ACS Photonics

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Decade 2020 Year 2026 Issue November 04, - Volume 13, Issue 21, Pages 6302 - 6596

Volume 13, Issue 21

November 04, 2026

EISSN 2330-4022

About the Cover

A complex-frequency chirped pulse traces a designed trajectory through a resonant scattering landscape, mapping a hidden spectral structure onto a measurable time-domain response. The artwork depicts the waveform winding around resonant features, illustrating how controlled temporal excitation reveals pole-zero dynamics inaccessible to conventional real-frequency probing. The cover graphic was created by the author using ChatGPT (OpenAI). View the article.

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Reviews

Subscribed

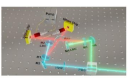
33.1 nm Wide-Tuning High-Power Blue-Green Semiconductor Disk Laser and Its Application in Underwater Wireless Optical Communication with Various Water Types

Tian Liu; Cheng Zhang; Tao Wang; Lidan Jiang; Renjiang Zhu; Peng Zhang

ACS Photonics (2026) 13 (21): 6302–6312.

https://doi.org/10.1021/acsphotonics.6c01626

Abstract PDF View Article


Pump
M2
LBO
M4 LBO
M1
M5
HWP
PBS

Articles

Subscribed

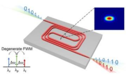
Mid-Infrared All-Optical Wavelength Conversion of NRZ OOK Signal in Silicon Waveguides

Zhiwei Yan; Chang Chang; Xuchen Peng; Guanglian Cheng; Qiyuan Yi; Xinzhe Xiong; Qiyuan Li; Zengfan Shen; Shuang Zheng; Yi Zou; Minming Zhang; Li Shen

ACS Photonics (2026) 13 (21): 6313–6321.

https://doi.org/10.1021/acsphotonics.6c00289

Abstract View Article PDF


Degenerate FWM

Subscribed ACS Editors' Choice

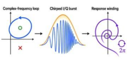
Complex-Frequency Chirped Pulses for Trajectory-Resolved Scattering

Alex Krasnok; Denis Seletskiy

ACS Photonics (2026) 13 (21): 6322–6332.

https://doi.org/10.1021/acsphotonics.6c00602

Abstract View Article PDF


Complex-frequency loop
Chirped I/Q burst
Response winding
2π

Open Access

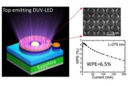
High-Efficiency Top-Emitting AlGaN-Based Deep-Ultraviolet Light-Emitting Diodes

Guo-Dong Hao; Manabu Taniguchi; Lingjie Wei; Shin-ichiro Inoue

ACS Photonics (2026) 13 (21): 6333–6338.

https://doi.org/10.1021/acsphotonics.6c00589

Abstract View Article PDF


Top-emitting DUV-LED
Sapphire
λ=275 nm
WPE=6.5%
WPE (%)
Current (mA)

Open Access

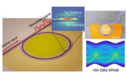
High-Speed Energy-Efficient Resonant Modulator on a Graphene-Organic Hybrid Platform

Xinzhi Zhang; Ping Ma; Tobias Blatter; Yannik Horst; Wolfgang Heni; Alexandros Emboras; Tatsuhiko Watanabe; Nikolaus Flöry; Lukas Novotny; Delwin L. Elder; Larry R. Dalton; Juerg Leuthold

ACS Photonics (2026) 13 (21): 6339–6347.

https://doi.org/10.1021/acsphotonics.6c00793

Abstract View Article PDF


Optical input
Modulated signal
Top Graphene
Bot Graphene
160 GBd 4PAM

Subscribed

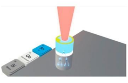
Germanium–Tin (GeSn) Avalanche Photodiode with up to 2.7 μm Cutoff Wavelength for Extended SWIR Detection

Quang Minh Thai; Rajesh Kumar; Justin Rudie; Xiaoxin Wang; Abdulla Said Ali; Perry C. Grant; Hryhorii Stanchu; Yunsheng Qiu; Steven Akwabli; Chun-Chieh Chang; Jifeng Liu; Baohua Li; Wei Du; Shui-Qing Yu

ACS Photonics (2026) 13 (21): 6348–6357.

https://doi.org/10.1021/acsphotonics.6c00810

Abstract View Article PDF



Subscribed

High-Efficiency Fiber Laser Generating up to 528th-Order Orbital Angular Momentum Light

Yu Lei; Jinjiang Wang; Hongyu Yan; Ruijian Li; Tong Liu; Zhengliang Liu; Yuan Ren

ACS Photonics (2026) 13 (21): 6358–6365.

https://doi.org/10.1021/acsphotonics.6c01098

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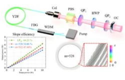

YDF
FBG
WDM
Col
PBS
QP1
HWP
QP2
OC
Pump
Slope efficiency
m=528

Subscribed

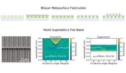
Near-Flatband Resonances in Bilayer Moiré Superlattices for Visible-to-Infrared Meta-Optics

Yiran Gu; Phillippe Pearson; Zhaowei Dai; Owen Miller; Andrei Faraon

ACS Photonics (2026) 13 (21): 6366–6372.

https://doi.org/10.1021/acsphotonics.6c01011

Abstract View Article PDF


Bilayer Metasurface Fabrication
Moiré Superlattice Flat Band
Simulation
Experiment
Incidence angle (degree)

Open Access

Exciton-Tunable Phase Control and Superstrong Coupling through Multimode Polariton Engineering in Planar Waveguides

Johannes Bürger; Erika Cortese; Simone Di Muzio; Daniele Sanvitto; Simone De Liberato; Dario Ballarini

ACS Photonics (2026) 13 (21): 6373–6385.

https://doi.org/10.1021/acsphotonics.6c01318

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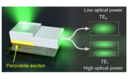
Low optical power
TE0
TE1
High optical power
Perovskite exciton

Open Access

Robust Radiative Cooling in Functionalizable Silica Microsphere Paints

Jorge Burgos; José Rodrigo Magana; Ares Lladós; Javier Pascualena Ferré; Sara Núñez-Sánchez; Juliana Jaramillo Fernández; Cefe López; Pedro David García

ACS Photonics (2026) 13 (21): 6386–6395.

https://doi.org/10.1021/acsphotonics.6c01355

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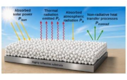
Absorbed solar power Psun
Thermal radiation emitted Pr
Absorbed atmospheric radiation Pa
Non-radiative heat transfer processes Pnonrad
Highly reflective substrate

Open Access

Programmable Non-Hermitian Synchronization of Light on a Silicon Photonic Processor

Ze-Sheng Xu; Nan Cheng; Mohammed S. Elmusrati; Rohan Yadgirkar; Andrea Cataldo; Rui Wen; Govind Krishna; Jun Gao; Ali W. Elshaari

ACS Photonics (2026) 13 (21): 6396–6404.

https://doi.org/10.1021/acsphotonics.6c01369

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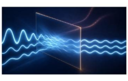

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Room-Temperature Visible-Light Single-Photon Avalanche Detection in Grating-Coupled Post-CMOS Photonic Circuits

Marcus Westhues; Roman Burkard; Thomas Geruschke; Julia Hauser; Johannes Ewering; Stefan Dreiner; Aleksandar Nesic; Anna Lena Schall-Giesecke

ACS Photonics (2026) 13 (21): 6405–6413.

https://doi.org/10.1021/acsphotonics.6c01473

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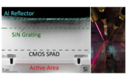
Al Reflector
SiN Grating
CMOS SPAD
Active Area
Si

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Cryogenic Insights into Bulk and Sidewall Nonradiative Recombination in AlGaInP Red Micro-LEDs

Ming-June Wu; Chee-Keong Yee; Natchanon Prechatavanich; Cheng-En Wu; Zhi-An Lin; Zih-Wei Cyue; Chao-Hsin Wu

ACS Photonics (2026) 13 (21): 6414–6421.

https://doi.org/10.1021/acsphotonics.6c01493

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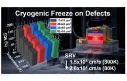

Subscribed

Parallel Spatial–Frequency Diffractive Neural Networks for Autonomous-Driving Visual Understanding

Peng Sun; Shu Li; Yuyang Duan; Yuchao Zhang; Tingxuan Li; Kun Tu; Yibo Dong; Min Gu; Jing Wang

ACS Photonics (2026) 13 (21): 6422–6431.

https://doi.org/10.1021/acsphotonics.6c01531

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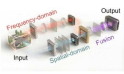
Frequency-domain
Output
Input
Spatial-domain
Fusion

Subscribed

Anomalous Quenching of Second-Harmonic Generation by Symmetry-Breaking Spin Order in CrOCl

De Hou; Zhou Wang; Ying Zhang; Ruiya Zhan; Xiao Lin; Zhigao Sheng; Xinwei Li

ACS Photonics (2026) 13 (21): 6432–6441.

https://doi.org/10.1021/acsphotonics.6c01568

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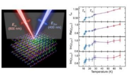

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Mechanisms Governing Photon-Pair Generation and Emission Directionality in Quantum Metasurfaces

Alberto Paniate; Ivano Ruo-Berchera; Francesco Monticone

ACS Photonics (2026) 13 (21): 6442–6448.

https://doi.org/10.1021/acsphotonics.6c01607

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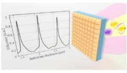

Subscribed

A Compact High-Repetition-Rate Intense THz Source for Atomic-Scale Materials Characterization

Léo Guiramand; Florant Exertier; Alexandre Fahy; Anna Martinez; Matteo De Tullio; Saïd Idlahcen; Jonathan Houard; Gerald Da Costa; Thomas Godin; Xavier Ropagnol; Domenico Paparo; François Blanchard; Angela Vella; Ammar Hideur

ACS Photonics (2026) 13 (21): 6449–6459.

https://doi.org/10.1021/acsphotonics.6c01637

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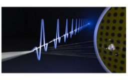

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Bidirectional Phase Sensitivity in Holographic Phototransient Microscopy

Emmanuel Kotu Robertson; Dennis van de Lockand; Matz Liebel

ACS Photonics (2026) 13 (21): 6460–6466.

https://doi.org/10.1021/acsphotonics.6c01684

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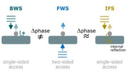
BWS
FWS
IFS
Δphase
≠
Δphase
≈
internal reflection
single-sided access
two-sided access
single-sided access

Subscribed

Sequential Stabilization for Color-Stable Deep-Blue Mixed-Halide Perovskite Light-Emitting Diodes

Hyojun Kim; Seungjae Lee; Junho Kim; Heeseung Lee; Seyun Lee; Hyuncheol Do; Jeongheon Park; Changsoon Cho; Jung-Yong Lee

ACS Photonics (2026) 13 (21): 6467–6477.

https://doi.org/10.1021/acsphotonics.6c01700

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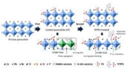
Pristine perovskite
First
Control perovskite (CP)
Second
TFPPS treated
Under bias
Under bias

Subscribed

Gate-Programmable Bipolar β-Ga$_2$O$_3$ Solar-Blind Phototransistor for Encrypted Optical Communication and Image Transmission

Wei Wang; Yushi Wang; Chenxing Liu; Zhengyuan Wu; Xin Dong; Kelvin H. L. Zhang; Ning Jia; Qinglin Sai; Hongji Qi; Daoyou Guo; Shan Li; Weihua Tang; Zhilai Fang

ACS Photonics (2026) 13 (21): 6478–6488.

https://doi.org/10.1021/acsphotonics.6c01763

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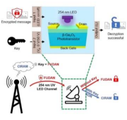
Encrypted message
Key
254 nm LED
Source
Drain
Back Gate
Decryption successful
CIRAM
Key = FUDAN
FUDAN
254 nm UV LED Channel
Without Key
With Key
FUDAN
CIRAM

Subscribed

Self-Rolled-Up Microtube Optoelectronic Synapse Based on WS$_2$/Graphene Heterojunction for Retina-Inspired Photoresponse Dynamics

Xiaoqiu Tang; Yuning Li; Yixin Zhang; Yuyang Zhao; Hengzhen Cheng; Xuan Yao; Danke Chen; Zhe Jiang; Mingqiang Zhu; Jingye Sun; Tao Deng

ACS Photonics (2026) 13 (21): 6489–6501.

https://doi.org/10.1021/acsphotonics.6c01771

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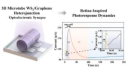
3D Microtube WS2/Graphene Heterojunction Optoelectronic Synapse
Retina-Inspired Photoresponse Dynamics
Current (pA)
Time (s)

Subscribed

Row–Column Addressable Monolayer Graphene/SiO$_2$/Si Heterostructure Array for Visible-to-Near-Infrared Imaging with Suppressed Dark Current

Shenghan Qin; Peirui Ji; Wenbo Hu; Hanjin Dong; Weihao Tao; Guofeng Zhang; Shuming Yang

ACS Photonics (2026) 13 (21): 6502–6509.

https://doi.org/10.1021/acsphotonics.6c01818

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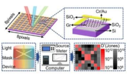
8pixels
8pixels
Cr/Au
SiO2
Gr
SiO2
Si
Light
Mask
Device
Source Meter
Computer
D*(Jones)

Subscribed

Quantum Barrier Engineering Enables Carrier Redistribution for High-Efficiency Green InGaN Micro-LEDs at Reduced Operating Current Density

Chunyu Liu; Weifang Lu; Xu Yang; Yizhan Lin; Jinchai Li; Kai Huang; Zhaoxia Bi; Rong Zhang

ACS Photonics (2026) 13 (21): 6510–6520.

https://doi.org/10.1021/acsphotonics.6c01862

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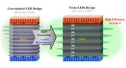
Conventional LED Design
Micro-LEDs Design
MQW Engineering
Carrier Redistribution
High Efficiency at Low J

Subscribed

Can Second-Order Nonlinearity in Metal–Dielectric Metamaterials Pave the Way toward Elusive Photonic Time Crystals?

Jacob B. Khurgin

ACS Photonics (2026) 13 (21): 6521–6526.

https://doi.org/10.1021/acsphotonics.6c01918

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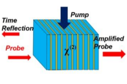

Time Reflection
Pump
Probe
χ(2)
Amplified Probe

Subscribed

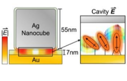
Molecular Control of Light–Matter Interactions in Plasmonic Nanogap Cavities

Benjamin P. King; Rachel E. Bangle; Hengming Li; Maiken H. Mikkelsen

ACS Photonics (2026) 13 (21): 6527–6537.

https://doi.org/10.1021/acsphotonics.6c01950

Abstract View Article PDF


|E|
Ag Nanocube
55nm
7nm
Au
Cavity E

Open Access

[Quantum Imaging via Kurtosis-Difference Weighted Covariance on a 2D Camera](https://doi.org/10.1021/acsphotonics.6c01982)

Zhe He; Yanli Shi; Hui Wu; Qun Cao; Weidong Zheng; Zheng Cui

ACS Photonics (2026) 13 (21): 6538–6544.

https://doi.org/10.1021/acsphotonics.6c01982

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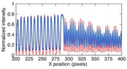

Subscribed

Closed-Loop, Event-Driven Machine Learning for Autonomous Triage of Single-Photon Emitters

Tanvir M. Mahim; Md Nahin Islam; M. Mosaddequr Rahman; Abu S. M. Mohsin

ACS Photonics (2026) 13 (21): 6545–6554.

https://doi.org/10.1021/acsphotonics.6c01984

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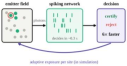
emitter field
spiking network
decision
photons
decides in ~0.3 s
certify
reject
6× faster
adaptive exposure per site (in simulation)

Subscribed

Turbulence-Invariant Polarization Readout via Spin-Dependent Angular Mapping

Chaoxu Chen; Yuan Wei; Fang Dong; Haoyu Zhang; Ouhan Huang; Ziwei Li; Fang Wei; Wei Chu; Haiwen Cai; Nan Chi; Junwen Zhang; Jianyang Shi

ACS Photonics (2026) 13 (21): 6555–6564.

https://doi.org/10.1021/acsphotonics.6c02024

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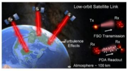
Low-orbit Satellite Link
Tx
Rx
FSO Transmission
Turbulence Effects
Rx
Rx
PDA Readout
Atmosphere ~ 100 km

Subscribed

Decoupling Plasmonic Hot Electrons and Photothermal Effects at Ag/Eu_2O_3 Interfaces for Multimode Optical Memory

Chengyun Zhang; Huahao Chen; Tenglong Zhang; Chenjiang Wang; Wei Gao; Qingyan Han; Xuewen Yan; Mingdi Zhang; Jun Dong

ACS Photonics (2026) 13 (21): 6565–6578.

https://doi.org/10.1021/acsphotonics.6c02145

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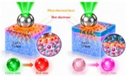

Photothermal heat
Hot electrons
Green state
Red state
Bright state

Open Access

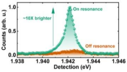
Efficient Quasi-Resonant, Polarization-Selective Excitation of GaN Quantum Emitters

Nilesh Dalla; Paweł Kulboka; Michał Kobecki; Jan Misiak; Paweł Prystawko; Tomasz Kazimierczuk; Piotr Kossacki; Henryk Turski; Tomasz Jakubczyk

ACS Photonics (2026) 13 (21): 6579–6587.

https://doi.org/10.1021/acsphotonics.6c02170

Abstract ⌄ | View Article | PDF



Subscribed

Imaging of Strain-Modulated Exciton Funneling and Exciton Lifetime Modulation in Multilayer GaSe

Sinto Varghese; Yan Jiang; Bhojraj Bhandari; Sergiy Krylyuk; Albert V. Davydov; Jingbiao Cui; Yuankun Lin

ACS Photonics (2026) 13 (21): 6588–6596.

https://doi.org/10.1021/acsphotonics.6c02445

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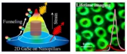
Funneling
Strain
2D GaSe on Nanopillars
Lifetime imaging

Mastheads

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Issue Editorial Masthead

ACS Photonics (2026) 13 (21)

https://doi.org/10.1021/phv013i021_2151331

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