**Pavel Cheben, PhD, DrHC, FREng, FRSC, FSPIE, FIEEE, FOptica, FAPS, FEOS, FInstP, FCAE, FEIC, CEng**
Principal Research Officer
National Research Council of Canada
Adjunct Professor, University of Toronto | University of Ottawa | Carleton University | McMaster University
Honourary Professor, University of Malaga
Guest Professor, University of Zilina
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## Educational degrees

PhD (Optics), *Summa cum laude*, Complutense University of Madrid, Spain (1996).
MSc (Microelectronics), *Summa cum laude*, Slovak Technical University, Bratislava, Czechoslovakia (1990).

## Employment history

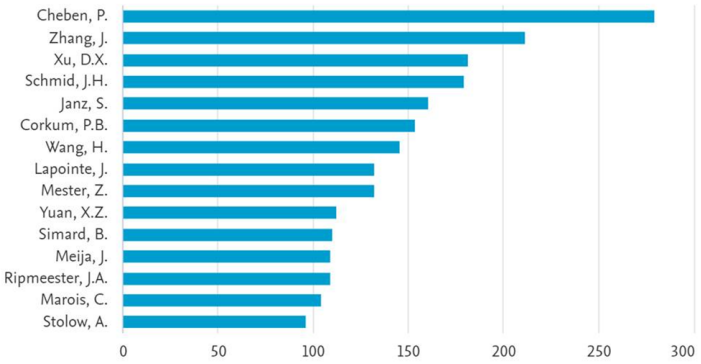
| | |
|---|---|
| 2016-2025 | Principal Research Officer, National Research Council, Canada. |
| 2002-2016 | Senior Research Officer, National Research Council, Canada. |
| 2012-2025 | Honourary Professor, Faculty of Telecommunications, University of Malaga, Spain. |
| 2019-2025 | Adjunct Professor, Faculty of Applied Science and Engineering, University of Toronto, Canada. |
| 2006-2025 | Adjunct Professor, Faculty of Electrical Engineering, Carleton University, Canada. |
| 2013-2025 | Adjunct Professor, Department of Engineering Physics, McMaster University, Canada. |
| 2017-2025 | Adjunct Professor, Faculty of Engineering, University of Ottawa, Canada. |
| 2014-2025 | Guest Professor, Faculty of Telecommunications, University of Zilina, Slovakia. |
| 2001-2002 | Senior Scientist, Optenia Inc., Ottawa. |
| 1997-2001 | Associate Research Officer, National Research Council, Canada. |
| 1992-1997 | Researcher, National Institute for Aerospace Technology, Spain. |
| 1990-1997 | Research and Teaching Assistant, Complutense University of Madrid, Spain. |
| 1990-1990 | Research Assistant, Slovak Technical University, Czechoslovakia. |
| 1986-1990 | Student Research Assistant, Slovak Technical University, Czechoslovakia. |

## Career highlights

- **Created a new field of research: metamaterial integrated photonics.** For decades, a major hurdle in silicon integrated photonics was a restricted number of silicon-compatible materials, insufficient to achieve complex optical on-chip functions. Cheben resolved this fundamental limitation by making a metamaterial – nanostructured material with engineered optical properties – directly on a silicon chip. This is recognized as one of the key discoveries in integrated photonics in the past decades.

- **Published influential invited review articles in journals with the highest impact.** These include *Nature* (Impact Factor 64.8), Advances in Optics and Photonics (IF 24.75), *Laser and Photonics Reviews* (IF 13.14), *Proceedings of the IEEE* (IF 20.6), and *Nanophotonics* (IF 8.45). Cheben's invited review "Subwavelength integrated photonics" (*Nature*, 2018) is the first *Nature* review article written by an NRC scientist in the Council history. The review article is the most prestigious category in *Nature*, and invitations from *Nature* editors are very rare and reserved for the most authoritative leaders in the field.

- **Is the most published scientist of the NRC, Canada, 2008-2025 (NRC has approximately 3500 scientists).** Cheben co-authored more than 800 publications and book chapters, 44 inventions and patents, and over 350 invited presentations. He is a co-author of more than 2% of all NRC publications.




NRC top publishing authors. Number of publications from 2010 to 2024 (as per Scopus database).

- **Applied the metamaterial waveguide concept to build radically new integrated photonic devices at telecom wavelengths.** Cheben demonstrated many metamaterial-engineered devices with unprecedented performance that are crucial for controlling transmission of light signals in advanced information technology systems. For example, Cheben's metamaterial nanophotonic fiber-chip coupler holds the world record in coupling efficiency, polarization performance, and bandwidth. The coupler has been adopted by major industry players, including IBM (USA), Global Foundries (USA), and CEA-Leti (France) for fibre-chip coupling in volume optoelectronic chip manufacturing. This coupling interface is critically important as every photonic chip needs to be optically connected with the external world.

- **Made pioneering contributions to telecom silicon-based multiplexer technology.** Cheben demonstrated the first polarization-insensitive silicon-based ultra-compact wavelength multiplexer. Silicon waveguide wavelength multiplexer technology was adopted by Intel in its high-speed photonic transceiver for data center interconnects, which also uses an optical mode transformer invented by Cheben. Intel has sold more than 5 million transceivers worth several billion US dollars.

- **Was first to bring silicon-based telecom multiplexer technology into a new application field: on-chip spectrometry.** Cheben demonstrated the first high-resolution spectrometer chip with a large number of spectral channels, and invented the on-chip Fourier-transform (FT) spectrometer. The concept has been hailed as revolutionary by NASA and praised by the Canadian Space Agency as "a technology that is changing our ideas of what is feasible for atmospheric science". Wearable on-chip silicon infrared spectrometers have been adopted by industry, e.g. smart health-monitoring watches developed by Rockley Photonics (UK) and Apple.

- **Training researchers and engineers.** Through his research, Cheben has mentored and trained in excess of 100 master and PhD students, postdocs, researchers, and technical staff in Canada and abroad. Holding adjunct and honourary appointments at four Canadian and two European universities, he was also appointed (as the only Canadian ever) to serve as Director of the Integrated Optics College at the United Nations' Abdus Salam International Centre for Theoretical Physics.

- **Received numerous national and international acclaims.** For pioneering research in several fields, Cheben is an elected Fellow of the Royal Society of Canada, the American Physical Society, Optica (formerly the Optical Society of America), the European Optical Society (the only Canadian and one of just four North American scientists elected to EOS Fellow), the Institute of Physics (London, UK), the Institute of Electrical and Electronics Engineers (IEEE), the Canadian Academy of Engineering, the Engineering Institute of Canada, and the International Society for Optics and Photonics (SPIE). The President of Slovakia invested him with the Order of

the Republic, Pribina's Cross of the 1st degree, and the Slovak Academy of Sciences awarded him the International Prize, the Academy's highest honour (only one awarded per year). He is also the recipient of the IEEE Photonics Society Engineering Achievement Award, the Government of Canada's Public Service Excellence Award, the NRC Research Excellence Award – the Council's highest recognition of research excellence (only one awarded per year), the NRC Industrial Achievement Award, and an honourary degree *Doctor honoris causa*. In 2023, he was elected International Fellow of the Royal Academy of Engineering (London, UK). Only 68 International Fellows were elected in the history of the Academy, and only 2 from Canada.

**Honours, awards and recognitions**


Left: Receiving the Order of Slovak Republic from Andrej Kiska, President of Slovakia; Right: Canada Public Service Excellence Award by the Clerk of the Privy Council and Secretary to the Cabinet, Mr. Ian Shugart.


Receiving the International Fellow of the Royal Academy of Engineering (UK) from her Royal Highness the Princess Royal.

2025 **SPIE Maria Goeppert Mayer Award in Photonics,** "For ground-breaking contributions in silicon photonics, opening and driving the field of subwavelength integrated photonics, and outstanding service to community."

2024 **IEEE Photonics Society Engineering Achievement Award.** "For pioneering contributions to silicon photonic waveguide devices, including the invention of metamaterial waveguides and advancing sub-wavelength integrated photonics technology."

2023 **International Fellow, Royal Academy of Engineering (London, UK).** Only 68 International Fellows elected in the history of the Academy, and 2 from Canada.

2023 **Fellow, Institute of Electrical and Electronics Engineers (IEEE).** "For contributions to silicon and metamaterial photonics."

2020 **Canada Public Service Excellence Award.** Canada's Federal Government's highest recognition of

excellence in public service. Bestowed by the Clerk of the Privy Council and Secretary to the Cabinet, Mr. Ian Shugart.

2020 **Fellow, International Society for Optics and Photonics (SPIE).** "For pioneering contributions to optical science and technology, and for opening and driving the field of subwavelength metamaterial integrated photonics."

2020 **Fellow, Royal Society of Canada.** "For groundbreaking contributions in silicon photonics fueling fundamental advances in multiple technologies, including optical communications, biomolecular sensing and on-chip spectrometry."

2020 **SPIE Community Champion.** Named by SPIE President John Greivenkamp, "For outstanding volunteerism in the Society."

2020 **Doctor honoris causa.** University of Zilina. https://youtu.be/UbiUjs4xpS0.

2019 **Fellow, American Physical Society (APS).** "For field opening contributions to subwavelength integrated photonics and the experimental and theoretical investigations of metamaterial nanostructures in optical waveguides." (One of 3 Canadians inducted in 2019 cohort).

2018 **Order of the Republic, Pribina's Cross of the 1st degree.** Bestowed by the President of the Slovak Republic.

2018 **Fellow, Engineering Institute of Canada (EIC).** "In recognition of excellence in engineering and for service to profession and society."

2018 **NRC Excellence in Research Award, National Research Council.** One award given per year.

2018 **Fellow, Canadian Academy of Engineering (CAE).** "For pioneering contributions to photonics and integrated optics science and technology."

2017 **Fellow, Institute of Physics (IOP), United Kingdom.**

2017 **NRC-ICT Outstanding Achievement Award.** National Research Council, "For extraordinary impact on and contribution to the international photonics community."

2015 **Fellow, Optical Society of America (OSA).** "For pioneering contributions to the science of photonic integrated circuits, including Fourier-transform interferometer arrays, nanophotonic couplers and subwavelength engineering in integrated optics."

2015 **Prize of Deputy Prime Minister and Minister of Foreign Affairs of the Slovak Republic.**

2014 **Fellow, European Optical Society (EOS).** "For pioneering contributions in subwavelength silicon photonics, waveguide photometers and holographic materials."

2014 **International Prize of the Slovak Academy of Sciences.** Council's highest international honour. One award given per year.

2007 **NRC-IMS General Award.** National Research Council.

2001 **Industrial Partnership Award, National Research Council.** One award given per year.

## Other professional recognitions

- Press release by the SPIE, Pavel Cheben: The 2025 SPIE Maria Goeppert Mayer Award in Photonics, https://spie.org/news/pavel-cheben-the-2025-spie-maria-goeppert-mayer-award-in-photonics
- Press release by NRC Canada, new way to steer light for Lidars and free-space communication, https://nrc.canada.ca/en/stories/new-way-steer-light-lidars-free-space-communication
- Press release by the IEEE Photonics Society, 2024 Engineering Achievement Award Recipient Dr. Pavel Cheben, https://ieeephotonics.org/announcements/2024-engineering-achievement-award-recipient-announced/
- Press release by the Royal Acadamy of Engineering, United Kingdom, https://raeng.org.uk/about-us/fellowship/new-fellows-2023/dr-pavel-cheben-freng.

- Press release by NRC Canada, NRC photonics researcher named International Fellow by the Royal Academy of Engineering, https://nrc.canada.ca/en/stories/nrc-photonics-researcher-named-international-fellow-royal-academy-engineering.
- Press release by University of Toronto, Dr. Pavel Cheben elected as a 2023 Intermnational Fellow of the Royal Academy of Engineering, https://www.ece.utoronto.ca/latest-news/ece-celebrates-announcements/
- Press release by NRC Canada, https://nrc.canada.ca/en/stories/nrc-invents-groundbreaking-technology-photonic-chip-based-satellite-communications.
- Invited review article, "Subwavelength integrated photonics," *Nature*, 560 (2018), pp. 565–572. This is the first Nature invited review article ever written by an NRC scientist.


nature.com > nature > review articles > article

nature
International journal of science

Review Article | Published: 29 August 2018

Subwavelength integrated photonics

Pavel Cheben, Robert Halir, Jens H. Schmid, Harry A. Atwater & David R. Smith

*Nature* **560**, 565–572 (2018) | Download Citation

- Press release by NRC Canada, Dr. Pavel Cheben inducted into the Royal Society of Canada, https://nrc.canada.ca/en/stories/drs-pavel-cheben-laura-ferrarese-inducted-royal-society-canada
- Press release by University of Ottawa, Dr. Pavel Cheben elected to the Royal Society of Canada, https://photonics.uottawa.ca/en/news/crpuo-members-pavel-cheben-and-ebrahim-karimi-have-been-elected-royal-society-canada
- Press release by NRC Canada, Dr. Pavel Cheben received Public Service Award of Excellence, https://nrc.canada.ca/en/stori, es/dr-pavel-cheben-received-public-service-award-excellence
- Press release by Carleton University, Dr. Pavel Cheben elected a Fellow of the Royal Society of Canada, https://www.doe.carleton.ca/dr-pavel-cheben-elected-fellow-royal-society-canada
- Press release by Carleton University, Dr. Pavel Cheben elected a Fellow of the American Physical Society, https://www.doe.carleton.ca/dr-pavel-cheben-elected-fellow-american-physical-society
- Nature Research, Device and Material Engineering, https://devicematerialscommunity.nature.com/amp/posts/36956-subwavelength-integrated-photonics-tailor-made-materials-for-every-photonic-device.
- Slovak scientists with the highest H index: https://sites.google.com/view/slovenskivedci
- Press release by Carleton University, Dr. Pavel Cheben receives Public Service Award of Excellence https://www.doe.carleton.ca/dr-pavel-cheben-receives-public-service-award-excellence
- Press release, President's office, Slovak Republic, https://www.prezident.sk/article/prezident-udelil-statne-vyznamenania-30-osobnostiam/. Dr. Pavel Cheben's of of the recipients of the Order of Slovak Republic.
- The Engineering Institute of Canada, https://eic-ici.ca/honours_award/cit18/2018%20Fellow%20Citation%20-%20Cheben.pdf
- Press release by Government of Canada, Treasury Board, https://www.canada.ca/en/treasury-board-secretariat/services/innovation/awards-recognition-special-events/public-service-award-excellence-2019.html. Dr. Pavel Cheben recipient of Canada Public Service Excellence Award (2019).
- Eset Science Award press release, https://www.eset.com/sk/o-nas/korporatne-informacie/novinky/spolocenska-zodpovednost/prvi-laureati-ocenenia-eset-science-award-su-znami/
- Invited review article, "Subwavelength grating metamaterial structures for silicon photonic devices," *IEEE Proceedings* (2018). This journal has historically documented and influenced major developments in engineering technologies.

- Press relase, Science in Outreach (Veda na Dosah), President bestowed order of the republic to P. Cheben (in Slovak) http://vedanadosah.cvtisr.sk/prezident-udelil-statne-vyznamenania-aj-vedcom-p-chebenovi-m-omastovej-m-valkovi-a-k-zavackej
- Press release by Carleton University, https://www.doe.carleton.ca/dr-pavel-cheben-was-awarded-order-slovak-republic.
- Press release by Carleton University, https://carleton.ca/doe/2022/phd-student-shahrzad-khajavi-wins-best-student-presentation/.
- Canadian Academy of Engineering, "Pavel Cheben, CAE Fellow, inducted into Order of the Slovak Republic." CAE News for the weeks of 7 and 14 January, https://www.cae-acg.ca/whats-new-at-the-academy/.
- "Achieving research excellence," Dr. Pavel Cheben, NRC Annual Report 2016-2017, p.5.
- Success story on Pavel Cheben, National Research Council Canada, NRC MyZone, Sep. 2016.
- Invited feature article, "Subwavelength Photonics," *OSA Optics and Photonics News*, pp. 34-41, May 2017.
- Invited feature article, SPIE Newsroom, "Nanostructured silicon delivers unprecedented optical devices," 10.1117/2.120172.006825, http://spie.org/newsroom/6825-nanostructured-silicon-delivers-unprecedented-optical-devices.
- Featured press release, *Pravda*, https://vat.pravda.sk/technologie/clanok/484590-subvlnova-integrovana-fotonika-technologia-buducnosti-ma-aj-slovensky-povod/.
- Featured press release, *Nature Science Update*, http://www.nature.com/nsu/010315/010315-7.html
- Featured article, *Nature*, 422 (2003), pp. 556-558.
- Featured press release, *New York Times*, http://www.nytimes.com/2001/07/12/technology/circuits/12NEXT.html
- Featured press release, *Physics Today*, http://www.physicstoday.org/pt/vol-54/iss-5/p9.html
- Featured press release, *Physics News Update*, http://www.aip.org/physnews/update/529-3.html
- Featured press release, *New Scientist*, http://www.newscientist.com/tech/holographic.jsp
- Press release by the Slovak Academy of Sciences, http://www.sav.sk/index.php?doc=services-news&source_no=20&news_no=5510
- Featured story on P. Cheben, published by CMC Microsystems, http://www.cmc.ca/AboutCMC/SuccessStories/ICT/SiPhotonics-LightCoupling.aspx
- Featured story on P. Cheben, published by Carleton University, https://carleton.ca/ci/2014/carleton-professor-honoured-2014-international-prize-slovak-academy-sciences/
- Spotlight on Optics, feature article on Cheben's work in subwavelength grating index engineering. http://www.opticsinfobase.org/spotlight/summary.cfm?uri=ol-35-15-2526, OSA Publishing group.
- Featured press release, *Chemical and Engineering News*, http://pubs.acs.org/cen/topstory/7912/7912 notw5.html
- Featured press release, *Optics.org*, http://www.optics.org/article/news/07/5/13
- Featured press release, *Laser Focus World*, May 2001, p. 95.
- Featured press release, *Materials Research Society Bulleting*, 26.4 (Apr. 2001), p. 277.
- Featured press release, *ChemPhysChem*, 3 (2002), p. 333.
- Featured press release, *STP-Gateway*, http://www.stp-gateway.de/news-e.html
- Featured press release, *Nederlandge Natuurkundige Vereniging*, http://www.phys.uu.nl/~nnv/news2000_2001/news_2001-07-11.html
- Featured press release, *Wirtschafts Woche e-Business*, 7 (Mar. 26, 2001), p. 114.
- Featured by Optical Society of America, "Photonics of the Year," *Optics and Photonics News*, (Dec. 2010).
- Invited feature article, SPIE Newsroom, http://spie.org/newsroom/4145-a-new-degree-of-freedom-for-silicon-integrated-optics
- Invited feature article, SPIE Newsroom, http://spie.org/newsroom/2524-tiny-spectrometer-enables-cost-effective-space-borne-sensing?ArticleID=x38279

**Scholarly and professional affiliations and activities**

| | |
|---|---|
| 2019-present | **Envoy,** ESET Science Award, https://www.esetscienceaward.sk/sk. Supported by the President of the Slovak Republic and Nobel laureates Sir Roger Penrose, Michel Mayor, Kip Thorne, Ada Yonath, and Erwin Neher. |
| 2012- present | **Honourary Professor,** Faculty of Telecommunications, University of Malaga, Spain. |
| 2019- present | **Adjunct Professor,** Faculty of Applied Science and Engineering, University of Toronto, Canada. |
| 2006- present | **Adjunct Professor,** Faculty of Electrical Engineering, Carleton University, Canada. |
| 2013- present | **Adjunct Professor,** Department of Engineering Physics, McMaster University, Canada. |
| 2017- present | **Adjunct Professor,** Faculty of Engineering, University of Ottawa, Canada. |
| 2014- present | **Guest Professor,** Faculty of Telecommunications, University of Zilina, Slovakia. |
| 2023- present | **Program Committee Member,** Opto-Electronics and Communications Conference (Melbourne, Australia). |
| 2024- present | **Program Committee Member,** Photonics Prague Conference (Prague, Czech Republic). |
| 2019-2023 | **Member,** IEEE Distinguished Lecturer Program Committee. |
| 2018-present | **Editor, Zhores Alferov named lectures series**, University of Havana (Havana, Cuba). |
| 2018-present | **Co-Chair,** Topical Meeting on Silicon Photonics and Guided Wave Optics, Europen Optical Society. |
| 2017-present | **Member of the European Technology Platform Photonics 21**. |
| 2017-present | **Chair,** Integrated Optics: Devices, Materials, and Technologies Conference, SPIE Photonics West (San Franciso, USA). |
| 2016-present | **Lead Chair,** Integrated Optics Conference, SPIE Optics and Optoelectronics Symposium (Prague, Czech Republic). |
| 2015-present | **Steering Committee member,** IEEE Group-IV Photonics Conference. |
| 2012-present | **Organizing Committee member,** Tecnolaser Conference (Havana, Cuba). |
| 2012-2024 | **Editorial board member,** Journal of Optical and Quantum Electronics, Springer Nature. |
| 2008-present | **Steering Committee member,** European Conference on Integrated Optics. Until 2015, the only SC member representing Canada and North America (since 2016 one of the two). |
| 2006-present | **Lead Chair,** Photonics Theory, Design and Simulation session, Photonics North (Canada). |
| 2017-2021 | **Jury member,** SPIE Dennis Gabor Award in Holography and Diffractive Optics. |
| 2022 | **International Scientific Committee member,** 14th International Conference ELEKTRO, May 23-26 (Krakow, Poland). |
| 2021 | **Invited Guest Editor,** Feature Issue on Next-generation Silicon Photonics, Photonics Research. |
| 2020-2021 | **Chair,** Photonic Devices session, IEEE Group IV Photonics Conference. |
| 2019 | **Principal Guest Editor,** Special Issue of IEEE JSTQE on Metamaterial Photonics and Integration. |
| 2018 | **Guest Associate Editor,** IET Optoelectronics Special Issue on Selected Papers from the 2018 European Conference on Integrated Optics. |
| 2016-2019 | **Organizing Committee member,** IEEE Group-IV Photonics Conference (Beijing ’16, Berlin ’17, Singapore ’18, and Malaga ’19). |
| 2017 | **Organizing Committee member,** CSSTC Conference (Waterloo, Canada). |
| 2017 | **Organizing Committee member,** Optical Sensing and Metrology of Lasers and Electro-Optics Europe (CLEO/Europe) and European Quantum Electronics Conference (EQEC) (Munich, Germany). |
| 2016 | **Lead Chair,** Subwavelength Photonics Incubator Meeting, OSA (Washington DC, USA). |
| 2016 | **Lead Chair,** Subwavelength Structures and Metamaterials for Integrated Photonics session, META Conference (Malaga, Spain). |
| 2016 | **Lead Chair,** Nanophotonics and Integration, PIERS Symposium (Shanghai, China). |

2015 **General Chair,** IEEE Group IV Photonics Conference (Vancouver, Canada).
2015 **Co-Chair,** Micro/Nano Photonics and Fabrication, International Conference on Optical Instrument and Technology (Beijing, China).
2014 **Co-Chair,** Novel Material and Structures, IEEE Group-IV Photonics Conference (Paris, France).
2014 **Guest Director,** Winter College in Integrated Optics, International Center for Theoretical Physics, UNESCO (Trieste, Italy).
2013 **Invited Guest Editor,** Special Issue on ECIO conference on Integrated Optics, IEEE Journal of Quantum Electronics.
2013 **Invited Guest co-Editor,** Special Issue in Silicon Photonics, IEEE Journal of Selected Topics in Quantum Electronics.
2013 **Conference Program Chair,** Photonics North (Ottawa, Canada).
2012 **Invited Guest Lead Editor,** Special Issue in Silicon Photonics and Nanophotonics, Journal of Optical and Quantum Electronics.
2011-2012 **Invited Visiting Researcher,** Centre national de la recherche scientifique (CNRS) and University Paris Sud (Paris, France).
2011 **Conference Program Chair,** International Conference on Information Photonics (Ottawa, Canada).
2010-2012 **Organizing Committee member,** the International Conference on Indium Phosphide and Related Materials (IPRM).
2008 **Invited Lead Editor,** Special Issue on Silicon Photonics, Advances in Optical Technology.

**Publications metrics: career totals**

| Book chapters | Proceedings and journals editorship | Invited presentations | Journal articles | Conferences total | Inventions and patents |
|---|---|---|---|---|---|
| **13** | **29** | **357** | **224** | **597** | **44** |

**Invited scholarly presentations at universities and research centers** (total 48)

[1] Recent advances in on-chip metamaterial and resonant structures, University of Toronto, Canada, April 3, 2024.
[2] Metamaterial engineered devices and their key role in integrated photonics, University of Zilina, Slovakia, April 18, 2023.
[3] Metamaterial silicon photonics, University of Toronto, Canada, Mar. 23, 2022.
[4] Subwavelength grating engineered devices for next generation silicon photonics, University of British Columbia, Vancouver, Canada, Nov. 11, 2021.
[5] Subwavelength optics for integrated photonics, Polytechnique Montreal, Canada, Mar. 12, 2021.
[6] Metamaterial integrated nanophotonics, University of Toronto, Canada, Mar. 24, 2021.
[7] Metamaterial inspired silicon photonics, Joint International Research Laboratory of Photonics, State Key Laboratory for Modern Optical Instrumentation, Zhejiang University, Zijingang, Hangzhou, China, Dec. 11, 2020.
[8] Subwavelength integrated photonics, Cuban Physical Society, Havana, Cuba, Nov. 1, 2018. Lecture delivered at the ceremony of the merit memership of the Cuban Physical Society.
[9] Metamaterial integrated photonics, Aston University, Birmingham, United Kingdom, Sep. 21, 2018.
[10] Advanced silicon photonics for communications and sensing, International School on Light Sciences and Technologies, Santander, Spain, Jun. 25-29, 2018.

[11] Photonics for the future, Institute of Aurel Stodola, Liptovsky Mikulas, Slovak Republic, Jul. 2017.
[12] Subwavelength silicon photonics, Silicon Photonics Fabrication Course, Laval University, Canada, May 27-Jun. 2, 2016.
[13] Photonics for the future, University of Havana, Cuba, Nov. 30, 2016.
[14] Photonics for the future: Exploiting subwavelength domain, Day of Photonics, Slovak Technical University, Bratislava, Slovak Republic, Oct. 21, 2016.
[15] Subwavelength nanophotonics, University of Zilina, Slovakia, Jan. 1015.
[16] Photonics for telecommunications, Technical University of Ostrava, Czech Republic, Jan. 2015.
[17] Silicon photonics, Technical University of Ostrava, Czech Republic, Jan. 2015.
[18] Subwavelength nanophotonics, Technical University of Ostrava, Czech Republic, Jan. 2015.
[19] Silicon photonics: From subwavelength engineering to applications in optical interconnects, spectroscopy and biological sensing, the Slovak Academy of Sciences, Bratislava, Slovak Republic, Jul. 2014.
[20] Glass, silicon and photonics, Bratislava, Slovak Republic, Sep. 2014. Lecture delivered at the award ceremony of the 2014 International Prize of the Slovak Academy of Sciences.
[21] Subwavelength silicon photonics, International Centre for Theoretical Physics, UNESCO, United Nations, Trieste, Italy, Feb.2014.
[22] Waveguide multiplexers and microspectrometers, International Centre for Theoretical Physics, UNESCO, United Nations, Trieste, Italy, Feb. 2014.
[23] Silicon photonics, University of Zilina, Slovak Republic, Jul. 2013.
[24] Subwavelength structures in integrated optics, University of Zilina, Slovak Republic, Jul. 2013.
[25] Evanescent field biological sensors, University of Zilina, Slovak Republic, Jul. 2013.
[26] Photonics for optical communications, University of Zilina, Slovak Republic, Jul. 2013.
[27] Subwavelength silicon photonics: From fundamentals to applications in optical interconnects, spectroscopy and biological sensing, Canadian Microelectronics Corporation, Kingston, Canada, 2012.
[28] Silicon subwavelength photonics: From fundamentals to applications in spectroscopy and sensing, Ghent University, Belgium, Jan. 11, 2012.
[29] Silicon subwavelength photonics: From fundamentals to applications in spectroscopy and sensing, University of Surrey, UK, Nov. 30, 2011.
[30] Silicon subwavelength photonics, CEA-LETI, Grenoble, France, Dec. 13, 2011.
[31] Silicon photonics: From subwavelength nanostructures to implementations in optical interconnects, spectroscopy and sensing, Institut national de la recherche scientifique, Montreal/Varennes, Canada, Apr. 30, 2010.
[32] Subwavelength silicon photonics, Campinas University, Sao Paolo, Brazil, Oct. 4-6, 2010.
[33] Silicon subwavelength photonics at the NRC Canada, Institut d'Electronique Fondamentale, Centre National de la Recherche Scientifique, Université Paris Sud, Paris, France, Nov. 1, 2010.
[34] Subwavelength nanostructures and biosensor arrays in high-index contrast waveguides, ETSI Telecomunicacion, Universidad de Malaga, Spain, Feb. 18, 2010.
[35] Silicon subwavelength photonics at the NRC Canada, University of Pavia, Italy, Nov. 2, 1010.
[36] Silicon subwavelength nanophotonics, Austrian Institute of Technology, Vienna, Austria, Jul. 6, 2010.
[37] Silicon photonics, Marburg University, Germany, Jun. 9, 2008.
[38] Photonic Technologies for WDM applications, University of Malaga, Spain, Sep. 4, 2008.
[39] Advances in silicon photonic waveguide devices at NRC Canada, University of Malaga, Spain, Sep. 13, 2007.
[40] Recent advances in silicon photonics research at the Institute for Microstructual Sciences, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China, Mar. 28, 2007.
[41] Photonics for information technologies: Materials, devices and applications, International Center for Theoretical Physics, UNESCO, United Nations, Trieste, Italy, Feb. 2006. Invited lectures at the Winter College of the Abdus Salam.

[42] High index contrast waveguide optics and microphotonics, Brockhouse Institute for Materials Research, Hamilton, Canada, Jan. 31, 2005.
[43] High index contrast waveguide optics and microphotonics, Department of Electronics, Carleton University, Ottawa, Canada, Mar. 10, 2005.
[44] High index contrast waveguide optics and microphotonics, Czech Academy of Sciences, Prague, Czech Republic, Jul. 1, 2005.
[45] High index contrast waveguide optics and microphotonics: Silicon and beyond, Institut de Ciències Fotòniques, Barcelona, Spain, Oct. 6, 2004.
[46] Silicon photonics, Complutense University of Madrid, Spain, May 27, 2004.
[47] Waveguide optics and integrated photonics, National Institute for Aerospace Technology, Ministry of Defence, Madrid, Spain, May 2004.
[48] Photorefractive hybrid organic-inorganic nanocomposites, Marshal Space Centre, NASA, Huntsville, USA, 1999.

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[220] **P. Cheben,** M. L. Calvo, T. Belenguer, and A. Núñez, "Substrate mode hologram for optical interconnects," *Opt. Commun.* 148 (1998), 18-22.
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**Refereed international conferences: plenary, keynote and invited** (total 309)

[1] **P. Cheben,** J.H. Schmid, J. Zhang, A. F. Hinestrosa, W. Fraser, R. Korček, J.M. Luque-González, M. Saad Bin-Alam, C.P. Armenta, A. Sánchez-Postigo, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R. Halir, P. Ginel-Moreno, D. Benedikovič, M. Dado, S. Khajavi, W. N. Ye, Z. Mokeddem, D. Melati, C. Alonso-Ramos, D. González-Andrade, L. Vivien, D. Sirmaci, I. Staude, D.-X. Xu, Y. Grinberg, S. Janz, S. Wang, M. Vachon, R. Cheriton, R. Fernández de Cabo, A.V. Velasco, C. Naraine, J. Bradley, and A. Knights, Recent progress in metamaterial integrated photonics, Smart Photonic and Optoelectronic Integrated Circuits conference Photonics West Symposium, San Francisco, 2025. Keynote.
[2] R. Fernández de Cabo, A. Sánchez-Sánchez, Y. Yang, D. Melati, C. Alonso-Ramos, **P. Cheben,** A. V. Velasco and D. González-Andrade, "Subwavelength metamaterials for high-performance power and modal control in silicon photonics," META, Málaga, Spain, 22 – 25 July, 2025. Invited.
[3] A. Sánchez-Postigo, M. Barona-Ruiz, P. Ginel-Moreno, J.H. Schmid, A. Ortega-Moñux, J. G. Wangüemert-Pérez, J. M. Luque-González, R. Halir, P. Cheben, I. Molina-Fernández, "High-performance surface grating couplers for fiber-chip and free-space coupling," 27th Photonics North Conference, 20–22 May, Ottawa, Canada, 2024. Invited.
[4] Z. Mokeddem, L. Vivien, E. Cassan, D. Marris-Morini, **P. Cheben,** J.H. Schmid, D.-X. Xu, Y. Grinberg, C. Alonso-Ramos, and D. Melati, Polarization beam splitters and rotators in the silicon nitride platform for the 950 nm and 1300 nm wavelengths, Photonics North, Ottawa, Canada, May 20 –22, 2024. Invited.
[5] R. Halir, M. Barona-Ruiz, A. Sanchez-Sanchez, L. Moreno-Pozas, J.M. Luque-Gonzalez, C.P. Armenta1, P. Ginel-Moreno, J. de-Oliva-Rubio, A. Sanchez-Postigo, A. Ortega-Monux, G. Wanguemert-Perez, **P. Cheben** and I. Molina-Fernandez, Subwavelength metamaterials: from on-chip devices to free-space beams, CLEO Europe, Munich, June 23-27, 2025. Invited.
[6] D. Benedikovic, W. Fraser, R. Korček, D. Medina, T. Dominguez-Bucio, F. Gardes, Q. Wilmart, S. Edmond, **P. Cheben,** J.H. Schmid, C. Alonso-Ramos, L. Vivien, and W.N. Ye, "Metamaterial-engineered fiber-chip couplers in silicon and silicon nitride waveguides," Silicon Photonics Conference, Photonics West Symposium, San Francisco, 2025. Invited.
[7] D. Benedikovic, W. Fraser, R. Korček, D. Medina, T. Dominguez-Bucio, F. Gardes, Q. Wilmart, S. Edmond, **P. Cheben,** J.H. Schmid, C. Alonso-Ramos, L. Vivien, and W.N. Ye, "Harnessing subwavelength metamaterials for low-loss grating couplers in silicon nitride waveguides," Integrated Optics: Design, Devices, Systems, and Applications VIII, SPIE Optics and Optoelectronisc 2025, Prague. Czech Republic. Invited.
[8] D.-X. Xu, Y. Grinberg, S. Janz, S. Dedyulin, J. Zhang, **P. Cheben,** J. Schmid, N. Israel, Q. Wang, L. Ramunno, D. Gostimirovic, A. Li, and O. Liboiron-Ladouceur, Advancing PIC development Using Machine Learning: from Design to Fabrication and Optical Characterization, OFC 2025, 30 March – 3 April 2025, San Francisco, USA. Invited.

[9] D. Melati, **P. Cheben,** et al., Optimization of photonic devices for integrated and free-space optical systems, Integrated Optics: Devices, Materials, and Technologies XXIV, Photonics West Symposium, San Francisco, 2025. Invited.

[10] J. Bradley, J. Schmid, **P. Cheben,** et al., Hybrid monolithic silicon photonic waveguides for on-chip light sources. Smart Photonic and Optoelectronic Integrated Circuits conference Photonics West Symposium, San Francisco, 2025. Invited.

[11] R. Fernandez de Cabo, A. Sanchez-Sanchez, Y. Yang, D. Melati, C. Alonso-Ramos, A.V. Velasco, **P. Cheben** and D. Gonzalez-Andrade, Subwavelength Metamaterials for Ultra-Broadband Power and Modal Management in Silicon Photonics, Integrated Optics: Design, Devices, Systems, and Applications VIII, SPIE Optics and Optoelectronisc 2025, Prague. Czech Republic. Invited.

[12] J. M. Luque-González, **P. Cheben,** et al., Inverse design of high-performance photonics devices using anisotropic SWG metamaterials, Integrated Optics: Devices, Materials, and Technologies XXIV, Photonics West Symposium, San Francisco, 2025. Invited.

[13] D. Medina-Quiroz, P. Nuño Ruano, J. Zhang, D. González-Andrade, P.J. Robin, H. E. B. Ferhart, T. T. D. Dinh, D. Medina-Quiroz, S. Edmond, J. R. Coudevylle, F. Mahut, S. Tanzilli, L. Labonté, P. Cheben, D. Marris-Morini, E. Cassan, L. Vivien, N. D. Lanzillotti-Kimura, and C. Alonso-Ramos, "Periodic nanostructures to harness Kerr and Brillouin nonlinearities in silicon," European Materials Research Society meeting, EMRS 2024, Warsaw, Poland, September 16-19, 2024. Invited.

[14] P. Petropoulos, V. Vitali, T. Domínguez Bucio, J. Manuel Luque González, A. Ortega -Moñux , G. Churchill, J. C. Gates, D. Melati, J. H. Schmid, I. Cristiani, **P. Cheben,** J. Gonzalo Wangüemert-Pérez, Í. Molina-Fernández, C. Lacava and F. Gardes, Broadband intermodal four-wave mixing in fully integrated Si-rich silicon nitride wavelength converter, Photonics West Symposium, San Francisco, 2025. Invited.

[15] R. Korček, W. Fraser, D. Medina Quiroz, Q. Wilmart, S. Edmond, T. Dominguez Bucio, F. Gardes, J. H. Schmid, P. Cheben, W. N. Ye, L. Vivien, C. Alonso Ramos, and D. Benedikovic, "Advances in low-loss fiber-chip couplers for silicon nitride integrated" IEEE International Conference on Nanotechnology 2024 (Nano 2024), Gijon, Spain, July 2024. Invited.

[16] R. Korček, W. Fraser, S. Salhic, X. Xin, Q. Wilmart, D. Medinac, S. Edmondc, T. Dominguez Bucio, F. Gardes, W. N. Ye, J. H. Schmid, P. Cheben, D. Melati, L. Vivien, C. Alonso-Ramos, and D. Benedikovic, Scalable surface gratings for efficient fiber-chip and free-space optical coupling, OPTICA Advanced Photonics Congress, Quebec, Canada, 28 July – 1 August, 2024. Invited.

[17] V. Vitali, T. Domínguez Bucio, H. Liu, K. R. H. Bottrill, J. M. Luque González, A. Ortega-Moñux, G. Churchill, J. C. Gates, J. Hillier, N. Kalfagiannis, D. Melati, J. H. Schmid, I. Cristiani, P. Cheben, J. G. Wangüemert-Pérez, Í. Molina-Fernández, F. Gardes, P. Petropoulos, and C. Lacava, "Broadband wavelength conversion in Si-rich silicon nitride waveguides based on intermodal four-wave mixing," European Optical Society Annual Meeting (EOSAM), Naples, Italy, September 9-13, 2024. Invited.

[18] P. Nuño Ruano, J. Zhang, D. González-Andrade, H. B. Ferhart, T. T. D. Dinh, D. Medina-Quiroz, S. Edmond, **P. Cheben,** D. Marris-Morini, E. Cassan, L. Vivien, N. D. Lanzillotti-Kimura and C. Alonso-Ramos, "Engineering silicon nanostructures for the optimization of nonlinear and optomechanical phenomena in integrated devices," 14th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), Toyama, Japan, July 16-19, 2024. Invited.

[19] Y. Grinberg, D.-X. Xu, M. Al-Digeil, D. Melati, R. F. H. Hunter, A. W. Walker, G. P. Forcade, J. J. Krich, K. Hinzer, M. M. Masnad, O. Liboiron-Ladoceur, **P. Cheben,** J. H. Schmid and S. Janz, "Dimensionality Reduction in Photonics Design – New Methods and Applications", 2024 Photonics North (PN), Vancouver, BC, Canada, May 28-30, 2024. Invited.

[20] M. S. Bin-Alam, Y. D. Sirmaci, J.H. Schmid, I. Staude, and **P. Cheben,** "Huygens' metawaveguide integrated photonics components," The 14th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Toyama, Japan, July 16-19, 2024. Invited.

[21] **P. Cheben,** J.H. Schmid, J. Zhang, M. Saad Bin-Alam, A. F. Hinestrosa, W. Fraser, R. Kor?ek, J.M. Luque-González, C.P. Armenta, A. Sánchez-Postigo, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R. Halir, P. Ginel-Moreno, D. Benedikovi?, M. Dado, S. Khajavi, W. N. Ye, Z. Mokeddem, D. Melati, C. Alonso-Ramos, D. González-Andrade, L. Vivien, D. Sirmaci, I. Staude, D.-X. Xu, Y. Grinberg, S. Janz, S. Wang, M. Vachon, R. Cheriton, R. Fernández de Cabo, A. V. Velasco, C. Naraine, J. Bradley, and A. Knights, "Recent

advances in metamaterial silicon photonic devices and Huygens' metawaveguides," International Conference on Transparent Optical Networks (ICTON), Bari, Italy, July 14-18, 2024. Invited.

[22] A. Ortega Moñux, A. Fernández Hinestrosa, C. Pérez Armenta, J. M. Luque González, A. Sánchez Postigo, D. Pereira Martín, J. G. Wangüemert-Pérez, R. Halir, A. Hadij-Elhouati, **P. Cheben,** J. H. Schmid, M. Milanizadeh, S. Wang, K.K. Mackay, W. N. Ye, Í. Molina-Fernández, "Silicon photonic Bragg grating structures for spectral filtering," Photonics West, OPTO 12889 (2024). Invited.

[23] **P. Cheben,** J.H. Schmid, P. Ginel-Moreno, S. Khajavi, R. Korček, W. Fraser, D. Sirmaci, A. F. Hinestrosa, J.M. Luque-González, D. Pereira-Martín, A. Sánchez-Postigo, A. Hadij-ElHouati, D. Benedikovič, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R. Halir, W. N. Ye, D. Melati, C. Alonso-Ramos, D. González-Andrade, L. Vivien, I. Staude, J. Zhang, M. Milanizadeh, D.-X. Xu, Y. Grinberg, R. Cheriton, S. Janz, S. Wang, M. Vachon, M. Dado, R. Fernández de Cabo, and A. V. Velasco. Metamaterial integrated photonics. In Proc. IEEE, Photonics North 2024, Vancouver, Canada, May 28-30, 2024. Keynote.

[24] J.H. Schmid, **P. Cheben,** J. Zhang, M. Milanizadeh, S. Bin-Alam, D.-Xia Xu, R. Cheriton, J. G. Wangüemert-Pérez, Í. Molina-Fernández, R. Halir, J.M. Luque Fernandez, A. F. Hinestrosa, A. O. Monux, W. Ye, Y.D. Sirmaci, I. Staude. Recent advances in integrated photonics with subwavelength and resonant metamaterials. Photonics West, OPTO 12889-44 (2024). Keynote.

[25] V. Vitali, T. Domínguez Bucio, J. Manuel Luque González, A. Ortega-Moñux, G. Churchill, J. C. Gates, J. Hillier, D. Melati, J. H. Schmid, **P. Cheben,** J. G. Wangüemert-Pérez, Í. Molina-Fernández, F. Gardes, I. Cristiani, P. Petropoulos, and C. Lacava, "Broadband wavelength conversion in integrated waveguides based on intermodal four-wave mixing, In Proc. IEEE, Photonics North 2024, Vancouver, Canada, May 28-30, 2024. Invited.

[26] J. Zhang, S. Khajavi. P. Cheben, J. Schmid, D. Melati, C. Ramos and W. Ye, "Advanced optical antenna and optical phased array designs," Photonics West (invited), OPTO 12889-44 (2024). Invited.

[27] P. Nuño Ruano, J. Zhang, D. González-Andrade, H. E. B. Ferhart, T. T. D. Dinh, D. Medina-Quiroz, **P. Cheben,** D. Marris-Morini, E. Cassan, L. Vivien, N. D. Lanzillotti-Kimura and C. Alonso-Ramos, Subwavelength photonic structures for nonlinear otical functionalities, Optical Fiber Conference, OFC, 24 – 28 March 2024, San Diego, USA. Invited.

[28] P. Nuño Ruano, J. Zhang, D. González-Andrade, H. E. B. Ferhart, T. T. D. Dinh, D. Medina-Quiroz, **P. Cheben,** D. Marris-Morini, E. Cassan, L. Vivien, N. D. Lanzillotti-Kimura and C. Alonso-Ramos, Optical and optomechanical nonlinear interactions in silicon nanostructures, International Conference on Transparent Optical Networks (ICTON), Bari, Italy, July 14-18, 2024. Invited.

[29] A. Sánchez-Postigo, P. Ginel-Moreno, A. Hadij-ElHouati, C. Graham-Scott, J.H. Schmid, J. G. Wangüemert-Pérez, A. Ortega-Moñux, **P. Cheben,** Í. Molina-Fernández, and C. Schuck, "Subwavelength-grating-metamaterial devices for quantum applications in silicon photonics platforms," In Proc. IEEE, Photonics North 2024, Vancouver, Canada, May 28-30, 2024. Invited.

[30] M. Saad Bin-Alam, Y. Denizhan Sirmaci, J. Zhang, J.H. Schmid, I. Staude, and P. Cheben, Resonant dielectric nanoantenna metawaveguides based on Huygen's principle. In Proc. IEEE, Photonics North 2024, Vancouver, Canada, May 28-30, 2024. Invited.

[31] P. Nuño Ruano, J. Zhang, D. González-Andrade, H. E. B. Ferhart, T. T. D. Dinh, D. Medina-Quiroz, S. Edmond, **P. Cheben,** D. Marris-Morini1, E. Cassan1, L. Vivien, N. D. Lanzillotti-Kimura and C. Alonso-Ramos, Silicon nanostructures for nonlinear and optomechanical applications. In Proc. IEEE, Photonics North 2024, Vancouver, Canada, May 28-30, 2024. Invited.

[32] D. Gonzalez-Andrade, D. Melati, J. Zhang, P. Nuno-Ruano, T. T. D. Dinh, X. Le Roux, D. Medina-Quiroz, D. Benedikovic, Z. Mokeddem, **P. Cheben,** J. Schmid, D. Bouville, N. D. Lanzillotti-Kimura, D. Marris-Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos, "Metamaterial engineered silicon photonic devices," In Proc.: Conference on Lasers and Electro-Optics (CLEO) 2023, San Jose, California, USA, May 2023. Invited.

[33] J. Schmid, **P. Cheben,** R. Halir, P. Ginel-Moreno, S. Khajavi, R. Korček, W. Fraser, D. Sirmaci, A. F. Hinestrosa, J.M. Luque-González, D. Benedikovič, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, W. N. Ye, D. Melati, C. Alonso-Ramos, I. Staude, J. Zhang, D.-X. Xu, S. Janz, Integrated silicon nanophotonics with subwavelength and resonant metamaterials. European Optical Society Annual Meeting (EOSAM), Sep. 11-15, 2023, Dijon, France. Invited.

[34] D.-X. Xu, J. H. Zhang, D. Melati, M. Al-Digeil, Y. Zheng, S. Janz, J. H. Schmid, **P. Cheben,** Y. Grinberg, "Using machine learning pattern recognition to enhance silicon photonic design and fabrication," Integrated Photonics Research conference, 2023. Invited.

[35] R. Cheriton, E. Tonita, V. Artyshchuk, A. Densmore, D.-X Xu, J.H. Schmid, **P. Cheben,** K. Hinzer, S. Janz, Astrophotonic correlation spectroscopy using microring resonators, In Proc. IEEE, Photonics North 2023, Montreal, Canada, June 12-15, 2023. Invited.

[36] **P. Cheben,** J.H. Schmid, P. Ginel-Moreno, S. Khajavi, R. Korček, W. Fraser, D. Sirmaci, A. F. Hinestrosa, J.M. Luque-González, D. Pereira-Martín, A. Sánchez-Postigo, A. Hadij-ElHouati, D. Benedikovič, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R. Halir, W. N. Ye, D. Melati, C. Alonso-Ramos, D. González-Andrade, L. Vivien, I. Staude, J. Zhang, M. Milanizadeh, D.-X. Xu, Y. Grinberg, R. Cheriton, S. Janz, S. Wang, M. Vachon, M. Dado, R. Fernández de Cabo, and A. V. Velasco, "Subwavelength-engineered metamaterial devices for integrated photonics," International Conference on Transparent Optical Networks (ICTON), Bucharest, July 2-6, 2023. Invited.

[37] **P. Cheben,** J.H. Schmid, P. Ginel-Moreno, S. Khajavi, R. Korček, W. Fraser, D. Sirmaci, A. F. Hinestrosa, J.M. Luque-González, D. Pereira-Martín, A. Sánchez-Postigo, A. Hadij-ElHouati, D. Benedikovič, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R. Halir, W. N. Ye, D. Melati, C. Alonso-Ramos, D. González-Andrade, L. Vivien, I. Staude, J. Zhang, M. Milanizadeh, D.-X. Xu, Y. Grinberg, R. Cheriton, S. Janz, S. Wang, M. Vachon, M. Dado, R. Fernández de Cabo, and A. V. Velasco, High performance silicon photonic devices with subwavelength metamaterials, META 2023 Conference, Paris, July 18 – 21, 2023. Invited.

[38] J. G. Wangüemert Pérez, C. Pérez-Armenta, P. Ginel-Moreno, J. M. Luque-González, A. Hadij-ElHouati, A. Sánchez-Postigo, J. de-Oliva-Rubio, A. Ortega-Moñux, R. Halir, J. H. Schmid, **P. Cheben** and Í. Molina-Fernández, "Recent progress in subwavelength grating metamaterial engineered silicon photonic devices," SPIE Optics & Optoelectronics Conference, Prague, 2023. Invited.

[39] D. Melati, Z. Mokeddem, P. Nuño-Ruano, E. Cassan, D. Marris-Morini, L. Vivien, C. Alonso-Ramos, Y. Grinberg, M. Al-Digeil, D.-X. Xu, J. Zhang, J. H. Schmid, **P. Cheben,** S. Khajavi, W. N. Ye, A. Waqas, and P. Manfredi, 'Subwavelength metamaterial devices with optimization and machine learning', presented at the Smart Photonic and Optoelectronic Integrated Circuits 2023, San Francisco, California, USA, Jan. 2023. Invited.

[40] D.-X. Xu, J. H. Zhang, D. Melati, S. Janz, J. H. Schmid, **P. Cheben,** Y. Grinberg, "Extending the dimension and index ranges of metamaterials in silicon photonics," In Proc. IEEE, Photonics North 2023, Montreal, Canada, June 12-15, 2023. Invited.

[41] J. Manuel Luque-González, **P. Cheben,** R. Halir, P. Ginel-Moreno, A. Sánchez-Postigo, A. Hadij-ElHouati, J. G. Wangüemert-Pérez, J. H. Schmid, Í. Molina-Fernández and A. Ortega-Moñux "Anisotropy-engineered metamaterials for polarization and mode management in silicon photonics", International Workshop on Optical Wave & Waveguide Theory and Numerical Modelling (OWTNM) Marseille, France, 4-5 May 2023. Invited.

[42] J. Manuel Luque-González, **P. Cheben,** R. Halir, P. Ginel-Moreno, A. Sánchez-Postigo, A. Hadij-ElHouati, J. G. Wangüemert-Pérez, J. H. Schmid, Í. Molina-Fernández and A. Ortega-Moñux, "Polarization management in silicon photonics by SWG metamaterial engineering," In Proc. IEEE, Photonics North 2023, Montreal, Canada, June 12-15, 2023. Invited.

[43] D. Benedikovic, R. Korcek, W. Fraser, C. Alonso-Ramos, L. Vivien, X. Xin, Y. Karimi Yonjali, **P. Cheben,** J. H. Schmid, M. Milanizadeh, T. Smy, A. Atieh, and W. N. Ye, "Off-chip surface grating couplers and nano-antennas for optical communications and phased arrays," In Proc.: IEEE Photonics North 2023, Montreal, Canada, June 12-15, 2023. Invited.

[44] J. Bradley, H. Mbonde, B. Segat Frare, N. Singh, M. Sinobad, T. Wildi, C. Naraine, P. Torab Ahmadi, B. Hashemi, M. A. Méndez-Rosales, H. Frankis, D. Bonneville, K. Miarabbas Kiani, R. Wang, J. Westwood-Bachman, C. Horvath, M. Aktary, R. Mateman, A. Leinse, J. Schmid, **P. Cheben,** P. Mascher, A. Knights, T. Herr, F. Kärtner, "Active, Passive and Nonlinear Integrated Photonics in Tellurite-Coated Silicon Nitride," in Conference on Lasers and Electro-Optics, San Jose, CA, USA, Technical Digest Series (Optica Publishing Group, 2023), paper JM2O.3. Invited.

[45] Y. D. Sırmacı, T. Pertsch, J. H. Schmid, **P. Cheben,** and I. Staude, "All dielectric Mie-resonant waveguides and nanophotonic structures," SPIE Optics & Optoelectronics Conference, Prague, 2023. Invited.

[46] J. Zhang, P. Nuno-Ruano, T. T. D. Dinh, D. Gonzalez-Andrade, X. Le Roux, M. Montesinos, C. Lafforgue, D. Medina-Quiroz, D. Benedikovic, **P. Cheben,** D. Marris-Morini, E. Cassan, L. Vivien, N. D. Lanzillotti-Kimura, and C. Alonso-Ramos, "Subwavelength engineering of silicon photonics for nonlinear and optomechanical applications," In Proc.: IEEE Photonics North 2023, Montreal, Quebec, Canada, June 2023. Invited.

[47] J. Zhang, P. Nuño Ruano, T. T. D. Dinh, D. González-Andrade, X. Le Roux, M. Montesinos-Ballester, C. Lafforgue, D. Medina-Quiroz, D. Benedikovic, **P. Cheben,** D. Bouville, N. D. Lanzillotti-Kimura, D. Marris-

Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos, "Subwavelength control of light and sound in silicon," In Proc.: SPIE Optics and Optoelectronics 2023, Prague, Czech Republic, April 2023. Invited.

[48] D. Benedikovic, W. Fraser, R. Korcek, X. Xin, Y. Karimi Yonjali, C. Alonso-Ramos, L. Vivien, **P. Cheben,** M. Milanizadeh, J. H. Schmid, T. Smy, A. Atieh and W. N. Ye "Silicon-based surface gratings for efficient fiber-chip and free-space beam coupling," In Proc.: SPIE Optics and Optoelectronics 2023, Prague, Czech Republic, April 2023. Invited.

[49] D. González-Andrade, R. Fernández-de-Cabo, J. Vilas, T. T. Dinh, J. M. Luque-González, D. Oser, G. Aubin, F. Amar, D. Pérez-Galacho, I. Olivares, A. Dias, R. Halir, A. Ortega-Moñux,J. G. Wangüemert Pérez, Í. Molina-Fernández, E. Cassan, D. Marris-Morini, **P. Cheben,** L. Vivien, A. Velasco and C. Alonso-Ramos, "Silicon photonic mode multiplexers based on subwavelength metamaterials and on-chip beamforming," SPIE Photonics West, San Francisco, USA, 28 Jan-02 Feb 2023. Invited.

[50] J. G. Wangüemert Pérez, C. Pérez-Armenta, P. Ginel-Moreno, J. M. Luque-González, A. Hadij-ElHouati, A. Sánchez-Postigo, J. de-Oliva-Rubio, A. Ortega-Moñux, R. Halir, J. H. Schmid, **P. Cheben** and Í. Molina-Fernández, "Bricked and evanescently-coupled topologies: expanding the portfolio of subwavelength metamaterial silicon photonic devices," SPIE Photonics West, San Francisco, USA, 28 Jan-02 Feb 2023. Invited.

[51] J. M. Luque-González, R. Halir, A. Sánchez-Postigo, J. G. Wangüemert Pérez, **P. Cheben,** J. H. Schmid, A. V. Velasco, Í. Molina-Fernández and A. Ortega-Moñux, "Controlling light with advanced subwavelength grating metamaterial topologies," SPIE Photonics West, San Francisco, USA, 28 Jan-02 Feb 2023. Invited.

[52] W. N. Ye, D. Benedikovic, Q. Liu, S. Khajavi, D. Melati, A. Sanchez-Postigo, J. H. Schmid, D.X. Xu, X. Xin, Y. Karimi, Yonjali, **P. Cheben,** T. Smy, and A. Atieh "Integrated silicon photonic phased arrays with large beam steering and high resolution," In Proc.: SPIE Photonics West 2023, San Francisco, California, USA, January-February 2023. Invited.

[53] T. T. D. Dinh, J. Zhang, P. Nuno-Ruano, D. Gonzalez-Andrade, X. Le Roux, M. Montesinos-Ballester, C. Lafforgue, D. Medina-Quiroz, D. Benedikovic, **P. Cheben,** D. Bouville, N. D. Lanzillotti-Kimura, D. Marris-Morini, E. CAssan, L. Vivien, and C. Alonso-Ramos "Subwavelength silicon nanostructuration for nonlinear and optomechanic applications," In Proc.: SPIE Photonics West 2023, San Francisco, California, USA, January-February 2023. Invited.

[54] D. González-Andrade, R. Fernández de Cabo, J. Vilas, R. Halir, A. Ortega-Moñux, J. Gonzalo Wangüemert-Pérez, Í. Molina-Fernández, **P. Cheben**, Laurent Vivien, Aitor V. Velasco, and C. Alonso-Ramos, "On-chip optical beamforming and subwavelength metamaterials for broadband mode-division multiplexing", Photonics North, 12-15/6/2023, Canada. Invited.

[55] A. V. Velasco, D. González-Andrade, Raquel Fernández de Cabo, Jaime Vilas, Irene Olivares, Antonio Dias, José Manuel Luque-González, J. Gonzalo Wangüemert-Pérez, Alejandro Ortega-Moñux, Íñigo Molina-Fernández, Robert Halir, **P. Cheben**, "Advanced metamaterial devices for broadband mode conversion and multiplexing". Optica Advanced Photonics Congress, 9/7/2023, South Korea. Invited.

[56] Y. Grinberg, M. A. Digeil, D. Melati, J. Schmid, **P. Cheben,** S. Janz, and D. Xu, "Nonlinear dimensionality reduction in photonic components design," IEEE Photonics Conference IPC, Nov. 13-17, 2022, Vancouver, Canada. Invited.

[57] **P. Cheben,** J. H. Schmid, P. Ginel-Moreno, A. Hadij-ElHouati, S. Khajavi, J. M. Luque-González, A. Sánchez-Postigo, A. F. Hinestrosa, D. Pereira-Martín, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R. Halir, W. N. Ye, D. González-Andrade, D. Melati, T. T. D. Dinh, C. Alonso-Ramos, L. Vivien, R. Fernández de Cabo, A. V. Velasco, Y. Grinberg, S. Janz, D.-X. Xu, R. Cheriton, J. Zhang, M. Milanizadeh, S. Wang, M. Vachon, D. Benedikovic, M. Dado, Y. D. Sirmaci, and I. Staude, "Metamaterial-inspired integrated photonics," IEEE Photonics Conference IPC, Nov. 13-17, 2022, Vancouver, Canada. Keynote.

[58] **P. Cheben,** J. H. Schmid, P. Ginel-Moreno, A. Hadij-ElHouati, S. Khajavi, J. M. Luque-González, A. Sánchez-Postigo, A. F. Hinestrosa, D. Pereira-Martín, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R. Halir, W. N. Ye, D. González-Andrade, D. Melati, T. T. D. Dinh, C. Alonso-Ramos, L. Vivien, R. Fernández de Cabo, A. V. Velasco, Y. Grinberg, S. Janz, D.-X. Xu, R. Cheriton, J. Zhang, M. Milanizadeh, S. Wang, M. Vachon, D. Benedikovic, and M. Dado, "Metamaterial integrated photonics," Asia Communications and Photonics Conference (ACP) & International Conference on Information Photonics and Optical Communications (IPOC), Nov. 5-8, 2022, Shenzhen, China. Invited.

[59] **P. Cheben,** J. H. Schmid, P. Ginel-Moreno, A. Hadij-ElHouati, S. Khajavi, J. M. Luque-González, A. Sánchez-Postigo, A. F. Hinestrosa, D. Pereira-Martín, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, R.

Halir, W. N. Ye, D. González-Andrade, D. Melati, T. T. D. Dinh, C. Alonso-Ramos, L. Vivien, R. Fernández de Cabo, A. V. Velasco, Y. Grinberg, S. Janz, D.-X. Xu, R. Cheriton, J. Zhang, M. Milanizadeh, S. Wang, M. Vachon, D. Benedikovic, and M. Dado, "Metamaterial engineered waveguide devices and their key role in silicon photonics," International Symposium on Silicon Based Optoelectronics (ISSBO), Jul. 14-16, 2022, Hangzhou, China. Plenary.

[60] R. Cheriton, E. Tonita, V. Artyshchuk, A. Densmore, S. Sivanandam, E. de Mooij, **P. Cheben,** D.-X. Xu, J. H. Schmid, K. Hinzer, and S. Janz, "Integrated astrophotonics: from exoplanet science to real applications," IEEE International Instrumentation and Measurement Technology Conference, May 16-19, 2022, Ottawa, Canada. Invited.

[61] R. Halir, J. Leuermann, A. Fernández-Gavela, C. J. Stirling, J Manuel Luque-González, P. Ginel-Moreno, A. Torres-Cubillo, A. Sánchez-Ramirez, D. Pereira-Martín1, A. Sánchez-Postigo, C. Pérez-Armenta, A. Hadij-ElHouati, J. de-Oliva-Rubio, J. H. Schmid, A. Ortega-Moñux, M. Nedeljkovic, J. Gonzalo Wangüemert Pérez, P. Cheben, and Í. Molina-Fernández, "Silicon photonics: advanced metamaterials and sensors," Photonics North, May 24-26, 2022, Niagara Falls, Canada. Keynote.

[62] J. M. Luque-González, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. M Fernandez, **P. Cheben,** and J. Schmid, "Advanced subwavelength grating metamaterial topologies for light propagation tailoring," Photonics North, May 24-26, 2022, Niagara Falls, Canada. Invited.

[63] S. Janz, D. Melati, D.-X. Xu, Y. Grinberg, M. Vachon, **P. Cheben**, J. Schmid, and M. Kamandar Dezfouli, "Si-photonic waveguide grating coupler arrays for wavefront monitoring," Photonics North, May 24-26, 2022, Niagara Falls, Canada. Invited.

[64] Y. Grinberg, M. Al-Digeil, D. Melati, M. K. Dezfouli, J. H. Schmid, **P. Cheben,** S. Janz, and D.-X. Xu, "Nonlinear dimensionality reduction for low data regime in nanophotonics design," Photonics North 2022, May 24-26, 2022, Niagara Falls, Canada. Invited.

[65] A. V. Velasco, D. González-Andrade, R. Fernández de Cabo, J. Vilas, I. Olivares, A. Dias, J. M. Luque-González, A. Ortega-Moñux, Í. Molina-Fernández, R. Halir, and **P. Cheben**, "Subwavelength-structured metamaterials for broadband mode conversion and multiplexing," Photonics North, May 24-26, 2022, Niagara Falls, Canada. Invited.

[66] D. Melati, M. K. Dezfouli, Y. Grinberg, M. Al-Digeil, D.-X. Xu, J. Schmid, **P. Cheben,** A. Waqas, P. Manfredi, S. Khajavi, W. N. Ye, P. Nuño-Ruano, J. Zhang, Z. Mokeddem, E. Cassan, D. Marris-Morini, L. Vivien, and C. Alonso-Ramos, "Multi-objective optimization for photonic systems with advanced functionalities and improved performance," Photonics North, May 24-26, 2022, Niagara Falls, Canada. Invited.

[67] T. T. D. Dinh, J. Zhang, P. Nuño Ruano, D. González-Andrade, D. Oser, X. Le Roux, M. Montesinos, C. Lafforgue, D. Medina-Quiroz, D. Pérez-Galacho, D. Benedikovic, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos, "Subwavelength engineering of silicon photonics for nonlinear applications," Photonics North, May 24-26, 2022, Niagara Falls, Canada. Invited.

[68] W. N. Ye, K. MacKay, S. Wang, and **P. Cheben,** "Broadband multimode waveguide bend in the SOI platform," Photonics North, May 24-26, 2022, Niagara Falls, Canada. Invited.

[69] D. Melati, M. K. Dezfouli, Y. Grinberg, M. Al-Digeil, D.-X. Xu, J. Schmid, **P. Cheben,** A. Waqas, P. Manfredi, S. Khajavi, W. N. Ye, P. Nuño-Ruano, J. Zhang, E. Cassan, D. Marris-Morini, L. Vivien, and C. Alonso-Ramos, "Dimensionality reduction and optimization for the inverse design of photonic integrated devices," Smart Photonic and Optoelectronic Integrated Circuits, vol. PC12005 (Mar. 2022), p. PC120050D, doi: 10.1117/12.2617543. Invited.

[70] M. K. Dezfouli, D. Melati, Y. Grinberg, M. Al-Digeil, R. Cheriton, **P. Cheben,** J. Schmid, S. Janz, and D.-X. Xu, "Iterative and efficient Bloch mode calculations for integrated photonics applications," Integrated Optics: Devices, Materials, and Technologies XXVI, vol. PC12004 (Mar. 2022), p. PC120040F, doi: 10.1117/12.2610477. Invited.

[71] A. Sánchez-Postigo, P. Ginel-Moreno, D. Pereira-Martín, A. Hadij-ElHouati, J. M. Luque-González, J. G. Wangüemert-Pérez, A. Ortega-Moñux, R. Halir, J. H. Schmid, J. S. Penadés, M. Nedeljkovic, W. N. Ye, G. Z. Mashanovich, **P. Cheben,** and Í. Molina-Fernández, "Subwavelength-engineered metamaterial devices for integrated photonics," Photonics West, Jan. 25-27, 2022, San Francisco, USA. Invited.

[72] Y. Grinberg, M. Dezfouli, D. Melati, M. Al-Digeil, J. H. Schmid, **P. Cheben,** S. Janz, and D.-X. Xu, "Dimensionality reduction in designing advanced silicon photonic components," SPIE/COS Photonics Asia, Dec. 10, 2021. Invited.

[73] D. Farnesi, G. Frigenti, S. Pelli, S. Soria, S. B7erneschi, F. Baldini, G. Testa, G. Persichetti, R. Berninib, **P. Cheben,** L. Vivien, X. Le Roux, C. Alonso-Ramos, G. Nunzi Contia, "Combining micro-optics and integrated optics: a case study on bulk resonators," Photonics West, Jan. 25-27, 2022, San Francisco, USA. Invited.

[74] D. Melati, M. K. Dezfouli, Y. Grinberg, M. Al-Digeil, D.-X. Xu, J. H. Schmid, **P. Cheben,** A. Waqas, P. Manfredi, J. Zhang, L. Vivien, and C. Alonso-Ramos, "High-performance photonic integrated devices with machine learning and optimization," European Optical Society Annual Meeting (EOSAM), Sep. 13-17, 2021, Rome, Italy. Invited.

[75] A. Sánchez-Postigo, P. Ginel-Moreno, A. Ortega-Moñux, J. G. Wangüemert-Pérez, R. Halir, D. Pereira-Martín, A. Hadij-ElHouati, J. H. Schmid, S. Wang, M. Vachon, D.-X. Xu, W. N. Ye, J. S. Penadés, M. Nedeljkovic, G. Mashanovich, **P. Cheben,** and Í. Molina-Fernández, "Building high-performance integrated optical devices using subwavelength grating metamaterials," European Optical Society Annual Meeting (EOSAM), Sep. 13-17, 2021, Rome, Italy. Invited.

[76] D. Melati, M. Kamandar Dezfouli, Y. Grinberg, M. Al-Digeil, D.-X. Xu, J. H. Schmid, **P. Cheben,** A. Waqas, P. Manfredi, J. Zhang, L. Vivien, and C. Alonso-Ramos, "High-performance photonic integrated devices with machine learning and optimization," European Optical Society Annual Meeting (EOSAM), Sep. 13-17, 2021, Rome, Italy. Invited.

[77] D. Melati, M. K. Dezfouli, Y. Grinberg, M. Al-Digeil, D.-X. Xu, J. H. Schmid, **P. Cheben,** A. Waqas, P. Manfredi, J. Zhang, L. Vivien, and C. Alonso-Ramos, "Dimensionality reduction for the on-chip integration of advanced photonic devices and functionalities," ECOC, Sep. 2021, Bordeaux, France. Invited.

[78] **P. Cheben,** J. Schmid, R. Halir, A. Sanchez-Postigo, A. Hadij Elhouati, P. Ginel-Moreno, I. Molina-Fernandez, C. A. Ramos, D. Melati, D. Pereira-Martín, J. M. Luque Gonzales, A. Ortega-Moñux, G. Wangüemert-Pérez, D. G. Andrade, R. Fernández de Cabo, A. V. Velasco, L. Vivien, J. Ctyroky, D. Benedikovic, M. Dado, S. Khajavi, W. N. Ye, M. Kamandar Dezfouli, D.-X. Xu, R. Cheriton, S. Janz, S. Wang, and M. Vachon, "Subwavelength engineered devices for the next generation silicon photonics," Integrated Photonics Research conference, OSA Advanced Photonics Congress, Jul. 26-29, 2021, Montreal, Canada. Invited.

[79] T. T. D. Dinh, J. Zhang, D. Oser, X. Le Roux, M. Montesinos-Ballester, C. Lafforgue, D. Pérez-Galacho, D. Benedikovic, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, C. Alonso-Ramos, "Subwavelength engineering of silicon photonics for applications in nonlinear light generation," IEEE Summer Topicals Meeting Series Virtual Conference, Jul. 2021, Online. Invited.

[80] H. Podmore, M. A. R. Fatin, A. Chauhan, B. Poulson, M. Zylstra, A. Elsharabasy, N. Zonta, G. Iu, A. Branicki, A. Scott, **P. Cheben,** A. Helmy, W. N. Ye, J. Sabarinathan, and R. Lee, "Design and analysis of on-chip optical phase array systems for satellite communications," Photonics North, May 31-Jun. 2, 2021, Online. Invited.

[81] A. Sánchez-Postigo, J. G. Wangüemert-Pérez, A. Ortega-Moñux, R. Halir, D. Pereira-Martín, P. Ginel-Moreno, A. Hadij-ElHouati, J. H. Schmid, S. Wang, M. Vachon, D.-X. Xu, J. S. Penadés, M. Nedeljkovic, G. Mashanovich, T. Hao, W. N. Ye, **P. Cheben**, and Í. Molina-Fernández, "High-performance off-chip couplers in silicon photonics," Photonics North, May 31-Jun. 2, 2021, Online. Invited.

[82] A. Ortega-Moñux, D. Pereira-Martín, P. Ginel-Moreno, A. Sánchez-Postigo, J. M. Luque-González, J. G. Wangüemert-Pérez, R. Halir, A. Hadij-ElHouati, J. de-Oliva-Rubio, J. Ctyroký, **P. Cheben,** J. H. Schmid, S. Wang, S. Janz, M. Vachon, D.-X. Xu, W. N. Ye, and Í. Molina-Fernández, "Millimeter-long metamaterial surface-emitting antenna in silicon photonics platform," Photonics North, May 31-Jun. 2, 2021, Online. Invited.

[83] R. Halir, A. Sánchez-Postigo, J. M. Luque-González, A. Hadij-ElHouati, D. Pereira-Martín, J. Leuermann, P. Ginel-Moreno, C. Pérez-Armenta, A. Torres-Cubillo, A. Herrero-Bermello, A. Dias-Ponte, D. González-Andrade, A. V. Velasco, J. G. Wangüemert-Pérez, A. Ortega-Moñux, J. de-Oliva-Rubio, **P. Cheben,** J. H. Schmid, J. Ctyroký, M. Nedeljkovic, G. Z. Mashanovich, Í. Molina-Fernández, "Subwavelength grating metamaterial structures for integrated photonics," Optical Fiber Conference (OFC), Jun. 6-10, 2021, San Francisco, USA. Invited.

[84] J. M. Luque-González, A. Ortega-Moñux, R. Halir, J. H. Schmid, **P. Cheben,** Í. Molina-Fernández, and J. G. Wangüemert-Pérez, "Bricked subwavelength structures: a flexible metamaterial topology," Photonics North, May 31-Jun. 2, 2021, Online. Invited.

[85] D.-X. Xu, M. Kamandar Dezfouli, M. Al-Digeil, J. H. Schmid, **P. Cheben,** S. Janz, R. Cheriton, Y. Grinberg, D. Melati, G. Zhang, M. M. Masnad, and O. Liboiron-Ladouceur, "Machine learning and inverse design for high performance nanophotonics: some perspectives," CLEO, May 2021, Online. Invited.

[86] R. Halir, J. M. Luque-González, A. Sánchez-Postigo, C. Pérez-Armenta, P. Ginel-Moreno, A. Hadij-ElHouati, D. Pereira-Martin, A. Torres-Cubillo, J. Leuermann, J. de Oliva-Rubio, J. G. Wangüemert-Pérez, A. Ortega-Moñux, Í. Molina-Fernández, J. Schmid, **P. Cheben,** J. Ctyroky, A. V. Velasco, A. Herrero-Bermello, D. González-Andrade, A. Dias-Ponte, M. Nedeljkovic, and G. Mashanovich, "Subwavelength metamaterials: the path towards next-generation silicon photonic devices," Integrated Optics Conference of the SPIE Optics and Optoelectronics Symposium, Apr. 19-22, 2021, Prague, Czech Republic. Keynote.

[87] D. Melati, M. Kamandar Dezfouli, Y. Grinberg, M. Digeil, S. Janz, R. Cheriton, J. H. Schmid, **P. Cheben,** and D.-X. Xu, "Machine learning dimensionality reduction for multi-objective design of photonic devices," SPIE Photonics West, Mar. 6-11, 2021, San Francisco, USA. doi: 10.1117/12.2586717. Invited.

[88] A. Sánchez-Postigo, J. G. Wangüemert-Pérez, A. Ortega-Moñux, D. Pereira-Martín, J. M. Luque-González, R. Halir, J. H. Schmid, S. Wang, M. Vachon, J. Soler Penadés, M. Nedeljkovic, G. Z. Mashanovich, **P. Cheben,** and I. Molina-Fernández, "Subwavelength-grating integrated devices for the near- and mid-infrared bands," SPIE Photonics West, Mar. 6-11, 2021, San Francisco, USA. Invited.

[89] I. Molina-Fernández, A. Hadij-ElHouati, J. M. Luque-González, D. Pereira-Martín, A. Sánchez-Postigo, J. G. Wangüemert-Pérez, A. Ortega-Moñux, R. Halir, J. de Oliva Rubio, J. H. Schmid, **P. Cheben**, and J. Ctyroký, "Subwavelength grating silicon photonic devices," SPIE Photonics West, Mar. 6-11, 2021, San Francisco, USA. Invited.

[90] F. Y. Gardes, T. D. Bucio, L. Mastronardi, G. D. Paoli, S. L. Jantzen, I. Skandalos, M. M. Milosevic, V. Vitali, J. Faneca, P. Petropoulos, F. J. Romero, J. M. Luque-González, I. Molina-Fernández, R. Halir, A. Ortega-Moñux, J. G. Wangüemert-Pérez, D. Melati, J. H. Schmid, and **P. Cheben,** "Tunable index silicon nitride for CMOS photonics applications," Integrated Optics: Devices, Materials, and Technologies XXV, vol. 11689 (Mar. 2021), p. 1168916. doi: 10.1117/12.2578387. Invited.

[91] R. Halir, J. M. Luque-González, A. Sánchez-Postigo, A. Herrero-Bermello, D. González-Andrade, A. Hadij-El-Houati, J. Leuermann, D. Pereira-Martín, A. Ortega-Moñux, J. Ctyroký, G. Wangüemert-Pérez, A. V. Velasco, M. Sánchez-Rodríguez, J. de-Oliva-Rubio, J. H. Schmid, J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, **P. Cheben**, and Í. Molina-Fernández, "Building high performance devices with silicon metamaterials," Next generation silicon photonics workshop," Asia Communications and Photonics Conference (ACP), Oct. 24-27, 2020, Beijing, China, Online. Invited.

[92] **P. Cheben,** J. H. Schmid, R. Halir, C. Alonso-Ramos, D. Melati, A. Sánchez-Postigo, D. Benedikovic, J. M. Luque-González, D. González-Andrade, D. Pereira-Martín, A. Hadij Elhouati, P. Ginel Moreno, J. Čtyroký, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, Y. Grinberg, A. V. Velasco, A. Herrero-Bermello, J. Lapointe, R. Cheriton, S. Janz, D.-X. Xu, M. K. Dezfouli, S. Wang, M. Vachon, L. Vivien, S. Khajavi, W. N. Ye, and M. Dado, "Metamaterial-inspired integrated photonics," IEEE Photonics Conference, 27 Sep. 27-Oct. 1, 2020, Vancouver, Canada. Keynote.

[93] **P. Cheben,** J. H. Schmid, R. Halir, C. Alonso-Ramos, D. Melati, A. Sánchez-Postigo, D. Benedikovic, J. M. Luque-González, D. González-Andrade, D. Pereira-Martín, A. Hadij Elhouati, P. Ginel Moreno, J. Čtyroký, A. Ortega-Moñux, J. G. Wangüemert-Pérez, I. Molina-Fernández, Y. Grinberg, A. V. Velasco, R. Fernandez de Cabo, A. Herrero-Bermello, J. Lapointe, R. Cheriton, S. Janz, D.-X. Xu, M. K. Dezfouli, S. Wang, M. Vachon, L. Vivien, S. Khajavi, W. N. Ye, and M. Dado, "Metamaterial silicon photonics," Optical Interconnects, IEEE Photonics Conference, Sep. 27-Oct. 1, 2020, Vancouver, Canada. 10.1109/IPC47351.2020.9252107. Invited.

[94] J. Zhang, T. T. D. Dinh, D. Oser, X. Le Roux, M. Montesinos, C. Lafforgue, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Ortiz, A. Rodirguez, O. Alibart, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, D. Kimura, L. Vivien, C. Alonso-Ramos, "Shaping the propagation of light and sound in silicon metamaterial waveguides," European Optical Society Annual Meeting, Sep. 7-11, 2020, Online. Invited.

[95] A.V. Velasco, D. González-Andrade, A. Herrero-Bermello, J. M. Luque-González, R. Halir, J. G. Wangüemert-Pérez, A. Ortega-Moñux, A. Dias-Ponte, I. Molina-Fernández, and **P. Cheben,** "Ultra-broadband silicon photonics devices based on subwavelength metamaterials," European Optical Society Annual meeting (EOSAM), Sep. 7-11, 2020, Online. Invited.

[96] D. Benedikovic, X. Le Roux, C. Alonso-Ramos, C. Dupré, B. Szelag, **P. Cheben,** D. Fowler, S. Guerber, É. Cassan, D. Marris-Morini, F. Boeuf, and L. Vivien, "Low-loss on-chip grating couplers engineered using subwavelength-structured metamaterials," META, 11th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Jul. 20-23, 2020, Warsaw, Poland,. Invited.

[97] J. H. Schmid, **P. Cheben,** D. Melati, D.-X. Xu, S. Janz, J. Lapointe, M. K. Dezfouli, R. Cheriton, Y. Grinberg, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, A. Sánchez-Postigo, D. Pereira-Martín, P. Ginel Moreno, and J. Čtyroký, "Applications of subwavelength silicon photonics for light coupling, spectral filters and optical nanoantennas," International Conference on Transparent Optical Networks, Jul. 19-23, 2020, Bari, Italy. doi: 10.1109/ICTON51198.2020.9203227. Invited.

[98] R. Halir, A. Herrero-Bermello, J. M. Luque-González, D. González-Andrade, J. Leuermann, A. Sánchez-Postigo, A. Hadij-ElHouati, D. Pereira-Martín, J. de-Oliva-Rubio, J. G. Wangüemert-Pérez, A. Ortega-Moñux, J. H. Schmid, A. V. Velasco, A. Dias-Ponte, J. Čtyroký, M. Nedeljkovic, G. Z. Mashanovich, **P. Cheben,** and Í. Molina-Fernández, "Silicon subwavelength structures: practical metamaterials for communications and sensing," OSA Advanced Photonics Congress | Integrated Photonics Research, Silicon and Nanophotonics, Jul. 13-16, 2020, Montreal, Canada. Invited.

[99] **P. Cheben,** J. H. Schmid, I. Molina Fernandez, R. Halir, G. Wangüemert-Pérez, A. Ortega-Moñux, J. M. Luque-González, A. Sánchez-Postigo, D. Pereira-Martín, A. Hadij Elhouati, P. Ginel Moreno, J. Ctyroky, A. Villafranca, D. González-Andrade, A. H. Bermello, R. Fernandez de Cabo, D.-X. Xu, S. Janz, D. Melati, S. Wang, M. Vachon, J. Lapointe, Y. Grinberg, M. K. Dezfouli, R. Cheriton, J. Litvik, M. Dado, J. Mullerova, W. Ye, C. Alonso-Ramos, D. Benedikovic, D. M. Morini, and L. Vivien, "Metamaterial-inspired silicon photonics," European Conference on Integrated Optics (ECIO), Jun. 23-24, 2020, Online. Keynote.

[100] J. H. Schmid, **P. Cheben,** M. Rahim, S. Janz, M. Vachon, G. Pakulski, P. J. Poole, P. Barrios, W. Jiang, D. Melati, D.-X. Xu, J. Lapointe, M. K. Dezfouli, R. Cheriton, S. Wang, A. Sánchez-Postigo, D. Pereira-Martín, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, "Subwavelength silicon photonic structures for efficient light coupling from quantum dash buried heterostructure lasers and spectral filtering," Photonics North, May 26-28, 2020, Niagara Falls, Canada. Invited.

[101] R. Cheriton, A. Densmore, S. Sivanandam, E. de Mooij, M. Kamandar Dezfouli, D. Melati, R. Ma, S. Wang, D.-X. Xu, J. H. Schmid, J. Lapointe, **P. Cheben,** L. Simard, and S. Janz, "High sensitivity remote gas sensing using integrated photonic correlation filters," Photonics North, May 26-28, 2020, Niagara Falls, Canada. Invited.

[102] R. Halir, J. M. Luque-González, A. Sánchez-Postigo, J. Leuermann, A. Hadij-Elhouatid, D. Pereira-Martin, J. de-Oliva-Rubio, J. G. Wangüemert-Pérez, A. Ortega-Moñux, Í. Molina-Fernández, J. H. Schmid, **P. Cheben,** A. Herrero-Bermello, A. Dias-Ponte, Subwavelength silicon photonics, Photonics North, May 26-28, 2020, Niagara Falls, Canada. Keynote.

[103] T. T. D. Dinh, J. Zhang, D. Oser, X. Le Roux, M. Montesinos, C. Lafforgue, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Ortiz, A. Rodirguez, O. Alibart, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, D. Kimura, L. Vivien, C. Alonso-Ramos, "Harnessing subwavelength nanostructuration to control the propagation of light and sound in silicon waveguides," International Conference on Transparent Optical Networks (ICTON), May 2020, Online. Invited.

[104] D. Melati, Y. Grinberg, M. Kamandar Dezfouli, S. Janz, J. H. Schmid, **P. Cheben,** A. Sánchez-Postigo, and D.-X. Xu, "Design of multi-parameter photonic devices using machine learning," SPIE Photonics Europe, Mar. 29-Apr. 2, 2020, Strasbourg, France. doi: 10.1117/12.2559583. Invited.

[105] I. Molina-Fernández, J. G. Wangüemert-Pérez, A. Ortega-Moñux, Robert Halir, J. de Oliva Rubio, A. Sánchez-Postigo, J. M. Luque-González, A. Hadij-Elhouati, D. Pereira-Martín, D. González-Andrade, A. V. Velasco, A. Herrero-Bermello, J. H. Schmid, **P. Cheben,** and J. Čtyroký, "Subwavelength grating metamaterial structures for integrated photonics," SPIE Photonics West | OPTO, Smart Photonic and Optoelectronic Integrated Circuits XXII, Feb. 2020, San Francisco, USA. Keynote.

[106] J. H. Schmid, **P. Cheben,** D. Melati, D.-X. Xu, S. Janz, J. Lapointe, M. K. Dezfouli, R. Cheriton, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, A. Sánchez-Postigo, D. Pereira-Martín, and J. Čtyroký, "Subwavelength silicon photonic structures for light coupling, spectral filters and optical nanoantennas," SPIE Photonics West, Feb. 1-7, 2020, San Francisco, USA. Invited.

[107] D.-X Xu, D. Melati, S. Janz, S. Dedyulin, A. Todd, M. Vachon, J. Weber, S. Wang, J. Lapointe, M. Kamandar Dezfouli, R. Cheriton, **P. Cheben,** and J. H. Schmid, "Precision modeling, thermometry and athermal components in silicon photonics," SPIE Photonics West, Feb. 1-7, 2020, San Francisco, USA. Invited.

[108] D.-X. Xu, Y. Grinberg, D. Melati, M. K. Dezfouli, **P. Cheben,** J. H. Schmid, S. Janz, A. Sánchez-Postigo, J. G. Wangüemert-Pérez, Í. Molina-Fernándezc, A. Ortega-Moñux, J. Niegemann, J. Pond and A. Ried, "Intelligent

exploration of complex design space of nanophotonic components using machine-learning algorithms," SPIE Photonics West, Feb. 1-7, 2020, San Francisco, USA. Invited.

[109] D. Oser, X. Le Roux, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Alibart, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, C. Alonso-Ramos, "Waveguide Bragg gratings for photonic noise suppression in silicon photon-pair sources," SPIE Photonics West, Feb. 1-7, 2020, San Francisco, USA. Invited.

[110] A. Herrero-Bermello, J. Li, M. Khazaei, Y. Grinberg, A. V. Velasco, M. Vachon, **P. Cheben,** L. Stankovic, V. Stankovic, D.-X. Xu, J. H. Schmid, C. Alonso-Ramos, "Smart on-chip Fourier-transform spectrometers harnessing machine learning algorithms," SPIE Photonics West, Feb. 1-7, 2020, San Francisco, USA. Invited.

[111] F. Gardes, T. Domínguez Bucio, C. Lacava, G. de Paoli, I. Skandalos, M. Milošević, P. Petropoulos, J. G. Wanguemert-Perez, F. Jurado Romero, I. Molina-Fernandez, D. Melati, J. Schmid, and **P. Cheben**, "Silicon nitride for advanced integrated CMOS photonics," SPIE Photonics West, Feb. 1-7, 2020, San Francisco, USA. Invited.

[112] D. Benedikovic, C. Alonso-Ramos, S. Guerber, X. Le Roux, **P. Cheben,** B. Szelag, C. Dupré, D. Fowler, G. Marcaud, V. Vakarin, D. Pérez-Galacho, E. Cassan, D. Marris-Morini, C. Baudot, F. Boeuf, and L. Vivien, "Silicon chip-integrated fiber couplers with sub-decibel loss," Smart Photonic and Optoelectronic Integrated Circuits | SPIE Photonics West, Feb. 1-7, 2020, San Francisco, USA. Invited.

[113] **P. Cheben,** J. Schmid, R. Halir, J. Ctyroky, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wanguemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, A. Hadij Elhouati, P. Ginel Moreno, D. Benedikovic, C. Alonso-Ramos, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, W. Ye, Y. Grinberg, G. Mashanovich, J. Penades, M. Nedjelkovic, F. Gardes, C. Lacava, T. Bucio, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, H. Podmore, A. Scott, M. Dado, J. Mullerova, and J. Litvik, "Subwavelength integrated photonics," SPIE ANZCOP, Dec. 8-12, 2019, Melbourne, Australia. Plenary.

[114] D. Oser, X. Le Roux, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Alibart, **P. Cheben**, S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos, "High-rejection silicon Bragg filters for quantum applications," International Conference on Group IV Photonics, Aug. 28-30, 2019, Singapore. Invited.

[115] **P. Cheben,** C. Alonso-Ramos, R. Halir, J. H. Schmid, J. Čtyroký, D. Benedikovic, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wangüemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, V. Vakarin, M. Dado, D. Oser, F. Mazeas, D. Pérez-Galacho, X. Le Roux, E. Durán-Valdeiglesias, L. Labonte, S. Tanzilli, E. Cassan, D. Marris-Morini, W. N. Ye, and L. Vivien, "Subwavelength metamaterial nanophotonic waveguide devices," OSA Advanced Photonics Congress (APC), Jul. 29-Aug. 1, 2019, San Francisco, USA. Invited.

[116] R. Halir, J. M. Luque-González, A. Sánchez-Postigo, A. Herrero-Bermello, D. González Andrade, A. Hadij-El-Houati, J. Leuermann, D. Pereira-Martín, A. Ortega-Moñux, J. Čtyroký, G. Wangüemert-Pérez, A. V. Velasco, M. Sánchez-Rodríguez, J. de-Oliva-Rubio, J. H. Schmid, J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, **P. Cheben**, and Í. Molina-Fernández, "High performance silicon photonic devices based on practical metamaterials," 24th Optoelectronics and Communications Conference, Jul. 7-11, 2019, Fukuoka, Japan. Invited.

[117] A. Sánchez-Postigo, G. Wangüemert-Pérez, J. S. Penadés, A. Ortega-Moñux, M. Nedeljkovic, R. Halir, F. El Mokhtari Mimum, Y. X. Cheng, Z. Qu, A. Z. Khokhar, A. Osman, W. Cao, C. G. Littlejohns, G. Z. Mashanovich, **P. Cheben,** and Í. Molina-Fernández, "Suspended silicon integrated platform for the long-wavelength mid-infrared band," 21th International Conference of Transparent Optical Network (ICTON) | 11th Sub-wavelength photonics Conference (SWP), Jul. 9-13, 2019, Angers, France. Invited.

[118] D. Oser, X. Le Roux, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Alibart, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos, "Harnessing sub-wavelength and symmetry engineering for the implementation of high-performance silicon Bragg grating filters," 21th International Conference of Transparent Optical Network (ICTON), July 9-13, 2019, Angers, France. Invited.

[119] D. Melati, M. K. Dezfouli, Y. Grinberg, S. Janz, J. H. Schmid, **P. Cheben**, and D.-X. Xu, "Machine learning design of subwavelengh integrated photonic devices," 19th International Conference on Numerical Simulation of Optoelectronic Devices, Jul. 8-12 2019, Ottawa, Canada. Invited.

[120] **P. Cheben,** J. Schmid, R. Halir, J. Ctyroky, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wanguemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, D. Benedikovic, C. Alonso-Ramos, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, M. Dado, "Subwavelength integrated photonics," OPTOEL, Jul. 3-5, 2019, Zaragoza, Spain. Plenary.

[121] J. G. Wangüemert-Pérez, A. Hadij-ElHouati, A. Sánchez-Postigo, J. Leuermanna, D. Pereira-Martína, J. M. Luque-González, **P. Cheben,** D.-X. Xu, J. H. Schmid, J. Ctyroký, J. Soler-Penadese, M. Nedeljkovic, G. Z. Mashanovich, A. Ortega-Moñux, R. Halir, and Í. Molina-Fernández, "Enhanced sensitivity subwavelength grating waveguides for silicon photonics sensing applications," Optical Sensors and Sensing Congress, Jun. 2019, San José, USA. Invited.

[122] M. K. Dezfouli, Y. Grinberg, D. Melati, **P. Cheben,** J. H. Schmid, S. Janz, and D.-X Xu, "Machine learning guided design and optimization in integrated photonics," Photonics North, May 21-23, 2019, Quebec City, Canada. Invited.

[123] J. Schmid, **P. Cheben,** C. Alonso-Ramos, R. Halir, J. Čtyroký, D. Benedikovic, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wangüemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, and M. Dado, "Subwavelength silicon nanophotonics," Photonics North, May 21-23, 2019, Quebec City, Canada. Invited.

[124] B. Gerard, C. Marois, **P. Cheben**, S. Janz, J. Schmid, A. Scott, and H. Podmore, "Phase mask design for exoplanet imaging," Photonics North, May 21-23, 2019, Quebec City, Canada. Invited.

[125] **P. Cheben,** J. Schmid, R. Halir, J. Ctyroky, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wanguemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, D. Benedikovic, C. Alonso-Ramos, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, and M. Dado, "Subwavelength metamaterial integrated photonics," Photonics North, May 21-23, 2019, Quebec City, Canada. Keynote.

[126] I. Molina-Fernández, R. Halir, A. Ortega-Moñux, J. G. Wangüemert-Pérez, A. Sánchez-Postigo, J. M. Luque-González, D. Pereira-Martín, **P. Cheben,** J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, J. Čtyroký, D. González-Andrade, A. V. Velasco, and A. Herrero-Bermello, "Molding the flow of light through subwavelength devices," Photonics North, May 21-23, 2019, Quebec City, Canada. Keynote.

[127] D. Oser, D. Benedikovic, X. Le Roux, E. Durán-Valdeiglesias, V. Vakarin, D. Marris-Morini, E. Cassan, L. Vivien, C. Alonso-Ramos, F. Mazeas, O. Alibart, L. Labonte, S. Tanzilli, D. Pérez-Galacho, S. Guerber, C. Baudot, F. Boeuf, and **P. Cheben,** "High-perfornace surface grating couplers and spectral filters based on subwavelength Si engineering," Photonics North, May 21-23, 2019, Quebec City, Canada. Invited.

[128] J. Čtyroký, **P. Cheben,** J. H. Schmid, S. Wang, D. Melati, D. Xu, S. Janz, J. Lapointe, J. G. Wangüemert-Pérez, Í. Molina-Fernández, A. Ortega-Moñux, R. Halir, P. Kwiecien, and I. Richter, "Ultra-narrowband Bragg filters in subwavelength gratingmetamaterial waveguides," International Workshop on Optical Wave & Waveguide Theory and Numerical Modelling (OWTNM) May 10-11, 2019, Málaga, Spain. Invited.

[129] D. Oser, X. Le Roux, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Alibart, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos, "High-performance silicon Bragg filters based on sub-wavelength, symmetry and modal engineering," IFCS-EFTF Conference, Apr. 14-18, 2019, Orlando, USA. Invited.

[130] D. Melati, Y. Grinberg, A. Waqas, P. Manfredid, M. K. Dezfoulia, **P. Cheben,** J. H. Schmid, S. Janz, A. Melloni, and D. X. Xu, "Performance and uncertainty analysis in machine-assisted design of photonic evices," SPIE Photonics West, Feb. 2-7, 2019, San Francisco, USA. Invited.

[131] H. Pomode, A. Scott, **P. Cheben,** and R. Lee, "On-chip Fourier-transform infrared spectrometers for applications in gas detection and compressed sensing," SPIE Photonics West, Feb. 2-7, 2019, San Francisco, USA. Invited.

[132] A. V. Velasco, D. González-Andrade, A. Herrero-Bermello, G. Wangüemert-Pérez, J. M. Luque-González, R. Halir, A. Ortega-Moñux, I. Molina Fernandez, A. Dias, and **P. Cheben,** "Subwavelength silicon photonic metamaterials for mode multiplexing and polarization control," SPIE Photonics West, Feb. 2-7, 2019, San Francisco, USA. Invited.

[133] D. Oser, X. Le Roux, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Alibart, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos,

"High-performance silicon Bragg filters exploiting sub-wavelength and symmetry engineering," SPIE Photonics West, Feb. 2-7, 2019, San Francisco, USA. Invited.

[134] **P. Cheben,** R. Halir, J. H. Schmid, J. Čtyroký, D. Benedikovic, C. Alonso-Ramos, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wangüemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, V. Vakarin, L. Vivien, J. Litvík, M. Dado, and J. Müllerová, "Subwavelength silicon photonics," SPIE Photonics West, Feb. 2-7, 2019, San Francisco, USA. Invited.

[135] Y. Grinberg, D. Melati, M. K. Dezfoulia, S. Janz, J. H. Schmid, **P. Cheben,** A. Sánchez-Postigob, J. G. Wangüemert-Pérez, Í. Molina-Fernández, A. Ortega-Moñux, and D.-X. Xu, "Reaping the benefits of machine learning pattern recognition in nanophotonic component design," SPIE Photonics West, Feb. 2-7, 2019, San Francisco, USA. Invited.

[136] R. Halir, A. Sánchez-Postigo, J. M. Luque-González, A. Herrero-Bermello, J. Leuermann, A. Ortega-Moñux, G. Wangüemert-Pérez, A.V. Velasco, J. de-Oliva-Rubio, J. H. Schmid, **P. Cheben,** J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, and Í. Molina-Fernández, "Silicon high performance devices using subwavelength structures," European Conference on Integrated Optics (ECIO), 2019, Ghent, Belgium. Invited.

[137] D. Melati, Y. Grinberg, M. K. Dezfouli, A. Waqas, P. Manfredi, **P. Cheben,** J. H. Schmid, S. Janz, A. Sánchez-Postigo, A. Melloni, and D. X. Xu, "Machine-assisted design and stochastic analysis in integrated photonics," European Conference on Integrated Optics (ECIO), 2019, Ghent, Belgium. Invited.

[138] **P. Cheben,** J. Schmid, R. Halir, J. Ctyroky, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wanguemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, D. Benedikovic, C. Alonso-Ramos, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, and M. Dado, "Recent advances in metamaterial integrated photonics," Optical Micro/Nano Resonators and Devices | IEEE Photonics Conference (IPC), 2019, San Antonio, USA. Invited.

[139] D. Benedikovic, M. Berciano, C. Alonso-Ramos, X. Le Roux, S. Guerber, G. Marcaud, V. Vakarin, D. Pérez-Galacho, E. Cassan, D. Marris-Morini, **P. Cheben,** C. Baudot, F. Boeuf, and L. Vivien, "Enhanced performance of integrated silicon nanophotonic devices engineered by sub-wavelength grating structures," SPIE Optics and Optoelectronics Symposium, 2019, Prague, Czech Republic. Invited.

[140] D.-X. Xu, Y. Grinberg, D. Melati, M. K. Dezfouli, **P. Cheben,** J.H. Schmid, and S. Janz, "Navigating through complex photonic design space using machine learning methods," SPIE Optics and Optoelectronics Symposium, 2019, Prague, Czech Republic. Invited.

[141] **P. Cheben,** C. Alonso-Ramos, J. Schmid, R. Halir, J. Ctyroky, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wanguemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, D. Benedikovic, C. Alonso-Ramos, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, and M. Dado, "Symposium on new trends in nanophotonics and advanced materials," Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2019, Lisbon, Portugal. Invited.

[142] M. K. Dezfouli, Y. Grinberg, D. Melati, **P. Cheben,** J. H. Schmid, S. Janz, and D.-X. Xu, "Design of subwavelength vertical grating couplers using machine learning pattern recognition," Photonics and Electromagnetics Research Symposium (PIERS), 2019, Rome, Italy. Invited.

[143] A. Ortega-Moñux, J. M. Luque-González, D. Pereira-Martín, A. Sánchez-Postigo, A. Hadij-ElHouati, J. Leuermann, J. de Oliva-Rubio, R. Halir, J. G. Wangüemert-Pérez, I. Molina-Fernández, J. Čtyroký, J. H. Schmid, and **P. Cheben,** "Design of subwavelength grating metamaterial waveguides for communications and sensing applications", Photonics and Electromagnetics Research Symposium (PIERS), 2019, Rome, Italy. Invited.

[144] G. Z. Mashanovich et al., "Silicon and germanium-based mid-infrared platforms," Photonics and Electromagnetics Research Symposium (PIERS), 2019, Rome, Italy. Invited.

[145] **P. Cheben,** C. Alonso-Ramos, R. Halir, J. H. Schmid, J. Čtyroký, D. Benedikovic, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wangüemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, J. Lapointe, S. Janz, D.-X. Xu, D. Melati, Y. Grinberg, S. Wang, M. Vachon, M. K. Dezfouli, R. Cheriton, V. Vakarin, M. Dado, D. Oser, F. Mazeas, D. Pérez-Galacho, X. Le Roux, E. Durán-Valdeiglesias, L. Labonte, S. Tanzilli, E. Cassan, D. Marris-Morini, and L. Vivien, "Recent advances on nanostructured metamaterial silicon photonics," Photonics and Electromagnetics Research Symposium (PIERS), 2019, Rome, Italy. Invited.

[146] C. Alonso-Ramos, **P. Cheben,** J. Schmid, D. Oser, X. Le Roux, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Alibart, S. Tanzilli, L. Labonté, D. Marris-Morini, J. Ctyroky, J. G. Wanguemert-Perez, I. Molina Fernandez, A. Ortega-Monux, R. Halir, M. Dado, E. Cassan, F. Boeuf, C. Baudot, and L. Vivien, "High-performance fiber-chip grating couplers and wavelength filters based on subwavelength engineering in silicon," Photonics and Electromagnetics Research Symposium (PIERS), 2019, Rome, Italy. Invited.

[147] M. Nedeljkovic, J. S. Penades, A. Sanchez-Postigo, J. G. Wangüemert Perez, A. Ortega-Monux, R. Halir, **P. Cheben,** I. Molina-Fernandez, V. Mittal, G. Murugan, A. Z. Khokhar, C. Littlejohns, Y. Xu, Z. Qu, A. Osman, W. Cao, L. G. Carpenter, C. Gawith, J. S. Wilkinson, and G. Mashanovich, "Silicon and germanium based waveguide platforms for the long wave infrared," OSA Conference on Lasers and Electro-Optics, paper STh1I.3, 2018. Invited.

[148] **P. Cheben,** R. Halir, J. H. Schmid, J. Čtyroký, D. Benedikovic, C. Alonso-Ramos, A. Ortega-Moñux, A. Sánchez-Postigo, D. González-Andrade, J. G. Wangüemert-Pérez, I. Molina-Fernández, A. V. Velasco, A. Herrero-Bermello, J. M. Luque-González, D. Pereira-Martín, J. Lapointe, S. Janz, D.-X. Xu, D. Melati,Y. Grinberg, S. Wang, M. Vachon, V. Vakarin, L. Vivien, J. Litvík, J. Müllerová, and M. Dado, "Subwavelength silicon photonic metamaterial waveguide devices," 44th European Conference on Optical Communication (ECOC), 2018, Rome, Italy. Invited.

[149] **P. Cheben,** R. Halir, J. H. Schmid, A. Sánchez-Postigo, J. M. Luque-González, Y. Grinberg, J. Lapointe, S. Wang, M. Vachon, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, S. Janz, D.-X. Xu, D. Melati, D. Benedikovic, C. Alonso-Ramos, L. Vivien, J. Ctyroky, J. Litvik, M. Dado, J. Müllerová, M. L. Calvo, D. González-Andrade, A. Herrero-Bermello, and A.V. Velasco, "Metamaterial silicon photonics," SPIE Photonics West, 2018, San Francisco, USA. Invited.

[150] R. Halir, A. Herrero-Bermello, J. M. Luque-González, A. Ortega-Moñux, G. Wangüemert-Pérez, A. V. Velasco, J. H. Schmid, **P. Cheben**, and Í. Molina-Fernández, "Designing anisotropy with waveguide subwavelength structures," ICTON, 2018, Bucharest, Romania.

[151] J. G. Wangüemert-Pérez, A. Sánchez-Postigo, J. S. Penades, A. Ortega-Moñux, M. Nedelkovic, R. Halir, F. El Mokhtari Mimun, **P. Cheben,** G. Z. Mashanovich, and I. Molina-Fernández, "Mid-infrared suspended waveguide platform and building blocks," European Conference on Integrated Optics (ECIO), 2018, Valencia, Spain. Invited.

[152] R. Halir, J. S. Penades, A. Sánchez-Postigo, J. M. Luque-González, J. D. Sarmiento-Merenguel, S. Wang, A. Ortega-Moñux, J. Schmid, M. Nedeljkovic, J. G. Wangüemert-Pérez, D.-X. Xu, G. Z. Mashanovich, **P. Cheben**, and I. Molina-Fernández, "Silicon subwavelength metamaterials: from basics to recent applications," EMN Meeting on Photonics, 2017, Budapest, Hungary. Invited.

[153] Y. Grinberg, D. Xu, D. Melati, J. Schmid, **P. Cheben,** S. Janz, A. Sánchez-Postigo, J. G. Wangüemert-Pérez, Í. Molina-Fernández, and A. Ortega-Moñux, "Machine learning techniques for the design of nanophotonic components," Photonics North, 2018, Ottawa, Canada. Invited.

[154] J. G. Wangüemert-Pérez, A. Sánchez-Postigo, J. S. Penades, A. Ortega-Moñux, M. Nedelkovic, R. Halir, F. El Mokhtari Mimun, **P. Cheben,** G. Z. Mashanovich, D.-X. Xu, and I. Molina-Fernández, "Subwavelength metamaterial for communications and sensing," Nanophotonics and Micro/Nano Optics, SPIE/COS Photonics Asia, 2018, Beijing, China. Invited.

[155] **P. Cheben,** R. Halir, J. H. Schmid, A. Sánchez-Postigo, J. M. Luque-González, Y. Grinberg, J. Lapointe, S. Wang, M. Vachon, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, S. Janz, D.-X. Xu, D. Melati, D. Benedikovic, C. Alonso-Ramos, L. Vivien, J. Ctyroky, J. Litvik, M. Dado, J. Müllerová, M. L. Calvo, D. González-Andrade, A. Herrero-Bermello, and A. V. Velasco, "Subwavelength engineered metamaterial devices for integrated photonics," CLEO, 2018, San Jose, USA. Invited.

[156] F. Gardes, D. B. Thalia, L. Mastronardi, M. Banakar, A. Bazin, K. Ali, C. Lacava, P. Petropoulos, M. Sotto, S. Saito, I. Molina-Fernández, R. Halir, A. Ortega-Moñux, J. G. Wangüemert-Pérez; C. Yang, J. J. He, **P. Cheben,** J. Schmid, C. Littlejohns, K. Debnath, M. Clementi, M. Liscidini, D. Bajoni, and M. Galli, "Going further with CMOS photonics using silicon nitride and SiGe," Asia Communications and Photonics Conference (ACP), 2018, Hangzhou, China. Invited.

[157] D. Oser, X. Le Roux, F. Mazeas, D. Pérez-Galacho, D. Benedikovic, E. Durán-Valdeiglesias, V. Vakarin, O. Alibart, **P. Cheben,** S. Tanzilli, L. Labonté, D. Marris-Morini, E. Cassan, L. Vivien, and C. Alonso-Ramos, "High-performance on-chip Bragg grating filters," Asia Communications and Photonics Conference (ACP), 2018, Hangzhou, China. Invited.

[158] D.-X. Xu, **P. Cheben,** J. H. Schmid, R. Halir, A. Sánchez-Postigo, Y. Grinberg, C. Cherry, S. Janz, J. Lapointe, S. Wang, M. Vachon, G. Wangüemert-Pérez, I. Molina-Fernández, and D. Benedikovic, "Silicon photonics devices with enhanced performance using subwavelength engineering," SPIE Photonics West, 2018, San Francisco, USA. Invited.

[159] C. Alonso-Ramos, D. Perez-Galacho, X. Le Roux, D. Benedikovic, F. Mazeas, W. Zhang, S. Serna, V. Vakarin, E. Duran-Valdeiglesias, N. Belabas-Plougonven, L. Labonte, S. Tanzilli, **P. Cheben,** E. Cassan, D. Marris-Morini, and L. Vivien, "Subwavelength engineered silicon photonics," International Workshop on Advanced Materials Science and Nanotechnology (IWAMSN), 2018, Ninh Binh, Vietnam. Invited.

[160] D. Benedikovic, C. Alonso-Ramos, **P. Cheben,** J. H. Schmid, S. Wang, D.-X. Xu, B. Lamontagne, J. Lapointe, S. Janz, R. Halir, A. Ortega-Moñux, J. Wangüemert-Pérez, I. Molina-Fernández, J.-M. Fédéli, M. Dado, and L. Vivien, "Fiber-chip surface grating couplers engineered by nanophotonic sub-wavelength grating metamaterials," 8th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2017, Seoul, South Korea. Invited.

[161] C. Alonso-Ramos, D. Pérez-Galacho, D. Oser, X. Le Roux, D. Benedikovic, F. Mazeas, W. Zhang, S. Serna, V. Vakarin, E. Durán-Valdeiglesias, L. Labonte, S. Tanzilli, **P. Cheben,** E. Cassan, D. Marris-Morini, and L. Vivien, "Nanostructured Si photonics for applications in the near- and mid- infrared," 8th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2017, Seoul, South Korea. Invited.

[162] **P. Cheben,** H. Podmore, R. Halir, J. H. Schmid, A. Sánchez-Postigo, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, J. M. Luque-Gonzalez, J. D. Sarmiento-Merenguel, D.-X. Xu, S. Janz, J. Lapointe, S. Wang, M. Vachon, D. Benedikovic, C. A. Ramos, R. Lee, A. Scott, A. Velasco, J. Litvik, J. Mullerova, and M. Dado, "Subwavelength nanophotonic structures for integration and sensing," 32nd URSI GASS, 2017, Montreal, Canada. Invited.

[163] **P. Cheben,** C. A. Ramos, J. H. Schmid, R. Halir, A. Sánchez-Postigo, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, J. M. Luque-Gonzalez, J. D. Sarmiento-Merenguel, D.-X. Xu, S. Janz, J. Lapointe, S. Wang, M. Vachon, X. Le Roux, E. Durán-Valdeiglesias, D. Benedikovic, D. Marris-Morini, L. Vivien, J. Litvík, and M. Dado, "Subwavelength nanophotonic structures for integration, sensing and spectroscopy," CLEO-Pacific Rim, 2017, Singapore. Invited.

[164] **P. Cheben,** H. Podmore, A. Herrero, A. V. Velasco, J. H. Schmid, A. Scott, M. Vachon, R. Lee, M. L. Calvo, D.-X. Xu, S. Janz, and P. Corredera, "Recent advances in on-chip Fourier transform spectrometers," 19th International Conference on Transparent Optical Networks (ICTON), 2017, Gerona, Spain. Invited.

[165] I. Molina-Fernández, R. Halir, A. Ortega-Moñux, J. G. Wangüemert-Pérez, Y. Chen, J.-J. He, **P. Cheben,** J. H. Schmid, T. D. Bucio, A. Z. Khokhar, M. Banakar, K. Grabska, and F. Y. Gardes, "Broadband and high-performance devices for the silicon and silicon-nitride platforms," 19th International Conference on Transparent Optical Networks (ICTON), 2017, Gerona, Spain. Invited.

[166] C. Alonso-Ramos, D. Pérez-Galacho, D. Oser, X. Le Roux, D. Benedikovic, F. Mazeas, W. Zhang, S. Serna, V. Vakarin, E. Durán-Valdeiglesias, L. Labonte, S. Tanzilli, **P. Cheben,** E. Cassan, D. Marris-Morini, and L. Vivien "Subwavelength Si photonics for near- and mid-IR applications," International Conference on Transparent Optical Networks (ICTON), 2017, Gerona, Spain. Invited.

[167] **P. Cheben,** D. Benedikovic, C. A. Ramos, J. H. Schmid, R. Halir, A. Sánchez-Postigo, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, J. M. Luque-Gonzalez, J. D. Sarmiento-Merenguel, D.-X. Xu, S. Janz, S. Wang, M. Vachon, X. Le Roux, E. Durán-Valdeiglesias, D. Marris-Morini, L. Vivien, A. V. Velasco, and M. Dado, "Subwavelength index engineered integrated photonic devices," 16th International Conference on Optical Communications and Networks (ICOCN), 2017, Wuzen, China. Invited.

[168] **P. Cheben,** D.-X. Xu, J. H. Schmid, S. Janz, J. Lapointe, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, A. Sanchez-Postigo, D. Benedikovic, C. Alonso Ramos, M. Dado, J. Müllerová, J. S. Penadés, M. Nedeljkovic, and G. Z. Mashanovich, "Subwavelength grating metamaterial waveguides for silicon photonic integrated circuits," Asia Communications and Photonics Conference (ACP), 2017, Guangzhou, China. Invited tutorial.

[169] **P. Cheben,** C. Alonso-Ramos, J. H. Schmid, R. Halir, A. Sánchez-Postigo, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, J. M. Luque-González, J. D. Sarmiento-Merenguel, D.-X. Xu, S. Janz, J. Lapointe, S. Wang, M. Vachon, X. Le Roux, E. Durán-Valdeiglesias, D. Benedikovic, J. Litvík, M. Dado, D. Pérez-Galacho, S. Guerber, D. Oser, F. Mazeas, W. Zhang, S. Serna, V. Vakarin, L. Labonte, S. Tanzilli, J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, F. Bœuf, C. Budot, E. Cassan, D. Marris-Morini, and L. Vivien, "Subwavelength

engineered metamaterial silicon photonic devices," Silicon Photonics Workshop, ACP, 2017, Guangzhou, China. Invited.

[170] A. Ortega-Moñux, R. Halir, A. Sánchez-Postigo, J. Soler-Penadés, J. Ctyroký, J. M. Luque-González, J. Darío Sarmiento-Merenguel, J. G. Wangüemert-Pérez, J. H. Schmid, D.-X. Xu, S. Janz, J. Lapointe, I. Molina-Fernández, M. Nedeljkovic, G. Z. Mashanovich, and **P. Cheben,** "Design of optical metamaterial waveguide structures," SPIE Optics and Optoelectronics, 2017, Prague, Czech Republic. Invited.

[171] R. Halir, A. Ortega-Monux, J. Soler-Penades, J. M. Luque-Gonzlez, D. Sarmiento-Merenguela, A. Sanchez-Postigo, G. Wanguemert-Perez, J. Schmid, D.-X. Xu, S. Janz, J. Lapointe, I. Molina-Fernndez, M. Nedeljkovic, G. Z. Mashanovich, and **P. Cheben**, "Subwavelength metamaterial engineering for silicon photonics," Photonics West, 2017, San Francisco, USA. Invited.

[172] J. G. Wangüemert-Pérez, A. Sánchez-Postigo, J. M. Luque-González, J. D. Sarmiento-Merenguel, R. Halir, A. Ortega-Moñux, I. Molina-Fernández, **P. Cheben,** D.-X. Xu, J. H. Schmid, J. Soler-Penades, M. Nedeljkovic, G. Z. Mashanovich, D. González-Andrade, and A. Villafranca-Velasco, "Subwavelength metamaterial structures for silicon photonics," Photonics North, 2017, Ottawa, Canada. Invited.

[173] C. Alonso-Ramos, D. Pérez-Galacho, D. Oser, X. Le Roux, D. Benedikovic, W. Zhang, S. Serna, V. Vakarin, E. Durán-Valdeiglesias, E. Cassan, D. Marris-Morini, F. Mazeas, L. Labonte, S. Tanzilli, and **P. Cheben**, "Near-IR and mid-IR subwavelength engineered Si photonics," Photonics North, 2017, Ottawa, Canada. Invited.

[174] A. Otrega-Monux, R. Halir, **P. Cheben,** J. M. Luque-Gonzales, J. D. Sarmiento Merenquel, J. H. Schmid, G. Wangüemert-Pérez, D.-X. Xu, S. Wang, and Í. Molina-Fernandez, "Subwavelength waveguide devices for near and mid-infrared applications," Europan Conference on Integrated Optics (ECIO), 2017, Eindhoven, Holland. Invited.

[175] **P. Cheben,** D.-X. Xu, J. H. Schmid, S. Janz, J. Lapointe, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, A. Sanchez-Postigo, D. Benedikovic, C. Alonso Ramos, M. Dado, J. Müllerová, J. S. Penadés, M. Nedeljkovic, and G. Z. Mashanovich, "Subwavelength index engineered waveguides and devices," OSA Optical Fiber Conference (OFC), 2017, Los Angeles, USA. Invited.

[176] C. Alonso-Ramos, X. Le Roux, D. Benedikovic, V. Vakarin, E. Durán-Valdeiglesias, D. Pérez-Galacho, E. Cassan, D. Marris-Morini, **P. Cheben,** and L. Vivien, "Mid- and near-IR silicon waveguides for sensing applications," SPIE Microtechnologies Symposium, 2017, Barcelona, Spain. Invited.

[177] C. Alonso-Ramos, D. Pérez-Galacho, X. Le Roux, D. Benedikovic, F. Maezas, W. Zhang, S. Serna, V. Vakarin, E. Durán-Valdeiglesias, N. Belabas-Plougonven, L. Labonté, S. Tanzilli, **P. Cheben,** E. Cassan, D. Marris-Morini, L. Vivien, "Subwavelength Si photonics for near- and mid-infrared applications," SPIE Photonics West, 2017, San Francisco, USA. Invited.

[178] S. Janz, **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Wang, M. Vachon, and J. Lapointe, "Subwavelength silicon photonics," OSA Subwavelength Photonics Incubator, 2016, Washington DC, USA. Plenary.

[179] R. Halir, J. M. Luque-González, S. Wang, A. Sánchez-Postigo, J. G. Wangüemert-Pérez, **P. Cheben,** J. Schmid, D.-X. Xu, S. Janz, J. Lapointe, I. Molina-Fernández, and A. Ortega-Moñux, "Broadband silicon devices using sub-wavelength structures," OSA Subwavelength Photonics Incubator, 2016, Washington DC, USA. Invited.

[180] **P. Cheben**, "CMOS photonics for molecular sensing," 23rd International Summer School of Science and Technology of Materials, 2016, la Universidad de La Habana, Cuba. Keynote.

[181] J. Pond, A. Liu, J. Niegemann, X. Wang, and **P. Cheben,** "Efficient optimization of subwavelength gratings for photonic integrated circuits," 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2016, Malaga, Spain. Invited.

[182] T. Domínguez Bucio, A. Z. Al-Attili, K. Debnath, S. Saito, G. Mashanovich, A. Sánchez-Postigo, G. Wangüemert-Pérez, A. Ortega-Moñux, R. Halir, **P. Cheben,** and F. Y. Gardes, "Silicon nitride for integrated photonic applications," 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2016, Malaga, Spain. Invited.

[183] A. V. Velasco, P. J. Bock, P. Cheben, J. H. Schmid, A. Delâge, J. Lapointe, D.-X. Xu, M. Vachon, S. Janz, M. L. Calvo, A. Herrero-Bermello, and P. Corredera, "Subwavelength-engineered interferometer arrays for Fourier-transform spectrometry," 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2016, Malaga, Spain. Invited.

[184] M. L. Calvo, A. V. Velasco, and **P. Cheben,** "Spatial heterodyne Fourier-transform spectroscopy: from fundamentals to array waveguide interferometers," 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2016, Malaga, Spain. Invited.

[185] **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Janz, J. Lapointe, M. Rahim, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, J. Pond, D. Benedikovic, C. Alonso-Ramos, J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, A. V. Velasco, M. L. Calvo, Y. Painchaud, M.-J. Picard, M. Poulin, M. Dado, J. Müllerová, W. N. Ye, M. Pápeš, and V. Vašinek "Subwavelength grating engineered metamaterial waveguide structures for silicon photonic integrated circuits," 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2016, Malaga, Spain. Invited.

[186] R. Halir, J. M. Luque-González, S. Wang, A. Sánchez-Postigo, J. G. Wangüemert-Pérez, **P. Cheben,** J. Schmid, D.-X. Xu, S. Janz, J. Lapointe, I. Molina-Fernández, and A. Ortega-Moñux, "Designing broadband silicon devices using subwavelength structures," 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2016, Malaga, Spain. Invited.

[187] **P. Cheben,** D.-X. Xu, J. H. Schmid, S. Janz, J. Lapointe, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, A. Sanchez-Postigo, D. Benedikovic, C. Alonso Ramos, M. Dado, J. Müllerová, J. S. Penadés, M. Nedeljkovic, and G. Z. Mashanovich, "Subwavelength index engineered structures: fundamental building blocks for the next generation photonic integrated circuits," European Conference on Optical Communication (ECOC) | CLEO-3 Optoelectronics, 2016, Düsseldorf, Germany. Invited.

[188] **P. Cheben,** J. Schmid, D.-X. Xu, S. Janz, D.-X. Xu, S. Janz, J. Lapointe, D. Benedikovic, C. Alonso-Ramos, L. Vivien, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, M. Dado, J. Müllerová, J. Soler Penadés, M. Nedeljkovic, and G.Z. Mashanovich, "Subwavelength engineered structures for integrated photonics," Progress In Electromagnetics Research Symposium (PIERS), 2016, Shanghai, China. Keynote.

[189] J. Schmid, **P. Cheben,** D.-X. Xu, S. Janz, J. Lapointe, M. Rahim, S. Wang, M. Vachon, R. Halir, A. Ortega-Muñox, G. Wangüemert-Pérez, I. Molina-Fernández, J. Pond, C. Alonso-Ramos, D. Benedikovic, M. Dado, W. Ye, M. Pápeš, V. Vašinek, Y. Painchaud, M.-J. Picard, and Michel Poulin, "Subwavelength engineering in silicon photonics for fiber-chip coupling," Progress In Electromagnetics Research Symposium (PIERS), 2016, Shanghai, China. Keynote.

[190] A. V. Velasco, **P. Cheben,** M. L. Calvo, P. J. Bock, A. Delâge, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, M. Florjańczyk, M. Vachon, M. Nedeljkovic, A. Z. Khokhar, G. Z. Mashanovich, A. Herrero-Bermello, and P. Corredera, "Fourier-transform on-chip microspectrometers," Progress In Electromagnetics Research Symposium (PIERS), 2016, Shanghai, China. Invited.

[191] H. Podmore, **P. Cheben,** A. Scott, and R. Lee, "Principles and design of a planar waveguide Fourier transform spectrometer for remote-sensing applications," Progress In Electromagnetics Research Symposium (PIERS), 2016, Shanghai, China. Invited.

[192] C. Alonso-Ramos, J. D. Sarmiento-Merenguel, R. Halir, X. Le Roux, L. Vivien, **P. Cheben,** E. Durán-Valdeiglesias, I. Molina-Fernández, D. Marris-Morini, D.-X. Xu, J. H. Schmid, S. Janz, A. Ortega-Moñux, "Integrated polarization controllers," Progress In Electromagnetics Research Symposium (PIERS), 2016, Shanghai, China. Invited.

[193] **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Janz, J. Lapointe, M. Rahim, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, J. Pond, D. Benedikovic, C. Alonso-Ramos, L. Vivien, J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, A. V. Velasco, M. L. Calvo, Y. Painchaud, M.-J. Picard, M. Poulin, M. Dado, J. Müllerová, W.N . Ye, M. Pápeš, and V. Vašinek, "Advances in silicon photonics: Exploiting subwavelength engineered metamaterials," Photonics North, 2016, Quebec City, Canada. Invited.

[194] H. Podmore, A. Scott, **P. Cheben,** C. Sioris, P. Cameron, and R. Lee, "The design of a microphotonic spatial heterodyne spectrometer for remote sensing," Photonics North, 2016, Quebec City, Canada. Invited.

[195] A. V. Velasco, A. Herrero-Bermello, P. Corredera, M. L. Calvo, **P. Cheben,** P. J. Bock, A. Delâge, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, M. Florjańczyk, M. Vachon, M. Nedeljkovic, A. Z. Khokhar, and G. Z. Mashanovich, "Waveguide interferometer arrays for on-chip Fourier spectroscopy," Photonics North, 2016, Quebec City, Canada. Invited.

[196] Daniel Benedikovic, Carlos Alonso-Ramos, **Pavel Cheben,** Jens H. Schmid, Shurui Wang, Dan-Xia Xu, Boris Lamontagne, Robert Halir, Alejandro Ortega-Moñux, Laurent Vivien, Jean Lapointe, Siegfried Janz, Juan-Gonzalo Wangüemert-Pérez, Iñigo Molina-Fernández, Jean-Marc Fédéli, and Milan Dado, "High efficiency fiber-chip surface grating couplers," Photonics North, 2016, Québec City, Canada. Invited.

[197] D. Benedikovic, C. Alonso-Ramos, **P. Cheben,** J. H. Schmid, S. Wang, D.-X. Xu, B. Lamontagne, R. Halir, A. Ortega-Moñux, L. Vivien, J. Lapointe, S. Janz, J.-G. Wangüemert-Pérez, I. Molina-Fernández, J.-M. Fédéli, and M. Dado, "High-efficiency single etch step surface grating couplers engineered by subwavelength strcutured

metamaterials," 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META), 2016, Málaga, Spain. Invited.

[198] C. Alonso-Ramos, D. Benedikovic, **P. Cheben,** D. Pérez-Galacho, J. H. Schmid, S. Wang, D.-X. Xu, B. Lamontagne, J. Lapointe, S. Janz, R. Halir, A. Ortega-Moñux, J.-G. Wangüemert-Pérez, I. Molina-Fernández, J.-M. Fédéli, M. Dado, E. Cassan, D. Marris-Morini, L. Vivien, "Sub-wavelength engineered high directionality fiber-to-chip blazed grating couplers," 7th Conference on Metamaterials, Photonics Crystals and Plasmonics (META), 2016, Málaga, Spain. Invited.

[199] **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Janz, D. Benedikovič, C. Alonso-Ramos, M. Rahim, S. Wang, M. Vachon, R. Halir, G. Wangüemert-Pérez, A. Ortega-Moñux, I. Molina-Fernández, M. J. Picard, M. Poulin, M. Pápeš, V. Vašinek, M. Dado, J. Müllerová, "Subwavelength engineered optical materials for photonic integration and sensing," Material Research Society (MRS) Meeting, 2016, Phoenix, USA. Invited.

[200] **P. Cheben,** D. Benedikovič, C. Alonso-Ramos, J. H. Schmid, R. Halir, D.-X. Xu, S. Janz, J. Pond, M. Rahim, S. Wang, M. Vachon, G. Wangüemert-Pérez, A. Ortega-Moñux, I. Molina-Fernández, M. J. Picard, M. Poulin, Y. Painchaud, M. Dado, J. Müllerová, M. Pápeš, and V. Vašinek, "High-efficiency subwavelength index engineered fibre-chip couplers for photonics integration and sensing," SPIE Photonics West, 2016, San Francisco, USA. Invited.

[201] G. Z. Mashanovich, G. T. Reed, M. Nedeljkovic, J. S. Penades, C. J. Mitchell, A. Z. Khokhar, C. J. Littlejohns, S. Stankovic, X. Chen, L. Shen, N. Healy, A. C. Peacock, C. Alonso-Ramos, A. Ortega-Monux, G. Wanguemert-Perez, I. Molina-Fernandez, **P. Cheben,** J. J. Ackert, A. P. Knights, F. Y. Gardes, and D. J. Thomson, "Silicon and germanium mid-infrared photonics," SPIE Photonics West, 2016, San Francisco, USA. Invited.

[202] A. Ortega-Moñux, J. Soler-Penadés, M. Nedeljkovic, J. G. Wangüermert-Pérez, A. Z. Khokhar, C. Alonso-Ramos, R. Halir, G. Z. Mashanovich, Í. Molina-Fernández, and **P. Cheben, "**Subwavelength suspended structures in silicon," SPIE Photonics West, 2016, San Francisco, USA. Invited.

[203] J. H. Schmid, **P. Cheben,** M. Rahim, S. Wang, D.-X. Xu, M. Vachon, S. Janz, J. Lapointe, Y. Painchaud, M.-J. Picard, M. Poulin, and M. Guy, "Subwavelength gratings for broadband and polarization independent fiber-chip coupling with -0.4 dB efficiency," Optical Fiber Conference (OFC), 2016, Anaheim, USA. Invited.

[204] I. Molina-Fernandez, P. Reyes-Iglesias, R. Halir, G. Wangüemert-Perez, J. de Oliva-Rubio, R. Godoy-Rubio, **P. Cheben,** C. Alonso-Ramos, and A. Ortega-Moñux, "Coherent receivers for advanced applications," Optical Fiber Conference (OFC), 2016, Anaheim, USA. Invited.

[205] W. N. Ye, Y. Xiong, **P. Cheben,** D.-X. Xu, and J. Schmid, "Ultracompact polarization splitter and rotators based on silicon-on-insulator," ADEPT Conference, 2015, Štrbské Pleso, Slovakia. Invited.

[206] **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Janz, J. Lapointe, M. Rahim, S. Wang, M. Vachon, R. Halir, A. Ortega-Moñux, G. Wangüemert-Pérez, I. Molina-Fernández, J. Pond, D. Benedikovic, C. Alonso-Ramos, J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, A. V. Velasco, M. L. Calvo, Y. Painchaud, M.-J. Picard, M. Poulin, M. Dado, J. Müllerová, W. N. Ye, M. Pápeš, and V. Vašinek, "Subwavelength metamaterial silicon structures for nanophotonic couplers, colourless multimode interference devices, polarization controllers and mid-infrared waveguides," 18th International Conference on Transparent Optical Networks (ICTON), 2016, Trento, Italy. Invited.

[207] G. Z. Mashanovich, M. Nedeljkovic, J. S. Penades, C. J. Mitchell, S. Stankovic, C. Howle, A. Ortega-Monux, G. Wanguemert-Perez, R. Halir, I. Molina-Fernandez, **P. Cheben,** J. J. Ackert, A. P. Knights, G. T. Reed, "Silicon photonics for the mid-infrared," PHOTONICA, 2015, Belgrade, Serbia. Invited.

[208] G. T. Reed, M. Nedeljkovic, J. S. Penades, C. J. Mitchell, A. Z. Khokhar, C. J. Littlejohns, S. Stankovic, B. Troia, V. M. N. Passaro, L. Shen, N. Healy, A. C. Peacock, A. Ortega-Monux, G. Wanguemert-Perez, I. Molina-Fernandez, **P. Cheben,** J. J. Ackert, A. P. Knights, D. J. Thomson, F. Y. Gardes, and G. Z. Mashanovich, "Group IV mid-IR photonics," IEEE Summer Topicals Meeting, 2015, Nassau, Bahamas. Invited.

[209] G. Z. Mashanovich, M. Nedeljkovic, J. S. Penades, C. J. Mitchell, A. Z. Khokhar, C. J. Littlejohns, S. Stankovic, B. Troia, V. M. N. Passaro, L. Shen, N. Healy, A. C. Peacock, A. Ortega-Monux, G. Wanguemert-Perez, R. Halir, I. Molina-Fernandez, D. Benedikovic, G. S. Murugan, J. S. Wilkinson, **P. Cheben,** A. Villafranca, J. J. Ackert, A. P. Knights, D. J. Thomson, F. Y. Gardes, and G. T. Reed, "Group IV photonics for the mid-infrared," IPR, 2015, Boston, USA. Invited.

[210] **P. Cheben,** D. Benedikovič, C. Alonso-Ramos, M. Pápeš, J. H. Schmid, D.-X. Xu, S. Janz, S. Wang, M. Vachon, G. Wangüemert-Pérez, R. Halir, A. Ortega-Moñux, I. Molina-Fernández, J.-M. Fédéli, J. Čtyroký, J. S. Penadés, M. Nedeljkovic, G. Mashanovic, W. N. Ye, M. Dado, J. Müllerová, and V. Vašinek, "Subwavelength waveguide

structures for optical interconnects and sensing," International Conference on Transparent Optical Network (ICTON), 2015, Budapest, Hungary. Invited.

[211] R. Halir, P. Reyes-Iglesias, C. Alonso-Ramos, D. Sarmiento-Merenguel, G. Wanguemert-Perez, **P. Cheben,** I. Molina-Fernandez, and A. Ortega-Monux, "Colorless devices and reception techniques for polarization multiplexed communications," 17th International Conference on Transparent Optical Networks (ICTON), 2015, Budapest, Hungary. Invited.

[212] D.-X. Xu, S. Janz, M. Vachon, S. Wang, N. Sabourin, **P. Cheben,** J. H. Schmid, J. Lapointe, R. Halir, G. Wangüemert-Pérez, C. Alonso-Ramos, A. Ortega-Moñux, I. Molina-Fernández, and J.-M. Fedeli, "Advances in label-free biosensing using CMOS photonic technologies," Integrated Photonics: Materials, Devices and Applications, SPIE Microtechnologies, 2015, Barcelona, Spain. Invited.

[213] D.-X. Xu, **P. Cheben,** J. H. Schmid, M. Rahim, B. Lamontagne, J. Lapointe, S. Wang, M. Vachon, L. Mao, C. Flueraru, and S. Janz, "Efficient and robust coupling components for hybrid integration with silicon photonics," 36th PIERS Symposium, 2015, Prague, Czech Republic. Invited.

[214] **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Janz, S. Wang, M. Vachon, D. Benedikovič, C. Alonso-Ramos, R. Halir, A. Ortega-Moñux, W. Ye, M. Dado, J. Mullerova, M. J. Picard, and Y. Painchaud "Subwavelength gratings for silicon photonic integration," 17th Canadian Semiconductor Science and Technology Conference, 2015, Sherbrooke, Canada. Invited.

[215] **P. Cheben,** D. Benedikovič, C. Alonso-Ramos, J. H. Schmid, R. Halir, D.-X. Xu, S. Janz, S. Wang, M. Vachon, J. Lapointe, B. Lamontagne, M. Rahim, M. Dado, J. Müllerová, G. Wangüemert-Pérez, A. Ortega-Moñux, I. Molina-Fernández, M. J. Picard, M. Poulin, M. Guy, M. Pápeš, and V. Vašinek, "Subwavelength engineering for silicon photonics," Asia Communications and Photonics Conference (ACP), 2015, Hong Kong. Invited.

[216] **P. Cheben,** D. Benedikovič, C. Alonso-Ramos, J. H. Schmid, R. Halir, D.-X. Xu, S. Janz, S. Wang, M. Vachon, J. Lapointe, B. Lamontagne, M. Rahim, M. Dado, J. Müllerová, G. Wangüemert-Pérez, A. Ortega-Moñux, I. Molina-Fernández, M. J. Picard, M. Poulin, M. Guy, M. Pápeš and V. Vašinek, "Subwavelength grating engineered nanostructures for integrated optics," Asia Communications and Photonics Conference (ACP), 2015, Hong Kong. Invited.

[217] **P. Cheben,** D. Benedikovič, C. Alonso-Ramos, J. H. Schmid, M. Pápeš, D.-X. Xu, S. Janz, S. Wang, M. Vachon, G. Wangüemert-Pérez, R. Halir, A. Ortega-Moñux, I. Molina-Fernánde8z, J.-M. Fédéli, J. S. Penadés, M. Nedeljkovic, G. Z. Mashanovich, W. Ye, M. L. Calvo, M. Dado, J. Müllerová, and V. Vašinek, "Subwavelength silicon photonics," Progress in Photonics, 2015, Florence, Italy. Invited.

[218] **P. Cheben,** C. Alonso Ramos, J. H. Schmid, D.-X. Xu, J. Lapointe, S. Janz, M. Vachon, S. Wang, P. Bock, D. Benedikovič, M. Dado, J. Mullerova, R. Halir, A. Ortega-Moñux, J. G. Wangüemert Pérez, I. Molina-Fernández, L. Vivien, and J.-M. Fédéli, "Subwavelength engineering for integrated photonics," Asia Communications and Photonics Conference (ACP), 2014, Shanghai. Invited.

[219] **P. Cheben,** J. Schmid, D.-X. Xu, J. Lapointe, S. Janz, M. Vachon, S. Wang, R. Halir, A. Ortega-Moñux, C. Alonso Ramos, J. G. Wangüemert Pérez, I. Molina-Fernández, P. Bock, D. Benedikovič, M. Dado, and J. Müllerová, "Subwavelength silicon nanophotonics," Photonics North, 2014, Montreal, Canada. Invited.

[220] J. H. Schmid, **P. Cheben,** J. Lapointe, D.-X. Xu, S. Janz, M. Vachon, S. Wang, P. Bock, D. Benedikovic, R. Halir, A Ortega-Monux, C. Alonso-Ramos, J. G Wanguemert-Perez, and I. Molina-Fernandez. "Subwavelength grating structures for silicon photonic devices," Photonics North, 2014, Montreal, Canada. Invited.

[221] J. G. Wangüemert-Pérez, **P. Cheben,** A. Ortega-Moñux, D. Pérez-Galacho, C. Alonso- Ramos, R. Halir, I. Molina-Fernández, D.-X. Xu, and J. H. Schmid, "Subwavelength gratings for sensing and polarization management," Photonics North, 2014, Montreal, Canada. Invited.

[222] **P. Cheben,** S. Janz, N. Sabourin, D.-X. Xu, H. Ding, S. Wang, J. H. Schmid, A. Delâge, J. Lapointe, W. Sinclair, R. Ma, S. Logan, R. MacKenzie, Q. Y. Liu, and M. Gilmour, R. Halir, C. Alonso Ramos, G. Wanguemert-Perez, A. Ortega-Monux, I. Molina Fernandez, X. Le Roux, L. Laurent, A.Villafranca Velasco, and M. L. Calvo, "Integrated planar waveguide devices for evanescent field sensing and spectroscopy," International Conference on Transparent Optical Networks (ICTON), 2014, Graz, Austria. Invited.

[223] J. H. Schmid, **P. Cheben,** J. Lapointe, D.-X. Xu, S. Janz, M. Vachon, S. Wang, P. Bock, D. Benedikovic, R. Halir, A. Ortega-Monux, C. Alonso-Ramos, J. G. Wanguemert-Perez, and I. Molina-Fernandez. "Silicon photonic integration with subwavelength gratings," International Conference on Transparent Optical Networks (ICTON), 2014, Graz, Austria. Invited.

[224] **P. Cheben,** J. Schmid, D.-X. Xu, J. Lapointe, S. Janz, M. Vachon, S. Wang, R. Halir, A. Ortega-Moñux, C. Alonso Ramos, J. G. Wangüemert Pérez, I. Molina-Fernández, A. V. Velasco, M. L. Calvo, P. Bock, D. Benedikovič, M. Dado, and J. Müllerová, "Subwavelength silicon nanophotonics," SPIE Photonics Europe, 2014, Brussels, Belgium. Invited.

[225] **P. Cheben,** J. Schmid, D.-X. Xu, J. Lapointe, S. Janz, M. Vachon, C. Alonso Ramos, R. Halir, A. Ortega-Moñux, J. G. Wangüemert Pérez, I. Molina-Fernández, A. V. Velasco, M. L. Calvo, P. Bock, D. Benedikovič, M. Dado, and J. Müllerová, "Engineering of refractive index metastructures in silicon photonic circuits," SPIE Photonics West, 2014, San Francisco, USA. Invited.

[226] **P. Cheben,** S. Janz, D.-X. Xu, M. Vachon, N. Sabourin, H. McIntosh, H. Ding, S. Wang, J. H. Schmid, A. Delâge, J. Lapointe, A. Densmore, R. Ma, W. Sinclair, S. M. Logan, R. MacKenzie, Q. Y. Liu, D. Zhang, G. Lopinski, O. Mozenson, M. Gilmour, and H. Tabor, "Silicon molecular sensor chip array with microfluidic and optomechanical interface," SPIE Photonics West, 2014, San Francisco, USA. Invited.

[227] R. Halir, A. Ortega-Moñux, **P. Cheben,** A. Maese-Novo, D. Pérez-Galacho, C. Alonso-Ramos, I. Molina-Fernández, J. G. Wangüemert-Pérez, J. H. Schmid, D.-X. Xu, and S. Janz, "Subwavelength engineering for integrated photonics," SPIE Photonics West, 2014, San Francisco, USA. Invited.

[228] J. H. Schmid, **P. Cheben,** J. Lapointe, S. Janz, P. Bock, D-X. Xu, M. Ibrahim, and W. N. Ye, "Subwavelength gratings for silicon photonic integration," Asia Communications and Photonics Conference, 2013, Beijing, China. Invited.

[229] R. Halir, A. Ortega-Moñux, A. Maese-Novo, D. Pérez-Galacho, I. Molina-Fernández, J. G. Wangüemert Pérez, **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Janz, "Molding silicon waveguide devices with sub-wavelength structures," Information Photonics, 2013, Warsaw, Poland. Guest talk.

[230] R. Halir, A. Ortega-Moñux, A. Maese-Novo, D. Perez-Galacho, L. Zavargo-Peche, I. Molina-Fernández, J. G. Wangüemert-Pérez, **P. Cheben,** J. H. Schmid, D.-X. Xu, S. Janz, and J.-M. Fédéli, "Engineering the optical properties of silicon using sub-wavelength structures," 10th International Conference on Group IV Photonics (GFP), 2013, Seoul, Korea. Invited.

[231] **P. Cheben,** R. Halir, S. Janz, N. Sabourin, D.-X. Xu, H. McIntosh, H. Ding, S. Wang, J. H. Schmid, A. Delâge, J. Lapointe, A. Densmore, W. Sinclair, R. Ma, S. Logan, R. MacKenzie, Q. Y. Liu, M. Gilmour, A. Ortega-Monux, and I. Molina Fernandez, "Recent advances in silicon wire biosensor arrays," EUROMAT, 2013, Seville, Spain. Invited.

[232] **P. Cheben,** J. H. Schmid, P. J. Bock, D.-X. Xu, J. Lapointe, S. Janz, A. Delâge, M. Vachon, M. Ibrahim, A. Aleali, W. N. Ye, R. Halir, A. Ortega-Moñux, C. Alonso-Ramos, A. Maese, I. Molina-Fernández, A. Villafranca Velasco, M. L. Calvo, and L. Vivien, "Recent advances in subwavelength engineering in integrated optics," OFC Conference, 2013, Anaheim, USA. Invited Tutorial.

[233] I. Molina-Fernández, R. Halir, A. Ortega-Moñux, L. Zavargo-Peche, S. Romero-Garcia, D. Pérez-Galacho, J. G. Wangüemert-Pérez, and **P. Cheben,** "Optical waveguide engineering for demanding applications," European Conference on Integrated Optics (ECIO), 2012, Sitges, Spain. Invited.

[234] I. Molina-Fernandez, R. Halir, A. Ortega-Moñux, L. Zavargo-Peche, S. R. García, A. Maese-Novo, D. Perez-Galacho, G. Wanguemert-Perez, **P. Cheben,** and D.-X. Xu, "New concepts in silicon component design using subwavelength structures," Photonics West 2012, San Francisco, USA. Invited.

[235] M. L. Calvo, T. Alieva, O. Martínez-Matos, J. A. Rodrigo, A. V. Velasco, **P. Cheben,** M. P. Hernández-Garay, and A. Cámara, "Holographic photopolymerizable glasses: current challenges for emerging optical information storage and laser beams manipulation applications," Optics Within Life Science, 2012, Genova, Italy. Invited.

[236] V. Velasco, M. L. Calvo, **P. Cheben,** M. Florjańczyk, P. J. Bock, A. Delâge, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, and M. Vachon, "High resolution Fourier-transform microspectroscopy based on spiral silicon waveguides," International Conference on Transparent Optical Networks (ICTON), 2013, Cartagena, Spain. Invited.

[237] **P. Cheben,** A. V. Velasco, R. Halir, C. Alonso-Ramos, P. J. Bock, J. H. Schmid, A. Ortega-Moñux, A. Maese, M. Ibrahim, D.-X. Xu, J. Lapointe, S. Janz, A. Delâge, M. Vachon, A. Aleali, W. N. Ye, I. Molina-Fernández, M. L. Calvo, and L. Vivien, "Recent advances in subwavelength engineering in integrated optics," International Conference on Transparent Optical Networks (ICTON), 2013, Cartagena, Spain. Invited.

[238] **P. Cheben,** J. H. Schmid, C.A. Ramos, R. Halir, L. Zavargo-Peche, J. Lapointe, P. Bock, D.-X. Xu, S. Janz, A. Ortega-Moñux, Í. Molina-Fernández, R. Ma, M. Vachon, A. Delâge, and J.-M. Fédéli, "Diffractive and

subwavelength grating couplers for microphotonic waveguides," 14th International Conference on Transparent Optical Networks (ICTON), 2012, UK. Invited.

[239] V. Velasco, **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, A. Delâge, M. L. Calvo, S. Janz, D.-X. Xu and M. Florjańczyk, "Espectrómetro de transformada de Fourier implementado mediante guías de onda en espiral con base de silicio," Reunión Nacional de Óptica, 2012, Zaragoza, Spain. Invited as awardee (AVV).

[240] D.-X. Xu, A. Delage, J. H. Schmid, R. Ma, S. Wang, J. Lapointe, M. Vachon, **P. Cheben,** and S. Janz, "Selecting the polarization in silicon photonic wire components," iSPIE Photonics West, 2012, San Francisco, USA. Invited.

[241] **P. Cheben,** J. H. Schmid, P. J. Bock, J. Lapointe, S. Janz, D.-X. Xu, A. Delâge, M. Vachon, R. Halir, A. Ortega-Moñux, C. Alonso Ramos, I. Molina-Fernandez, J.-M. Fédéli, M. Ibrahim, W. N. Ye, A. V. Velasco, M. L. Calvo, and I. Glesk, "Refractive index engineering with subwavelength gratings in silicon waveguides," OSA Integrated Photonics Integrated Photonics Research, Silicon and Nano Photonics (IPR), 2012, Colorado Springs, USA. Invited.

[242] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, M. Vachon, R. Ma, A. Densmore, A. Delâge, B. Lamontagne, R. Halir, I. Molina-Fernández, A. Ortega-Moñux, C. Alonso-Ramos, A. Villafranca Velasco, M. L. Calvo, J.-M. Fédélie, I. Glesk, M. Ibrahim, and W. N. Ye, "Silicon subwavelength nanophotonics," Technolaser International Conference, 2012, Havana, Cuba. Plenary.

[243] S. Janz, D.-X. Xu, N. Sabourin, H. McIntosh, H. Ding, H. McIntosh, A. Delâge, **P. Cheben,** M. Vachon, S. Wang, J. Lapointe, J. H. Schmid, A. Densmore, R. Ma, R. Mackenzie, S. Logan, Y. Li, G. Lopinski, O. Mozenson, D. Zhang, Q. Y. Li, W. Sinclair, and B. Lamontagne, "Integrated silicon photonic wire sensor microarrays and microarray reader instrumentation," Materials Research Society Spring Meeting: Symposium on Group IV Photonics for Sensing and Imaging, 2012, San Francisco, USA. Invited.

[244] **P. Cheben,** J. H. Schmid, P. J. Bock, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delâge, R. Ma, R. Halir, B. Lamontagne, A. Ortega-Moñux, I. Molina Fernandez, J.-M. Fédéli, M. Ibrahim, W. N. Ye, and T.J. Hall, "Silicon subwavelength photonics," Asia Communications and Photonics (ACP) Conference, 2011, Shanghai, China. Invited.

[245] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delâge, B. Lamontagne, R. Ma, and M. Vachon, "Subwavelength silicon photonics," 18th International Conference on Applied Physics of Condensed Matter (APCOM), 2011, Nový Smokovec, Slovak Republic. Invited.

[246] **P. Cheben,** J. H. Schmid, P. J. Bock, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delâge, B. Lamontagne, R. Ma, and M. Vachon, "Subwavelength silicon waveguide devices," 7th Workshop on Fibre and Optical Passive Components (WFOPC), 2011, Montreal, Canada. Invited.

[247] **P. Cheben,** M. Florjańczyk, P. Bock, C. A. Ramos, B. Lamontagne, A. Bogdanov, S. Janz, D.-X. Xu, A. Ortega-Moñux, I. M. Fernandez, A. Scott, B. Solheim, and K. Sinclair, "Recent advances in static Fourier-transform planar waveguide spectrometers," 13th International Conference on Transparent Optical Networks (ICTON), 2011, Stockholm, Sweden. Invited.

[248] S. Tanev, V. Tuchin, **P. Cheben,** P. J. Bock, J. H. Schmid, S. Janz, D.-X. Xu, J. Lapointe, A. Densmore, and J. Pond, "Advances in the FDTD design and modeling of nano- and bio-photonics applications," Photonics and Nanostructures - Fundamentals and Applications, 2011, doi:10.1016/j.photonics.2011.06.003. Invited.

[249] **P. Cheben,** J. H. Schmid, P. J. Bock, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delage, R. Ma, R. Halir, B. Lamontagne, A. Ortega-Monux, I. Molina-Fernandez, J.-M. Fedeli, M. Ibrahim, and W. N. Ye, "Subwavelength structures in SOI waveguides," 8th International Conference on Group IV Photonics, 2011, London, England. Invited.

[250] J. H. Schmid, M. Ibrahim, **P. Cheben,** J. Lapointe, S. Janz, P. J. Bock. A. Densmore, W. N. Ye, and D.-X. Xu, "Athermal silicon waveguides using the subwavelength grating effect," Integrated Photonics and Nanophotonics Research and Applications, 2011, Toronto, Canada. Invited.

[251] J. H. Schmid, **P. Cheben,** P. J. Bock, J. Lapointe, S. Janz, A. Delâge, A. Densmore, T. J. Hall, B. Lamontagne, R. Ma, and D.-X. Xu "Refractive index engineering with subwavelength gratings in silicon microphotonic waveguides," IEEE Winter Topicals Conference, 2011, Keystone, USA. Invited.

[252] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, R. Ma, A. Densmore, A. Delâge, B. Lamontagne, T. J. Hall, R. Halir, I. Molina-Fernández, and J.-M. Fédéli, "Subwavelength and diffractive waveguide structures and their applications in nanophotonics and sensing," Photonics West Symposium, Proc. SPIE 7941, 2011, doi:10.1117/12.875431. Invited.

[253] S. Janz, **P. Cheben,** J. H. Schmid, P. J. Bock, R. Halir, D.-X. Xu, A. Densmore, R. Ma, I. Molina-Fernandez, A. Delage, M. Vachon, J. Lapointe, W. Sinclair, E. Post, B. Lamontagne "Engineering light at the sub-wavelength scale using silicon photonics," Photonics West Symposium, Proc. SPIE 7943, 2011, doi: 10.1117/12.875488. Invited.

[254] S. Janz, A. Densmore, D.-X. Xu, W. Sinclair, J. H. Schmid, R. Ma, M. Vachon, J. Lapointe, Y. Li, T. Mischki, G. Lopinski, E. Post, A. Delâge, **P. Cheben,** and B. Lamontagne, "Silicon photonic wire biosensors and biosensor arrays," Europtrode X, 2010, Prague, Czech Republic. Invited.

[255] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, R. Ma, A. Delâge, B. Lamontagne, and T. Hall, "Subwavelength silicon photonics," IEEE Photonics Society Symposium on Advancements in Photonics, 2010, Ottawa, Canada. Invited.

[256] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delâge, B. Lamontagne, M. L. Calvo, and T. J. Hall, "Subwavelength photonics: a new waveguide principle for highly efficient planar waveguide components," European Optical Society Annual Meeting, 2010, Paris, France. Invited.

[257] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delâge, B. Lamontagne, and T. J. Hall, "Subwavelength silicon nanophotonics," Optical Society of America LAOP Conference, 2010, Recife, Brazil. Invited.

[258] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delâge, B. Lamontagne, T. J. Hall, I. Molina-Fernandez, and W. Sinclair, "Subwavelength nanophotonics: from a new waveguide principle to practical components at telecom wavelengths," 12th International Conference on Transparent Optical Networks, 2010, Munich, Germany. Invited.

[259] **P. Cheben,** P. J. Bock, J. H. Schmid, J. Lapointe, S. Janz, D.-X. Xu, A. Densmore, A. Delâge, B. Lamontagne, M. Florjanczyk, and T. Hall, "Silicon photonics: from subwavelength nanostructures to implementations in optical interconnects, spectroscopy and sensing," 17th Conference on Quantum and Wave Aspects of Contemporary Optics, 2010, Liptovsky Jan, Slovak Republic. Plenary.

[260] S. Janz, A. Densmore, D.-X. Xu, W. Sinclair, J. H. Schmid, R. Ma, M. Vachon, J. Lapointe, Y. Li, T. Mischki, G. Lopinski, E. Post, A. Delâge, **P. Cheben,** and B. Lamontagne, "Silicon photonic wire evanescent field sensors: from sensor to biochip array," 8th Annual Centre for Optical technologies Open House, Workshop on Optical Biosensors, 2009, Lehigh University, Bethelehem, USA. Invited.

[261] S. Janz, A. Densmore, D.-X. Xu, W. Sinclair, J. H. Schmid, R. Ma, M. Vachon, J. Lapointe, A. Delâge, E. Post, Y. Li, T. Mischki, G. Lopinski, **P. Cheben,** and B. Lamontagne, "Silicon photonic wire evanescent field sensors: from sensor to biochip array," IEEE 6th International Conference on Group IV Photonics, 2009, San Francisco, USA. Invited.

[262] M. L. Calvo, **P. Cheben,** O. Martínez-Matos, M. Paz Hernández-Garay, and J. A. Rodrigo, "Fundamentals and advances in holographic photomaterials for optical data processing and applications," ROMOPTO, 2009, Sibiu, Romania. Invited.

[263] M. L. Calvo, **P. Cheben,** O. Martínez-Matos, J. A. Rodrigo, M. P. Hernández-Garay, and F. del Monte, "New insights on photopolymerizable glasses: toward green holography," ICO Topical Meeting on Emerging Trends & Novel Materials in Photonics, ICO Photonics Delphi , 2009. Invited.**P. Cheben,** J. H. Schmid, M. Florjańczyk, P. J. Bock, D.-X. Xu, S. Janz, A. Delâge, J. Lapointe, B. Lamontagne, E. Post, A. Densmore, J. Albert, T. J. Hall, B. Solheim, and A. Scott, "Recent progress in planar waveguide spectrometers," Integrated Photonics and Nanophotonics Research and Applications, OSA Technical Digest (CD), Optical Society of America, 2009. Invited.

[264] **P. Cheben,** J. H Schmid, P. Bock,. D.-X. Xu, S. Janz, A. Delage, J. Lapointe, B. Lamontagne, A. Densmore, and T. Hall, "Sub-wavelength nanostructures for engineering the effective index of silicon-on-insulator waveguides," 11th International Conference on Transparent Optical Networks, 2009. Invited.

[265] A. Delage, **P. Cheben,** M. Florjanczyk, S. Janz, B. Lamontagne, J. Lapointe, A. Scott, B. Solheim, and D.-X. Xu, "Static Fourier-transform waveguide spectrometers," 11th International Conference on Transparent Optical Networks (ICTON), 2009. Invited.

[266] D.-X. Xu, A. Densmore, J. H. Schmid, R. Ma, M. Vachon, S. Janz, R. McKinnon, J. Lapointe, A. Delâge, E. Post, and **P. Cheben,** "Spiral cavity silicon wire resonators as label-free biosensors," IPNRA, 2009, Hawaii, USA. Invited.

[267] **P. Cheben,** S. Janz, D.-X. Xu, A. Delâge, B. Lamontagne, J. Lapointe, J. H. Schmid, A. Densmore, M. Florjańczyk, B. Solheim, A. Scott, M. L. Calvo, O. Martinez, J. Rodrigo, and T. Alieva, "Emerging planar

waveguide microspectrometer devices: spatial heterodyne interferometer arrays," Tecnolaser International Conference, 2009, Havana, Cuba. Keynote.

[268] A. Densmore, S. Janz, D.-X. Xu, M. Vachon, P. Waldron, J. H. Schmid, J. Lapointe, T. Mischki, G. Lopinski, A. Delâge, **P. Cheben,** and R. Ma, "Optoelectronic integration of silicon photonic wire biosensors," SPIE Photonics West, 2009, San Jose, USA. Invited.

[269] A. Scott, M. Florjańczyk, **P. Cheben,** S. Janz, B. Solheim, and D.-X. Xu, "Micro-interferometer with high throughput for remote sensing," SPIE Photonics West, 2009, San Jose, USA. Invited.

[270] A. Densmore, D.-X. Xu, S. Janz, J. H. Schmid, P. Waldron, **P. Cheben,** A. Delâge, G. Lopinski, and T. Mischki, "Silicon nanophotonic devices for sensing and switching applications," IEEE Lasers and Electrooptic Society (LEOS) Annual Meeting, 2008, Newport Beach, USA. Invited.

[271] A. Delâge, D.-X. Xu, A. Densmore, S. Janz, P. Waldron, J. Lapointe, B. Lamontagne, T. Mischki, G. Lopinski, J. H. Schmid, and **P. Cheben,** "Label-free biological sensors based on ring resonators," International Conference on Transparent Optical Network, 2008, Athens, Greece. Invited.

[272] J. H. Schmid, **P. Cheben,** S. Janz, J. Lapointe, E. Post, A. Delâge, A. Densmore, B. Lamontagne, P. Waldron, and D.-X. Xu, "Subwavelength structures in silicon-on-insulator waveguides for modification of facet reflectivity and efficient fiber-chip coupling," 14th European Conference on Integrated Optics, 2008, Eindhoven, The Netherlands. Invited.

[273] **P. Cheben,** P. J. Bock, M. L. Calvo, A. Delâge, A. Densmore, M. Florjańczyk, S. Janz, B. Lamontagne, J. Lapointe, E. Post, J. Rodrigo, J. Schmid, P. Waldron, and D.-X. Xu, "Emerging silicon photonic devices: waveguide gratings, resonator arrays and biosensors," Photonics, 2008, Prague, Czech Republic. Invited.

[274] M. Florjańczyk, **P. Cheben,** S. Janz, A. Scott, B. Solheim, and D.-X. Xu, "Spatial heterodyne planar waveguide spectrometer: theory and design," Photonics North, 2008, Montreal, Canada. Invited.

[275] M. L. Calvo, O. Martínez-Matos, J. A. Rodrigo, T. Alieva, **P. Cheben,** and F. del Monte, "Holographic optical elements in photopolymerizable glass with high refractive index modulation: emerging implementations," Optics for the 21st Century (ICO21), 2008, Sydney, Australia. Invited.

[276] **P. Cheben,** P. Bock, M. Florjańczyk, S. Janz, D.-X. Xu, A. Delâge, J. Schmid, A. Scott, B. Solheim, A. Densmore, and T. Hall, "Emerging planar waveguide devices for WDM and spectroscopy: curved waveguide multiplexers and interferometer arrays," IEEE/LEOS ICTON, 2008, Athens, Greece. Invited.

[277] **P. Cheben,** M. Florjanczyk, S. Janz, D.-X. Xu, B. Solheim, A. Scott, B. Lamontagne, J. Schmid, J. Lapointe, A. Delage, and A. Densmore, "Fourier transform waveguide interferometer arrays for spectroscopic sensing," CANUES Harsh Environment Sensor Workshop, 2008, Neuchâtel, Switzerland. Invited.

[278] S. Janz, **P. Cheben,** D.-X. Xu, J. Schmid, P. Waldron, A. Delâge, B. Lamontagne, J. Lapointe, and W. Ye, "Wavelength selective elements on silicon: implementation and applications," Silicon Photonics Integrated Devices Workshop at the Optical Fiber Communications Conference, 2008, San Diego, USA. Invited.

[279] M. L. Calvo, O. Martínez-Matos, J. A. Rodrigo, **P. Cheben,** and F. del Monte, "Some physical features on photopolymerisable glasses modified with high refractive index species for holographic data storage," 6th Iberoamerican Conference on Optics (RIAO) | 9th Latinamerican meeting on Optics, Lasers and Applications (OPTILAS), 2007, Campinas-SP, Brazil. Invited.

[280] **P. Cheben,** J. Schmid, A. Delâge, A. Densmore, M. Florjanczyk, S. Janz, B. Lamontagne, J. Lapointe, E. Post, P. Waldron, D.-X. Xu, and W. Ye, "Silicon-based arrayed waveguide grating microspectrometers and subwavelength structures," 5th Workshop in Fibers and Optical Passive Components, 2007, Taipei, Taiwan. Invited.

[281] S. Janz, A. Densmore, D.-X. Xu, P. Waldron, J. Lapointe, G. Lopinski, T. Mischki, **P. Cheben,** A. Delage, B. Lamontagne, and J. H. Schmid, "Integrated nanophotonics for biology: photonic wire evanescent field bio-molecular sesnors," 7th Annual General Meeting, NRC-Genomics and Health Initiative, 2007, Halifax, Canada. Invited.

[282] **P. Cheben,** A. Delâge, A. Densmore, S. Janz, B. Lamontagne, J. Lapointe, E. Post, J. H. Schmid, P. Waldron, and D.-X. Xu, "Recent advances in silicon microphotonic devices," 5th International Workshop Technolaser, 2007, Havana, Cuba. Keynote.

[283] **P. Cheben,** A. Delâge, A. Densmore, M. Florjanczyk, S. Janz, B. Lamontagne, J. Lapointe, E. Post, I. Powel, J. Schmid, P. Waldron, and D.-X. Xu, "Silicon photonic arrayed waveguide grating devices and sub-wavelength structures," ICTON, 2007, Rome, Italy. Invited.

[284] J. H. Schmid, **P. Cheben,** S. Janz, J. Lapointe, E. Post, A. Delâge, A. Densmore, B. Lamontagne, P. Waldron, D.-X. Xu, "Subwavelength grating structures in planar waveguide facets for modified reflectivity," Photonics North, 2007, Ottawa, Canada. Invited.

[285] M. Florjańczyk, **P. Cheben,** S. Janz, A. Scott, B. Solheim, and D.-X. Xu, "Planar waveguide spatial heterodyne spectrometer," Photonics North, 2007, Ottawa, Canada. Invited.

[286] S. Janz, A. Densmore, D.-X. Xu, P. Waldron, J. Lapointe, G. Lopinski, T. Mischki, **P. Cheben,** A. Delage, B. Lamontagne, and J. H. Schmid, "Silicon photonics for biosensing applications," OSA Topical Meeting on Integrated Photonics and Nanophotonics Research and Applications, 2007, Salt Lake City, USA. Invited.

[287] S. Janz, **P. Cheben,** A. Delâge, A. Densmore, B. Lamontagne, J. Lapointe, E. Post, J. Schmid, P. Waldron, D.-X. Xu, K. P. Yap, and W. N. Ye, "Silicon photonics: an overview of the technology, challenges, and applications," Photonics North, 2006, Ottawa, Canada. Keynote.

[288] **P. Cheben,** "Photonics for information technologies: materials, devices, and application," Winter College on Quantum and Classical Aspects of Information Optics, The Abdus Salam International Center for Theoretical Physics, 2006, Unesco, Trieste, Italy. Invited.

[289] S. Janz, A. Densmore, D.-X. Xu, P. Waldron, A. Delage**, P. Cheben**, J. Lapointe, and J. H. Schmid, "Silicon based microphotonics for biosensing applications," NATO Advanced Study Institute in Optical Waveguide Sensing and Imaging, 2006, Gatineau, Canada. Invited.

[290] A. Densmore, D.-X. Xu, P. Waldron, S. Janz, and **P. Cheben,** "Silicon microphotonic waveguides for biological sensing," International Symposium on Biophotonics, Nanophotonics and Metamaterials, 2006, Hangzhou, China. Invited.

[291] S. Janz, **P. Cheben,** A. Delage, A. Densmore, B. Lamontagne, E. Post, J. Schmid, P. Waldron, D.-X. Xu, K. P. Yap, and W. N. Ye, "Silicon microphotonic waveguide technology for sensing, spectroscopy and communications," ECS Meeting, Electrochemical Society Transactions, 2006. Invited.

[292] M. L. Calvo, **P. Cheben,** O. Martínez-Matos, J. A. Rodrigo, and F. del Monte, "On physical properties of a new photopolymerisable glass with high refractive index species for holographic data storage," Romopto Conference, 2006, Sibiu, Romania. Invited.

[293] D.-X. Xu, **P. Cheben,** A. Delâge, S. Janz, B. Lamontagne, M.-J. Picard, E. Post, P. Waldron, and W. N. Ye, "Applications of cladding stress induced effects for advanced polarization control in silicon photonics," Progress In Electromagnetics Research Symposium (PIERS), 2007, Beijing, China. Invited.

[294] **P. Cheben,** M. L. Calvo, F. del Monte, O. Martínez-Matos, and J. A. Rodrigo, "Sol-gel holographic recording materials," ICO Topical Meeting on Optoinformatics and Information Processing, 2006, St. Petersburg, Russia. Invited.

[295] M. L Calvo, P. Martínez-Matos, F. del Monte, J. A. Rodrigo, and **P. Cheben**, "The experimental evidence of over-modulation in volume holographic gratings recorded in a new photopolymerizable glass with high refractive index species," ICO Topical Meeting on Optoinformatics and Information Processing, 2006, St. Petersburg, Russia. Invited.

[296] D.-X. Xu, W. N. Ye, **P. Cheben,** A. Delâge, S. Janz, B. Lamontagne, M.-J. Picard, and E. Post, "FEM simulation assisted stress engineering for polarization control in SOI waveguide components," Integrated Photonics Research and Applications, 2006. Invited.

[297] A. Delâge, **P. Cheben,** A. Densmore, S. Janz, B. Lamontagne, J. Lapointe, J. Schmid, P. Waldron, D-X. Xu, "Application of optical telecom planar technology to silicon-based microphotonics and sensors," 8th International Conference on Transparent Optical Networks, 2006. Invited.

[298] D.-X. Xu, A. Delage, **P. Cheben,** B. Lamontagne, S. Janz, and W. N. Ye, "Silicon-on-insulator (SOI) as a photonics platform," 12th International Symposium on SOI Technology and Devices, 2005, Quebec City, Canada. Invited.

[299] **P. Cheben,** I. Powell, S. Janz, and D.-X Xu, "Fourier transform microspectrometer with interleaved arrayed waveguide gratings," 7th International Conference on Transparent Optical Networks, 2005, Barcelona, Spain. Invited.

[300] D.-X. Xu, W. N. Ye, A. Bogdanov, D. Dalacu, A. Delâge, **P. Cheben,** S. Janz, B. Lamontagne, M.-J. Picard, "Design of polarization-insensitive components using geometrical and stress-induced birefringence in SOI waveguides," Photonics West, 2005, San Jose, USA. Invited.

[301] M. L. Calvo, **P. Cheben,** O. Martínez Matos, F. del Monte, J. Rodrigo, and T. Alieva, "The current status of organically modified photopolymer glasses for holographic data storage and photonic applications," International Conference on Lasers, Applications, and Technologies, 2005, St. Petersburg, Russia. Invited.

[302] S. Janz, **P. Cheben,** A. Delâge, B. Lamontagne, M.-J. Picard, D.-X. Xu, K.-P. Yap, and W. N. Ye, "Silicon-based integrated optics – waveguide technology to microphotonics," Group IV Semiconductor Nanostructures, Materials Research Society Symposium, 2005. Invited.

[303] A. Delâge, S. Bidnyk, **P. Cheben,** K. Dossou, S. Janz, B. Lamontagne, M. Packirisamy, and D.-X. Xu, "Recent developments in integrated spectrometers. 6th International Conference on Transparent Optical Networks, 2004, Wroclaw, Poland. Invited.

[304] **P. Cheben,** S. Janz, D.-X. Xu, and S. Tanev, "A highly efficient broad-band waveguide grating coupler with a sub-wavelength grating mirror," NATO Advanced Research Workshop, 2004, Ottawa, Canada. Invited.

[305] D.-X. Xu, J. M. Baribeau, **P. Cheben,** S. Janz, and W. N. Ye, "Prospect and challenges for microphotonic waveguide components based on Si and SiGe," The Electrochemical Society, SiGe: Materials, Processing, and Devices, 2004. Invited.

[306] M. L. Calvo and **P. Cheben,** "New holographic materials for optical data storage," The International Optical Congress, Optics - XXI Century, 2002, St. Petersburg, Russia. Invited.

[307] **P. Cheben** and M. L. Calvo, "Recent advances in sol-gel holographic recording materials," Photonics West, 2002, San Jose, USA. Invited.

[308] **P. Cheben** and C. P. Grover, "Photosensitive silica gels for holographic recording," International Conference on Optics and Optoelectronics, 1998, Dehradun, India. Invited.

[309] **P. Cheben,** M. L. Calvo, and C. Morales, "Holographic optical elements: optical solutions for aerospace systems," II Congress INTA: Space 21, 1992, Madrid, Spain. Invited.

**Refereed international conferences, regular contributions** (total 288)

[1] T. Hao, **P. Cheben,** J.H. Schmid, and P. Berini, Spherical representation of (anti-)parity-time states of Bragg gratings, META 2025, Malaga, Spain, July 22 – 25, 2025.

[2] S. Saeidi, **P. Cheben,** J. H. Schmid, and P. Berini, "InP-Based Laser Diode for Plasmonic Biosensing," OPTICA Advanced Photonics Congress, Marseille, France, 13 – 17 July, 2025.

[3] L. Yuan, W. Ye, **P. Cheben,** J. H. Schmid, J. Zhang, and J. M. Luque-González, "Broadband Brick MMI Crossing for Integrated Photonic Circuit," Photonics North 2025, Ottawa, Canada, May 20–22, 2025.

[4] S.-M. Toxqui-Rodriguez, T.-T. Duong-Dinh, X. Le-Roux, N. Koopmai, D. Melati, M. Montesinos-Ballester, D. González-Andrade, **P. Cheben,** A.-V. Velasco, E. Cassan, D. Marris-Morini, L. Vivien, and C.-A. Ramos, "Mid-infrared Fourier transform spectrometer based on metamaterial suspended silicon waveguides", ECIO 2025, Cardiff, UK, 10th – 12th June 2025.

[5] W. El-Sayed, Y. Grinberg, D.-X Xu, **P. Cheben,** P. E. Barclay, "Parameterizing arbitrary shapes for optimization of optomechanical cavities," Photonics North, Ottawa, Ontario, Canada, 20 – 23 May 2025.

[6] W. Fraser, R. Korček, C. Horvath, S. Wang, M. Vachon, R. Ma, D.-X. Xu, I. Glesk, J. Litvik, J. H. Schmid, **P. Cheben,** W. N. Ye and D. Benedikovič, "O-band-operated fiber-chip surface gratings for silicon nitride photonic integrated circuits," In Proc: Photonics Prague 2025, Prague, Czechia, June 2025.

[7] R. Korček, A. Petrovič, W. Fraser, J. H. Schmid, **P. Cheben,** W. N. Ye, and D. Benedikovič, "Metaheuristic optimization of hybrid silicon nitride grating couplers," In Proc: Photonics Prague 2025, Prague, Czechia, June 2025.

[8] A. V. Velasco, R. Fernández de Cabo, D. González-Andrade, D. Melati, Carlos Alonso-Ramos, A. Sánchez-Sánchez, **P. Cheben,** "Advanced metamaterial waveguide devices for broadband modal and power control", IEEE Photonics Conference, Rome, 2024.

[9] I.Kandid, S. Khajavi, M. Vachon, J. Zhang, D. Melati, S. Wang, **P. Cheben,** J. H. Schmid, A. Atieh, C. Alonso Ramos, and W. N. Ye, "Experimental Demonstration of a 2-D Dense Optical Phased Array," IEEE SiPhotonics conference, Park Plaza London Riverbank, United Kingdom, April 14-17, 2025.

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