E. Mogni, G. Pellegrini, J. Gil-Rostra, F. Yubero, G. Simone, S. Fossati, J. Dostálek, R. Martínez Vázquez, R. Osellame, M. Celebrano, M. Finazzi, P. Biagioni
“One-Dimensional Photonic Crystal for Surface Mode Polarization Control”
ADVANCED OPTICAL MATERIALS **2200759**, 1-6 (2022)
5. A. Di Francescantonio, A. Locatelli, X. Wu, A. Zilli, T. Feichtner, P. Biagioni, L. Duò, D. Rocco, C. De Angelis, M. Celebrano, B. Hecht, M. Finazzi
“Coherent Control of the Nonlinear Emission of Single Plasmonic Nanoantennas by Dual-Beam Pumping”
ADVANCED OPTICAL MATERIALS **2200757**, 1-8 (2022)
6. D. Rocco, A. Zilli, A. Ferraro, A. Borne, V. Vinel, G. Leo, A. Lemaître, C. Zucchetti, M. Celebrano, R. Caputo, C. De Angelis, M. Finazzi
“Tunable second harmonic generation by an all-dielectric diffractive metasurface embedded in liquid crystals”
NEW JOURNAL OF PHYSICS **24**, 045002 (2022)
7. D. Rocco, R. Camacho Morales, L. Xu, A. Zilli, V. Vinel, M. Finazzi, M. Celebrano, G. Leo, M. Rahmani, C. Jagadish, H. Tan, D. Neshev, C. De Angelis
“Second order nonlinear frequency generation at the nanoscale in dielectric platforms”
ADVANCES IN PHYSICS: X **7**, 2022992 (2022)
8. L. Fagiani, N. Granchi, A. Zilli, C. Barri, F. Rusconi, M. Montanari, E. Mafakheri, M. Celebrano, M. Bouabdellaoui, M. Abbarchi, F. Intonti, A. Khursheed, P. Biagioni, M. Finazzi, M. A. Vincenti, M. Bollani
“Linear and nonlinear optical properties of dewetted SiGe islands”
OPTICAL MATERIALS: X **13**, 100116 (2022)
9. K. I. Okhlopkov, A. Zilli, A. Tognazzi, D. Rocco, L. Fagiani, E. Mafakheri, M. Bollani, M. Finazzi, M. Celebrano, M. R. Shcherbakov, C. De Angelis, A. A. Fedyanin
“Tailoring third-harmonic diffraction efficiency by hybrid modes in high-Q metasurfaces”

- NANO LETT. **21**, 10438-10445 (2021)
10. A. Mazzanti, E. A. A. Pogna, L. Ghirardini, M. Celebrano, A. Schirato, G. Marino, A. Lemaître, M. Finazzi, C. De Angelis, G. Leo, Giulio C., G. Della Valle
“All-Optical Modulation with Dielectric Nanoantennas: Multiresonant Control and Ultrafast Spatial Inhomogeneities”
SMALL SCIENCE **1**, 2000079 (2021)
 11. E. A. A. Pogna, M. Celebrano, A. Mazzanti, L. Ghirardini, L. Carletti, G. Marino, A. Schirato, D. Viola, P. Laporta, C. De Angelis, G. Leo, G. Cerullo, M. Finazzi, and G. Della Valle
“Ultrafast, All Optically Reconfigurable, Nonlinear Nanoantenna”
ACS Nano **15**, 11150-11157 (2021)
 12. M. Celebrano, D. Rocco, M. Gandolfi, A. Zilli, F. Rusconi, A. Tognazzi, A. Mazzanti, L. Ghirardini, E. A. A. Pogna, L. Carletti, C. Baratto, G. Marino, C. Gigli, P. Biagioni, L. Duò, G. Cerullo, G. Leo, G. Della Valle, M. Finazzi, C. De Angelis
“Optical tuning of dielectric nanoantennas for thermo-optically reconfigurable nonlinear metasurfaces”
OPT. LETT. **46**, 2453-2456 (2021)
 13. A. Tognazzi, K. I. Okhlopkov, A. Zilli, D. Rocco, L. Fagiani, E. Mafakheri, M. Bollani, M. Finazzi, M. Celebrano, M. R. Shcherbakov, A. A. Fedyanin, C. De Angelis
“Third-harmonic light polarization control in magnetically resonant silicon metasurfaces”
OPT. EXPRESS **29**, 11605-11612 (2021)
 14. A. Zilli, D. Rocco, M. Finazzi, A. Di Francescantonio, L. Duò, C. Gigli, G. Marino, G. Leo, C. De Angelis, M. Celebrano
“Frequency Tripling via Sum-Frequency Generation at the Nanoscale”
ASC PHOTONICS **8**, 1175-1182 (2021)
 15. L. Ghirardini, E. A. A. Pogna, G. Soavi, A. Tomadin, P. Biagioni, S. Dal Conte, S. Mignuzzi, D. De Fazio, T. Taniguchi, K. Watanabe, L. Duò, M. Finazzi, M. Polini, A. C. Ferrari, G. Cerullo, M. Celebrano
“Tunable broadband light emission from graphene”
2D Materials **8**, 035026 (2021)
 16. L. Carletti, A. Zilli, F. Moia, A. Toma, M. Finazzi, C. De Angelis, D. N. Neshev, M. Celebrano
“Steering and Encoding the Polarization of the Second Harmonic in the Visible with a Monolithic LiNbO₃ Metasurface”
ACS PHOTONICS **8**, 731-737 (2021)
 17. Z. Wang, P. Altmann, C. Gadermaier, Y. Yang, W. Li, L. Ghirardini, C. Trovatiello, M. Finazzi, L. Duò, M. Celebrano, R. Long, D. Akinwande, O. V. Prezhdo, G. Cerullo, S. Dal Conte
“Phonon-Mediated Interlayer Charge Separation and Recombination in a MoSe₂/WSe₂ Heterostructure”
NANO LETTERS **21**, 2165-2173 (2021)
 18. N. Maccaferri, A. Zilli, T. Isoniemi, L. Ghirardini, M. Iarossi, M. Finazzi, M. Celebrano, F. De Angelis “Enhanced nonlinear optical response of single metal-dielectric nanocavities resonating in the near-infrared”
ACS PHOTONICS **8**, 512-520 (2021)

19. F. Mattioli, G. Mazzeo, G. Longhi, S. Abbate, G. Pellegrini, E. Mogni, M. Celebrano, M. Finazzi, L. Duò, C. G. Zanchi, M. Tommasini, M. Pea, R. Polito, F. Sciortino, L. Baldassarre, A. Nucara, M. Ortolani, P. Biagioni
“Plasmonic superchiral lattice resonances in the mid-infrared”
ACS PHOTONICS 7, 2676–2681 (2020)
20. L. Bonacina, P.-F. Brevet, M. Finazzi, M. Celebrano
“Harmonic generation at the nanoscale” (Perspective)
JOURNAL OF APPLIED PHYSICS 127, 230901 (2020) **COVER ARTICLE**
21. D. Rocco, L. Carletti, R. Caputo, M. Finazzi, M. Celebrano, C. De Angelis
“Switching the second harmonic generation by a dielectric metasurface via tunable liquid crystal”
OPTICS EXPRESS 28, 12037-12046 (2020).
22. F. Mattioli, G. Mazzeo, G. Longhi, S. Abbate, G. Pellegrini, E. Mogni, M. Celebrano, M. Finazzi, L. Duò, C. G. Zanchi, M. Tommasini, M. Pea, S. Cibella, R. Polito, F. Sciortino, L. Baldassarre, A. Nucara, A. Nucara, M. Ortolani, P. Biagioni
“Plasmonic Superchiral Lattice Resonances in the Mid-Infrared”
ACS PHOTONICS 7, 2676-2681 (2020)
23. G. Pellegrini, M. Finazzi, M. Celebrano, M. A. Iatì, O. M. Maragò, P. Biagioni
“Superchiral Surface Waves for All-Optical Enantiomer Separation”
J. PHYS. CHEM. C 123, 28336-28342 (2019)
24. M. Celebrano, A. Locatelli, L. Ghirardini, G. Pellegrini, P. Biagioni, X. Wu, S. Grossmann, L. Carletti, C. De Angelis, L. Duò, B. Hecht, M. Finazzi
“Evidence for cascaded third harmonic generation in non-centrosymmetric gold nanoantennas”
NANO LETTERS 19, 7013-7020 (2019)
25. M. Celebrano, L. Ghirardini, M. Finazzi, G. Ferrari, Y. Chiba, A. Abdelghafar, M. Yano, T. Shinada, T. Tani, and E. Prati
“Room temperature resonant photocurrent in an erbium low-doped silicon transistor at telecom wavelength”
NANOMATERIALS 9, 416 (2019)
26. L. Carletti, G. Marino, L. Ghirardini, V. F. Gili, D. Rocco, I. Favero, A. Locatelli, A. V. Zayats, M. Celebrano, M. Finazzi, G. Leo, C. De Angelis, and D. N. Neshev
“Nonlinear goniometry by second harmonic generation in AlGaAs nanoantennas”
ACS PHOTONICS 5, 4386-4392 (2018)
27. L. Ghirardini, G. Marino, V. F. Gili, I. Favero, D. Rocco, L. Carletti, A. Locatelli, C. De Angelis, M. Finazzi, M. Celebrano, D. N. Neshev, and G. Leo
“Shaping the nonlinear emission pattern of a dielectric nanoantenna by integrated holographic gratings”
NANO LETTERS 18, 6750-6755 (2018)
28. V. F. Gili, L. Ghirardini, D. Rocco, G. Marino, I. Favero, I. Roland, G. Pellegrini, L. Duò, M. Finazzi, L. Carletti, A. Locatelli, A. Lemaître, D. Neshev, C. De Angelis, G. Leo, M. Celebrano
“Metal–dielectric hybrid nanoantennas for efficient frequency conversion at the anapole mode”
BEILSTEIN JOURNAL OF NANOTECHNOLOGY 9, 2306-2314 (2018)

29. G. Soavi, G. Wang, H. Rostami, D. G. Purdie, D. De Fazio, T. Ma, B. Luo, J. Wang, A. K. Ott, D. Yoon, S. A. Bouelle, J. E. Muench, I. Goykhman, S. Dal Conte, M. Celebrano, A. Tomadin, M. Polini, G. Cerullo, and A. C. Ferrari
“Broadband, electrically tunable third-harmonic generation in graphene”
NATURE NANOTECHNOLOGY 13, 583–588 (2018)
30. G. Pellegrini, M. Finazzi, M. Celebrano, L. Duò, P. Biagioni
“Surface-enhanced chiroptical spectroscopy with superchiral surface waves”
CHIRALITY 30, 1-7 (2018)
31. D. Rocco, V. F. Gili, L. Ghirardini, L. Carletti, I. Favero, A. Locatelli, G. Marino, D. N. Neshev, M. Celebrano, M. Finazzi, G. Leo, and C. De Angelis
“Tuning the second-harmonic generation in AlGaAs nanodimers via non-radiative state optimization”
PHOTONICS RESEARCH 6, B6-B12 (2018)
32. L. Ghirardini, A.-L. Baudrion, M. Monticelli, D. Petti, P. Biagioni, L. Duò, G. Pellegrini, P.-M. Adam, M. Finazzi, and M. Celebrano
“Plasmon-enhanced second harmonic sensing”
THE JOURNAL OF PHYSICAL CHEMISTRY C 122, 11475-11481 (2018).
33. V. F. Gili, L. Carletti, F. Chouchane, G. Wang, C. Ricolleau, D. Rocco, A. Lemaître, I. Favero, L. Ghirardini, M. Finazzi, M. Celebrano, C. De Angelis, And G. Leo,
“Role of the substrate in monolithic AlGaAs nonlinear nanoantennas Nanophotonics”
NANOPHOTONICS 7, 517–521 (2018)
34. M. Celebrano, L. Ghirardini, M. Finazzi, Y. Shimizu, Y. Tu, K. Inoue, Y. Nagai, T. Shinada, Y. Chiba, A. Abdelghafar, M. Yano, T. Tani, and E. Prati
“1.54 μm photoluminescence from Er:Ox centers at extremely low concentration in silicon at 300 K”
OPTICS LETTERS 42, 3311-3314 (2017)
35. C. Zucchetti, F. Bottegoni, C. Vergnaud, F. Ciccacci, G. Isella, L. Ghirardini, M. Celebrano, F. Rortais, A. Ferrari, A. Marty, M. Finazzi, and M. Jamet
“Imaging Spin diffusion in Germanium at room temperature”
PHYSICAL REVIEW B 96, 014403 (2017)
36. G. Pellegrini, M. Finazzi, M. Celebrano, L. Duò, and P. Biagioni
“Chiral Surface Waves for Enhanced Circular Dichroism”
PHYSICAL REVIEW B 95, 241402 (2017)
37. L. Ghirardini, L. Carletti, V. Gili, G. Pellegrini, L. Duò, M. Finazzi, D. Rocco, A. Locatelli, C. De Angelis, I. Favero, M. Ravaro, G. Leo, A. Lemaître, and M. Celebrano
“Polarization properties of second-harmonic generation in AlGaAs optical nanoantennas”
OPTICS LETTERS 42, 559-562 (2017)
38. L. Carletti, D. Rocco, A. Locatelli, C. De Angelis, V. F. Gili, M. Ravaro, I. Favero, G. Leo, M. Finazzi, L. Ghirardini, M. Celebrano, G. Marino, A. V. Zayats
“Controlling second-harmonic generation at the nanoscale with monolithic AlGaAs-on-AlOx antennas”
NANOTECHNOLOGY 28, 114005 (2017) **Invited Paper**

39. M. Baselli, A.-L. Baudrion, L. Ghirardini, G. Pellegrini, E. Sakat, L. Carletti, A. Locatelli, C. De Angelis, P. Biagioni, L. Duò, M. Finazzi, P.-M. Adam, and M. Celebrano
“Plasmon-Enhanced Second Harmonic Generation: from Individual Antennas to Extended Arrays”
PLASMONICS 12, 1595-1600 (2017)
40. V. Giliberti, E. Sakat, M. Bollani, M. V. Altoe, M. Melli, A. Weber-Bargioni, L. Baldassarre, M. Celebrano, J. Frigerio, G. Isella, S. Cabrini and M. Ortolani
“Functionalization of scanning probe tips with epitaxial semiconductor layers”
SMALL METHODS 1600033 (2017)
41. L. Ghirardini, M. Malerba, M. Bollani, P. Biagioni, L. Duò, M. Finazzi, F. De Angelis, and M. Celebrano
“Nonlinear emission from silver-coated 3D hollow nanopillars”
NANOSPECTROSCOPY 2, 15-23 (2016)
42. G. Pellegrini, M. Celebrano, M. Finazzi, and P. Biagioni
“Local Field Enhancement: Comparing Self-Similar and Dimer Nanoantennas”
JOURNAL OF PHYSICAL CHEMISTRY C 120, 26021–26024 (2016)
43. V. F. Gili, L. Carletti, A. Locatelli, D. Rocco, M. Finazzi, L. Ghirardini, I. Favero, C. Gomez, A. Lemaître, M. Celebrano, C. De Angelis, and G. Leo
“Monolithic AlGaAs second-harmonic nanoantennas”
OPTICS EXPRESS 24, 15965-15971 (2016)
44. L. Ghirardini, T. Virgili, S. Bolis, M. Finazzi, and M. Celebrano
“The role of segregation in the polarized emission from polyfluorene embedded in a liquid crystal”
J. POLYM. SCI., PART B: POLYM. PHYS. 54, 1558–1563 (2016) **Cover Paper**
45. C. J. Myers, M. Celebrano, and M. Krishnan
“Information storage and retrieval in a single levitating colloidal particle”
NATURE NANOTECHNOLOGY 10, 886–891 (2015)
Highlights: NATURE 524, 391 (2015)
46. M. Celebrano, X.F. Wu, M. Baselli, S. Grossmann, P. Biagioni, A. Locatelli, C. De Angelis, G. Cerullo, R. Osellame, B. Hecht, L. Duò, F. Ciccacci, and M. Finazzi
“Mode matching in multiresonant plasmonic nanoantennas for enhanced second harmonic generation”
NAT. NANOTECHNOLOGY 10, 412-417 (2015)
47. M. Finazzi, P. Biagioni, M. Celebrano, and L. Duò
“Quasistatic limit for plasmon-enhanced optical chirality”
PHYS. REV. B 91, 195427 (2015)
48. S. Bolis, M. Celebrano, L. Ghirardini, M. Finazzi, C. Botta, J. Beeckman, P. Kockaert, T. Virgili
“Optical gain from polyfluorene keto defects in a liquid crystal mixture”
CHEMICAL COMMUNICATION 51, 9686-9689 (2015)
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BOOK CHAPTERS/SECTIONS

M. Celebrano, L. Duò, M. Finazzi

“Nonlinear optical processes and spectroscopies”

To appear in “Nanoscopy and Nanospectroscopy Vol. 1” edited by M. Fleisher and P.-M. Adam. De Gruyter.

C. De Angelis, L. Carletti, D. Rocco, A. Locatelli, L. Ghirardini, M. Finazzi, M. Celebrano, L. Xu, and A. Miroshnichenko

“Harmonic generation”

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D. Rocco Elsevier Book Harmonic generation in all-dielectric metasurfaces

D. Rocco IntechOpen

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CONFERENCE PROCEEDINGS

1. C. De Angelis, D. Rocco, M. Gandolfi, A. Tognazzi, G. Zograf, O. Pashina, K. Frizyuk, C. Gigli, G. Leo, S. Makarov, M. Celebrano, A. Zilli, M. Petrov, and M. Finazzi
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2. C. De Angelis, V. F. Gili, L. Carletti, D. Rocco, A. Locatelli, L. Ghirardini, I. Favero, C. Gomez, A. Lemaître, M. Finazzi, M. Celebrano, and G. Leo
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5. R. Lettow, P. Kukura, M. Celebrano, Y. Rezus, S. Goetzinger, and V. Sandoghdar
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J. Phys.: Conf. Series **61**, 125 (2007)

MAIN INVITED CONTRIBUTION TO NATIONAL AND INTERNATIONAL CONFERENCES (28 of which 17 given by myself and 11 by colleagues)

1. M. Celebrano "Nonlinear light management at the nanoscale"
Foremost in Nanophotonics, 10-14 October 2022, Erice (Italy)
2. M. Celebrano "XXX"
International Conference of Quantum, Nonlinear and Nanophotonics'2022, 05-09 September, Jena (Germany)
3. M. Celebrano "Enhancing and Steering the nonlinear emission in nanoantennas and metasurfaces"
International Summer School on Physics and Application of Metasurfaces 28th August – 1st September 2022, Dll via Branze 38, Brescia / Montisola (BS), Italy
4. M. Celebrano, "Controlling the Second Harmonic Generation from nanoantennas and metasurfaces"
2nd COLLOQUIUM ON THE PHYSICS AND APPLICATIONS OF METASURFACES
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5. M. Finazzi, "Nonlinear emission from plasmonic and dielectric nanoantennas by dual-beam pumping"
2nd COLLOQUIUM ON THE PHYSICS AND APPLICATIONS OF METASURFACES
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6. M. Celebrano, et al. "Controlling and steering the nonlinear emission in nanoantennas and metasurfaces",
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7. A. Zilli, et al. "Coherent modulation by dual-beam pumping of the nonlinear emission of a nanoantenna",
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8. A. Zilli, A. Locatelli, D. Rocco, L. Carletti, P. Biagioni, L. Duò, X. Wu, S. Grossmann, C. Gigli, G. Marino, G. Leo, C. DeAngelis, B. Hecht, M. Celebrano, M. Finazzi, "Interplay between nonlinear effects at the nanoscale in engineered optical nanoantennas"
AES Conference 2022, May 24-27 2022, Marrakesh (Morocco)
9. M. Celebrano, "Reconfigurable nonlinear emission in dielectric nanoantennas by light-induced thermo-optical effects", METANANO 2021, September 13-17 2021, ONLINE
10. M. Celebrano, "Enhancing and manipulating harmonic generation in individual dielectric nanoantennas",
METANANO 2020, September 14-18 2020, ONLINE
11. L. Ghirardini, A. Zilli, E. A. A. Pogna, F. Rusconi, P. Biagioni, A. Mazzanti, G. Della Valle, M. Finazzi, L. Duò, L. Carletti, D. Rocco, C. Gigli, G. Marino, X. Wu, B. Hecht, G. Leo, C. De Angelis, G. Cerullo, M. Celebrano, "Enhancing and Switching Harmonic Generation in Plasmonic and Dielectric Nanoantennas", SPIE Photonics Europe, 29/03 – 02/04 2020, Strasburg (France). ONLINE
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13. M. Celebrano, E. A. A. Pogna, L. Ghirardini, F. Rusconi, P. Biagioni, A. Mazzanti, G. Della Valle, L. Duò, L. Carletti, D. Rocco, C. Gigli, G. Marino, G. Leo, C. De Angelis, G. Cerullo, M. Finazzi
“Optical switching of the Second Harmonic Generation in AlGaAs nanoantennas”
META 2019, JULY 23 – 26, 2019, Lisbon (Portugal)
14. M. Celebrano, L. Ghirardini, G. Pellegrini, L. Duò, M. Finazzi, C. Gigli, V. F. Gili, G. Marino, I. Favero, M. Ravaro, A. Lemaitre, G. Leo, L. Carletti, A. Locatelli, C. De Angelis, D. Neshev
“Enhanced Nonlinear Nanophotonics with Dielectric and Hybrid Antennas”
PIERS 2019, 17-21 June 2019, Rome (Italy)
15. M. Celebrano
“Engineering Nanoantennas For Efficient Nonlinear Photon Conversion At The Nanoscale”, International Workshop on Metallic Nano-Objects (MNO 2018), 5 – 7 November 2018, Lyon (France)
16. M. Celebrano
“All-Optical Switching of Second Harmonic Generation in AlGaAs Nanoantennas”
ETNO Workshop, 10 – 12 September 2018 Iseo (Italy)
17. L. Ghirardini, L. Carletti, V. Gili, G. Pellegrini, L. Duo, M. Finazzi, D. Rocco, A. Locatelli, C. De Angelis, I. Favero, M. Ravaro, G. Leo, A. Lemaitre, M. Celebrano.
“Mode-matching in multiresonant nanoantennas for enhanced nonlinear emission”
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18. A. Locatelli, L. Ghirardini, X. Wu, S. Großmann, P. Biagioni, G. Pellegrini, L. Carletti, C. De Angelis, B. Hecht, L. Duò, M. Finazzi, M. Celebrano
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20. M. Celebrano
“Towards efficient detection of photons emitted by Er³⁺ ions in silicon”
IV Bilateral Italy-Japan Seminar - Innovative Solutions for Single Atom Applications in Photonics and Nanoelectronics, Colico (Italy), 2-4 May 2017
21. C. De Angelis, V. Gili, L. Carletti, D. Rocco, A. Locatelli, L. Ghirardini, I. Favero, C. Gomez, A. Lemaître, M. Finazzi, M. Celebrano, and G. Leo
“Second harmonic generation in dielectric nanoantennas”
NanoPhotonics Workshop MINW, Tequisquiapan, Mexico 15 – 19 January 2017
22. C. De Angelis, V. Gili, L. Carletti, D. Rocco, A. Locatelli, L. Ghirardini, I. Favero, C. Gomez Carbonell, A. Lemaitre, M. Finazzi, M. Celebrano, and G. Leo
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23. V. F. Gili, L. Carletti, D. Rocco, A. Locatelli, M. Ravaro, I. Favero, A. Lemaitre, L. Ghirardini, M. Finazzi, M. Celebrano, C. De Angelis, and G. Leo
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24. M. Celebrano, L. Ghirardini, X. Wu, S. Großmann, P. Biagioni, G. Pellegrini, M. Baselli, A. Locatelli, C. De Angelis, G. Cerullo, R. Osellame, B. Hecht, L. Duò, F. Ciccacci, & M. Finazzi
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25. M. Celebrano, L. Ghirardini, X. Wu, S. Großmann, P. Biagioni, G. Pellegrini, M. Baselli, A. Locatelli, C. De Angelis, G. Cerullo, R. Osellame, B. Hecht, L. Duò, F. Ciccacci, & M. Finazzi
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26. M. Celebrano, X. Wu, M. Baselli, S. Großmann, P. Biagioni, A. Locatelli, C. De Angelis, G. Cerullo, R. Osellame, B. Hecht, L. Duò, F. Ciccacci, and M. Finazzi
 "Enhanced second-harmonic generation from multiresonant plasmonic nano-structures"
 OSI 11 Conference, Austin (TX) USA, 28 June-3 July 2015
27. G. Cerullo, M. Celebrano, M. Zavelani-Rossi, P. Biagioni, M. Finazzi, and L. Duò
 "Near-field second harmonic generation from single gold nanoparticles"
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28. M. Celebrano, M. Zavelani-Rossi, D. Polli, P. Biagioni, M. Finazzi, L. Duò, M. Labardi, M. Allegrini, J. Grand, P.-M. Adam, and G. Cerullo
 "Mapping local field distribution at metal nanostructures by near-field second-harmonic generation"
 SPIE Photonic West 2007

OTHER ORAL CONTRIBUTIONS (personally presented by the author)

1. "Reconfigurable Nonlinear Emission in Dielectric Nanoantennas by Light-Induced Thermo-Optical Effects"
 EOS Annual Meeting, Rome (Italy), 13-17 September 2021.
2. "Reconfigurable Nonlinear Emission in Dielectric Nanoantennas by Light-Induced Thermo-Optical Effects"
 METAMATERIALS 2021, 20-25 September 2021 ONLINE.
3. "Engineering Plasmonic Nanoantennas For Efficient Nonlinear Photon Conversion At The Nanoscale"
 CMNO 2020 Zurich (Switzerland), 29-31 January 2020.
4. "All-optical Ultrafast Control of Second Harmonic Generation in AlGaAs Nanopillars"
 CLEO Europe Conference, München (Germany), 23-27 June 2019
5. "Plasmon-enhanced second-harmonic sensing on a microfluidic chip"
 Optical Sensors, SeTh1A. 2 (2018) Advanced Photonics Congress,
6. "Mode matching in multiresonant plasmonic nanoantennas for enhanced second harmonic generation"
 ICES 2015, Messina (Italy), October 12-15, 2015.

7. "Mode matching in multiresonant plasmonic nanoantennas for enhanced second harmonic generation"
PLASMONICA 2015, Padova (Italy), July 1-3, 2015.
8. "Mode matching in multiresonant plasmonic nanoantennas for enhanced second harmonic generation"
SCIENCE CAMP 2015, Cumberland Lodge, Windsor Great Park (UK), August 18-21, 2015.
9. "Multiresonant nanoantennas for efficient and highly tunable second harmonic generation"
MRS Fall Meeting, Boston (USA), November 30 – December 5 2014.
10. "Enhanced emission in Ge antennas for telecom wavelengths"
MRS Fall Meeting, Boston (USA), November 30 – December 5 2014.
11. "Optical generation of highly-confined complementary spin populations: the spin photovoltaic cell"
MRS Fall Meeting, Boston (USA), November 30 – December 5 2014.
12. "Anomalous propagation of surface plasmon polaritons in thin gold films on transparent substrates"
PLASMONICA2013, Milano (Italy), 1-3 July 2013
13. "Angular Trapping of Anisometric Nano-Objects in a Fluid"
FisMat2013, Milano (Italy), 9-13 September 2013.
14. "Angular Trapping of Anisometric Nano-Objects in a Fluid"
12th International Conference on Near-field Optics and related topics (NFO 12), San Sebastian (Spain), 3-7 September 2012.
15. "Single-molecule imaging by optical absorption at room temperature"
CLEO Europe Conference, München (Germany), 22-26 May 2011.
16. "Single-molecule imaging by optical absorption at room temperature"
NANOMETEA Conference, Seefeld (Austria), 3-6 January 2011.
17. "Imaging single molecules at room temperature by optical absorption"
CIMST Microscopy Colloquium, Zürich (Switzerland) 30/09/2010.
18. "High sensitivity nanoscopy via interferometric scattering microscopy"
Swiss Soft Days 2nd Workshop, Lausanne (Switzerland) 23/06/2010.
19. "Sensing and tracking non-fluorescent nanoparticles via interferometric scattering microscopy (iSCAT)"
Workshop on Nano-diagnostic and Emerging Research, Milan (Italy) 19/11/2009.
20. "Linear and nonlinear near-field spectroscopy of metal nanoparticles using hollow-pyramid probes"
10th International Conference on Near-field Optics and related topics (NFO10), Buenos Aires (Argentina), 1-5 September 2008.
21. "Extinction imaging of a single Quantum Emitter in its bright and dark states at ambient conditions"
International Conference on Near-field Optics and related topics (NFO10), Buenos Aires (Argentina), 1-5 September 2008.
22. "Confocal mapping of electric field inside organic semiconductors"

E-MRS 2008 Spring Meeting, Strasbourg (FRANCE), 26-30 May 2008.

23. "Nonlinear Near-Field Microscopy: a Tool for Local Field Enhancements Investigation at Metal Nanostructures"

Italian Workshop on Optics and Photonics (IWOP07), Ancona, (Italy) 30 May-1 June 2007.

Best Talk Award

OTHER CONTRIBUTIONS TO NATIONAL AND INTERNATIONAL CONFERENCES

24. L Ghirardini, L Carletti, V Gili, G Pellegrini, L Duò, M Finazzi, D Rocco, ...
"Optical Switching of the Second Harmonic Generation in AlGaAs Nanoantennas"
Nonlinear Photonics, NpW3C. 8 (2018)
25. L Ghirardini, A Locatelli, L Carletti, C De Angelis, G Pellegrini, P Biagioni, ...
"Engineering Nanoantennas for Efficient Nonlinear Photon Conversion at the Nanoscale"
Nonlinear Photonics, NpTh4C. 4 (2018)
26. D Rocco, L Ghirardini, VF Gili, L Carletti, I Favero, A Locatelli, M Guasoni, ...
"Second harmonic generation at the nanoscale in isolated and coupled AlGaAs nanodisks"
Photonics Conference (IPC), 2017 IEEE, 365-366
27. M. Celebrano, M. Baselli, M. Bollani, J. Frigerio, A. Bahgat Shehata, A. Della Frera, A. Tosi, A. Farina, F. Pezzoli, J. Osmond, X. Wu, B. Hecht, R. Sordan, D. Chrastina, G. Isella, L. Duò, M. Finazzi, and P. Biagioni
"Ge nanoantennas for enhanced emission at telecom wavelengths"
13th International Conference on Near-field Optics, Nanophotonics and Related Techniques (NFO 13), Salt Lake City (USA), August 31 – September 4, 2014.
28. M. Baselli, M. Celebrano, P. Biagioni, X. Wu, B. Hecht, L. Duò, and M. Finazzi
"Near-field scattering analysis of gold gap nanoantennas"
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29. M. Baselli, M. Celebrano, P. Biagioni, X. Wu, B. Hecht, L. Duò, and M. Finazzi
"Near-field scattering analysis of gold gap nanoantennas"
Italian National Conference on Condensed Matter Physics FisMat2013, Milano (Italy), 9-13 September 2013.

In fede,



Milano, 11/02/2020