15 Top-Cited Articles from Optica

OSA Journals <osa@osacommunications.org>

Mon 5/17/2021 5:34 AM

To: SOURANGSU BANERJI <sourangsu.banerji@ece.utah.edu>;

OSA | 100 Share:

optica

AUTHOR INFORMATION | SUBMIT YOUR MANUSCRIPT | CREATE E-ALERTS | FOLLOW@OSAPUBLISHING

Browse a Collection of Top-Cited Papers from *Optica*

Optica has quickly established itself as a trusted Open-Access source for some of the most exciting work in optics and photonics. To help you keep up to date on the top research in the field, we have put together a collection of the most cited articles published in *Optica* since 2020.*

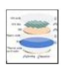
We hope that you find these articles helpful. If you would like to be notified about new research published in the Journal, please sign up for our free Table of Contents email alerts.

Learn More About Submitting to *Optica*

*Source for top-cited articles is Clarivate Analytics' Web of Science™

A message to our authors, reviewers, and readers regarding COVID-19

Most Cited *Optica* Papers



Narrow-linewidth III-V/Si/Si_3N_4 laser using multilayer heterogeneous integration

Chao Xiang, Warren Jin, Joel Guo, Jonathan D. Peters, M. J. Kennedy, Jennifer Selvidge, Paul A. Morton, and John E. Bowers

Optica 7(1) 20-21 (2020) HTML PDF

Silicon nitride is a dielectric material that is important for optical clocks and optical sensors. The authors integrated silicon nitride into a high-performance laser, potentially enabling a class of integrated photonic devices that do not require external light sources.

Hybrid integration methods for on-chip quantum photonics

Je-Hyung Kim, Shahriar Aghaeimeibodi, Jacques Carolan, Dirk Englund, and Edo Waks

Optica 7(4) 291-308 (2020) HTML PDF

Future quantum photonics requires the integration of multiple components for the generation, manipulation, and detection of nonclassical light in a phase stable and efficient platform. The hybrid integration approach combines independently developed materials, photonic functional structures, and control techniques in a single chip. The authors review recent advances and future prospects of integrated quantum photonics systems based on the hybrid integration method.

Large-scale optical phased array using a low-power multi-pass silicon photonic platform

Steven A. Miller, You-Chia Chang, Christopher T. Phare, Min Chul Shin, Moshe Zadka, Samantha P. Roberts, Brian Stern, Xingchen Ji, Aseema Mohanty, Oscar A. Jimenez Gordillo, Utsav D. Dave, and Michal Lipson

Optica 7(1) 3-6 (2020) HTML PDF

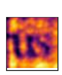
Long-range high-performance optical phased arrays require a large beam emission area, densely packed with thousands of actively phase-controlled and power-hungry light-emitting elements. The authors demonstrate a multipass photonic platform integrated into a large-scale phased array that lowers phase shifter power consumption by nearly nine times and could enable scalable phased arrays.

Ultrabroadband nonlinear optics in nanophotonic periodically poled lithium niobate waveguides

Marc Jankowski, Carsten Langrock, Boris Desiatov, Alireza Marandi, Cheng Wang, Mian Zhang, Christopher R. Phillips, Marko Lončar, and M. M. Fejer

Optica 7(1) 40-46 (2020) HTML PDF

Pulsed interactions in nonlinear devices efficiently generate different frequencies of coherent laser light. Typical devices are limited to short lengths by the different velocities of the interacting waves. The authors report how nanophotonic devices can overcome these limits, and demonstrate efficient interactions with orders of magnitude less energy than conventional devices.

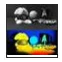


Hyperspectral terahertz microscopy via nonlinear ghost imaging

Luana Olivieri, Juan S. Totero Gongora, Luke Peters, Vittorio Cecconi, Antonio Cutrona, Jacob Tunesi, Robyn Tucker, Alessia Pasquazi, and Marco Peccianti

Optica 7(2) 186-191 (2020) HTML PDF

The authors experimentally demonstrate time-resolved nonlinear ghost imaging, a technique based on near-field, optical-to-terahertz nonlinear conversion and detection of illumination patterns. Their approach enables high-fidelity subwavelength imaging and enables reconstruction of hyperspectral images of complex samples inaccessible via standard fixed-time methods.

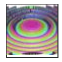


Megapixel time-gated SPAD image sensor for 2D and 3D imaging applications

Kazuhiro Morimoto, Andrei Ardelean, Ming-Lo Wu, Arin Can Ulku, Ivan Michel Antolovic, Claudio Bruschini, and Edoardo Charbon

Optica 7(4) 346-354 (2020) HTML PDF

With the recent miniaturization of single-photon avalanche diodes (SPADs) in CMOS, large-format cameras benefiting a wide variety of timing- and speed-sensitive applications are possible. The authors demonstrated a one megapixel SPAD camera with sub-100-picosecond time resolution and large array size, which could be useful in industrial and robotic monitoring, safety and security, automotive and consumer sensing, biomedical and scientific imaging, as well as in quantum optics applications.



Large-area, high-numerical-aperture multi-level diffractive lens via inverse design

Monjurul Meem, Sourangsu Banerji, Christian Pies, Timo Oberbiermann, Apratim Majumder, Berardi Sensale-Rodriguez, and Rajesh Menon

Optica 7(3) 252-253 (2020) HTML PDF

The authors leverage rotational symmetry and high-resolution grayscale-optical lithography to demonstrate a flat lens with diameter of 4.13 mm, numerical aperture of 0.9, and focusing performance better than that of a conventional refractive lens. Such a lens could replace bulky microscope objectives with wafer-thin, lightweight, flat optics.

Water window soft x-ray source enabled by a 25 W few-cycle 2.2 µm OPCPA at 100 kHz

J. Pupeikis, P.-A. Chevreuil, N. Bigler, L. Gallmann, C. R. Phillips, and U. Keller

Optica 7(2) 168-171 (2020) HTML PDF

Long-wavelength ultrafast lasers enable coherent soft x-ray generation at photon energies beyond a few hundred electronvolts. Extending sensitive attosecond time-domain studies into this spectral region requires production of soft x-ray flashes at high repetition rates, which is limited by long-wavelength laser technology. The authors designed a laser amplification system and a soft x-ray generation target to overcome these limitations and demonstrate a tabletop source producing coherent soft x-ray flashes at a rate of 100,000 shots per second, enabling applications in the physical and biological sciences.

Deep-inverse correlography: towards real-time high-resolution non-line-of-sight imaging

Christopher A. Metzler, Felix Heide, Prasana Rangarajan, Muralidhar Madabhushi Balaji, Aparna Viswanath, Ashok Veeraraghavan, and Richard G. Baraniuk

Optica 7(1) 63-71 (2020) HTML PDF

This article describes an approach to recover high-resolution images of objects that are obscured/hidden from view by exploiting the spatial correlations in scattered light. However, this requires solving a noisy phase retrieval problem, which has limited the utility of similar approaches and necessitated the use of long exposure times. By combining spectral estimation theory and deep learning, the authors demonstrate sub-millimeter resolution non-line-of-sight imaging from a one meter stand-off in near-real-time.

Two-dimensional topological quantum walks in the momentum space of structured light

Alessio D'Errico, Filippo Cardano, Maria Maffei, Alexandre Dauphin, Raouf Barboza, Chiara Esposito, Bruno Piccirillo, Maciej Lewenstein, Pietro Massignan, and Lorenzo Marrucci

Optica 7(2) 108-114 (2020) HTML PDF

This article reports the realization of two-dimensional quantum walks in an optical platform based on cascaded patterned geometric-phase elements. The devised evolution constitutes an easily tunable and configurable periodically-driven Chern topological insulator. The authors probe the topology of the underlying band structure in a Quantum Hall type experiment by reading out the quantized anomalous response arising in the direction orthogonal to an applied constant force.

Bufferless 1.5 µm III-V lasers grown on Si-photonics 220 nm silicon-on-insulator platforms

Yu Han, Zhao Yan, Wai Kit Ng, Ying Xue, Kam Sing Wong, and Kei May Lau

Optica 7(2) 148-153 (2020) HTML PDF

Si-photonics needs bufferless III-V lasers to seamlessly couple epitaxial light sources with other Si-based photonic components. The authors devised a III-V/Si heteroepitaxy scheme and demonstrated direct growth of bufferless 1.5 µm III-V lasers on the standard 220 nm SOI platform for Si-photonics.

Reconfigurable multilevel control of hybrid all-dielectric phase-change metasurfaces

Carlota Ruiz de Galarreta, Ivan Sinev, Arseny M. Alexeev, Pavel Trofimov, Konstantin Ladutenko, Santiago Garcia-Cuevas Carrillo, Emanuele Gemo, Anna Baldycheva, Jacopo Bertolotti, and C. David Wright

Optica 7(5) 476-484 (2020) HTML PDF

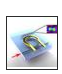
All-dielectric metasurfaces allow for the manipulation of optical wavefronts with ultrahigh efficiency. By embedding deeply subwavelength-sized inclusions of phase-change materials within the body of all-dielectric meta-atoms, and switching their phase state, the authors achieved multilevel and fully reversible control of wavefronts in the near infrared, with potential applications ranging from spectral filtering to color displays, sensors, LIDAR, holography, and more.

Distribution of high-dimensional orbital angular momentum entanglement over a 1 km few-mode fiber

Huan Cao, She-Cheng Gao, Chao Zhang, Jian Wang, De-Yong He, Bi-Heng Liu, Zheng-Wei Zhou, Yu-Jie Chen, Zhao-Hui Li, Si-Yuan Yu, Jacquiline Romero, Yun-Feng Huang, Chuan-Feng Li, and Guang-Can Guo

Optica 7(3) 232-237 (2020) HTML PDF

By employing an actively stabilizing phase precompensation technique, the authors demonstrate distribution of three-dimensional orbital angular momentum (OAM) entanglement via a 1 km long few-mode optical fiber. The method can, in principle, be extended to higher OAM dimensions and larger distances, which would help developing future OAM-based high-dimensional long-distance quantum communication.



Visible nonlinear photonics via high-order-mode dispersion engineering

Yun Zhao, Xingchen Ji, Bok Young Kim, Prathamesh S. Donvalkar, Jae K. Jang, Chaitanya Joshi, Mengjie Yu, Chaitali Joshi, Renato R. Domeneguetti, Felippe A. S. Barbosa, Paulo Nussenzveig, Yoshitomo Okawachi, Michal Lipson, and Alexander L. Gaeta

Optica 7(2) 135-141 (2020) HTML PDF

The development of nonlinear photonics at visible wavelengths is limited by large intrinsic material dispersion. The authors show that this can be overcome using high-order waveguide modes. They demonstrate a visible Kerr frequency comb and a visible photon-pair source, which have a wide range of applications including metrology, bio-imaging, and quantum information processing.

Waveguide-integrated three-dimensional quasi-phase-matching structures

Jörg Imbrock, Lukas Wesemann, Sebastian Kroesen, Mousa Ayoub, and Cornelia Denz

Optica 7(1) 28-34 (2020) HTML PDF

The authors write three-dimensional nonlinear structures into waveguides using laser lithography and report parallel generation of laser light with new wavelengths. When applied to integrated optics, this technique could enable compact devices for efficient frequency conversion and laser beam shaping.

The Optical Society (OSA)
2010 Massachusetts Ave., N.W. Washington, D.C. 20036 USA
www.osa.org
+1 202.223.8130