

ESI Highly Cited Papers in July 2023

- 1. Surface brightens up Si quantum dots: direct bandgap-like size-tunable emission**
Kateřina Dohnalová, Alexander N Poddubny, Alexei A Prokofiev, Wieteke DAM de Boer, Chinnaswamy P Umesh, Jos MJ Paulusse, Han Zuilhof & Tom Gregorkiewicz
Light Sci Appl **2**, e47 (2013). DOI: 10.1038/lisa.2013.3
- 2. Highly efficient GaAs solar cells by limiting light emission angle**
Emily D Kosten, Jackson H Atwater, James Parsons, Albert Polman & Harry A Atwater
Light Sci Appl **2**, e45 (2013). DOI: 10.1038/lisa.2013.1
- 3. New yellow Ba_{0.93}Eu_{0.07}Al₂O₄ phosphor for warm-white light-emitting diodes through single-emitting-center conversion**
Xufan Li, John D Budai, Feng Liu, Jane Y Howe, Jiahua Zhang, Xiao-Jun Wang, Zhanjun Gu, Chengjun Sun, Richard S Meltzer & Zhengwei Pan
Light Sci Appl **2**, e50 (2013). DOI: 10.1038/lisa.2013.6
- 4. Helicity dependent directional surface plasmon polariton excitation using a metasurface with interfacial phase discontinuity**
Lingling Huang, Xianzhong Chen, Benfeng Bai, Qiaofeng Tan, Guofan Jin, Thomas Zentgraf & Shuang Zhang
Light Sci Appl **2**, e70 (2013). DOI: 10.1038/lisa.2013.26
- 5. Ultra-thin, planar, Babinet-inverted plasmonic metalenses**
Xingjie Ni, Satoshi Ishii, Alexander V Kildishev & Vladimir M Shalaev
Light Sci Appl **2**, e72 (2013). DOI: 10.1038/lisa.2013.28
- 6. Plasmonics for solid-state lighting: enhanced excitation and directional emission of highly efficient light sources**
Gabriel Lozano, Davy J Louwers, Said RK Rodríguez, Shunsuke Murai, Olaf TA Jansen, Marc A Verschuuren & Jaime Gómez Rivas
Light Sci Appl **2**, e66 (2013). DOI: 10.1038/lisa.2013.22
- 7. A systematic study on efficiency enhancements in phosphorescent green, red and blue microcavity organic light emitting devices**
Chaoyu Xiang, Wonhoe Koo, Franky So, Hisahiro Sasabe & Junji Kido
Light Sci Appl **2**, e74 (2013). DOI: 10.1038/lisa.2013.30
- 8. Exceeding the limit of plasmonic light trapping in textured screen-printed solar cells using Al nanoparticles and wrinkle-like graphene sheets**
Xi Chen, Baohua Jia, Yinan Zhang & Min Gu
Light Sci Appl **2**, e92 (2013). DOI: 10.1038/lisa.2013.48
- 9. Functionalized polymer nanofibers: a versatile platform for manipulating light at the nanoscale**
Pan Wang, Yipei Wang & Limin Tong
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10. [Handheld high-throughput plasmonic biosensor using computational on-chip imaging](#)
Arif E Cetin, Ahmet F Coskun, Betty C Galarreta, Min Huang, David Herman, Aydogan Ozcan & Hatice Altug
Light Sci Appl **3**, e122 (2014). DOI: 10.1038/lisa.2014.3
11. [A visible light-driven plasmonic photocatalyst](#)
Francesca Pincella, Katsuhiko Isozaki & Kazushi Miki
Light Sci Appl **3**, e133 (2014). DOI: 10.1038/lisa.2014.14
12. [Healthy, natural, efficient and tunable lighting: four-package white LEDs for optimizing the circadian effect, color quality and vision performance](#)
Ji Hye Oh, Su Ji Yang & Young Rag Do
Light Sci Appl **3**, e141 (2014). DOI: 10.1038/lisa.2014.22
13. [Ultrafast lasers-reliable tools for advanced materials processing](#)
Koji Sugioka & Ya Cheng
Light Sci Appl **3**, e149 (2014). DOI: 10.1038/lisa.2014.30
14. [Metallic nanostructures for light trapping in energy-harvesting devices](#)
Chuan Fei Guo, Tianyi Sun, Feng Cao, Qian Liu & Zhifeng Ren
Light Sci Appl **3**, e161 (2014). DOI: 10.1038/lisa.2014.42
15. [Adaptive optical microscopy: the ongoing quest for a perfect image](#)
Martin J Booth
Light Sci Appl **3**, e165 (2014). DOI: 10.1038/lisa.2014.46
16. [Generating optical orbital angular momentum at visible wavelengths using a plasmonic metasurface](#)
Ebrahim Karimi, Sebastian A Schulz, Israel De Leon, Hammam Qassim, Jeremy Upham & Robert W Boyd
Light Sci Appl **3**, e167 (2014). DOI: 10.1038/lisa.2014.48
17. [Optical storage arrays: a perspective for future big data storage](#)
Min Gu, Xiangping Li & Yaoyu Cao
Light Sci Appl **3**, e177 (2014). DOI: 10.1038/lisa.2014.58
18. [Light scattering and surface plasmons on small spherical particles](#)
Xiaofeng Fan, Weitao Zheng & David J Singh
Light Sci Appl **3**, e179 (2014). DOI: 10.1038/lisa.2014.60
19. [Design and fabrication of broadband ultralow reflectivity black Si surfaces by laser micro/nanoprocessing](#)
Jing Yang, Fangfang Luo, Tsung Sheng Kao, Xiong Li, Ghim Wei Ho, Jinghua Teng, Xiangang Luo & Minghui Hong
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20. **Coding metamaterials, digital metamaterials and programmable metamaterials**
Tie Jun Cui, Mei Qing Qi, Xiang Wan, Jie Zhao & Qiang Cheng
Light Sci Appl **3**, e218 (2014). DOI: 10.1038/lisa.2014.99
21. **Fundamentals of phase-only liquid crystal on silicon (LCOS) devices**
Zichen Zhang, Zheng You & Daping Chu
Light Sci Appl **3**, e213 (2014). DOI: 10.1038/lisa.2014.94
22. **Observation of efficient population of the red-emitting state from the green state by non-multiphonon relaxation in the Er^{3+} - Yb^{3+} system**
Jiahua Zhang, Zhendong Hao, Jing Li, Xia Zhang, Yongshi Luo & Guohui Pan
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23. **Massive individual orbital angular momentum channels for multiplexing enabled by Dammann gratings**
Ting Lei, Meng Zhang, Yuru Li, Ping Jia, Gordon Ning Liu, Xiaogeng Xu, Zhaohui Li, Changjun Min, Jiao Lin, Changyuan Yu, Hanben Niu & Xiaocong Yuan
Light Sci Appl **4**, e257 (2015). DOI: 10.1038/lisa.2015.30
24. **Advances in InGaAs/InP single-photon detector systems for quantum communication**
Jun Zhang, Mark A Itzler, Hugo Zbinden & Jian-Wei Pan
Light Sci Appl **4**, e286 (2015). DOI: 10.1038/lisa.2015.59
25. **Giant photonic spin Hall effect in momentum space in a structured metamaterial with spatially varying birefringence**
Xiaohui Ling, Xinxing Zhou, Xunong Yi, Weixing Shu, Yachao Liu, Shizhen Chen, Hailu Luo, Shuangchun Wen & Dianyuan Fan
Light Sci Appl **4**, e290 (2015). DOI: 10.1038/lisa.2015.63
26. **Nanoplasmonic waveguides: towards applications in integrated nanophotonic circuits**
Yurui Fang & Mengtao Sun
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27. **Optical tuning of exciton and trion emissions in monolayer phosphorene**
Jiong Yang, Renjing Xu, Jiajie Pei, Ye Win Myint, Fan Wang, Zhu Wang, Shuang Zhang, Zongfu Yu & Yuerui Lu
Light Sci Appl **4**, e312 (2015). DOI: 10.1038/lisa.2015.85
28. **Broadband diffusion of terahertz waves by multi-bit coding metasurfaces**
Li-Hua Gao, Qiang Cheng, Jing Yang, Shao-Jie Ma, Jie Zhao, Shuo Liu, Hai-Bing Chen, Qiong He, Wei-Xiang Jiang, Hui-Feng Ma, Qi-Ye Wen, Lan-Ju Liang, Biao-Bing Jin, Wei-Wei Liu, Lei Zhou, Jian-Quan Yao, Pei-Heng Wu & Tie-Jun Cui
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29. [On-chip light sources for silicon photonics](#)

Zhiping Zhou, Bing Yin & Jurgen Michel

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30. [Tailoring color emissions from N-doped graphene quantum dots for bioimaging applications](#)

Dan Qu, Min Zheng, Jing Li, Zhigang Xie & Zaicheng Sun

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31. [Photoexcitation dynamics in solution-processed formamidinium lead iodide perovskite thin films for solar cell applications](#)

Hong-Hua Fang, Feng Wang, Sampson Adjokatse, Ni Zhao, Jacky Even & Maria Antonietta Loi

Light Sci Appl **5**, e16056 (2016). DOI: 10.1038/lisa.2016.56

32. [High-efficiency surface plasmon meta-couplers: concept and microwave-regime realizations](#)

Wujiong Sun, Qiong He, Shulin Sun & Lei Zhou

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33. [Anisotropic coding metamaterials and their powerful manipulation of differently polarized terahertz waves](#)

Shuo Liu, Tie Jun Cui, Quan Xu, Di Bao, Liangliang Du, Xiang Wan, Wen Xuan Tang, Chunmei

Ouyang, Xiao Yang Zhou, Hao Yuan, Hui Feng Ma, Wei Xiang Jiang, Jiaguang Han, Weili Zhang & Qiang Cheng

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34. [Energy transfer in plasmonic photocatalytic composites](#)

Xiang-Chao Ma, Ying Dai, Lin Yu & Bai-Biao Huang

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35. [A single Eu²⁺-activated high-color-rendering oxychloride white-light phosphor for white-light-emitting diodes](#)

Peng-Peng Dai, Cong Li, Xin-Tong Zhang, Jun Xu, Xi Chen, Xiu-Li Wang, Yan Jia, Xiaojun Wang &

Yi-Chun Liu

Light Sci Appl **5**, e16024 (2016). DOI: 10.1038/lisa.2016.24

36. [Supra-\(carbon nanodots\) with a strong visible to near-infrared absorption band and efficient photothermal conversion](#)

Di Li, Dong Han, Song-Nan Qu, Lei Liu, Peng-Tao Jing, Ding Zhou, Wen-Yu Ji, Xiao-Yun Wang,

Tong-Fei Zhang & De-Zhen Shen

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37. [Ultrafast laser processing of materials: from science to industry](#)

Mangirdas Malinauskas, Albertas Žukauskas, Satoshi Hasegawa, Yoshio Hayasaki, Vyngantas

Mizeikis, Ričardas Buividas & Saulius Juodkazis

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Jian-Yong Hu, Bo Yu, Ming-Yong Jing, Lian-Tuan Xiao, Suo-Tang Jia, Guo-Qing Qin & Gui-Lu Long
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39. **Ca_{1-x}Li_xAl_{1-x}Si_{1+x}N₃:Eu²⁺ solid solutions as broadband, color-tunable and thermally robust red phosphors for superior color rendition white light-emitting diodes**
Le Wang, Rong-Jun Xie, Yuanqiang Li, Xiaojun Wang, Chong-Geng Ma, Dong Luo, Takashi Takeda, Yi-Ting Tsai, Ru-Shi Liu & Naoto Hirotsuki
Light Sci Appl **5**, e16155 (2016). DOI: 10.1038/lsa.2016.155
40. **Information entropy of coding metasurface**
Tie-Jun Cui, Shuo Liu & Lian-Lin Li
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41. **Control over emissivity of zero-static-power thermal emitters based on phase-changing material GST**
Kai-Kai Du, Qiang Li, Yan-Biao Lyu, Ji-Chao Ding, Yue Lu, Zhi-Yuan Cheng & Min Qiu
Light Sci Appl **6**, e16194 (2017). DOI: 10.1038/lsa.2016.194
42. **Tomographic flow cytometry by digital holography**
Francesco Merola, Pasquale Memmolo, Lisa Miccio, Roberto Savoia, Martina Mugnano, Angelo Fontana, Giuliana D'Ippolito, Angela Sardo, Achille Iolascon, Antonella Gambale & Pietro Ferraro
Light Sci Appl **6**, e16241 (2017). DOI: 10.1038/lsa.2016.241
43. **Quantification of light-enhanced ionic transport in lead iodide perovskite thin films and its solar cell applications**
Yi-Cheng Zhao, Wen-Ke Zhou, Xu Zhou, Kai-Hui Liu, Da-Peng Yu & Qing Zhao
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44. **Parametric down-conversion photon-pair source on a nanophotonic chip**
Xiang Guo, Chang-ling Zou, Carsten Schuck, Hojoong Jung, Risheng Cheng & Hong X Tang
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45. **Generation of wavelength-independent subwavelength Bessel beams using metasurfaces**
Wei Ting Chen, Mohammadreza Khorasaninejad, Alexander Y. Zhu, Jaewon Oh, Robert C. Devlin, Aun Zaidi & Federico Capasso
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46. **Three-dimensional chiral microstructures fabricated by structured optical vortices in isotropic material**
Jincheng Ni, Chaowei Wang, Chenchu Zhang, Yanlei Hu, Liang Yang, Zhaoxin Lao, Bing Xu, Jiawen Li, Dong Wu & Jiaru Chu
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Chao Xie, Peng You, Zhike Liu, Li Li & Feng Yan
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48. [Multifunctional interleaved geometric-phase dielectric metasurfaces](#)
Elhanan Maguid, Igor Yulevich, Michael Yannai, Vladimir Kleiner, Mark L Brongersma & Erez Hasman
Light Sci Appl **6**, e17027 (2017). DOI: 10.1038/lisa.2017.27
49. [Optical manipulation from the microscale to the nanoscale: fundamentals, advances and prospects](#)
Dongliang Gao, Weiqiang Ding, Manuel Nieto-Vesperinas, Xumin Ding, Mahdy Rahman, Tianhang Zhang, ChweeTeck Lim & Cheng-Wei Qiu
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50. [Going beyond the limit of an LCD's color gamut](#)
Hai-Wei Chen, Rui-Dong Zhu, Juan He, Wei Duan, Wei Hu, Yan-Qing Lu, Ming-Chun Li, Seok-Lyul Lee, Ya-Jie Dong & Shin-Tson Wu
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51. [Beam switching and bifocal zoom lensing using active plasmonic metasurfaces](#)
Xinghui Yin, Tobias Steinle, Lingling Huang, Thomas Taubner, Matthias Wuttig, Thomas Zentgraf & Harald Giessen
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52. [Plasmonic nano-printing: large-area nanoscale energy deposition for efficient surface texturing](#)
Lei Wang, Qi-Dai Chen, Xiao-Wen Cao, Ričardas Buividas, Xuewen Wang, Saulius Juodkazis & Hong-Bo Sun
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53. [Electrons dynamics control by shaping femtosecond laser pulses in micro/nanofabrication: modeling, method, measurement and application](#)
Lan Jiang, An-Dong Wang, Bo Li, Tian-Hong Cui & Yong-Feng Lu
Light Sci Appl **7**, 17134 (2018). DOI: 10.1038/lisa.2017.134
54. [Phase recovery and holographic image reconstruction using deep learning in neural networks](#)
Yair Rivenson, Yibo Zhang, Harun Günaydın, Da Teng & Aydogan Ozcan
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55. [Twisted photons: new quantum perspectives in high dimensions](#)
Manuel Erhard, Robert Fickler, Mario Krenn & Anton Zeilinger
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56. **Giant intrinsic chiro-optical activity in planar dielectric nanostructures**
Alexander Y Zhu, Wei Ting Chen, Aun Zaidi, Yao-Wei Huang, Mohammadreza Khorasaninejad, Vyshakh Sanjeev, Cheng-Wei Qiu & Federico Capasso
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57. **Liquid crystal display and organic light-emitting diode display: present status and future perspectives**
Hai-Wei Chen, Jiun-Haw Lee, Bo-Yen Lin, Stanley Chen & Shin-Tson Wu
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58. **Boron nitride nanoresonators for phonon-enhanced molecular vibrational spectroscopy at the strong coupling limit**
Marta Autore, Peining Li, Irene Dolado, Francisco J Alfaro-Mozaz, Ruben Esteban, Ainhoa Atxabal, Fèlix Casanova, Luis E Hueso, Pablo Alonso-González, Javier Aizpurua, Alexey Y Nikitin, Saül Vélez & Rainer Hillenbrand
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59. **Quenching of the red Mn⁴⁺ luminescence in Mn⁴⁺-doped fluoride LED phosphors**
Tim Senden, Relinde J.A. van Dijk-Moes & Andries Meijerink
Light Sci Appl **7**, 8 (2018). DOI: 10.1038/s41377-018-0013-1
60. **Gold-patched graphene nano-stripes for high-responsivity and ultrafast photodetection from the visible to infrared regime**
Semih Cakmakyapan, Ping Keng Lu, Aryan Navabi & Mona Jarrahi
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61. **Thermal camouflage based on the phase-changing material GST**
Yurui Qu, Qiang Li, Lu Cai, Meiyan Pan, Pintu Ghosh, Kaikai Du & Min Qiu
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62. **Reflective chiral meta-holography: multiplexing holograms for circularly polarized waves**
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65. [Looking at sound: optoacoustics with all-optical ultrasound detection](#)
Georg Wissmeyer, Miguel A. Pleitez, Amir Rosenthal & Vasilis Ntziachristos
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66. [A hybrid invisibility cloak based on integration of transparent metasurfaces and zero-index materials](#)
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67. [Hybrid graphene metasurfaces for high-speed mid-infrared light modulation and single-pixel imaging](#)
Beibei Zeng, Zhiqin Huang, Akhilesh Singh, Yu Yao, Abul K. Azad, Aditya D. Mohite, Antoinette J. Taylor, David R. Smith & Hou-Tong Chen
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69. [Multimode optical fiber transmission with a deep learning network](#)
Babak Rahmani, Damien Loterie, Georgia Konstantinou, Demetri Psaltis & Christophe Moser
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70. [Broadband achromatic dielectric metalenses](#)
Sajan Shrestha, Adam C. Overvig, Ming Lu, Aaron Stein & Nanfang Yu
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71. [X-ray-activated long persistent phosphors featuring strong UVC afterglow emissions](#)
Yan-Min Yang, Zhi-Yong Li, Jun-Ying Zhang, Yue Lu, Shao-Qiang Guo, Qing Zhao, Xin Wang, Zi-Jun Yong, Hong Li, Ju-Ping Ma, Yoshihiro Kuroiwa, Chikako Moriyoshi, Li-Li Hu, Li-Yan Zhang, Li-Rong Zheng & Hong-Tao Sun
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Xin Bao, Ye Yuan, Jingqin Chen, Bohan Zhang, Di Li, Ding Zhou, Pengtao Jing, Guiying Xu, Yingli Wang, Kateřina Holá, Dezhen Shen, Changfeng Wu, Liang Song, Chengbo Liu, Radek Zbořil & Songnan Qu
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74. [High-fidelity multimode fibre-based endoscopy for deep brain in vivo imaging](#)
Sergey Turtaev, Ivo T. Leite, Tristan Altwegg-Boussac, Janelle M. P. Pakan, Nathalie L. Rochefort & Tomáš Čižmár
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Ruizhe Zhao, Basudeb Sain, Qunshuo Wei, Chengchun Tang, Xiaowei Li, Thomas Weiss, Lingling Huang, Yongtian Wang & Thomas Zentgraf
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76. [Interference-assisted kaleidoscopic meta-plexer for arbitrary spin-wavefront manipulation](#)
He-Xiu Xu, Guangwei Hu, Ying Li, Lei Han, Jianlin Zhao, Yunming Sun, Fang Yuan, Guang-Ming Wang, Zhi Hao Jiang, Xiaohui Ling, Tie Jun Cui & Cheng-Wei Qiu
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Ruoyang Qi, Zhen Sun, Zaisheng Lin, Penghao Niu, Wentao Hao, Liyuan Song, Qin Huang, Jiancun Gao, Liuguo Yin & Gui-Lu Long
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82. [Optical orbital-angular-momentum-multiplexed data transmission under high scattering](#)
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83. [Emerging ultra-narrow-band cyan-emitting phosphor for white LEDs with enhanced color rendition](#)
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84. [Artificial neural networks enabled by nanophotonics](#)
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85. [3D Janus plasmonic helical nanoapertures for polarization-encrypted data storage](#)
Yang Chen, Xiaodong Yang & Jie Gao
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86. [High-efficiency, large-area, topology-optimized metasurfaces](#)
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90. [Single-photon avalanche diode imagers in biophotonics: review and outlook](#)
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