Domenico de Ceglia

Associate Professor
Department of Information Engineering
University of Brescia, Italy
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Education

Politecnico di Bari - Bari, Italy
PhD in Electronic Engineering, 2007
Dissertation: "Nonlinear wave propagation effects in photonic crystals and metamaterials"
Supervisor: Prof. Francesco Prudenzano (Politecnico di Bari)

Politecnico di Bari - Bari, Italy
***Laurea* in Electronic Engineering,** 2003
Dissertation: "Study of 2nd Order Nonlinear Interactions in Photonic Crystals and Microcavities"
Supervisors: Prof. Antonella D'Orazio (Politecnico di Bari), Prof. Ramon Vilaseca (Universitat Politecnica de Catalunya), Prof. Jordi Martorell (Universitat Politecnica de Catalunya)

Professional Experience

UNIVERSITY OF BRESCIA, ITALY – DEPARTMENT OF INFORMATION ENGINEERING
Associate Professor, November 2021 –

UNIVERSITY OF PADOVA, ITALY – DEPARTMENT OF INFORMATION ENGINEERING
Associate Professor, December 2017 – October 2021

Teaching activity in the following courses:
- ***Nanophotonics***
- ***Biophotonics***
- ***Antennas and wireless propagation***
- ***Propagazione guidata e dispositivi***

Institutional activity:
Member of the Committee of the PhD School in Information Engineering

AEGIS TECHNOLOGIES INC. – Huntsville, AL - USA
Research Scientist, February 2017 – November 2017

Research and development on the following topics: (i) new concepts for photovoltaic devices; (ii) tunable, reconfigurable, nonlinear and active metamaterials; (iii) microwave and optical devices based on 2D materials; (iv) wireless power and data transfer systems based on inductive coupling.
Prof. de Ceglia has worked on the following projects as PI or co-investigator:
- *Photonic band gap structures for solar energy conversion*, DoD 2016, A2-6252 Topic: SB092-002, Second phase II (co-investigator)

- *Dynamically tunable metamaterials*, DoD 2016, A2-6238 Topic: A090A-T002 Awarded, Second phase II (co-investigator)
- *Wireless power transfer system for missile applications*, 2017 DoD AMRDEC (PI)
- Business development: December 2016-February2017, contribution to two SBIR proposals with AEgis as Prime and one in collaboration with TSC with AEgis as sub.

US ARMY – AMRDEC

Senior Research Associate, November 2012 – February 2017

Research activity on nanophotonics, plasmonics, metamaterials, nonlinear optics, computational electromagnetics, graphene and 2D materials
Tutor for a PhD student in Electronic Engineering at University of Alabama – Huntsville (UAH).

AEGIS TECHNOLOGIES INC. – Huntsville, AL - USA

Research Scientist, October 2009 – November 2012

Research activity related to US Department of Defense contracts (electro-optical devices, photovoltaics, waveguide sensors)

ALTRAN ITALIA SpA – Milan, Italy

Electronic Engineer and Consultant, October 2007 – September 2009

Technical Support Engineer at Alcatel-Lucent (now Nokia), support on optical transport networks, Ethernet-based services, SDH/SONET and WDM
Consultant for ENI SpA.: Research activity on satellite remote sensing of atmosphere and lithosphere for Oil & Gas exploration

US ARMY - CHARLES M. BOWDEN LABORATORY – Redstone Arsenal, AL

Research Fellow, October 2005 – October 2007

Research on linear and nonlinear light-matter interactions in sub-wavelength structures, metamaterials and nano-plasmonic devices

POLITECNICO DI BARI, Via Orabona 4, 70125 – Bari, Italy

Research Assistant, September 2003 – February 2004

Analysis and design of nonlinear photonic devices for all-optical communications
Advisor for seven graduate students of Electronic Engineering at Politecnico di Bari

Research Interests and Achievements

- *Metamaterials and metasurfaces*
  Metamaterials and metasurfaces are artificial structures engineered to achieve electromagnetic properties not found in nature. These materials allow the observation of unusual electromagnetic effects and bring about new applications at microwave, terahertz and optical frequencies. Areas of interests are: negative refraction, cloaking, artificial magnetism, super-resolution, perfect couplers, absorbers and mirrors, highly-selective angular filters, and highly-efficient frequency mixers. The main limitations of metamaterials are related to the absorption losses of the constituent materials, especially metals in the optical regime.
  Some of my contributions in this field include: (i) theory and design of super-resolving lenses based on optically-transparent metal-dielectric multilayers; (ii) theory and design of loss-compensated hyperbolic metamaterials; (iii) prediction of giant nonlinear optical response from near-zero permittivity metamaterials with active-gain-media inclusions; (iv) explanation of the physics of the Fano-resonant response of plasmonic metasurfaces based on the excitation of complex leaky modes;

(v) demonstration of strong coupling and highly efficient harmonic generation from all-dielectric metasurfaces with intersubband transitions.

- *Graphene and 2D materials*
  Graphene is a one-atom-thick lattice of carbon atoms with semi-metallic electronic behavior, zero band-gap and linear energy-momentum dispersion relation, flat optical absorption from ultraviolet to infrared, and excellent mechanical properties. Prof. de Ceglia is particularly interested in the nonlinear and tunable electromagnetic response of 2D materials and the integration with photonic platforms (e.g., waveguides, gratings, photonic crystals) and nanostructures. Possible applications include but are not limited to: ultrathin and optically-transparent microwave and rf devices, such as antennas, polarizers and filters, tunable photonic devices (switches, tunable filters, modulators), ultrafast pulsed lasers, ultrathin mixers.
  Contributions of Prof. de Ceglia in this field are: (i) design of an optically-transparent polarizer operating in microwave X-band based on a few-layer graphene film; (ii) analysis and design of perfect absorbers for visible and infrared light, based on the integration of mono- and multi-layer graphene films with dielectric resonant gratings; (iii) prediction of giant enhancement of third-harmonic generation and saturable absorption in graphene-based, one-dimensional photonic crystals; (iv) modeling and design of graphene-based amplitude- and wavelength-tunable resonators for telecom wavelengths based on the quasinormal mode theory; (v) development of an highly-efficient second-harmonic generation converter based on a $MoSe_2$-loaded silicon waveguide.

- *Nonlinear optics in nanostructures*
  Solid understanding of nonlinear optical phenomena at the nanoscale is the first, necessary step toward the design and development of reconfigurable devices based on nanostructures. Design principles based solely on the linear properties of nanostructures lead to the realization of static functionalities. The next and natural progress is to provide fast (nanosecond or less), inertial-less (no moving parts), and reliable tunability to these functionalities. This can be achieved by exploiting the nonlinear properties of nanostructures, whose signature can be modulated by varying physical parameters like light intensity, temperature, etc. and may also provide important information about the surrounding environment. Areas of interest include: nanoantennas for nanomixers, ultrafast nonlinearities with ultrathin nanostructures, optical limiting for laser eye protection, all-optical switches, all-optical beam steering, bistable nanoscale devices, computational electromagnetics and modeling techniques for nanostructures.
  Some relevant contributions of my research in this field are: (i) clarification of fundamental aspects of second-harmonic generation from metallic nanoantennas; (ii) theoretical investigation and experimental demonstration of the optical limiting properties of metal-dielectric multilayers for laser eye protection; (iii) prediction of enhanced nonlinear effects in natural and artificial epsilon-near-zero films; (iv) demonstration of enhanced third-harmonic generation from ultrathin indium-tin-oxide films in the Kretschmann configuration; (v) prediction of harmonic generation and two-photon absorption metal-insulator-metal structure with nanometer-sized gaps; (vi) implementation/development of a time-domain, beam-propagation method code and a multi-harmonic, finite-difference time-domain code for the numerical analysis of nonlinear interactions in photonic crystals, gratings and plasmonic nanostructures; (vii) modeling of the nonlinear forces acting on free and bound electrons in metals and integration of the model in a finite-difference time domain code.

- *Plasmonics*
  The most critical challenge for high-bandwidth and low-power-consumption photonic devices is the reduction of the physical dimensions of photonic components down to the nanoscale, beyond the diffraction limit. Surface plasmons are collective oscillations of free electrons at metal-dielectric interfaces that are usually excited by photons. Localized and propagating surface plasmons have been indicated as possible solutions for nanoscale photonics and for bridging the gap between photonics and electronics, thanks to the pronounced abilities of confining light in sub-wavelength

volumes and enhancing the electric field. In addition, plasmonic structures – such as nanoparticles and waveguides - are extremely sensitive to the surrounding environment and lend themselves naturally to sensing and detection applications.
The following is a partial list of Prof. de Ceglia's contributions in the field of plasmonics: (i) development of a quantum-mechanics model for quantum tunneling in sub-nanometer gaps between metallic nanoparticles ; (ii) clarification of extraordinary optical transmission properties of metal gratings; (iii) prediction of wideband beam steering in liquid-crystal-based metal gratings; (iv) development of enhanced Raman-scattering sensors based on periodic arrangements of plasmonic resonators; (v) modeling of palladium-based plasmonic platforms for hydrogen sensing; first demonstration of the viscoelastic response of free electrons in low-damping epsilon-near zero ultrathin films.

- *Photovoltaics*
  Although almost 90% of the solar cell market is currently based on crystalline silicon, half of the energy in the solar spectrum is lost in silicon-based solar cells because of the poor absorption of low-energy photons and the inefficient conversion of high-energy photons. The path forward is the development of new concepts in both materials and design that enable the fabrication of high-efficiency, cost-effective photovoltaic systems. Areas of interests for my research are: stacked (*tandem*) solar cells, semi-transparent solar cells, novel transparent conductive films.
  De Ceglia research achievements in this field are: (i) invention of both highly-absorptive and semi-transparent photovoltaic cells based on metal-semiconductor thin films; (ii) development of metal-dielectric stacks for infrared rejection and efficiency-boosting of existing photovoltaic platforms; (iii) inclusion of plasmonic nanostructures – gratings and nanoparticles – in semiconductor-based solar cells in order to improve light trapping and absorption efficiency.

Bibliometrics and Publications

- **Citations** 2569; **h-index** 30 (source: Scopus as of November 1st 2021)
  https://www.scopus.com/authid/detail.uri?authorId=13805590500
- **Citations** 3110; **h-index** 31 (source: Google Scholar as of November 1st 2021)
  https://scholar.google.com/citations?hl=en&user=zrTjAD8AAAAJ
- **More than 180 Papers** in peer-reviewed journals and international conference proceedings
- **3 Book chapters**
- **2 US Patent**

Awards, Fellowships and Qualifications

- The National Academy of Sciences – NRC Fellowship (2012 – 2017)
- Habilitation to cover the position of Full Professor of "Electromagnetic Fields" from the Italian Ministry of University and Research (2018)
- Habilitation to cover the position of Full Professor of "Experimental Physics of Matter" from the Italian Ministry of University and Research (2018)
- Politecnico di Bari Faculty Fellowship (2004)
- European Community Erasmus grant for the Master's degree final project (2002)

Grants and Projects

- Six US Department of Defense (DoD) contracts with Aegis Technologies:
  - Defense Advanced Research Projects Agency (DARPA) (2009, Contract no. W31P4Q-11-C-0237 phase I and II): $ 450k (co-investigator)

  Photonic Band Gap Structures for Solar Energy Generation
  - US Air Force (2010, Contract no. FA8650-11-M-5150): $ 100k (co-PI)
    Plasmonic beamsteering
  - US Army (2016, A2-6238 Topic: A090A-T002 Awarded, Second phase II, a*waiting contract*): $ 750k (co-investigator)
    Nonlinear plasmonics
  - US Army (2016, A2-6252 Topic: SB092-002 Awarded, Second phase II, a*waiting contract*): $ 750k (co-investigator)
    Photonic Band Gap Structures for Solar Energy Generation
  - US Army (2016-2017 DoD AMRDEC): $100k (PI)
    Wireless power transfer system for missile application
- Two AEgis Technologies IR&D awards:
  - All-optical wideband plasmonic beam steering (2011, Internal R&D award): $ 10k (PI)
  - Hydrogen sensor (2011, Internal R&D award): $ 10k (Co-PI)
- Seven US ARMY - ITCA Research grants
  - US Army ITCA Grant for Research Activity (2018, Contract no. W911NF-18-1-0424): $ 54k (PI)
    Nonlinear optical effects at interfaces of photonic nanostructures
  - US Army ITCA Grant for Research Activity (2008, Contract no. W911NF-08-1-0492): $ 21k (PI)
    Plasmonics: A New Tool for the Design of Photovoltaic Cells
  - US Army ITCA Grant for Research Activity (2008, Contract no. R&D 1253-AM-01): $ 20k (PI)
    New insights into diffraction by very small, sub-wavelength apertures
  - US Army ITCA Grant for Research Activity (2007, Contract no. W911NF-07-1-0560): $ 36k (PI)
    Analysis and design of plasmonic structures and metamaterials for superresolution and superguiding devices
  - US Army ITCA Grant for Research Activity (2006, Contract no. R&D 1110-AM-06): $ 12k (PI)
    Study and analysis of focussing and guiding properties of metallo-dielectric structures
  - US Army ITCA Grant for Research Activity (2006, Contract no. R&D 1073-AM-06): (PI)
    Enhancement and Inhibition of Stimulated Processes in Negative Index Cavities
  - US Army ITCA Grant for Research Activity (2006, Contract no. R&D 1014-AM-06): (PI)
    Analysis and design of photonic-crystal-assisted waveguides for high-efficiency second harmonic generation
- One University of Padova SEED award (2018, Contract no. BIRD189573): € 17k (PI)
  - *Nonlinear electrodynamics at interfaces*

Editorial Activities and Affiliations

- Editorial board member of *Applied Sciences*
- Editorial board member of *Photonics*
- Associate Editor of *Frontiers in Photonics* for the section *Nonlinear optics*
- Senior Member of the *Optical Society of America*, Member of *IEEE*
- Reviewer for *Applied Physics Letters, Journal of Applied Physics, Journal of the Optical Society of America B, Photonics Research, Optics Letters, Optics Express, Optical Materials Express, Nature Communications, Scientific Reports, Radio Science, PIER, Applied Optics, 2D Materials, Optics Communications, Journal of the European Optical Society, Journal of Quantum Electronics, European Physics Journal D*
- Evaluator of several projects funded by the *US DoD* and *DoE*
- Member of the organizing committee for the workshop: "*Linear and Nonlinear Optical Interactions in Metamaterials and Plasmonic Nanostructures*", Huntsville – AL, June 21-22 (2012)

Professional Education

- Sustainable Energy Conversion and Storage Certificate, July 2011-Dec 2011, Stanford University – Stanford Center for Professional Development
  Photovoltaics; Energy Storage; Hydrogen Economy; Fuel Cells – Hydrogen utilization
- Ethernet base Cefriel (Alcatel-Lucent S.p.A), May 2008
- Ethernet advanced Cefriel (Alcatel-Lucent S.p.A), May 2008
- 1354 Ethernet Broadband Manager Alcatel-Lucent Alcatel-Lucent S.p.A Optical Network Division, June 2008
- 1359 High Availability, OS Resilience Alcatel-Lucent Alcatel-Lucent S.p.A Optical Network Division, September 2008
- Telecommunications Management Network Alcatel-Lucent S.p.A. Optical Network Division, November 2007
- DPG Summer School on Metamaterials Bad-Honnef (Germany), 17 September 2006 - 22 September 2006

Publications

PATENTS (2)

1. D. de Ceglia, M. A. Vincenti, M. Scalora, M. G. Cappeddu, US Patent No. 8,993,874 "Photonic Bandgap Solar Cells" (2015)
2. M. Grande, G. V. Bianco, M. A. Vincenti, D. de Ceglia, P. Capezzuto, M. Scalora, A. D'Orazio, G. Bruno, "Optically Transparent Microwave Polarizer based on Quasi-Metallic Graphene", U.S. Patent No. 10,355,348 (2019).

BOOK CHAPTERS (3)

1. M.A. Vincenti, D. de Ceglia, V. Roppo, M. Scalora, "Nonlinear Optical Interactions in Epsilon-Near-Zero Materials: Second and Third Harmonic Generation", in Nonlinear, Tunable and Active Metamaterials, Editors: I. V. Shadrivov, M. Lapine, Y.S. Kivshar, Springer (2015)
2. M.A. Vincenti, D. de Ceglia, "Effective medium theories", in Fundamentals and Applications of Nanophotonics, Editor: Joseph W. Haus, Elsevier (2016)
3. D. de Ceglia, M.A. Vincenti, "Plasmonics", in Fundamentals and Applications of Nanophotonics, Editor: Joseph W. Haus, Elsevier (2016)

PEER-REVIEW JOURNAL PAPERS (89)

1. M. Nauman, J. Yan, D. de Ceglia, M. Rahmani, K.Z. Kamali, C. De Angelis, A. E. Miroshnichenko, Y. Lu, D. Neshev "Tunable Unidirectional Nonlinear Emission from Transition-Metal-Dichalcogenide Metasurfaces," Nat. Communications 12, 5597 (2021)
2. L. R.-S., J. Trull, C. Cojocaru, N. Akozbek, D. de Ceglia, M. A. Vincenti, M. Scalora, "Harmonic generation from gold nanolayers: bound and hot electron contributions to nonlinear dispersion," Opt. Express 29 (6), 8581-8591 (2021)
3. I. Vassalini, I. Alessandri, D. de Ceglia, "Stimuli-Responsive Phase Change Materials: Optical and Optoelectronic Applications," Materials 14 (12), 3396 (2021)
4. L. Carletti, M. Gandolfi, D. Rocco, A. Tognazzi, D. de Ceglia, M. A. Vincenti, C. De Angelis, "Reconfigurable nonlinear response of dielectric and semiconductor metasurfaces,"

Nanophotonics, vol. , no. , pp. 000010151520210367. https://doi.org/10.1515/nanoph-2021-0367 (2021)

5. R. Sarma, N. Nookala, K.J. Reilly, S. Liu, D. de Ceglia, L. Carletti, M. D. Goldflam, S. Campione, K. Sapkota, H. Green, G. T Wang, J. Klem, M. B. Sinclair, M. A Belkin, I. Brener, “Strong Coupling in All-Dielectric Intersubband Polaritonic Metasurfaces,” Nano Letters 21 (1), 367–374 (2021)
6. M.A. Vincenti, D. de Ceglia, M. Scalora, “ENZ materials and anisotropy: enhancing nonlinear optical interactions at the nanoscale,”, Optics Express 28 (21), 31180-31196 (2020)
7. M. Scalora, J. Trull, D. de Ceglia, M.A. Vincenti, N. Akozbek, Z. Coppens, L. Rodríguez-Suné, C. Cojocaru, “Electrodynamics of conductive oxides: Intensity-dependent anisotropy, reconstruction of the effective dielectric constant, and harmonic generation,” Physical Review A 101 (5), 053828 (2020)
8. D. Rocco, C. De Angelis, D. De Ceglia, L. Carletti, M. Scalora, M.A. Vincenti, “Dielectric nanoantennas on epsilon-near-zero substrates: Impact of losses on second order nonlinear processes,” Optics Communications 456, 124570 (2020)
9. L. Carletti, D. de Ceglia, M.A. Vincenti, C. De Angelis, “Self-tuning of second-harmonic generation in GaAs nanowires enabled by nonlinear absorption,” Optics express 27 (22), 32480-32489 (2019)
10. M. Scalora, J. Trull, C. Cojocaru, M.A. Vincenti, L. Carletti, D. de Ceglia, N. Akozbek, C. De Angelis “Resonant, broadband, and highly efficient optical frequency conversion in semiconductor nanowire gratings at visible and UV wavelengths,” JOSA B 36 (8), 2346-2351 (2019)
11. R. Sarma, D. de Ceglia, N. Nookala, M.A. Vincenti, S. Campione, O. Wolf, M. Scalora, M. B. Sinclair, M. A. Belkin, I. Brener,” Broadband and efficient second-harmonic generation from a hybrid dielectric metasurface/semiconductor quantum-well structure,” ACS Photonics 6 (6), 1458-1465 (2019)
12. M.M.R. Hussain, I. Agha, Z. Gao, D. de Ceglia, M.A. Vincenti, A. Sarangan,” Harmonic generation in metal-insulator and metal-insulator-metal nanostructures,” Journal of Applied Physics 125 (10), 105302 (2019)
13. D de Ceglia, L Carletti, MA Vincenti, C De Angelis, M Scalora, “Second-harmonic generation in mie-resonant GaAs nanowires,” Applied Sciences 9, 3381 (2019)
14. M.F. Kashif, G.V. Bianco, T. Stomeo, M.A. Vincenti, D. de Ceglia, M. De Vittorio, M. Scalora, G. Bruno, A. D’Orazio, M. Grande, “Graphene-based cylindrical pillar gratings for polarization-insensitive optical absorbers,” Applied Sciences 9, 2528 (2019)
15. M. Scalora, M. A. Vincenti, D. de Ceglia, N. Akozbek, M. J. Bloemer, C. De Angelis, J. W. Haus, R. Vilaseca, J. F. Trull, C. Cojocaru, "Harmonic generation from metal-oxide and metal-metal boundaries," Physical Review A 98, 023837 (2018)
16. M. Scalora, M. A. Vincenti, D. de Ceglia, M. J. Bloemer, J. W. Haus, N. Akozbek, J. F. Trull, C. Cojocaru, L Roso, "Reevaluation of radiation reaction and consequences for light-matter interactions at the nanoscale," Optics Express 24, 18055 (2018)
17. D. de Ceglia, M. Scalora, M. A. Vincenti, S. Campione, K. Kelley, E. L. Runnerstrom, J.-P. Maria, G. A. Keeler & T. S. Luk , "Viscoelastic optical nonlocality of low-loss epsilon-near-zero nanofilms," Scientific Reports 8, 9335 (2018)
18. Z. Gao, M.M.R. Hussain, D. de Ceglia, M. A. Vincenti, A. Sarangan, I. Agha, M. Scalora, J. W. Haus, Parag Banerjee, "Unraveling delocalized electrons in metal induced gap states from second harmonics," Appl. Phys. Lett. 111, 161601 (2017)

19. M. A. Vincenti, M. Kamandi, D. de Ceglia, C. Guclu, M. Scalora, and F. Capolino, "Second-harmonic generation in longitudinal epsilon-near-zero materials,"Phys. Rev. B 96, 045438 (2017)
20. H. Chen, V. Corboliou, A. S. Solntsev, D.-Y. Choi, M. A. Vincenti, D. de Ceglia, C. De Angelis, Y. Lu, and D. N. Neshev, "Enhanced second harmonic generation from two-dimensional $MoSe_2$ on a silicon waveguide," Light: Science & Applications 6, e17060 (2017)
21. M. A. Vincenti, D. de Ceglia, C. De Angelis, and M. Scalora, "Surface-plasmon excitation of second-harmonic light: emission and absorption," J. Opt. Soc. Am. B 34, 633-641 (2017)
22. D. de Ceglia, M. A. Vincenti, N. Akozbek, M. J. Bloemer, M. Scalora, "Nested plasmonic resonances: extraordinary enhancement of linear and nonlinear interactions," Opt. Express 25, 3980 (2017)
23. D. de Ceglia, M. A. Vincenti, M. Scalora, "On the origin of third harmonic light from hybrid metal-dielectric nanoantennas," J. Opt. 18, 11 115002 (2016)
24. M. Grande, G. V. Bianco, M. A. Vincenti, D. de Ceglia, P. Capezzuto, V. Petruzzelli, M. Scalora, G. Bruno, and A. D'Orazio, "Optically transparent microwave screens based on engineered graphene layers," Opt. Express 24, 22788 (2016)
25. S. Campione, I. Kim, D. de Ceglia, G. A. Keeler, and T. S. Luk, "Experimental verification of epsilon-near-zero plasmon polariton modes in degenerately doped semiconductor nanolayers," Opt. Express 24, 18782 (2016)
26. M. A. Vincenti, D. de Ceglia, M. Scalora, "Anomalous nonlinear absorption in epsilon-near-zero materials: Optical limiting and all-optical control", Optics Letters 41, 3611 (2016)
27. D. de Ceglia, M. A. Vincenti, M. Grande, G. V. Bianco, G. Bruno, A. D'Orazio, M. Scalora, "Tuning infrared guided-mode resonances with graphene", J. Opt. Soc. Am. B 33, 426 (2016)
28. M. Grande, G. V. Bianco, M. A. Vincenti, D. de Ceglia, P. Capezzuto, M. Scalora, A. D'Orazio, G. Bruno, '"Optically transparent microwave polarizer based on quasi-metallic graphene", Scientific Reports 5, 17083 (2015)
29. M. Scalora, M. A. Vincenti, D. de Ceglia, C. M. Cojocaru, M. Grande, J. W. Haus, "Nonlinear Duffing oscillator model for third harmonic generation", J. Opt. Soc. Am. B 10, 2129 (2015)
30. M. Grande, M. A. Vincenti, T. Stomeo, G. V. Bianco, D. de Ceglia, N. Aközbek, V. Petruzzelli, G. Bruno, M. De Vittorio, M. Scalora, and A. D'Orazio," Graphene-based perfect optical absorbers harnessing guided mode resonances", Opt. Express 23, 21032 (2015)
31. T. S. Luk, D. de Ceglia, S. Liu, G. A. Keeler, R. P. Prasankumar, M. A. Vincenti, M. Scalora, M. B. Sinclair and S. Campione, "Enhanced third harmonic generation from the epsilon-near-zero modes of ultrathin films," App. Phys. Letters 106, 151103 (2015)
32. D. de Ceglia, M. A. Vincenti, C. De Angelis, A. Locatelli, J.W. Haus, M. Scalora, "Role of antenna modes and field enhancement in second harmonic generation from dipole nanoantennas," Opt. Express 23, 1715 (2015)
33. M. Grande, M. A. Vincenti, T. Stomeo, G. V. Bianco, D. de Ceglia, N. Aközbek, V. Petruzzelli, G. Bruno, M. De Vittorio, M. Scalora, and A. D'Orazio,"Graphene-based absorber exploiting guided mode resonances in one-dimensional gratings," Opt. Express 22, 31511 (2014)
34. S. Campione, D. de Ceglia, C. Guclu, M. A. Vincenti, M. Scalora, and F. Capolino, "Fano collective resonance as complex mode in a two-dimensional planar metasurface of plasmonic nanoparticles," Applied Phys. Letters 105, 191107 (2014)
35. M. Scalora, M. A. Vincenti, D. de Ceglia, J. W. Haus, "Nonlocal and quantum-tunneling contributions to harmonic generation in nanostructures: Electron-cloud-screening effects," Phys. Rev. A 90, 013831 (2014)

36. M. A. Vincenti, D. de Ceglia, M. Grande, A. D'Orazio, and M. Scalora, "Third-harmonic generation in one-dimensional photonic crystal with graphene-based defect," Phys. Rev. B 89, 165139 (2014)
37. Y. Wu, N. Dong, S. Fu, J. D. Fowlkes , L. Kondic , M. A. Vincenti , D. de Ceglia , P. D. Rack, "Directed Liquid Phase Assembly of Highly Ordered Metallic Nanoparticle Arrays", ACS Advanced Materials and Interfaces 6, 5835 (2014)
38. J. W. Haus, D. de Ceglia, M. Vincenti, M. Scalora, "Nonlinear quantum tunneling effects in nanoplasmonic environments: two-photon absorption and harmonic generation", Journal of Optical Society of America B, 31 A13 (2014)
39. D. de Ceglia, M. A. Vincenti, S. Campione, F. Capolino, J. W. Haus, M. Scalora, "Second-harmonic double-resonance cones in dispersive hyperbolic metamaterials", Physical Review B 89 075123 (2014)
40. J. W. Haus, D. de Ceglia, M. Vincenti, M. Scalora, "Quantum conductivity for metal–insulator–metal nanostructures", Journal of Optical Society of America B, 31 259-269 (2014)
41. M. A. Vincenti, D. de Ceglia, M. Scalora, "Nonlinear Dynamics in Low Permittivity Media: The Impact of Losses", Optics Express 21, 29949-29954 (2013)
42. M. A. Vincenti, D. de Ceglia, J. W. Haus, M. Scalora, "Harmonic generation in multiresonant plasma films", Physical Review A 88, 043812 (2013)
43. M. Scalora, M. A. Vincenti, D. de Ceglia, M. Grande, J. W. Haus, "Spontaneous and stimulated Raman scattering near metal nanostructures in the ultrafast, high-intensity regime", Journal of Optical Society of America B 30, 2634-2639 (2013)
44. M. A. Vincenti, D. de Ceglia, M. Grande, A. D'Orazio, and M. Scalora, "Nonlinear control of absorption in one-dimensional photonic crystal with graphene-based defect," Optics Letters 38, 3550-3553 (2013)
45. M. Grande, T. Stomeo, G. V. Bianco, M. Vincenti, D. de Ceglia, V. Petruzzelli, G. Bruno, M. De Vittorio, M. Scalora, A. D'Orazio, "Fabrication of doubly resonant plasmonic nanopatch arrays on graphene", Applied Physics Letters 102, 231111 (2013)
46. M. A. Vincenti, D. de Ceglia, M. Grande, A. D'Orazio, M. Scalora, "Tailoring absorption in metal gratings with resonant ultrathin bridges", Plasmonics DOI 10.1007/s11468-013-9558-2 (2013)
47. D. de Ceglia, S. Campione, M. A. Vincenti, F. Capolino, M. Scalora, "Low-damping epsilon-near-zero slabs: Nonlinear and nonlocal optical properties", Physical Review B 87 155140 (2013)
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