

Xiankai Sun

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RESEARCH INTEREST AND EXPERTISE

integrated optics, optoelectronics, nanophotonics, nanofabrication, optomechanics, optoacoustics, nanomechanics, micro- and nanoelectromechanics, photonic nanostructures, semiconductor lasers, photonic/phononic crystals, nonlinear photonics, topological photonics, optical communication, optical sensing and signal processing

APPOINTMENTS

08/2021–present Associate Director, Centre of Optical Sciences, The Chinese University of Hong Kong
08/2020–present Associate Professor, Electronic Engineering, The Chinese University of Hong Kong
08/2014–07/2020 Assistant Professor, Electronic Engineering, The Chinese University of Hong Kong
06/2012–07/2014 Associate Research Scientist, Electrical Engineering, Yale University, USA
07/2010–05/2012 Postdoctoral Research Associate, Electrical Engineering, Yale University, USA

EDUCATION

2010 Ph.D., Applied Physics, California Institute of Technology (Caltech), USA GPA: 4.2/4.3
Advisor: Prof. Amnon Yariv. Thesis: Supermode Si/III–V lasers and circular Bragg lasers
2006 M.S., Applied Physics, California Institute of Technology (Caltech), USA GPA: 4.2/4.3
2004 B.S., Physics, University of Science and Technology of China (USTC), China GPA: 3.9/4.0

HONORS AND AWARDS

2015 Early Career Award, Research Grants Council of Hong Kong
2013 Finalist, Blavatnik Awards for Young Scientists, New York Academy of Sciences
2010 Bor-Uei Chen Memorial Scholarship Award, Photonics Society of Chinese-Americans
2009 IEEE Photonics Society Student Travel Grant Award
SPIE Scholarship in Optical Science and Engineering
2008 IEEE Photonics Society Graduate Student Fellowship Award
Li Ming Scholarship Award, Caltech
Chinese Government Award for Outstanding Overseas Students
2007 Phi Tau Phi Scholarship, Phi Tau Phi Scholastic Honor Society of America
2006 CESASC Scholarship, Chinese-American Engineers and Scientists Association of Southern California
2004 Outstanding College Graduate of Anhui Province, China
Outstanding College Graduate of USTC
Outstanding Bachelor Thesis Award, USTC
Outstanding College Student of Anhui Province, China
2001–2003 First-Tier Outstanding Student Scholarship of USTC, every year
2000 Zhang Zongzhi Sci-Tech Scholarship, USTC

PROFESSIONAL ACTIVITIES

◆ Journal editor

- Associate Editor of *Optics Express*, 08/2016–present
- Editorial Board Member of *Scientific Reports*, 06/2018–present

◆ **Conference organization**

- organizer for session *SC3: Integrated Lithium Niobate Photonics* in the *2021 Photonics and Electromagnetics Research Symposium (PIERS 2021)*, Hangzhou, China, 11/2021
- technical committee member of *S&I 9: Photonic Integration* in the *2022 Conference on Lasers and Electro-Optics (CLEO 2022)*, San Jose, CA, USA, 05/2022
- technical committee member of *Topic 7: Optoelectronic Devices and Integration* in the *10th Applied Optics and Photonics China (AOPC 2021)*, Beijing China, 06/2021
- technical committee member of *S&I 9: Photonic Integration* in the *2021 Conference on Lasers and Electro-Optics (CLEO 2021)*, San Jose, CA, USA, 05/2021
- technical committee member of *Track 6: Micro-, Nano-, and Quantum Photonics: Science and Applications* in the *2020 Asia Communications and Photonics Conference (ACP 2020)*, Beijing, China, 10/2020
- technical committee member of *S&I 9: Photonic Integration* in the *2020 Conference on Lasers and Electro-Optics (CLEO 2020)*, San Jose, CA, USA, 05/2020
- technical committee member of *Track 4: Optoelectronic Integration and Devices* in the *2019 International Conference on Optical Communications and Networks (ICOON 2019)*, Huangshan, China, 08/2019
- co-chair for topical session *Optofluidics & Optical Devices* in the *2019 International Multidisciplinary Conference on Optofluidics (IMCO 2019)*, Hong Kong, 06/2019
- technical committee member of *Track 4: Optoelectronic Devices and Integration* in the *2018 Asia Communications and Photonics Conference (ACP 2018)*, Hangzhou, China, 10/2018
- co-chair for topical session *Optical Microcavity: From Sensing to Lasing* in the *2018 International Multidisciplinary Conference on Optofluidics (IMCO 2018)*, Shanghai, China, 08/2018
- organizer and chair for session *SC3&2: Optical Forces and Optomechanics* in the *2016 Progress In Electromagnetic Research Symposium (PIERS 2016)*, Shanghai, China, 08/2016

◆ **External reviewer/evaluator**

- grant proposals for the Israel Science Foundation, 2021
- grant proposals for the European Research Council, 2020
- master and PhD theses for The Chinese University of Hong Kong, Shenzhen, 2019, 2020
- graduate courses for The Chinese University of Hong Kong, Shenzhen, 2021, 2022
- PhD theses for University of Science and Technology of China, 2017
- grant proposals for the French National Research Agency, 2017
- research and professional activities of the Institutes of the Czech Academy of Sciences, 2015, 2020

◆ **Journal reviewer (more than 200 times in total)**

[Optics and Photonics]

- *Light: Science & Applications*
- *Laser & Photonics Reviews*
- *Advanced Optical Materials*
- *Advanced Photonics Research*
- *Nanophotonics*
- *ACS Photonics*
- *Optics Letters*
- *Optics Express*
- *Journal of the Optical Society of America B*
- *Journal of Lightwave Technology*
- *IEEE Journal of Selected Topics in Quantum Electronics*
- *IEEE Journal of Quantum Electronics*

[Physics and Applied Physics]

- *Nature Nanotechnology*
- *Physical Review Letters*
- *Physical Review Applied*
- *Physical Review A*
- *Physical Review B*
- *Physical Review Materials*
- *Physical Review Research*
- *Scientific Reports*
- *IEEE Access*
- *Applied Physics Letters*
- *Journal of Applied Physics*
- *Science China Physics, Mechanics & Astronomy*
- *Science China Information Sciences*
- *Annalen der Physik*

- *IEEE Photonics Journal*
- *IEEE Photonics Technology Letters*
- *Optical Fiber Technology*
- *IET Optoelectronics*
- *Optical and Quantum Electronics*
- *Journal of Nanophotonics*
- *Optical Engineering*
- *Optical Review*
- *Fiber and Integrated Optics*
- *Advanced Quantum Technologies*
- *Molecules*
- *Sensors*
- *Materials*
- *Entropy*
- *Applied Sciences*
- *Applied Physics Express*
- *Micromachines*
- *Journal of Physics B*
- *Applied Physics B*
- *AIP Advances*
- *ACS Applied Nano Materials*

RESEARCH PROJECTS AND EXPERIENCE

The Chinese University of Hong Kong

08/2014–present

- ◆ Investigation of anti-PT symmetry on an integrated photonic platform
[PI, period: 1 Oct 2021 – 30 Sep 2024]
- ◆ An integrated measurement system for quantum information and quantum materials research under extreme conditions
[co-PI, period: 30 Jun 2021 – 29 Jun 2024]
- ◆ A high-accuracy wafer polisher and bonders for heterogeneous integration
[co-PI, period: 1 Jan 2021 – 31 Dec 2023]
- ◆ On-chip topological lasers with cavities of arbitrary shapes
[PI, period: 1 Jan 2020 – 31 Dec 2022]
- ◆ Investigation of photonic bound states in the continuum in photonic integrated circuits
[PI, period: 1 Jan 2019 – 30 Jun 2022]
- ◆ Experimental investigation of nanoscale *PT*-symmetric acoustics with cavity optomechanical systems
[PI, period: 1 Jan 2018 – 30 Jun 2021]
- ◆ Ultra-high *Q* silicon micro-resonators for integrated quantum photonics
[Co-I, period: 1 Oct 2017 – 31 Mar 2021]
- ◆ Visible-light optomechanical integrated circuits based on III-nitride semiconductors
[PI, period: 1 Jan 2016 – 31 Dec 2019]
- ◆ Investigation of the force law of classical electrodynamics with nanoscale optomechanical systems
[PI, period: 1 Jan 2016 – 30 Jun 2019]
- ◆ Developing optomechanical devices based on layered nanomaterials for single-biomolecule mass spectrometry
[PI, period: 1 Jul 2015 – 30 Jun 2017]
- ◆ Nano-optomechanical devices based on novel two-dimensional nanomaterials
[PI, period: 1 Jan 2015 – 30 Jun 2017]

Yale University

07/2010–07/2014

Yale Nanodevices Laboratory, Electrical Engineering (supervisor: Prof. Hong Tang)

- ◆ Cavity nano-optomechanics
- ◆ Nonlinear photonics
- ◆ Applications of photonic crystals in cavity optomechanics
- ◆ Micro/nanoelectromechanical systems (MEMS/NEMS)
- ◆ Cryogenic nanophotonics and nano-optomechanics

California Institute of Technology

09/2004–06/2010

Optical and Quantum Electronics Laboratory, Applied Physics (advisor: Prof. Amnon Yariv)

- ◆ Hybrid Si/III–V integrated optoelectronic devices and circuits
- ◆ Electrically pumped, large-area, single-mode, two-dimensional photonic crystal Bragg lasers
- ◆ Theoretical analysis and calculation of surface-emitting chirped circular grating lasers
- ◆ Ultralow-loss integrated photonic delay

University of Science and Technology of China

09/2002–07/2004

ZnO Lab Group, Department of Physics (advisor: Prof. Zhuxi Fu)

- ◆ Growth, characterization, and device fabrication of heteroepitaxial ZnO films on Si substrates

TEACHING EXPERIENCE

The Chinese University of Hong Kong, as an instructor

08/2014–present

- ENGG1100 (*Introduction to Engineering Design*)
- ENGG1310, ESTR2006 (*Engineering Physics*)
- BMEG4410 (*BioMEMS*)
- ELEG5550 (*Micro- and Nano-Fabrication Laboratory*)

California Institute of Technology, as a teaching assistant

09/2004–06/2010

- APh17c (*Thermodynamics*)
- APh/EE131 (*Optical Wave Propagation*)
- APh/EE132 (*Optoelectronic Materials and Devices*)
- EE151 (*Electromagnetic Engineering*)

INVITED CONFERENCE TALKS

- (1) “Topological Dirac-vortex parametric phonon lasers,” CLEO 2022, San Jose, CA, USA, May 2022.
- (2) “Etchless lithium niobate integrated photonics,” The First International Symposium on Lithium Niobate Optoelectronics (ISLNO 2021), Shanghai, China, Oct. 2021.
- (3) “Inverse-designed optical devices and modules for advanced photonic integration,” The 26th Optoelectronics and Communications Conference (OECC 2021), Hong Kong, Jul. 2021.
- (4) “Rotation sensing with PT-symmetric circular Bragg lasers,” SPIE Photonics West 2021, San Francisco, CA, USA, Mar. 2021.
- (5) “Inverse design of photonic components for large-scale and high-density integration,” SPIE Photonics West 2021, San Francisco, CA, USA, Mar. 2021.
- (6) “Photonic integrated circuits with bound states in the continuum: principle and applications,” Asia Communications and Photonics Conference 2020, Beijing, China, Oct. 2020.
- (7) “Experimental investigation of the topological charge of optical force in a solid dielectric,” SPIE Optics + Photonics 2020, San Diego, CA, USA, Aug. 2020.
- (8) “Graphene metallization of integrated electro-optomechanical resonators,” The 42nd Photonics & Electromagnetics Research Symposium (PIERS 2019 in Xiamen), Xiamen, China, Dec. 2019.
- (9) “Broadband and narrowband optical absorbers for photonic and optoelectronic applications,” The 9th International Multidisciplinary Conference on Optofluidics (IMCO 2019), Hong Kong, Jun. 2019.
- (10) “Inverse design in integrated photonic structures, devices, and circuits,” The 17th International Conference on Optical Communications and Networks (ICOCN 2018), Zhuhai, China, Nov. 2018.
- (11) “Optomechanical devices at the nanoscale: an overview and recent developments,” The 8th International Multidisciplinary Conference on Optofluidics (IMCO 2018), Shanghai, China, Aug. 2018.
- (12) “Recent progress in nano-optomechanical devices at microwave frequencies,” SPIE Photonics West 2018, San Francisco, CA, USA, Jan. 2018.

- (13) “Integrated optical isolators with hybrid graphene/silicon photonics technology,” Asia Communications and Photonics (ACP) Conference Workshop 6: 2D Material on Waveguide Devices and Applications, Wuhan, China, Nov. 2016.
- (14) “Photonics meets mechanics in the nanoworld,” Asia Communications and Photonics (ACP) Conference Workshop 9: On-chip Light-matter Interaction: Physics and Devices, Wuhan, China, Nov. 2016.
- (15) “High-frequency nano-optomechanics: an exploration at the boundary between photonics, mechanics, and microwaves,” SPIE Optics + Photonics 2013, San Diego, CA, USA, Aug. 2013.

INVITED SEMINARS

- (1) “Novel Nanophotonic Structures, Devices, and Circuits for Enhanced Light–Matter Interaction”
 - University of Science and Technology of China, Hefei, China, Dec. 2018
- (2) “Optomechanics: From LIGO to Nano”
 - Tsinghua University, Beijing, China, Dec. 2018
 - Huazhong University of Science and Technology, Wuhan, China, Mar. 2018
- (3) “Novel Nanophotonic and Nano-Optomechanical Devices”
 - University of Science and Technology of China, Hefei, China, Dec. 2017
- (4) “Novel Nanophotonic Devices: Harnessing Light–Matter Interaction at the Nanoscale”
 - Huazhong University of Science and Technology, Wuhan, China, Apr. 2017
 - University of Science and Technology of China, Hefei, China, Apr. 2017
 - Zhejiang University, Hangzhou, China, Apr. 2017
- (5) “Photonics Meets Mechanics in the Nanoworld”
 - Xi’an Jiao Tong University, Xi’an, China, Mar. 2017
 - Hong Kong University of Science and Technology, Hong Kong, Nov. 2016
 - Huazhong University of Science and Technology, Wuhan, China, Apr. 2016
 - Tianjin University, Tianjin, China, Apr. 2016
 - Nankai University, Tianjin, China, Apr. 2016
 - Tsinghua University, Beijing, China, Apr. 2016
 - Beihang University, Beijing, China, Apr. 2016
 - Peking University, Beijing, China, Apr. 2016
 - Beijing University of Posts and Telecommunications, Beijing, China, Apr. 2016
- (6) “Nano-Optomechanics in the High Frequency Regime: Exploration at the Boundary Between Photonics, Mechanics, and Microwaves”
 - University of New Mexico, NM, USA, Mar. 2014
 - University of Arizona, AZ, USA, Mar. 2014
 - The Chinese University of Hong Kong, Hong Kong, Mar. 2014
 - Shanghai Jiao Tong University, Shanghai, China, Feb. 2014
 - Zhejiang University, Hangzhou, China, Feb. 2014
 - Harbin Institute of Technology Shenzhen Graduate School, Shenzhen, China, Feb. 2014
 - University of Science and Technology of China, Hefei, China, Feb. 2014
 - Nanjing University, Nanjing, China, Feb. 2014
 - Tsinghua University, Beijing, China, Feb. 2014
 - Peking University, Beijing, China, Feb. 2014
 - University of California, Los Angeles, CA, USA, Sep. 2013
 - University of Southern California, CA, USA, Sep. 2013
 - University of California, San Diego, CA, USA, Aug. 2013
- (7) “Circular Bragg Lasers and Supermode Si/III–V Lasers: From Theory to Devices”
 - University of California, Santa Barbara, CA, USA, Apr. 2010
- (8) “Circular Bragg Lasers and Supermode Si/III–V Lasers: The Ideal On-Chip Integrable Light Sources for Next-Generation Optical Communication”

- Yale University, New Haven, CT, USA, Feb. 2010
- (9) “Circular Bragg Microresonators and Microlasers: From Theory to Devices”
- Shanghai Jiao Tong University, Shanghai, China, Sep. 2009
- (10) “Circular Bragg Resonator Lasers: Theoretical Analysis and Optimal Design”
- University of Science and Technology of China, Hefei, China, Sep. 2006

PUBLICATIONS

- ◆ Overall profile: 78 refereed journal papers, 58 refereed conference papers, 15 invited conference talks, 1 book, 3 book chapters
- ◆ Google Scholar homepage: <http://scholar.google.com.hk/citations?user=Z8CHWjsAAAAJ&hl=en>
- ◆ Total citations: 2250, *h*-index: 25 (as of Nov. 2021)

Book Chapters

- (1) **Xiankai Sun** and Amnon Yariv, “Surface-emitting circular Bragg lasers – a promising next-generation on-chip light source for optical communications,” in *Frontiers in Guided Wave Optics and Optoelectronics*, Bishnu Pal (ed.), Intech, 2010. ISBN: 978-953-7619-82-4.
- (2) Michael Shearn, **Xiankai Sun**, M. David Henry, Amnon Yariv, and Axel Scherer, “Advanced plasma processing: etching, deposition, and wafer bonding techniques for semiconductor applications,” in *Semiconductor Technologies*, Jan Grym (ed.), Intech, 2010. ISBN: 978-953-307-080-3.
- (3) Jacob Scheuer and **Xiankai Sun**, “Radial Bragg resonators,” in *Photonic Microresonator Research and Applications*, Ioannis Chremmos, Otto Schwelb, and Nikolaos Uzunoglu (eds.), Springer, 2010. ISBN: 978-1-4419-1743-0.

Journal Papers

- (1) Taojie Zhou, Jingwen Ma, Mingchu Tang, Haochuan Li, Mickael Martin, Thierry Baron, Huiyun Liu, Siming Chen, **Xiankai Sun**, and Zhaoyu Zhang, “Monolithically integrated ultralow threshold topological corner state nanolasers on silicon,” 2021. (submitted)
- (2) Yue Yu, Xiang Xi, and **Xiankai Sun**, “Observation of bound states in the continuum in a micromechanical resonator,” 2021. (submitted)
- (3) Xiang Xi, Jingwen Ma, and **Xiankai Sun**, “A topological parametric phonon laser,” 2021. (submitted)
- (4) Jingwen Ma, Taojie Zhou, Mingchu Tang, Haochuan Li, Zhan Zhang, Xiang Xi, Mickael Martin, Thierry Baron, Huiyun Liu, Zhaoyu Zhang, Siming Chen, and **Xiankai Sun**, “Room-temperature continuous-wave Dirac-vortex topological lasers on silicon,” 2021. (submitted)
- (5) Xiang Xi, Chang-Ling Zou, Chun-Hua Dong, and **Xiankai Sun**, “Highly tunable broadband coherent wavelength conversion with a fiber-based optomechanical system,” 2021. (submitted)
- (6) Fan Ye, Yue Yu, Xiang Xi, and **Xiankai Sun**, “Second-harmonic generation in etchless lithium niobate nanophotonic waveguides with bound states in the continuum,” *Laser & Photonics Reviews*, 2021. (accepted)
- (7) Yuan Li and **Xiankai Sun**, “Anisotropic Dirac cone and slow edge states in a photonic Floquet lattice,” *Physical Review B*, 2021. (accepted)
- (8) Xiang Xi, Jingwen Ma, Zhong-Hao Zhou, Xin-Xin Hu, Yuan Chen, Chang-Ling Zou, Chun-Hua Dong, and **Xiankai Sun**, “Experimental investigation of the angular symmetry of optical force in a solid dielectric,” *Optica* **8** (11): 1435–1441, Nov. 2021.
- (9) Yue Yu, Lai Wang, and **Xiankai Sun**, “Demonstration of on-chip gigahertz acousto-optic modulation at near-visible wavelengths,” *Nanophotonics* **10** (17): 4323–4329, Dec. 2021. [included in Special Issue on *Nonradiating Photonics with Resonant Dielectric Nanostructures*]
- (10) Zunyue Zhang, Yuan Li, Yi Wang, Zejie Yu, **Xiankai Sun**, and Hon Ki Tsang, “Compact high resolution speckle spectrometer by using linear coherent integrated network on silicon nitride platform at 776 nm,” *Laser & Photonics Reviews* **15** (11): 2100039, Nov. 2021.
- (11) Yue Yu, Zejie Yu, Lai Wang, and **Xiankai Sun**, “Ultralow-loss etchless lithium niobate integrated photonics at near-visible wavelengths,” *Advanced Optical Materials* **9** (19): 2100060, Oct. 2021.

- (12) Huade Mao, Yuxuan Ren, Yue Yu, Zejie Yu, **Xiankai Sun**, Shuang Zhang, and Kenneth K. Y. Wong, “Broadband meta-converters for multiple Laguerre-Gaussian modes,” *Photonics Research* **9** (9): 1689–1698, Sep. 2021.
- (13) Jingwen Ma, Xiang Xi, Yuan Li, and **Xiankai Sun**, “Nanomechanical topological insulators with an auxiliary orbital degree of freedom,” *Nature Nanotechnology* **16** (5): 576–583, May 2021. [reported in News & Views: “Topological vortices for sound and light,” *Nature Nanotechnology* **16** (5): 487–489, May 2021]
- (14) Yang Liu, Lai Wang, Yuantao Zhang, Xin Dong, **Xiankai Sun**, Zhibiao Hao, Yi Luo, Changzheng Sun, Yanjun Han, Bing Xiong, Jian Wang, and Hongtao Li, “Demonstration of n-Ga₂O₃/p-GaN diodes by wet-etching lift-off and transfer-print technique,” *IEEE Electron Device Letters* **42** (4): 509–512, Apr. 2021.
- (15) Zejie Yu and **Xiankai Sun**, “Gigahertz acousto-optic modulation and frequency shifting on etchless lithium niobate integrated platform,” *ACS Photonics* **8** (3): 798–803, Mar. 2021.
- (16) Yi Wang, Zejie Yu, Zunyue Zhang, **Xiankai Sun**, and Hon Ki Tsang, “Fabrication-tolerant and low-loss hybrid plasmonic slot waveguide mode converter,” *Journal of Lightwave Technology* **39** (7): 2106–2112, Apr. 2021.
- (17) Jingwen Ma, Xiang Xi, and **Xiankai Sun**, “Experimental demonstration of dual-band nano-electromechanical valley-Hall topological metamaterials,” *Advanced Materials* **33** (10): 2006521, Mar. 2021.
- (18) Xiang Xi, Jingwen Ma, Shuai Wan, Chun-Hua Dong, and **Xiankai Sun**, “Observation of chiral edge states in gapped nanomechanical graphene,” *Science Advances* **7** (2): eabe1398, Jan. 2021.
- (19) Zejie Yu and **Xiankai Sun**, “Inverse-designed photonic jumpers with ultracompact size and ultralow loss,” *Journal of Lightwave Technology* **38** (23): 6623–6628, Dec. 2020.
- (20) Yue Yu, Zejie Yu, and **Xiankai Sun**, “Nonmetallic broadband visible-light absorbers with polarization and incident angle insensitivity,” *IEEE Photonics Journal* **12** (6): 2200807, Dec. 2020.
- (21) Yi Wang, Zejie Yu, Zunyue Zhang, Beilei Sun, Yeyu Tong, Jian-Bin Xu, **Xiankai Sun**, and Hon Ki Tsang, “Bound-states-in-continuum hybrid integration of 2D platinum diselenide on silicon nitride for high-speed photodetectors,” *ACS Photonics* **7** (10): 2643–2649, Oct. 2020.
- (22) Taojie Zhou, Kar Wei Ng, **Xiankai Sun**, and Zhaoyu Zhang, “Ultra-thin curved visible microdisk lasers with three-dimensional whispering gallery modes,” *Nanophotonics* **9** (9): 2997–3002, Jul. 2020.
- (23) Ziyao Feng and **Xiankai Sun**, “Giant enhancement of rotation sensing with *PT*-symmetric circular Bragg lasers,” *Physical Review Applied* **13** (5): 054078, May 2020.
- (24) Yi Wang, Zejie Yu, Yeyu Tong, Beilei Sun, Zunyue Zhang, Jian-Bin Xu, **Xiankai Sun**, and Hon Ki Tsang, “High-speed infrared two-dimensional platinum diselenide photodetectors,” *Applied Physics Letters* **116** (21): 211101, May 2020. [selected as Editor’s Pick]
- (25) Zejie Yu, Yeyu Tong, Hon Ki Tsang, and **Xiankai Sun**, “High-dimensional communication on etchless lithium niobate platform with photonic bound states in the continuum,” *Nature Communications* **11**: 2602, May 2020.
- (26) Xiang Xi, Zefeng Chen, Jian-Bin Xu, and **Xiankai Sun**, “Graphene-assisted electro-optomechanical integration on a silicon-on-insulator platform,” *Optics Express* **28** (10): 14386–14395, May 2020.
- (27) Zejie Yu and **Xiankai Sun**, “Acousto-optic modulation of photonic bound state in the continuum,” *Light: Science & Applications* **9**: 1, Jan. 2020.
- (28) Jingwen Ma, Ziyao Feng, Yuan Li, and **Xiankai Sun**, “Optically controlled topologically protected acoustic wave amplification,” *IEEE Journal of Selected Topics in Quantum Electronics* **26** (5): 7600410, Sep./Oct. 2020. [invited]

- (29) Aosong Feng, Zejie Yu, and **Xiankai Sun**, “Giant enhancement of nonlinear optical processes with split-ring resonators for THz applications,” *IEEE Photonics Technology Letters* **31** (21): 1681–1684, Nov. 2019.
- (30) Wen Zhou, Yeyu Tong, **Xiankai Sun**, and Hon Ki Tsang, “Ultra-broadband hyperuniform disordered silicon photonic polarizers,” *IEEE Journal of Selected Topics in Quantum Electronics* **26** (2): 8201109, Mar./Apr. 2020.
- (31) Jingwen Ma, Xiang Xi, and **Xiankai Sun**, “Topological photonic integrated circuits based on valley kink states,” *Laser & Photonics Reviews* **13** (12): 1900087, Dec. 2019. [featured as cover article]
- (32) Zejie Yu, Yi Wang, Beilei Sun, Yeyu Tong, Jian-Bin Xu, Hon Ki Tsang, and **Xiankai Sun**, “Hybrid 2D-material photonics with bound states in the continuum,” *Advanced Optical Materials* **7** (24): 1901306, Dec. 2019.
- (33) Zejie Yu, Xiang Xi, Jingwen Ma, Hon Ki Tsang, Chang-Ling Zou, and **Xiankai Sun**, “Photonic integrated circuits with bound states in the continuum,” *Optica* **6** (10): 1342–1348, Oct. 2019.
- (34) Wen Zhou, Yeyu Tong, **Xiankai Sun**, and Hon Ki Tsang, “Hyperuniform disordered photonic bandgap polarizers,” *Journal of Applied Physics* **126** (11): 113106, Sep. 2019.
- (35) Xiang Xi, Jingwen Ma, and **Xiankai Sun**, “Carrier-mediated cavity optomechanics in a semiconductor laser,” *Physical Review A* **99** (5): 053837, May 2019.
- (36) Wen Zhou, Zhenzhou Cheng, Xia Chen, Ke Xu, **Xiankai Sun**, and HonKi Tsang, “Subwavelength engineering in silicon photonic devices,” *IEEE Journal of Selected Topics in Quantum Electronics* **25** (3): 2900113, May/June. 2019. [invited]
- (37) Zejie Yu, Aosong Feng, Xiang Xi, and **Xiankai Sun**, “Inverse-designed low-loss and wideband polarization-insensitive silicon waveguide crossing,” *Optics Letters* **44** (1): 77–80, Jan. 2019. [selected as Editor’s Pick]
- (38) Aosong Feng, Zejie Yu, and **Xiankai Sun**, “Ultrannarrow-band metagrating absorbers for sensing and modulation,” *Optics Express* **26** (22): 28197–28205, Oct. 2018.
- (39) Zejie Yu, Yang Ma, and **Xiankai Sun**, “Photonic welding points for arbitrary on-chip optical interconnects,” *Nanophotonics* **7** (10): 1679–1686, Oct. 2018.
- (40) Ziyao Feng, Jingwen Ma, and **Xiankai Sun**, “Parity–time-symmetric mechanical systems by the cavity optomechanical effect,” *Optics Letters* **43** (17): 4088–4091, Sep. 2018.
- (41) Wen Zhou, Zhenzhou Cheng, **Xiankai Sun**, and Hon Ki Tsang, “Tailorable dual-wavelength-band coupling in a transverse-electric-mode focusing subwavelength grating coupler,” *Optics Letters* **43** (12): 2985–2988, Jun. 2018.
- (42) Ziyao Feng, Jingwen Ma, Zejie Yu, and **Xiankai Sun**, “Circular Bragg lasers with radial PT symmetry: design and analysis with a coupled-mode approach,” *Photonics Research* **6** (5): A38–A42, May 2018.
[included in Virtual Feature Issue on *Non-Hermitian Photonics in Complex Media: PT-symmetry and beyond*]
- (43) Wen Zhou, Zhenzhou Cheng, Xinru Wu, **Xiankai Sun**, and Hon Ki Tsang, “Fully suspended slot waveguide platform,” *Journal of Applied Physics* **123** (6): 063103, Feb. 2018.
- (44) Zejie Yu and **Xiankai Sun**, “Giant enhancement of stimulated Brillouin scattering with engineered photonic crystal waveguides,” *Optics Express* **26** (2): 1255–1267, Jan. 2018.
- (45) Zejie Yu, Haoran Cui, and **Xiankai Sun**, “Genetically optimized on-chip wideband ultracompact reflectors and Fabry–Perot cavities,” *Photonics Research* **5** (6): B15–B19, Dec. 2017.
[included in Virtual Feature Issue on *Optical Microcavities*]
- (46) Zejie Yu, Haoran Cui, and **Xiankai Sun**, “Genetic-algorithm-optimized wideband on-chip polarization rotator with an ultrasmall footprint,” *Optics Letters* **42** (16): 3093–3096, Aug. 2017.

- (47) Yun Gao, Wen Zhou, **Xiankai Sun**, Hon Ki Tsang, and Chester Shu, “Cavity-enhanced thermo-optic bistability and hysteresis in a graphene-on-Si₃N₄ ring resonator,” *Optics Letters* **42** (10): 1950–1953, May 2017.
- (48) Wen Zhou, Zhenzhou Cheng, Xinru Wu, Bingqing Zhu, **Xiankai Sun**, and Hon Ki Tsang, “Fully suspended slot waveguides for high refractive index sensitivity,” *Optics Letters* **42** (7): 1245–1248, Apr. 2017.
- (49) Jiahua Gu, Xiang Xi, Jingwen Ma, Zejie Yu, and **Xiankai Sun**, “Parity–time-symmetric circular Bragg lasers: a proposal and analysis,” *Scientific Reports* **6**: 37688, Nov. 2016.
- (50) Wen Zhou, Zejie Yu, Jingwen Ma, Bingqing Zhu, Hon Ki Tsang, and **Xiankai Sun**, “Ultraviolet optomechanical crystal cavities with ultrasmall modal mass and high optomechanical coupling rate,” *Scientific Reports* **6**: 37134, Nov. 2016.
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