

1. BIOGRAPHY

Prof. Patrice Genevet

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Married, 2 children.
Language: French(first language), English, Italian.
Born on august, 20, 1982 in Nice, France



Publication: 114
h-factor: 52 (Google scholar).
Citation: 26196 (Google scholar)
Research Gate: https://www.researchgate.net/profile/Patrice_Genevet
Google Scholar: <http://scholar.google.com/citations?user=IEyXxl4AAAAJ&hl=fr>
Web page: <https://2dphotonics.weebly.com/>
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Scopus Author ID: [15131744800](https://orcid.org/15131744800)

Current Position

07/2023 **Professor of Physics, Colorado school of Mines, Golden USA**

Previous research Positions and Education

2015-2023 **CNRS research Scientist I**, (chargé de recherche)
Centre de Recherche sur l'hétéro-épitaxie et ses applications, Valbonne, France.

04/06/2021 **Habilitation à Diriger les Recherches (HDR)**

2014 **Senior Research Scientist I**, grade 4
A*STAR, Singapore Institute of Manufacturing Technology, 71 Nanyang Drive, 638075, Singapore.

2011-2014 **Research Associate at Harvard University**
Development of ultra-thin plasmonic metasurfaces.

2009-2011 **post-Doctoral fellow at Harvard University** in Prof. Capasso group in collaboration with Prof. Marlan O. Scully (Texas A&M University). Investigation of plasmonic structures for linear and nonlinear optics and spectroscopy.

2006-2009 **Ph.D in physics at University of Nice Sophia Antipolis** under the direction of Prof. J.R. Tredicce and Dr. S. Barland. Title of the thesis: "Localized lasing structures in broad area coupled microresonators". Thesis defended October 9, 2009 mention "très honorable".

University teacher formation ("Monitorat d'initiation à l'enseignement supérieur", Univ. Of Nice-Sophia-Antipolis, France).

Awards and scientific recognitions

2023- Highly Cited Researchers 2023 (Clarivate rank in the top 1% by citations in Web of Science)
 2022- Award of the « Prix d'excellence de l'Université Côte d'Azur »
 2022- Highly Cited Researchers 2022 (Clarivate rank in the top 1% by citations in Web of Science)
 2022- **Prix Fabry- De Gramont 2021** (Société Française d'Optique, France)
 2021- Highly Cited Researchers 2021 (Clarivate rank in the top 1% by citations in Web of Science)
 2020- Award of the « Prix d'excellence de l'Université Côte d'Azur »
 2020- Highly Cited Researchers 2020 (rank in the top 1% by citations in Web of Science)
 2019- Award of the « Prix d'excellence de l'Université Côte d'Azur »
 2019- Highly Cited Researchers 2019 (rank in the top 1% by citations in Web of Science)
2019- European Research Council Proof of Concept 2019
2019- Prix Aimé Cotton 2017 (Société Française de Physique, France)
 2018- Highly Cited Researchers 2018 (rank in the top 1% by citations in Web of Science)
 2018- Tan Chin Tuan visiting professor fellowship – (Singapore)
 2016- STAR Partenariat Hubert Curien (PHC) franco-coréen
2014- European Research Council Starting Grant (Starting date September 2015 for 5 years)
 2006- PhD fellowship from the French Ministry of Higher Education and Research

Research interests and skills keywords

Nanophotonics, metasurfaces, topological photonics, transformation optics, holography, plasmonics, metamaterials, nanofabrication including E-beam lithography, FIB, RIE etching and CVD, deposition, experimental optics (visible, near and mid-IR), Cherenkov radiation, nonlinear optics, ultra-fast laser system, semiconductor lasers, and nonlinear dynamics, Near-field, linear and nonlinear microscopy techniques (NSOM, Fluorescence, SERS, CARS, SRS), Optical vortices, Thin-film technology, boundary optics, Semiconductors, LEDs, VCSELs, LiDARs.

Scientific Responsibility

Projects leader:

- **UnitySC industrial project** –Project “design of visible MS for wafer inspection” 140k€
- **CEA-ST** –Project “Design of 940nm for LiDAR imaging”
- **Prématuration CNRS 2021 – Coordinator** –Project “Wide angle MHz beam steering metasurfaces” 144k€
- **Deeptech UCA 2021 – Coordinator** –Project “Electronics design for tunable metasurfaces” 50k€
- **ANR 2020 – Coordinator** –Project « DILEMMA (ANR-20-CE09-0027)» aiming at achieving directional light emitting diodes, in collaboration with Nicolas Bonod (Fresnel, France) 235k€
- **STAR 2020** - Partenariat Hubert Curien (PHC) French-Korean co-PI with J. Rho (Postech, Korea) 15k€
- **ERC PoC 2019 iLiDAR**- from the European Research Council. Proof of Concept for LiDAR system 150K€
- **Industrial funding**: Achromatic imaging system for a cell phone company 300k€
- **ANR Astrid Maturation 2018**- Project “OPERA” on active metasurfaces, CoPI with Stéphane Lanteri (INRIA, France) 210k€
- **STAR 2016** - Partenariat Hubert Curien (PHC) French-Korean co-PI with J. Rho (Postech, Korea). 20k€
- **ERC StG 2015** on “FLATLIGHT: Functional 2D metamaterials at visible wavelengths” under the European Union’s Horizon 2020 and innovation programme (Grant agreement No: 639109, 2015-2020) 2M€
- **XRP5**: “Ultrafast and Broadband Mid-infrared Photonics” Science and Engineering Research Council, A-Star (grant No: 1426500053, 2015-2018) 500k SG\$

Projects Co-investigator:

- **H2020-MSCA-RISE-2020**- Participation to the innovation staff exchange program “CHARTIST” 725k€
- **European Defense Funds 2022**- Minibots, 3.4M€ (CNRS part 695k€)
- **EIC Pathfinder 2021** – Participant Leader French team on “Twisted nano” 3.2M€ (CNRS part 620k€)
- **ANR Astrid 2021** - Project “Millesime2” collaboration industrielle avec Thales-Lynred-Onera 294 k€

- **ANR 2020** –Project « Meta-on-demand» aiming at achieving light modulation using phase change materials, in collaboration with S. Cueff (INL, Lyon) and ST microelectronics (Crolles, France) 612k€
- **EAGER** EARly-concept Grants for Exploratory Research at NSF Grant (ECCS-1347251) on “*New coupling scheme for surface plasmon polaritons*”,
- **IARPA** Intelligence Advanced Research Projects Activity (Grant No. N66001-13-2007 on “*Generation and Detection of Optical Vortices for High Information Capacity Secure Free-space Communications*” and the Robert A. Welch Foundation (A.1261).

Reviewer for funding agencies: NSERC (Canada), Cariplo (Italy), ANR (France), Israel science foundation (Israel), Fund for Scientific Research – FNRS (Belgium), European Research Council (ERC advanced, Europe), Swiss National Science Foundation (Switzerland), expert panel member of the National Science Centre, Poland, Deutsche Forschungsgemeinschaft (DFG), Germany.

Conference Chair: PQE (2013), SPIE PhotonicsWest (2013), META (2019), NICE OPTICS (2020), NANOP (2022), MRS Boston 2021.

Conference Organizing Committee: MRS (2014), NANOP 2016 Organizing Committee Paris, France (6,7 December 2016), Symposium C9 nanophotonics for CLEO-PR, OECC and PGC 2017, co-chair for CLEO-PR - nanophotonics symposium CLEO-PR, OECC and PGC 2017 (Singapore), co-chair for IMCO (2018), JNMO 2018 (France), scientific committee C’NANO 2018, Session SP12 for Meta19 (Portugal), CLEO 2020 Symposium organiser, committee member for CLEO PacRim 2020, Nanophotonique committee at SFO (Nice 2022), 2^{de} Colloquium on metasurfaces and applications July 18-22, 2022 (Firenze, Italy), Technical Program Committee (TPC) of Metamaterials 2022 Sept 12-17 2022 (Siena, Italy), IMID 2022 Program Sub-Committee Co-Chair of topic “09. Emerging Materials and Devices for Display Technology” (Busan, Korea). Co-Chair of symposium “Photonic Materials” for the MH22 conference 19th-21th Sept 2022 (Singapore). Technical committee for the CLEO-Pacific Rim conference 2024 (Incheon, South-Korea). Programme committee for the Metamaterials conference at SPIE Photonics Europe 2024 (Strasbourg, France)

Conference Organization: 1st Colloquium on metasurfaces and applications June 14-18, 2021 (Cargèse Corsica). Co-organizer with G. Léo of the 2^{de} Colloquium on metasurfaces and applications July 18-22, 2021 (Firenze, Italia).

PhD review committee: Chanaka Suranjith Rupasinghe (Department of Electrical and Computer Systems Engineering Monash University, Australia, 2015, **Reviewer of the manuscript**), Sebastien Héron (Onera, France, 2016), Eng Aik Chan (NTU, Singapore, 2019, **Reviewer of the manuscript**), Mengjia WANG (femto-st, France, 2019), Emmanuel Lassalle (Fresnel, 2019), Egor Khaidarov (NTU, Singapore, 2019, **Reviewer of the manuscript**), Antu Nehuen Gortari (C2N, Paris, 2019), Mohamed BOURAS (INL, Lyon 2019), Arthur Baroni (Fresnel, France, 2020), Elena Mikheeva (Fresnel, France, 2020), Carlo Gigli (MPQ, France 2021), Jules Billuart (Fresnel, France, 2021, **Reviewer of the manuscript**), Sunny Tiwari (IISERC India, 2021, **Reviewer of the manuscript**), Nicolas Dalloz (St Etienne, France 2021, **Reviewer of the manuscript**); Adelin Patoux (CEMES, Toulouse France, **Reviewer of the manuscript**); Anne Nguyen (Institut d’Optique 2022, France, **Reviewer of the manuscript**); Adeel Afridi (ICFO, Spain, **Reviewer of the manuscript 2023**). Yaoyao Liang (C2N University Paris-Saclay, France, **Reviewer of the manuscript 2023**).

HdR review committee:

Phillip Del Hougne (universite de Rennes, France 2023).

Scientific publications, patents and conferences

I published several of my research in high impact journals including *Science* (3), *Nature nanotechnology* (4), *Nature Materials* (1), *Advanced Materials* (1), *Science Advances* (2), *Nature communications* (10), *Nano Letters* (9), and *Physical Review Letters* (7). I co-authored 5 book chapters. I hold two US patents and four EU patents. I have personally been invited to more than 70 talks at national and international conferences. I gave several keynotes and plenary talks.

Broad Audience Outreach

Part of the results I have obtained were treated in broad audience scientific magazines and websites such as *Physics Today*, *Nature photonics news and views*, *La Recherche* and also in nonscientific magazines as the *Huffington post*, *Economist*, *Le Monde* and *Engadget*. I was invited to give a few webinars (a web seminar).

Editorial Responsibility and Refereeing

Reviewer for: Nature, Science, Nature nanotechnology, Nature materials, Nature photonics, Science advances, Scientific Report, Advanced Materials, Nature Communications, Physical Review Letters, Nano Letters, Advanced Functional Materials, Advanced Optical Materials, PRX, Laser & Photonics Review, Proceedings of the National Academy of Sciences, Nanotechnology, PRA, Applied Physics Letters, Optics Letters, Communications Physics, Applied Physics B, JOSA B, Advanced Optical Materials, Nanophotonics, Nanoscale Research Letters, Journal of Optics, Optics Express, European Physical Journal D, Advances in Condensed Matter Physics, Advanced Photonics.

Distinguished prize committee member: AAAS Newcomb Cleveland Prize

Guest Editor: Applied Sciences; Special Issue on “Metasurfaces: Physics and Applications”, guest editor with Prof. Dr. Sergey I. Bozhevolnyi and Dr. Fei Ding (2017); Special issue NANOP2022 Nanophotonics guest editor with Dr. Jérôme Wenger.

Editorial Board: * Board Member for section "Optics and Lasers" in journal Applied Sciences.
 * **Optics Letters** (since 2021)
 * **Science Advances** (since 2022).

Teaching Experience

- COURSES TAUGHT @ Mines
 - 2024 INTERDISC MICROELECT PROC LAB (PHGN-535-A, CBEN-535-A, PHGN-435-A, CBEN-435-A)
 - 2024 SENIOR DESIGN PRACTICE (Fall 2023-PHGN481AI, PHGN482AI)
 - 2024 HONORS SENIOR DESIGN PRACTICE (Spring 2024-PHGN492A1, PHGN492AC)
- During my Ph.D. years (2006-2009) I was “Moniteur à l’Université de Nice Sophia Antipolis” (96 hrs/year). I was charged with teaching undergraduate courses in experimental optics.
- I gave 6 months tutorial courses at Center for nanoscale system (CNS) at Harvard University for users on nonlinear microscopy and fluorescence microscopy.
- Students’ mentoring, supervising and co-supervising (Yellow highlight current group members):
 - (2010) Jean-phillipe Tetienne, Master student from ENS de Cachan (France).
 - (2011) Vincent Chery, Master student from Ecole Polytechnique (France). He received the “**Prix du stage de recherche**” from Ecole Polytechnique
 - (2012) Guillaume Aoust, Master student from Ecole polytechnique (France). He won the “**Grand Prix du stage de recherche**” from Ecole Polytechnique and « Prix Edouard Branly 2020 ».
 - (2012) Zach Gault, Master student at Harvard University.
 - (2013-2014) Francesco Aieta, PhD student from Universita d’Ancona, Italy.
 - (2013-2014) Alan She, PhD student at Harvard University.
 - (2013-2015) Daniel Wintz, Third year PhD student at Harvard University.
 - (2015) Yutong Zhu, NSS A-star student, internship at SIMTech.
 - (2014-2015) Jonathon Teo Hi Han, Master student, A-star, SIMTech
 - (2016) Bertrand Peyce, University of Nice Sophia-antipolis, 6 months internship

- (2016) Purva Bumkar (IISER, india), 3 month Internship
- (2016) Nicolas Kossowski (Central), PhD co-direction with QJ Wang at NTU
- (2016-2019) Peinan Ni (Postdoctorate) EEE, Nanyang Technological University, ERC Stg funding
- (2016-2019) Gauthier Briere, PhD on ERC funding from Univeristé de Bourgogne. He won the "**Prix Pierre Laffitte 2018** for his innovating work on GaN metasurfaces.
- (2017-2020) Mario Ferraro, PhD student on Région PACA funding, from Universitat La Sapienza, Italy
- (2017-2019) Sébastien Héron, Postdoctorate from ONERA, France, ERC stg funding
- (2017) Gustavo Méndez Lara, intern (collaborative project with E. StrupiechonskiCinvesta Queretaro, Mexico)
- (2017) Purva Bumkar (IISER, india), 12 month Internship
- (2017-2022) Anthony Gourdin, (Safran electronics & defense) PhD, co-direction with Prof. Felback, montpellier
- (2017) Synda Labidi (Faculty of mathematical, physical and Natural sciences of Tunisia), 3 months internship
- (2017-2020) Rajath Sawant (IISER, india) PhD student on ERC funding.
- (2018-2021) Sandeep Golla (IIT Madras, india) PhD student on ERC funding.
- (2019-2021) Qinghua Song (NUS, Singapore), Postdoctorate student on ERC funding.
- (2019) Mohamed Sabry Mohamed (EPFL, Swizerland), Postdoctorate on ERC funding
- (2019-2020) Luzhou Chen, (NTU, Singapore) Postdoc in collaboration with Qijie Wang
- (2019-2020) Constance Colmagro (UCA, France) Master in "alternance" with the company Napa tech.
- (2020-2025) Geoffrey Pascal Barbet (NTU, Singapore) co-direction with Prof Luo Yu
- (2020-) Renato Juliano Martins (Université Carnot de Bourgogne) Postdoc on i-LiDAR ERC Proof of Concept
- (2020-2022) Christina kyrou (National and Kapodistrian University of Athens, Athens, Greece) **Recipient of the I-PhD 2022 startup program**
- (2020-2023) Fouad Bentata (PhD student on ANR Meta-On-Demand, co-direction with S. Cueff INL)
- (2021-2024) Nikita Nikitskiy (PhD student on ANR Dilemma, co-direction with J. Brault, CRHEA)
- (2021-2022) Clement Majorel (Postdoc on ANR OPERA)
- (2021-2023) Elena Elena Mikheeva (Postdoctorate fellow on ANR Meta-On-Demand) currently working for Essilor
- (2021-2023) Remi Colom (Postdoctorate fellow), currently **CNRS researcher** at CRHEA.
- (2021) Amir Loucif (PhD CIFRE thesis in collaboration with UnitySC)
- (2021) Yanel Tahmi (PhD CIFRE thesis in collaboration with Phasics)
- (2021-2022) Anthony Gourdin, (Postdoc on ANR OPERA)
- (2021-2024) Emil Marinov (Phd student on French ministry funding)
- (2021-2024) Martin Lepers (PhD student on CIFRE ST micro-electronics, co-direction with S. Lanteri INRIA)
- (2022) Hugo Briant (undergraduate student)
- (2022-) Nicolas Kossowski (NTU Singapore) Postdoc on ANR- Millesime2
- (2022) PhD visiting student Haydee Pacheco (from Rutgers University, USA)
- (2022) Adelin Patoux (Postdoctorate on Safran industrial research grant)
- (2023-) Alope Jana (PhD Student at the Colorado School of Mines, coming from IISER Kolkata)
- (2023) Loubnan Abou-Hamdan (Postdoctorate fellow at the Colorado School of Mines, coming from ESPCI)

Interests and Activities

Triathlon, hiking, climbing, ski de randonnee, trail running, outdoor activities, fishing.

2. PUBLICATIONS

2.1. PEER-REVIEWED ARTICLES

In peer-review

[119] "Designer metasurfaces via nanocube assembly at the air-water interface"

ML Fajri, N Kossowski, I Bouanane, F Bedu, P Pongsripong, RJ Martins, C Majorel, O Margeat, J Le Rouzo, P Genevet and B Sciacca

Advanced Materials (submitted 2023)

[118] "Bio-inspired flat optics for directional 3D Light Detection And Ranging"

C Majorel, A Loucif, E Marinov, RJ Martins, A Patoux, PM Coulon, V Brandli, E Charbon, C Bruschini, and P Genevet
NJP nanophotonics (submitted 2023)

[117] "Sphere of arbitrarily polarized exceptional points"

H. Qin, Z. Yang, C.-Y. Chen, Y. Shi, W. Zhao, B. Li, J. Zhou, Jesús Zúñiga-Pérez, P. Genevet, P. C. Wu, Q. Song*

Nature (in review 2023)

* Q. Song is my former postdoc

[116] "Non-orthogonal Polarization Eigenstates in twisted Metasurfaces"

Yueyi Yuan, Kuang Zhang, Qun Wu, Shah Nawaz Burokur and Patrice Genevet

Nature Comm. (in review 2023)

Published/Accepted

[115] "High-security Learning-based Optical Encryption assisted by Disordered Metasurface"

Z. Yu, H. Li, W. Zhao, P.-S. Huang, Y.-T. Lin, J. Yao, W. Li, Q. Zhao, P. C. Wu, P. Genevet, Q. Song*, and P. Lai

Nature Communications (accepted 2024)

* Q. Song is my former postdoc

[114] "Advanced imaging and information processing using flat-optics"

X Wang, H Hao, X He, P Xie, J Liu, J Tan, H Li, H Wang, P Genevet, Y Luo, X Ding, G Hu

Nature Reviews Electrical Engineering (accepted 2023)

[113] "Roadmap for optical metasurfaces"

A I. Kuznetsov, M L. Brongersma, J Yao, M K Chen, U Levy, D P Tsai, N I. Zheludev, A Faraon, A Arbabi, N Yu, D Chanda, K Crozier, A V. Kildishev, H Wang, J K.W. Yang, J G. Valentine, P Genevet, J A. Fan, O D. Miller, A Majumdar, J E. Fröch, D Brady, F Heide, A Veeraraghavan, N Engheta, A Alù, A Polman, H A. Atwater, P Thureja, R Paniagua-Dominguez, S T Ha, A Barreda, J Schuller, I Staude, G Grinblat, Y Kivshar, S Peana, S F. Yelin, A Senichev, V M. Shalaev, S Saha, A Boltasseva, J Rho, D K Oh, J Kim, J Park, Robert Devlin, Ragip Pala.

Applied Physics Letters (accepted 2024)

[112] "Poles and zeros of electromagnetic quantities in photonic systems"

F. Binkowski, F. Betz, R. Colom, P. Genevet, and S. Burger

Physical Review B **109**, 045414 (2024)

[111] "Asymmetric Full-color Vectorial Meta-holograms Empowered by Pairs of Exceptional Points"

Zijin Yang, Po-Sheng Huang, Yu-Tsung Lin, Haoye Qin, Jiaxin Chen, Wei Huang, Yuzhi Shi, Bo Li, Jesús Zúñiga-Pérez, Patrice Genevet, Pin Chieh Wu, and Qinghua Song *

Nano Letters (2024) <https://doi.org/10.1021/acs.nanolett.3c03611>

* Q. Song is my former postdoc

[110] "Creating Pairs of Exceptional Points for Arbitrary Polarization Control: Asymmetric Vectorial Wavefront Modulation"

Zijin Yang, Po-Sheng Huang, Yu-Tsung Lin, Haoye Qin, Jesus Zuniga-Perez, Yuzhi Shi, Zhan-Shan Wang, Cheng Xinbin, Boubacar Kante, Pin Chieh Wu, Patrice Genevet and Qinghua Song*

Nature Comm. **15** 232 (2024)

* Q. Song is my former postdoc

[109] "Excitons in (Al,Ga)N Quantum Dots and Quantum wells Grown on (0001)-oriented AlN Templates: Emission Diagrams and Valence Band Mixings"

Alexandra Ibanez, Nikita Nikitskiy, Aly Zaiter, Pierre Valvin, Wilfried Desrat, Thomas Cohen, M. Ajmal Khan, Guillaume Cassabois, Hideki Hirayama, Patrice Genevet, Julien Brault, and Bernard Gil

Journal of Applied Physics **134**, 193103 (2023)

[108] "Asymmetric phase modulation of light with parity-symmetry broken metasurfaces"

Elena Mikheeva, Remi Colom, Karim Achouri, Adam Overvig, Felix Binkowski, Jean-Yves Duboz, Sebastien Cueff, Shanhui Fan, Sven Burger, Andrea Alù and Patrice Genevet

Optica 10 (10), 1287-1294 (2023)

[107] "Overcoming the limitations of 3D sensors with wide Field-of-View Metasurface-enhanced scanning LiDAR"

Emil Marinov, Renato Juliano Martins, M Aziz Ben Youssef, Christina Kyrou, Pierre-Marie Coulon, and Patrice Genevet

Advanced Photonics, Vol. 5, Issue 4, 046005 (2023)

See Phys.org commentary [here](#).

[106] "Epsilon-near-zero enhancement of nonlinear responses from intersubband transitions in the mid-infrared"

Geoffrey Barbet, Bo Qiang, Yuhao Jin, Tingting Wu, Patrice Genevet, Qijie Wang and Yu Luo

Adv. Opt. Mat. 2202786 (2023) <https://doi.org/10.1002/adom.202202786>

[105] "Universal active metasurfaces for ultimate wavefront molding by manipulating the reflection singularities"

Mahmoud M. R. Elsayw, Christina Kyrou, Elena Mikheeva, Remi Colom, Jean-Yves Duboz, Khosro Zangeneh Kamali, Stephane Lanteri, Dragomir Neshev, and Patrice Genevet

Laser & Photonics Reviews 2023, 2200880, <https://doi.org/10.1002/lpor.202200880>

[104] "Crossing of the branch cut: the topological origin of a universal 2π -phase retardation in non-Hermitian metasurfaces"

R Colom, E Mikheeva, K Achouri, J Zuniga-Perez, N Bonod, O JF Martin, S Burger, and P Genevet

Laser & Photonics Reviews 2023, 2200976 <https://doi.org/10.1002/lpor.202200976>

See press release: <https://www.wileyindustrynews.com/en/news/complex-scattering-light> and journal [cover](#)

[103] "Uniform Huygens metasurfaces with post-fabrication phase pattern recording functionality"

E Mikheeva, R Colom, P. Genevet, F Bedu, I Ozerov, S Khadir, G Baffou, R Abdeddaim, S Enoch, and J Lumeau

ACS Photonics (2023) <https://doi.org/10.1021/acsp Photonics.3c00128>

[102] "Super-Reflector Enabled by Non-Interleaved Spin-Momentum-Multiplexed Metasurface"

He-Xiu Xu, Guangwei Hu, Xianghong Kong, Yanzhang Shao, Patrice Genevet, and Cheng-Wei Qiu

Light Science & Applications 12, 78 (2023)

[101] "Metasurface for complete measurement of polarization Bell state"

Zhanjie Gao, Zengping Su, Qinghua Song, Patrice Genevet and Konstantin E. Dorfman

Nanophotonics (2022) <https://doi.org/10.1515/nanoph-2022-0593>

[100] "Exploiting Extraordinary Topological Optical Forces at Bound States in the Continuum"

H. Qin, Y. Shi, Z. Su, G. Wei, Z. Wang, X. Cheng, A. Q. Liu, P. Genevet, Q Song

Science Advances 8 eade7556 (2022) <https://www.science.org/doi/10.1126/sciadv.ade7556>

[99] "Spin-decoupling of Vertical Cavity Surface-Emitting Lasers with complete phase modulation using on-chip integrated Jones matrix metasurfaces"

P-N Ni, P Fu, P-P Chen, C. Xu, Y-Y Xie, and P Genevet

Nature Communications 13, 7795 (2022)

[98] "Inverse design of nanophotonics devices and materials"

PR Wiecha, AY Petrov, P Genevet, A Bogdanov

Photonics and Nanostructures-Fundamentals and Applications, 10108413, (2022)

[97] "Metasurface-enhanced Light Detection and Ranging Technology"

RJ Martins, E Marinov, M. Aziz Ben Youssef, C Kyrou, M Joubert, C Colmagro, V Gâté, C Turbil, PM Coulon, D Turover, S Khadir, M Giudici, C Klitis, M Sorel and P Genevet

Nature Communications 13, 5724 (2022)

See CNRS innovation press release : <https://www.cnrsinnovation.com/actualite/un-systeme-dimagerie-3d-a-large-champ-de-vision-pour-la-robotique-et-lautomobile/>

[96] " *Les métasurfaces optiques pour les lidars à large champ et à haute cadence d'imagerie*"

RJ Martins, E Marinov, M. Aziz Ben Youssef, C Kyrou, and P Genevet

Photonique 41-45 (2022)

[95] "*Susceptibility synthesis of arbitrary shaped metasurfaces*"

N Lebbe, S Lanteri, S Y Golla and P Genevet

Phys. Rev. B 106, 035110 (2022)

[94] " *Getting topological photonics out of the laboratory*"

Matricardi, C., Small, C., Persechini, L., Zhen, B., Redondo, A.B., Szameit, A. and P Genevet,

Nature Communications 13: 2249 (2022) invited "Q&A"

[93] " *Space &/or Time modulation of light with metasurfaces: recent progress and future prospects*"

E. Mikheeva, C. Kyrou, F. Bentata, S. Khadir, S. Cuffe, and P Genevet

ACS Photonics <https://doi.org/10.1021/acsp Photonics.1c01833> (2022) invited "perspective article"

Selected as **ACS Editors' Choice** on June 30 (2022)

[92] " *Vectorial metasurface holography*"

Q Song, X Liu, CW Qiu, and P Genevet

Applied Physics Reviews 9 (1), 011311 (2022)

[91] "*Aberration-corrected large-scale hybrid metalenses*"

R Sawant, D Andrén, RJ Martins, S Khadir, R Verre, M Käll, P Genevet

Optica, 8 (11), 1405-1411 (2021)

[90] "*Plasmonic Topological Metasurface by Encircling an Exceptional Point*"

Q. Song, M. Odeh, J. Zúñiga-Pérez, B. Kanté, and P.Genevet

Science, 373, 1133-1137 (2021)

see the press release on [Photonique](#) and cnrs actualités [here](#)

[89] "*Reconstruction of multidimensional nonlinear polarization response of Pancharatnam-Berry metasurfaces*"

Z. Gao, P.Genevet, G. Li, and K. E. Dorfman

Physical Review B 104, 054303 (2021)

[88] " *Optimization of metasurfaces under geometrical uncertainty using statistical learning*"

M. M. R. Elsayy, M. Binois, R. Duvinneau, S. Lanteri and P.Genevet

Optics Express, 29, (19) 29887-29898 (2021)

[87] " *Multiobjective statistical learning optimization of RGB metalens*"

M. MR Elsayy, A. Gourdin, M. Binois, R. Duvinneau, D. Felbacq, S. Khadir, P.Genevet, S. Lanteri

ACS Photonics, 8, 8, 2498–2508 (2021)

[86] "*Broadband Decoupling of Intensity and Polarization with Vectorial Fourier Metasurfaces*"

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M. Giudici, F. Pedaci, E. Caboche, P. Genevet, S. Barland, J. R. Tredicce, G. Tissoni and L. Lugiato. Localized States in Physics: Solitons and Patterns, Springer (2011)

[Chap1] *“Cavity Soliton Laser based on coupled micro-resonators”*

P. Genevet, S. Barland, M. Giudici and J. R. Tredicce. Localized States in Physics: Solitons and Patterns , Springer

2.3. PLENARY

[Ple4] *“ Topological Metasurfaces”*

Distinguished Lectures on Metamaterials 2023, Optical Society of Korea (OSK) Winter Annual Meeting 2023
Busan, South Korea, Feb. 15th -17th 2023

[Ple3] *“From planar to conformable optics”*, **Plenary** talk at the **Nanophotonics and Micro/Nano Optics International Conference 2017**, 13-15 September 2017.

[Ple2] *“Flat optics”*, **Plenary** talk for the **Physics of Quantum electronics**, Snowbird, 2-7 January 2017

[Ple1] *“Broadband Wavefront Engineering with Optical Resonator Arrays”*, **Optical MEMS and Nanophotonics Conference**, 6 - 9 August 2012, Banff, Alberta, Canada, **Plenary** speaking on behalf of Prof. Capasso.

2.4. TUTORIALS

[Tuto4] *“Singular Metaphotonics”*

3rd Colloquium on the Physics and Applications of Metasurfaces
22-25th Jan, 2024 Zurich, Switzerland, **Tutorial talk.**

[Tuto3] *“An Overview of Numerical Optimization Methods for Metasurfaces”*

MRS Boston 29/11 2021, Boston, USA, Tutorial talk.

[Tuto2] *“Tutorial on Optical Metasurfaces and Applications”*

Société Française d’Optique Dijon 05/09 July 2021, Dijon France, **Tutorial talk.**

[Tuto1] *“Tutorial EL05: Optical Metasurfaces—Materials, Design and Advanced Device Applications”*

Virtual MRS Spring, April 17, 2021, **Tutorial talk.**

2.5. KEYNOTES

[Key7] *“Metasurfaces integration on VCSELs”*

International Symposium on Physics and Applications of Laser Dynamics 2023 (IS-PALD 2023)
Nov. 29th- Dec 1st 2023 Metz, France

[Key6] *“Topological Metasurfaces”* July 21, 2022, META 2022, Torremolinos, Spain, **Keynote** presentation.

[Key5] *“# EL05.07.01 Vectorial Holography and Polarization-Maintaining Metasurfaces”* April 19, 2021, Virtual MRS Spring, **Keynote** presentation.

[Key4] "Integration of metasurface on VCSELs", OPTICS N.I.C.E. 2020, the 2de International Conference on Optics, Photonics & Materials, Nice (France) on October 12-14, 2020, **Keynote** presentation.

[Key3] "Applications of semiconductor-based Metasurfaces"
IMCO 2019, Hong Kong, June 14th - 17th, 2019, **Keynote** presentation.

[Key2] "Planar Optics with Metasurfaces", NICE OPTICS 2016, the 1st International Conference on Optics, Photonics & Materials, Nice (France) on October 26-28, 2016, **Keynote** presentation.

[Key1] "Achromatic Metasurface Optical Components and Metagratings for Efficient Broadband and Polarization Sensitive Light Routing", ICMAT 2015 Singapore, **Keynote** presented on the behalf of prof. Capasso.

2.6. INVITED ORAL PRESENTATIONS

[I89] "*Light detection and ranging using Metasurfaces*"

2024 Gordon Research conference

To be presented (Jun. 9-14th 2024, Maine, USA)

[I88] "*Metasurfaces: physics and applications*"

EL08: Plasmonics and Metasurfaces—Design, Materials and Applications, 2024 MRS Spring Meeting USA

To be presented (April. 22-26th 2024 Seattle, Washington, USA)

[I87] "*Topological Metasurfaces*"

2024 SPIE Photonics Europe

To be presented (April 7-11st 2024 Strasbourg, France)

[I86] "*Topological Metasurfaces*"

2024 Photonics West/OPTO

Jan. 27th- Feb 1st 2024 San Francisco, California, USA

[I84] "*Metasurface for light detection and Ranging*"

2023 Seminar Instituto de Física de la Benemérita Universidad Autónoma de Puebla

Jan. 19th 2024

[I84] "*metasurface system integration*"

2023 MIT seminar, Boston MA, USA

Nov. 29th 2023

[I83] "*Comprehensive Design of Metasurfaces: The Role of Symmetries in the Position of Complex Frequency Zero Singularities*"

2023 MRS, EL.12, Boston MA, USA

Nov. 26th -Dec. 1st 2023

[I82] **Colloquium and Seminar** "*Metasurfaces: physics and applications*"

2023 Centro De Física Aplicada y Tecnológica Avanzada, Mexico City, Mexico

Nov. 13-16th 2023

[I81] Tutorial and a seminar "*Metasurfaces: physics and applications*"

2023 PS², Paris-Saclay Plasmonics School

Oct. 23-27th 2023 Paris, France

[I80] "*Metasurfaces: physics and applications*"

2023 colloquium at the University of Denver, CO, USA

Sept. 20th 2023

[I79] "*Metasurfaces for LiDAR imaging*"

2023 Optical Imaging Congress: Flat optics

Aug. 14-17th 2023, Boston, MA, USA

[I78] "*Crossing of the Branch cut: Huygens regime has topological origin*"

2023 E-MRS, Strasbourg, France

May 31th 2023

[I77] "*Topological Metaphotonics: applications for laser wavefront engineering and Light imaging and ranging technology*"

2023 MDPI International Day of Light

May 16th 2023

[I76] "*Crossing of the Branch cut in Topological Metasurfaces*"

2023 MRS Spring Meeting, San Francisco

April 26th 2023

[I75] "*Topological Metasurfaces*"

OPTICA 2023 Optoelectronics Technical Webinar

Online webinar, 07 April 2023

- [OPTICA technical group \(2023\)](#)

[I74] "*Topological Metasurfaces*"

15th Annual Meeting Photonic Devices (AMPD2023)

Zuse Institute Berlin, Berlin, Germany, 29-31 March 2023

[I73] "*Metasurfaces design and applications*"

Centre for OptoElectronics and Biophotonics (COEB), School of Electrical and Electronic Engineering, NTU, & IEEE Photonics Society Singapore Chapter & the OPTICA Singapore Section

Singapore, 22 February 2023

[I72] "*Metasurfaces design and applications*"

Seminar at the Samsung Advanced Institute of Technology (SAIT)

Dongtan, South Korea, 20 February 2023

[I71] "*Metasurfaces design and applications*"

Seminar at the Physics department at Postech University

Pohang, South Korea, 19 February 2023

[I70] "*Topological Metasurfaces*"

Imperial College, METAMAT online seminar, Jan. 10th 2023

- [Imperial College London seminar \(2023\)](#)

[I69] "*Metasurfaces: physics and applications*"

Jinan University, public online seminar, Dec. 13th 2022

[I68] "*Topological Metasurfaces*"

Singular Days

Nice, France, 2-4th November 2022

[I67] "*Topological Metasurfaces, physics and applications*"

Beijing Institute of Technology, public online seminar, Oct. 20th 2022

[I66] "*Topological Metasurfaces*"

2nd International Conference on Materials for Humanity (MH 22)

CV

Singapore, 19-21st September 2022 (online)

[I65] "*Optical Metasurfaces, Physics, and Applications*"

Applied Materials seminar (online)

Santa Clara, USA, 10th October 2022

[I64] "*Crossing of the branch cut in Topological Metasurfaces*"

16th international congress on artificial materials for novel wave phenomena

Siena, Italy, 12-17th September 2022

[I63] "*Understanding metasurfaces from their topological properties*"

ETOPIM 2022

Besançon, France, 4-8th July 2022

[I62] "*Physics, applications and integration of Metasurfaces*"

2nd FNIP seminar

EPFL, Switzerland, April 21th, 2022

- [2nd FNIP Webinar\(2022\)](#)

[I61] "*Topological Metasurfaces: Physics and applications*"

EPFL Photonics day 2021

EPFL, Switzerland, Dec. 2, 2021

[I60] "*Applications and integration of Metasurfaces*"

15th International Congress on Artificial Materials for Novel Wave Phenomena – Metamaterials 2021

New York, USA, Aug. 2nd –7th, 2021

[I59] "*Applications and integration of semiconductor-based Metasurfaces*"

2021 OSA Optical Design and Fabrication Congress 27 June-01 July Online USA.

[I58] "*Applications and integration of semiconductor-based Metasurfaces*"

EOSAM 2021 13-17 Sept Rome, Italia.

[I57] "*Applications and integration of semiconductor-based Metasurfaces*"

PQE-2020 January 5-10, conference Snowbird, Utah., USA

[I56] "Semiconductor metasurfaces and applications"

19th International Conference on II-VI Compounds and Related Materials, Zhengzhou, Oct. 27th -31th, 2019

[I55] "Semiconductor metasurfaces and applications"

11^{èmes} Journées Scientifiques (C'Nano PACA), Porquerolles, Sept. 25th -27th, 2019

[I54] "Semiconductor metasurfaces and applications"

Topical Meeting on Diffractive Optics 2019, Jena, Sept. 16th -19th, 2019

[I53] "Semiconductor metasurfaces and applications"

25^{ème} Congrès Général de la Société Française de Physique, Nantes, July 8th -12th, 2019

[I52] "Applications of semiconductor-based and conformal Metasurfaces"

META 2019, Lisbon, July 23rd -26th, 2019

[I51] "Applications of semiconductor-based Metasurfaces"

ICMAT 2019, Singapore, June 23rd -28th, 2019

[I50] "Applications of semiconductor-based Metasurfaces"

IMCO 2019, Hong Kong, June 14th -17th, 2019

[I49] "Applications of semiconductor-based Metasurfaces"

Photonics North, Québec, May 21st -23rd , 2019

[I48] "Semiconductor based MetaOptics"

SPIE Photonics West, San Francisco, USA, February 2-7th, 2019

[I47] "Semiconductor based MetaOptics"

ENGE 2018, Jeju, South Korea, November, 11-14th , 2018

[I46] "Semiconductor based MetaOptics"

Imaginano, Ramot, Israel, November, 5-8th 2018

[I45] "MetaOptics for space applications"

Thales Alenia Space, Cannes, France, October, 24th 2018

[I44] "Towards semiconductor based MetaOptics"

Gradient Resonant Array Devices In Electro-magnetic-acoustic Nano Technologies, Lille, France, October, 18-19th , 2018

[I43] "Towards semiconductor based MetaOptics"

Huawei Optical materials and processing summit 2018, Munich, Germany, October, 15-16th , 2018

[I42] "GaN Semiconductor based Optical metasurfaces for visible wavelength"

The 8th International Multidisciplinary Conference on Optofluidics 2018, Shanghai, China, August, 5-8, 2018

[I41] "Gallium Nitride Metasurface, Industrially Relevant Manufacturing Processes"

OSA Advanced Photonics Congress, Zurich, July, 2-5 2018

[I40] "GaN Semiconductor based Optical metasurfaces for visible wavelength"

SFO Optique, Toulouse, July, 3-6 2018

[I39] "Free Form Optics: Modelling and design"

International conference of Computational Methods in Sciences and Engineering, Grece, March, 14-18 2018

[I38] "Planar optics"

Optical Society of Korea, Korea, February, 5-7 2018

[I37] "Optical metasurfaces"

Nice Nonlinearities, Nice, France, December, 14-15 2017

[I36] "Flat optics"

State Key Laboratory of Precision Spectroscopy, East China Normal University, Shanghai, China, November, 29 2017

[I35] "Controlling light with plasmonic metasurfaces"

School on Plasmonics 2017, Porquerolles 4-8 September 2017

[I34] "Controlling Surface Plasmon Polaritons with Metasurfaces"

Société Française de Physique 2017, Orsay Paris, 3-7 July 2017

[I33] "Free-standing and conformable Optical Metasurfaces"

CLEO PR 2017, Singapore

[I32] "Free-standing and conformable Optical Metasurfaces"

Meta 17, 24-28 July 2017, Incheon, Korea

[I31] "Tutorial: Metaoptics"

EuropMeta, 33rd Doctoral School on Metamaterials, 3-6 April 2017, University of Bordeaux, France

[I30] "Conformal Boundary optics"

E-MRS, Strasbourg, Spring Meeting May 22 - 26 2017

[I29] "Free standing meta-optics"

C'Nano, Porquerolles, 2017

[I28] "From Planar to conformable Optics with Metasurfaces"

Cleo PR 2017, Singapore July 31th – August 4 2017

[I27] "From Planar to conformable Optics with Metasurfaces"

Cleo Europe EQEC 2017, Munich 25 - 29 June 2017

[I26] "Planar Optics with Metasurfaces"

Groupe de recherche CNES 2016, LAAS, Toulouse November 29-30th 2016.

[I25] "Planar Optics with Metasurfaces"

BuildMona Module 2016-T6 Hybrid Systems – Metamaterials 29/30 September 2016 Leipzig, Germany

[I24] "Planar Optics with Metasurfaces"

NaBi annual meeting Paris – 13th-14th Set 2016.

[I23] "Conformal Boundary Optics"

Meta 16 Torremolinos (Malaga), Spain, July 25, 2016 – July 28, 2016.

[I22] "Planar Optics With metasurfaces"

C'NANO PACA Les Journées Scientifiques de Porquerolles, 25 au 27 mai 2016.

[I21] "Optics at interfaces"

Groupe de recherche 2015, Ecole centrale de Lyon, October 19-21th 2015.

[I20] "Optics at interfaces"

Seminar organized by "Nikon and Essilor International Joint Research Center Co., Ltd.", **French Embassy in Japan**, Tokyo, June 3rd 2015.

[I19] "Dispersion management at interfaces"

University of Glasgow, Scotland, 20th March 2015.

[I18] "Controlling light with Huygens'-like interfaces: application to surface holography"

MRS Boston, 01 December, 2014.

[I17] "Folding optical space with Huygens' interfaces"

A*star Investigatorship Symposium Singapore, October 31, 2014.

[I16] "*Controlling light with Huygens' interfaces*"

Meta'14 Singapore, May 20-23 2014

[I15] "*Holographic Metasurfaces*"

SPIE Optics and Photonics 2013 San Diego, USA Aug. 25 - 28, 2013.

[I14] "*Holographic Metasurfaces*"

ICCES'13 Seattle, USAMay 24 - 28, 2013.

[I13] "*Plasmonic couplers for vortex beams and non-diffracting surface waves*"

SPIE PhotonicWest, 2-7 February 2013, San Francisco, USA

[I12] "*Holographic plasmonic couplers for light with complex wavefronts*"
January 6-10, **PQE-2013** conference Snowbird, Utah., USA

[I11] "*Manipulating light with optical metasurfaces*", August 02 (2012),
University of Ottawa, ON, Canada.

[I10] "*Manipulating complex beams with optical metasurfaces*", July 26 (2012),
University of Sydney, NSW, Australia,

[I9] "*Ultra-thin plasmonic optical phased array based on phase discontinuities and application to the generation of optical vortex beam*"
January 9-12, TAMU Physics of Quantum Electronics Workshop, Texas., USA

[I8] "*Ultra-thin plasmonic optical phased array based on phase discontinuities and application to the generation of optical vortex beam*"
January 2-6, **PQE-2012** conference Snowbird, Utah., USA

[I7] "*Nonlinear plasmonics with nanocavity gratings*",
SPIE San Diego 21-25 August 2011, Ca, USA.

[I6] "*New plasmonic structures for nonlinear optics and spectroscopy*",
July 25-29 (2011) **Summer School of the Institute for Quantum Science and Engineering**, Jackson Hole, WY, USA.

[I5] "*Plasmonic nanocavity gratings enhance nonlinear optical phenomena*",
July 18-31, 2010 **Summer School of Quantum Optics and Electronics**, Casper, WY, USA.

[I4] "*Localized vortices in semiconductor Lasers*",
January 12-13, 2010, **TAMU Physics of Quantum Electronics Workshop**, TX, USA.

[I3] "*Experimental observation of Localized vortices in semiconductor Lasers*",
January 3-7, **PQE-2010** conference Snowbird, UT, USA.

[I2] "*Laser solitons and localized Vortices*",
Seminar November 17, 2010, Texas A&M University, TX, USA.

[I1] "*Cavity soliton laser: localized structures and clusters*"
Localized States workshop in Chile, Santiago, September 22-25 2008 (www.dfi.uchile.cl/lsworkshop08/).

2.7. PATENTS, INCLUDING PROVISIONALS

[pp7] "DEVICE FOR INSPECTING SUBSTRATES", submitted patent application PCT application number PCT/FR2023/051036 (2023)

[pp6] "Improved LIDAR imaging device", EU submitted patent application V/Ref EP23305541, 073656 EP/RCA (2023)

[pp5] "Fast active beam-steering device and apparatus operating in transmission mode", WO2023280899A1 (2021)

[pp4] "System and method for imaging in the optical domain", WO2022214665A1

[pp3] "Achromatic metasurface optical components by dispersive phase compensation", WO2016140720A2, US11733535B2, licensed in 2021 to Metalenz.

[PP2] "Amplitude, Phase and Polarization Plate for Photonics", Awarded US patent WO2013033591 A1, publication date Mars, 7, 2013. Licensed in June 2015 to Samsung.

[PP1] " Ultra-thin optical coatings and devices and methods of using ultra-thin optical coatings", US, 9 952 096 B2, WO 2013/184556 A1.