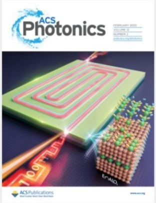
ACS Photonics
Er2O3
Al2O3
ACS Publications

February 19, 2025
Volume 12, Issue 2
Pages 563-1251

About the Cover:

An erbium-doped waveguide amplifier (EDWA) based on atomic layer deposition. The erbium-doped-aluminum-oxide film is grown through a layer-by-layer deposition of erbium oxide and aluminum oxide, ensuring uniform doping and high film quality. The signal light is amplified by the EDWA under a bidirectional pumping input. **View the article.**

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EDITORIALS

New Year Editorial

Romain Quidant

ACS Photonics 2025, 12, 2, 563 **(Editorial)** Subscribed
Publication Date (Web): February 19, 2025

First Page Full text PDF

LETTERS

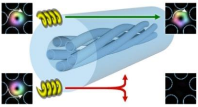
Giant Helical Dichroism in Twisted Hollow-Core Photonic Crystal Fibers

Christof Helfrich, Michael H. Frosz, and Francesco Tani*

ACS Photonics 2025, 12, 2, 564-569 **(Letter)** Open Access
Publication Date (Web): February 9, 2025

Abstract Full text PDF

ABSTRACT



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ACS Publications First Issue ARTIFICIAL PHOTOSYNTHESIS

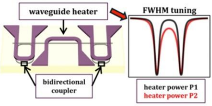
Cavity–Waveguide Coupling Modulation via an Optical Analogue of Superradiance in Microring Arrays

Andrew Tang, Romil Audhkhasi, Abhi Saxena, Virat Tara, Geun Ho Ahn, Jelena Vučković, and Arka Majumdar*

ACS Photonics 2025, 12, 2, 570-575 **(Letter)** Subscribed
Publication Date (Web): January 18, 2025

Abstract Full text PDF

ABSTRACT


waveguide heater
FWHM tuning
bidirectional coupler
heater power P1
heater power P2

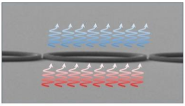
Single-Defect Mode Lasing in a Non-Hermitian 1D Trivial SSH Lattice

Abouzar Gharajeh, Kiyanoush Goudarzi, and Qing Gu*

ACS Photonics 2025, 12, 2, 576-580 **(Letter)** Subscribed
Publication Date (Web): January 13, 2025

Abstract Full text PDF

ABSTRACT



Radiofrequency Receiver Based on Isotropic Solid-State Spins

Islay O. Robertson, Brett C. Johnson, Giannis Thalassinos, Sam C. Scholten, Kevin J. Rietwyk, Brant C. Gibson, Jean-Philippe Tetienne*, and David A. Broadway*

ACS Photonics 2025, 12, 2, 581-587 **(Letter)** Subscribed

Publication Date (Web): January 30, 2025

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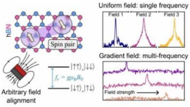
hBN
Spin pair
Uniform field: single frequency
Field 1
Field 2
Field 3
Gradient field: multi-frequency
Field strength
$|\uparrow\uparrow\rangle, |\downarrow\downarrow\rangle$
$f_r = g\mu_B B_0$
$|\downarrow\uparrow\rangle, |\uparrow\downarrow\rangle$
Arbitrary field alignment

ARTICLES

Multichannel Lithium-Niobate-On-Insulator Photonic Filter for Dense Wavelength-Division Multiplexing

Mingyu Zhu, Dajian Liu, Zehao Guo, Weike Zhao, Huang Fei, Chenfeng Wen, Chun Gao, Shi Zhao, Zejie Yu, and Daoxin Dai*

ACS Photonics 2025, 12, 2, 588-596 **(Article)** Subscribed

Publication Date (Web): February 2, 2025

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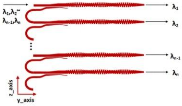
λ_1,λ_2~
λ_{n-1},λ_n
λ_1
λ_2
λ_{n-1}
λ_n
z_axis
y_axis

Coherence and Phase-Locking in High-Power, Broad-Area, Highly Heterogeneous Blue Diode Laser Arrays

Parashu Nyaupane*, Olivier Spitz*, Gregory Scranton, Suyesh Koyu, Mark A. Berrill, Patrick L. LiKamWa, and Yehuda Braiman*

ACS Photonics 2025, 12, 2, 597-609 **(Article)** Subscribed

Publication Date (Web): January 8, 2025

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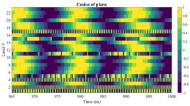
˅ ABSTRACT



Fast Free-Form Phase Mask Design for Three-Dimensional Photolithography Using Convergent Born Series

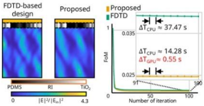
Dohyeon Lee, Moosung Lee, Bakytgul Yerenzhep, Myungjoon Kim, Herve Hugonnet, Seokwoo Jeon, Jonghwa Shin, and YongKeun Park*

ACS Photonics 2025, 12, 2, 610-619 **(Article)** Subscribed

Publication Date (Web): January 27, 2025

Abstract Full text PDF

˅ ABSTRACT



Photon-Limited Imaging by Timestamped All-Pixel Sensing (PITAS)

Zhan-Ming Li, Shi-Bao Wu, Zhi-Yao Wang, Jun Gao, Zeng-Quan Yan, Heng Zhou, Si-Yuan Yin, and Xian-Min Jin*

ACS Photonics 2025, 12, 2, 620-627 **(Article)** Subscribed

Publication Date (Web): January 14, 2025

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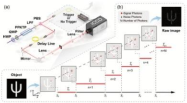
˅ ABSTRACT


(a)
(b)
PPKTP
PBS
LPF
QWP
HWP
Trigger or No Trigger
Lens
Filter
Delay Line
Lens
Mirror
Object
Raw image

High-Efficiency Solar Hybrid Photovoltaic/Thermal System Enabled by Ultrathin Asymmetric Fabry–Perot Cavity

Ran Wei, Tianshu Xu, and Chunlei Guo*

ACS Photonics 2025, 12, 2, 628-635 **(Article)** Open Access

Publication Date (Web): February 6, 2025

Abstract Full text PDF

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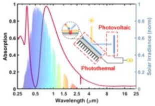

Simultaneous Transmission and Reflection Terahertz Homodyne Imaging System with Integrated Resonant C-Shaped Metalenses

Vladislovas Cizas*, Karolis Redeckas, Kasparas Stanaitis, Auguste Bieleviciute, Rusne Ivaskeviciute-Povilauskiene, Domas Jokubauskis, Mindaugas Karaliunas, Ernestas Nacius, Ignas Grigelionis, and Linas Minkevicius

ACS Photonics 2025, 12, 2, 636-647 **(Article)** Open Access

Publication Date (Web): February 4, 2025

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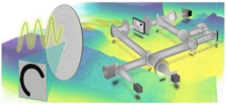
ABSTRACT



Complementary Speckle Stimulated Emission Depletion Microscopy

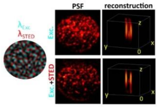
Payvand Arjmand*, Samlan Chandran Thodika, Haoyang Li, Elsa Bivas, Martin Oheim, Hiroyuki Yoshida, Etienne Brasselet, and Marc Guillon*

ACS Photonics 2025, 12, 2, 648-654 **(Article)** Subscribed

Publication Date (Web): January 30, 2025

Abstract Full text PDF

ABSTRACT



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Direct on-Chip Optical Communication between Nano Optoelectronic Devices

Vidar Flodgren, Abhijit Das, Joachim E. Sestoft, David Alcer, Thomas K. Jensen, Hossein Jeddi, Håkan Pettersson, Jesper Nygård, Magnus T. Borgström, Heiner Linke, and Anders Mikkelsen*

ACS Photonics 2025, 12, 2, 655-665 **(Article)** Open Access

Publication Date (Web): January 21, 2025

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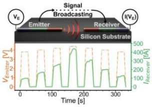

Broadband and Omni-directional Enhancement of Emissivity Enabled by Thermal Excitation of Mie Resonances

Ramin Pouria, Dhan Cardinal, Philippe K. Chow, and Sheila Edalatpour*

ACS Photonics 2025, 12, 2, 666-673 **(Article)** Subscribed

Publication Date (Web): February 5, 2025

Abstract Full text PDF

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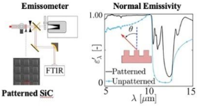

Atomic-Layer Engineered Erbium-Doped Waveguide Amplifier with a 14.4 dB Net Gain

Hao Zhang, Yichen He, Shengyun Zhu, Xiaoyan Zhou*, and Lin Zhang*

ACS Photonics 2025, 12, 2, 674-683 **(Article)** Subscribed

Publication Date (Web): December 3, 2024

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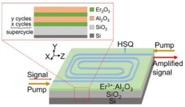
ABSTRACT


y cycles
x cycles
supercycle
Er_2O_3
Al_2O_3
SiO_2
Si
HSQ
Pump
Amplified signal
X
Y
Z
Signal
Pump
$Er^{3+}:Al_2O_3$
SiO_2
Si

Tantalum Pentoxide Integrated Photonics: A Promising Platform for Low-Loss Planar Lightwave Circuits with Low Thermo-Optic Coefficients

Zhenyu Liu, Wenle Yao, Mingjian You, Xiaolun Yu, Ning Ding, Weiren Cheng, Zhengqi Li, Xingyu Tang, Fei Guo*, Dan Lu, and Qiancheng Zhao*

ACS Photonics 2025, 12, 2, 684-695 **(Article)** Subscribed

Publication Date (Web): January 22, 2025

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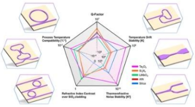

Brain-Like Device Simulating Dendrites Perception Process and Optical Induced Excitatory Postsynaptic Current

Jia-Ying Chen, Wen-Min Zhong, Qi-Zhong Ren, Ang He, Xiao-Bin Guo, Yan-Ping Jiang, Qiu-Xiang Liu, and Xin-Gui Tang*

ACS Photonics 2025, 12, 2, 696-704 **(Article)** Subscribed

Publication Date (Web): January 23, 2025

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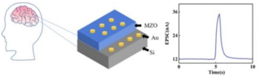

MZO
Au
Si
EPSC(nA)
36
24
12
0
5
10
Time(s)

Highly Resistive Semitransparent G−aSi−ITO Photodetectors with Graded Energy Band Gaps

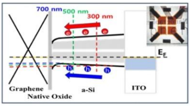
Jiyoun Jeong, Minho Choi, and Jaewu Choi*

ACS Photonics 2025, 12, 2, 705-716 **(Article)** Subscribed

Publication Date (Web): January 23, 2025

Abstract Full text PDF

ABSTRACT


700 nm
500 nm
300 nm
e
h
E_F
Graphene
Native Oxide
a-Si
ITO

Anomalous Lasing Behavior in a Nonlinear Plasmonic Random Laser

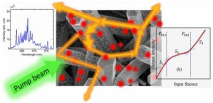
Renu Yadav, Sourabh Pal, Subhajit Jana, Samit K. Ray, Maruthi M. Brundavanam, and Shivakiran Bhaktha B. N*

ACS Photonics 2025, 12, 2, 717-727 **(Article)** Subscribed

Publication Date (Web): January 24, 2025

Abstract Full text PDF

ABSTRACT



Voltage-Tunable Multifunctional Zoom Imaging Metalenses

Melissa Bosch*, Maxim Shcherbakov, Kanghee Won, Hong-Seok Lee, Young Kim, and Gennady Shvets*

ACS Photonics 2025, 12, 2, 728-736 **(Article)** Subscribed

Publication Date (Web): January 7, 2025

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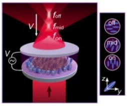
ABSTRACT


f_{off}
f_{mid}
f_{on}
V
V
off
mid
on
z
y

2.46 MHz Ultranarrow Line Width Vertical-Cavity Surface-Emitting Lasers with Cholesteric Liquid Crystals Coupled Cavity

Ning Cui*, Chen Zhang, Huihui Wang, Lishan Fu, Feng Zhang, Yudong Liu, and Baolu Guan*

ACS Photonics 2025, 12, 2, 737-746 **(Article)** Subscribed

Publication Date (Web): November 20, 2024

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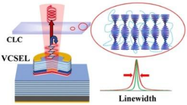
ABSTRACT


CLC
VCSEL
Linewidth

Microwave Injection Induced Broadband Dual-Comb Operation in Terahertz Quantum Cascade Lasers with a Stacked Active Region

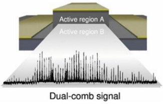
Kang Zhou, Binbin Liu, Wenjian Wan, Ziping Li, Shumin Wu, Xuhong Ma, Guibin Liu, Yanming Lu, Xianglong Bi, Lulu Zheng, Zhenzhen Zhang, Heping Zeng*, and Hua Li*

ACS Photonics 2025, 12, 2, 747-757 **(Article)** Subscribed

Publication Date (Web): December 4, 2024

Abstract Full text PDF

ABSTRACT


Active region A
Active region B
Dual-comb signal

Acoustoplasmonic Metasurfaces for Tunable Acoustic Wavefront Shaping with Polarized Light

Julia E. Holland, Jiuk Byun, Nicholas Boechler, and Lisa V. Poulikakos*

ACS Photonics 2025, 12, 2, 758-767 **(Article)** Subscribed
Publication Date (Web): February 2, 2025

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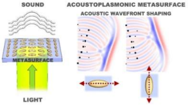
SOUND
ACOUSTOPLASMONIC METASURFACE
ACOUSTIC WAVEFRONT SHAPING
METASURFACE
LIGHT

High-Efficiency and Flat-Top Electro-Optic Frequency Comb Using a Single Modulator and Drive on Thin-Film Lithium Niobate

Gengxin Chen, Ziliang Ruan, and Liu Liu*

ACS Photonics 2025, 12, 2, 768-775 **(Article)** Subscribed
Publication Date (Web): January 22, 2025

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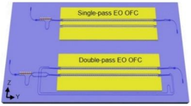
Single-pass EO OFC
Double-pass EO OFC
Z
Y

Space and Time Domain Transport Modulation by InGaN/GaN Single-Carrier Superlattices for High-Performance UV-Blue Photodetection

Zesheng Lv, Supeng Zhang, Gang Wang, and Hao Jiang*

ACS Photonics 2025, 12, 2, 776-785 **(Article)** Subscribed
Publication Date (Web): January 2, 2025

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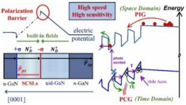
Polarization Barrier
High speed
High sensitivity
(Space Domain) PIG
Energy
built-in fields
electric potential
+σ
N_D^+
-σ
N_D^+
$\vec{P}_{pz}$
$\vec{P}_{sp}$
n-GaN
SCSLs
uid-GaN
n-GaN
[0001]
photo excited
T
TE
Hole Accu.
PCG (Time Domain)

Joint Experimental and Computational Characterization of Sum-Frequency Generation between a Continuous Wave Laser and an Ultrafast Frequency Comb Laser for Tunable Laser Development

Jie Zhan, Nicholas D. Cooper, and Melanie A. R. Reber*

ACS Photonics 2025, 12, 2, 786-791 **(Article)** Open Access
Publication Date (Web): January 29, 2025

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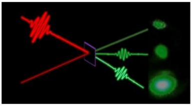
ABSTRACT



Surface Phonon Polariton Ellipsometry

Giulia Carini*, Richarda Niemann, Niclas Sven Mueller, Martin Wolf, and Alexander Paarmann

ACS Photonics 2025, 12, 2, 792-800 **(Article)** Open Access
Publication Date (Web): January 16, 2025

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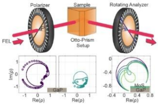
Polarizer
Sample
Rotating Analyzer
FEL
Otto-Prism Setup
Im(ρ)
Re(ρ)
GaP
Re(ρ)
Re(ρ)
MoS
GaP
1
0
-1
-0.4
-0.8
0.4
0.8

Stimulated Exciton–Polariton Scattering in Hybrid Halide Perovskites

Igor Chestnov*, Mikhail Masharin, Valeriy Kondratyev, Ivan Iorsh, Anton Samusev, Anatoly Pushkarev, Sergey Makarov, Ivan A. Shelykh, and Vanik Shahnazaryan*

ACS Photonics 2025, 12, 2, 801-808 **(Article)** Subscribed
Publication Date (Web): February 3, 2025

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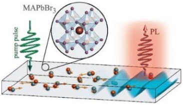
ABSTRACT


$MAPbBr_3$
pump pulse
PL

Near-Infrared Phototransistor Using a SiGe-Based Light-Triggered Feedback Field-Effect Transistor with a Metasurface

Jayoung Kim, Youngbin Yoon, Myunghun Shin, and Jinyoung Hwang*

ACS Photonics 2025, 12, 2, 809-818 **(Article)** Subscribed

Publication Date (Web): January 31, 2025

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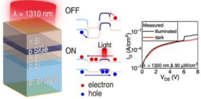
λ = 1310 nm
n Si
p SiGe
n Si
p Si
p⁺ Si Wafer
OFF
ON
Light
electron
hole
Measured
illuminated
dark
λ = 1350 nm & 90 μW/cm²
I_D (A/cm²)
V_DS (V)

Visualizing Standing Light Waves in Continuous-Beam Transmission Electron Microscopy

Jonathan T. Weber, Niklas Müller, Alexander Schröder, and Sascha Schäfer*

ACS Photonics 2025, 12, 2, 819-827 **(Article)** Open Access

Publication Date (Web): January 31, 2025

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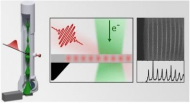

Microfabricated Active Laser Noise Suppression Device for a High-Sensitivity Diamond Quantum Magnetometer

Nan Wang, Yichen Liu, Yongquan Su, Xiao Peng, Yuqiang Hu, Qihui Liu, Fei Xie, Yaochen Zhu, Xin Chen, Xin Luo, Yonggui Zhang, Lihao Wang, Maoheng Jing, Chun Li, Shaoxiong Nie, Hao Chen*, Zhenyu Wu*, and Jiangong Cheng*

ACS Photonics 2025, 12, 2, 828-838 **(Article)** Subscribed

Publication Date (Web): January 18, 2025

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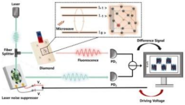

Laser
Fiber Splitter
Microwave
Diamond
Fluorescence
PD₁
PD₂
Difference Signal
Laser noise suppressor
Driving Voltage

Electro-Optic Frequency Combs Carrying Orbital Angular Momentum

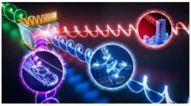
Jinze He, Xingyu Jia, Bing-Yan Wei*, Guanhao Wu*, and Yang Li*

ACS Photonics 2025, 12, 2, 839-846 **(Article)** Subscribed

Publication Date (Web): November 25, 2024

Abstract Full text PDF

ABSTRACT



Triple Modulation of MoS_2/β-Ga_2O_3 van der Waals Heterojunction on the Response Performance of β-Ga_2O_3 Deep Ultraviolet Photodetector

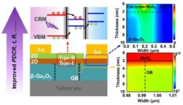
Jie Su*, Xinhao Chen, Liang Shi, Ben Niu, Jingjing Chang*, Jincheng Zhang, and Yue Hao

ACS Photonics 2025, 12, 2, 847-854 **(Article)** Subscribed

Publication Date (Web): January 31, 2025

Abstract Full text PDF

ABSTRACT


Improved PDCR, t, R, ...
CBM
VBM
Au
2D
β-Ga₂O₃
GB
Type-II
Type-I
Substrate
Electrode/MoS₂
Thickness (nm)
Width (μm)
MoS₂

Optothermal Revolution: Colloids in an Optical Ring Trap

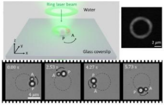
Rahul Chand*, Ashutosh Shukla, and G. V. Pavan Kumar*

ACS Photonics 2025, 12, 2, 855-863 **(Article)** Subscribed

Publication Date (Web): January 7, 2025

Abstract Full text PDF

ABSTRACT


Ring laser beam
Water
Glass coverslip
2 μm
0.00 s
2.53 s
4.27 s
5.73 s
4 μm

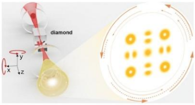
Diamond Raman Vortex Lasers

Hui Chen, Zhenxu Bai*, Junhong Chen, Xiaowei Li, Zhi-Han Zhu, Yulei Wang, Takashige Omatsu, Richard P. Mildren, and Zhiwei Lu

ACS Photonics 2025, 12, 2, 864-869 **(Article)** Subscribed
Publication Date (Web): November 20, 2024

Abstract Full text PDF

ABSTRACT


diamond
y
x
z

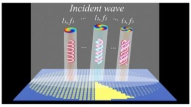
Broadband Continuous Integer- and Fractional-Order Multimode OAM Beam Generator via a Metasurface

Ruichen Li, Min Huang, Yijun Zou, Rongrong Zhu*, Bin Zheng, Tianshuo Qiu*, and Hongsheng Chen*

ACS Photonics 2025, 12, 2, 870-878 **(Article)** Subscribed
Publication Date (Web): January 15, 2025

Abstract Full text PDF

ABSTRACT


Incident wave
l_1, f_1
l_2, f_2
l_3, f_3

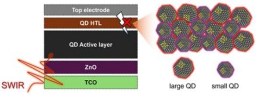
Hybrid-Size Quantum Dots in Hole Transport Layer Depress Dark Current Density of Short-Wave Infrared Photodetectors

Simin Chen, Huaying Zhong, Xiao Wang, Guangjiu Pan, Haodong Tang*, Fan Fang, Jiufeng Wu, Weichao Wang, Lihai Xu, Jun Tang, Junjie Hao, Keyu Zheng, Dan Wu, Zeguo Tang, Lei Zhang, Leifeng Cao, Peter Müller-Buschbaum*, Kai Wang*, and Wei Chen*

ACS Photonics 2025, 12, 2, 879-888 **(Article)** Subscribed
Publication Date (Web): January 2, 2025

Abstract Full text PDF

ABSTRACT


Top electrode
QD HTL
QD Active layer
ZnO
TCO
SWIR
large QD
small QD

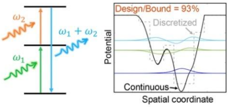
Approaching Upper Bounds to Resonant Nonlinear Optical Susceptibilities with Inverse-Designed Quantum Wells

Hao Li*, Theodoros T. Koutserimpas, Francesco Monticone, and Owen D. Miller*

ACS Photonics 2025, 12, 2, 889-898 **(Article)** Subscribed
Publication Date (Web): January 21, 2025

Abstract Full text PDF

ABSTRACT


ω_2
ω_1
$\omega_1 + \omega_2$
Design/Bound = 93%
Discretized
Potential
Continuous
Spatial coordinate

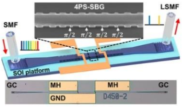
Widely Tunable Photonic Filter Based on Equivalent Chirped Four-Phase-Shifted Sampled Bragg Gratings

Simeng Zhu*, Bocheng Yuan, Mohanad Al-Rubaiee, Yiming Sun, Yizhe Fan, Ahmet Seckin Hezarfen, Stephen J. Sweeney, John H. Marsh, and Lianping Hou

ACS Photonics 2025, 12, 2, 899-907 **(Article)** Open Access
Publication Date (Web): January 27, 2025

Abstract Full text PDF

ABSTRACT


4PS-SBG
LSMF
SMF
π/2 π/2 π/2 π/2
SOI platform
GC
MH
MH
GC
GND
D450-2

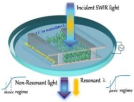
Enhanced Speed and Tunability of Liquid Crystals in Nanocavities via Engineering the Local Electromagnetic Field

Abu Aisheh Majd, C. K Amaljith, and Abdulhalim Ibrahim*

ACS Photonics 2025, 12, 2, 908-916 **(Article)** Open Access
Publication Date (Web): January 23, 2025

Abstract Full text PDF

ABSTRACT


Incident SWIR light
Non-Resonant light
msec regime
Resonant λ
μsec regime

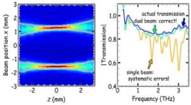
Dual-Beam THz Spectrometer with Low-Aberration Optics and Off-Axis Multipixel Photoconductive Emitters for Reduced Systematic Errors

Nishtha Chopra* and James Lloyd-Hughes*

ACS Photonics 2025, 12, 2, 917-924 **(Article)** Open Access
Publication Date (Web): January 11, 2025

Abstract Full text PDF

ABSTRACT



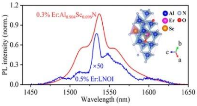
Photoluminescent Properties of Erbium-Doped Aluminum Scandium Nitride Thin Films

Xingyan Zhao*, Zebin Xie, Huayou Liu, Huan Liu, Yuanmao Pu, Yang Qiu, Shaonan Zheng, Yaping Dan, Qize Zhong, Yuan Dong, and Ting Hu*

ACS Photonics 2025, 12, 2, 925-931 **(Article)** Subscribed
Publication Date (Web): January 7, 2025

Abstract Full text PDF

ABSTRACT



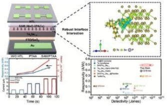
Molecular Engineering of Hole-Selective Layer of Te_xSe_{1-x} for High-Performance Short-Wave Infrared Photodetectors

Mingxin Hu, Yanjun Duan, Shengren Li, Lin Yang, Wenxin Dong, Wei Dang*, Zheng Zhang, Jiaqi Liu, and Zhiqiang Li*

ACS Photonics 2025, 12, 2, 932-943 **(Article)** Subscribed
Publication Date (Web): January 31, 2025

Abstract Full text PDF

ABSTRACT



Robust Interface Interaction
Time (s)
Detectivity (Jones)
Responsivity (A/W)

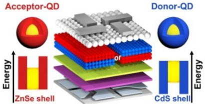
Comparative Study of Two Different Quasi-Type II Heterostructured Quantum Dots for Enhanced Electroluminescence

Namyoung Gwak, Minwoo Lee, Seongchan Kim, Seungki Shin, Yunseo Lee, Jihyoun Roh, Inyoung Jeong, Jaeyoung Seo, Jina Na, and Nuri Oh*

ACS Photonics 2025, 12, 2, 944-951 **(Article)** Subscribed
Publication Date (Web): January 15, 2025

Abstract Full text PDF

ABSTRACT



Acceptor-QD
Donor-QD
Energy
ZnSe shell
or
CdS shell
Energy

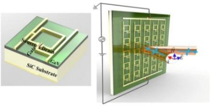
Terahertz Coding Metasurface with Low-Switch-Ratio for Rapid 1-bit Phase Modulation and Beam Steering

Tianyang Song, Feng Lan*, Luyang Wang, Hongxin Zeng*, Shixiong Liang, Munan Yang, DongFang Shen, Wenxin Liu, Shengxiao Jin, Zhongbo Zhu, Pinaki Mazumder, Yaxin Zhang*, and Ziqiang Yang

ACS Photonics 2025, 12, 2, 952-962 **(Article)** Subscribed
Publication Date (Web): January 17, 2025

Abstract Full text PDF

ABSTRACT



Source
Drain
Gate
GaN
SiC Substrate

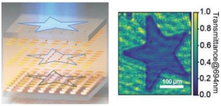
Spatially Controlled All-Optical Switching of Liquid-Crystal-Empowered Metasurfaces

Maximilian Beddoe*, Sarah L. Walden, Slobodan Miljevic, Dmitry Pidgayko, Chengjun Zou, Alexander E. Minovich, Angela Barreda, Thomas Pertsch, and Isabelle Staude*

ACS Photonics 2025, 12, 2, 963-970 **(Article)** Open Access
Publication Date (Web): January 21, 2025

Abstract Full text PDF

ABSTRACT



100 μm
Transmittance@694nm
1.0
0.8
0.6
0.4
0.2
0.0

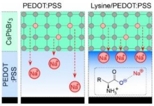
Suppressing Metal Cation Diffusion in Perovskite Light-Emitting Diodes via Blending Amino Acids with PEDOT:PSS

Joonseok Kim, Min-Gi Jeon, Subin Yun, Artavazd Kirakosyan, and Jihoon Choi*

ACS Photonics 2025, 12, 2, 971-980 **(Article)** Subscribed
Publication Date (Web): January 23, 2025

Abstract | Full text | PDF

ABSTRACT


PEDOT:PSS
Lysine/PEDOT:PSS
$CsPbBr_3$
PEDOT :PSS
Na^+
R
O
$O^⊖$
$Na^⊕$
NH_3^+

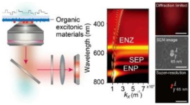
Organic Exciton Polariton Structured Illumination Microscopy

Dong Hee Park, Bin Chan Joo, Kyu-Ri Choi, Jin Young Lee, Ka-Hyun Kim, and Yeon Ui Lee*

ACS Photonics 2025, 12, 2, 981-988 **(Article)** Subscribed
Publication Date (Web): January 7, 2025

Abstract | Full text | PDF

ABSTRACT



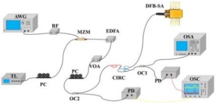
Photonic Spiking Reservoir Computing System Based on a DFB-SA Laser for Pattern Recognition

Zhiwei Dai, Xingxing Guo*, Shuiying Xiang*, Hanxu Zhou, Yuna Zhang, Yahui Zhang, Yanan Han, Changjian Xie, Tao Wang, Yuechun Shi, and Yue Hao

ACS Photonics 2025, 12, 2, 989-996 **(Article)** Subscribed
Publication Date (Web): January 17, 2025

Abstract | Full text | PDF

ABSTRACT


DFB-SA
AWG
RF
MZM
EDFA
OSA
VOA
TL
PC
PC
CIRC
OC1
PD
OSC
PD
OC2

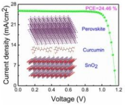
Highly Efficient and Stable Perovskite Solar Cells via a Multifunctional Curcumin-Modified Buried Interface

Xianhu Wu*, Jieyu Bi, Guanglei Cui*, Jiaxin Jiang, Hailong Tang, Nian Liu, Gaojie Xia, Jilong Sun, Ning Lu, Ping Li, Chunyi Zhao, Zewen Zuo, and Min Gu

ACS Photonics 2025, 12, 2, 997-1004 **(Article)** Subscribed
Publication Date (Web): February 5, 2025

Abstract | Full text | PDF

ABSTRACT



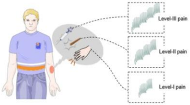
New Device Strategy for Multilevel Nociceptor-Mediated Synaptic Analogs

Chengdong Yang, Xinwei Li, and Linlin Su*

ACS Photonics 2025, 12, 2, 1005-1014 **(Article)** Subscribed
Publication Date (Web): January 7, 2025

Abstract | Full text | PDF

ABSTRACT


Level-III pain
Level-II pain
Level-I pain

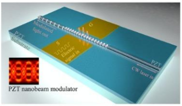
Thin-Film Lead Zirconate Titanate Nanobeam Electro-Optic Modulator

Hongyan Yu, Yujun Xie, Chenlei Li, Jungan Wang, Chen Yang, Lei Wang, Ke Li, Daoxin Dai, Ming Li*, and Feng Qiu*

ACS Photonics 2025, 12, 2, 1015-1021 **(Article)** Subscribed
Publication Date (Web): January 8, 2025

Abstract | Full text | PDF

ABSTRACT


Modulated light out
Substrate
G
S
Electric signal in
PZT
CW laser in
PZT nanobeam modulator

Weak Measurement of the Angular Goos-Hänchen Shift from a Monolayer MoS_2 Immersed in a Dielectric Medium

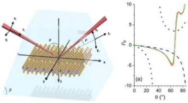
Yu He*, Jinpeng Liu, Jixin Cen, Yanbo Zhang, Vimarsh Awasthi, Leonardo Cobelli, Luca Dell'Anna, and Michele Merano*

ACS Photonics 2025, 12, 2, 1022-1029 **(Article)** Subscribed

Publication Date (Web): February 5, 2025

Abstract Full text PDF

ABSTRACT



Engineering Carbon Nanotube Saturable Absorber for Boosting Repetition Rate in a Harmonic Mode-Locked GHz Soliton Fiber Laser

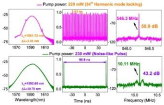
Qianqian Huang, Lilong Dai, Bo Zhang, Kai Wang, Mohammed Al Araimi, Aleksey Rozhin, and Chengbo Mou*

ACS Photonics 2025, 12, 2, 1030-1038 **(Article)** Subscribed

Publication Date (Web): January 15, 2025

Abstract Full text PDF

ABSTRACT



Fabrication of Ultra-Low-Loss, Dispersion-Engineered Silicon Nitride Photonic Integrated Circuits via Silicon Hardmask Etching

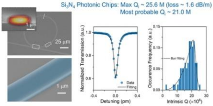
Shuai Liu*, Yuheng Zhang, Abdulkarim Hariri, Abdur-Raheem Al-Hallak, and Zheshen Zhang*

ACS Photonics 2025, 12, 2, 1039-1046 **(Article)** Subscribed

Publication Date (Web): February 2, 2025

Abstract Full text PDF

ABSTRACT



Advanced Speckle Wavemeter Based on a Silicon Chip

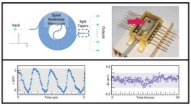
Haole Kong, Zhiming Zhang, Zhihang Lin, Yanghui Li, Juan Kang*, Le Wang, and Yi Li*

ACS Photonics 2025, 12, 2, 1047-1054 **(Article)** Subscribed

Publication Date (Web): January 9, 2025

Abstract Full text PDF

ABSTRACT



Input
Spiral Multimode Waveguide
Split Tapers
Outputs
Time (µs)
Time (hours)

Broadband Photoresponse Enhancement by Band Engineering in Sb-Doped $MnBi_2Te_4$

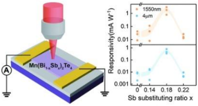
Zixuan Xu, Haonan Chen, Jiayu Wang, Yicheng Mou, Yingchao Xia, Jiaming Gu, Yuxiang Wang, Qi Liu, Jiaqi Liu, Wenqing Song, Qing Lan, Tuoyu Zhao, Wu Shi, and Cheng Zhang*

ACS Photonics 2025, 12, 2, 1055-1062 **(Article)** Subscribed

Publication Date (Web): February 6, 2025

Abstract Full text PDF

ABSTRACT



Portable Acoustic Holographic Optical Waveguide Device for Phototherapy

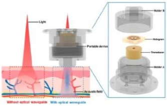
Runyu Wang, Qibo Lin, Zhaoxi Li, Xiongwei Wei, Chenxue Hou, Han Shan, Xiaofei Luo, Xize Yu, Zeyu Chen, Xiheng Hu*, and Chunlong Fei*

ACS Photonics 2025, 12, 2, 1063-1074 **(Article)** Subscribed

Publication Date (Web): January 27, 2025

Abstract Full text PDF

ABSTRACT



Light
Portable device
Holder B
Hologram
Transducer
Holder A
Acoustic field
Without optical waveguide
With optical waveguide

Photodeposited Amorphous WO_3 Thin-Film Conductive Filters for Heterojunction Near-Ultraviolet Spectrally Selective Photodetection and

Imaging

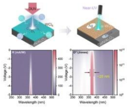
Weidong Song*, Jun Wei, Junxing Lv, Huimin Duan, Hainan Qin, Jiaquan Li, Weijia Yang, Bingqian Li, and Shuti Li*

ACS Photonics 2025, 12, 2, 1075-1083 **(Article)** Subscribed

Publication Date (Web): January 28, 2025

Abstract Full text PDF

ABSTRACT



UV and NIR Dual-Band Photodetector Enabled by p-Type Perovskite and Semitransparent Microcavity

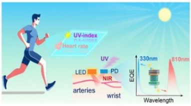
Qingshan Fan, Keqiang Li, Hanqing Zhang, Chenyang Han, Zhanzheng Wang, Qiong Li, Zunmin Wan, Yu Zhou*, Xiaodong Liu*, and Jiang Huang*

ACS Photonics 2025, 12, 2, 1084-1094 **(Article)** Subscribed

Publication Date (Web): February 3, 2025

Abstract Full text PDF

ABSTRACT


UV-index
Heart rate
UV
LED
PD
NIR
arteries
wrist
EQE
330nm
810nm
Wavelength

Quasi-Two-Dimensional CsPbBr$_3$ Quantum Dot Superlattice/WS$_2$ Hybrid Photodetector: Self-Assembly Fabrication and Performance Optimization

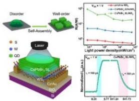
Huanteng Luo, Yiming Zhao, Zhenjun Chen, Yao Zhou, Jiabin Li, Zheng Liu, Jie Zhao, Tao Zheng, Wei Gao*, and Xiao Liu*

ACS Photonics 2025, 12, 2, 1095-1106 **(Article)** Subscribed

Publication Date (Web): January 24, 2025

Abstract Full text PDF

ABSTRACT


Disorder
Well-order
Self-Assembly
S
W
QD
Laser
Light power density(mW/cm²)
Time(ms)

Repumping Mediated Emission Manipulation of Single-Photon Emitter by Optical Coexcitation

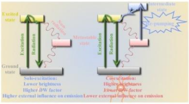
Qian Xu, Xiaodong Xu, Liang Zhao, Weiqi Li, Jianqun Yang, Xingji Li*, and Bo Gao*

ACS Photonics 2025, 12, 2, 1107-1115 **(Article)** Subscribed

Publication Date (Web): February 4, 2025

Abstract Full text PDF

ABSTRACT


Excited state
Excitation
Radiation
Metastable state
Ground state
Intermediate state
Re-pumping
Solo-excitation:
Lower brightness
Higher DW factor
Higher external influence on emission
Co-excitation:
Higher brightness
Lower DW factor
Lower external influence on emission

Breaking the Size Limit of Room-Temperature Prepared Lead Sulfide Colloidal Quantum Dots for High-Performance Short-Wave Infrared Optoelectronics

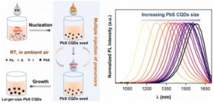
Yin-Fen Ma, Jian Xu, Kelei Zu, You-Mei Wang, Juntao Hu, Nan Chen, Dong-Ming Zhang, Ao Li, Dengke Wang, Huaiyi Ding, Mei Leng*, Yong-Biao Zhao*, and Zheng-Hong Lu

ACS Photonics 2025, 12, 2, 1116-1124 **(Article)** Subscribed

Publication Date (Web): February 6, 2025

Abstract Full text PDF

ABSTRACT



Segmented SiPM Readout for Cherenkov Time-of-Flight Positron Emission Tomography Detectors Based on Bismuth Germanate

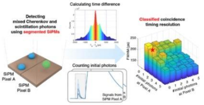
Minseok Yi, Daehee Lee, Alberto Gola, Stefano Merzi, Michele Penna, Jae Sung Lee, Simon R. Cherry, and Sun Il Kwon*

ACS Photonics 2025, 12, 2, 1125-1136 **(Article)** Open Access

Publication Date (Web): February 6, 2025

Abstract Full text PDF

ABSTRACT


Detecting mixed Cherenkov and scintillation photons using segmented SiPMs
Calculating time difference
Classified coincidence timing resolution
Counting initial photons
SiPM Pixel A
SiPM Pixel B
Signals from SiPM Pixel A
#initial photons at Pixel A
#initial photons at Pixel B

Compute-First Optical Detection for Noise-Resilient Visual Perception

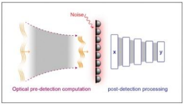
Jungmin Kim*, Nanfang Yu, and Zongfu Yu

ACS Photonics 2025, 12, 2, 1137-1145 **(Article)** Subscribed

Publication Date (Web): February 5, 2025

Abstract Full text PDF

ABSTRACT


Noise
x
y
Optical pre-detection computation
post-detection processing

High-Efficiency On-Chip Optical Phase Conjugation Using a Single Ultralow-Loss Silicon Photonic Waveguide

Shihan Hong, Yiwei Xie*, Mingming Tan, Yiming Li, Mingfei Ding, Long Zhang, Zejie Yu, Ke Wang, Andrew D. Ellis, and Daoxin Dai*

ACS Photonics 2025, 12, 2, 1146-1154 **(Article)** Subscribed

Publication Date (Web): January 30, 2025

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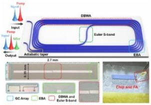
ABSTRACT


Pump
Signal
Input
Pump
Signal
Idler
Output
DBWA
Euler S-band
Adiabatic taper
EBA
2.7 mm
0.35 mm
Chip and FA
GC Array
EBA
DBWA and Euler S-band

Spatial Phasor Analysis for Optical Sectioning Nanoscopy

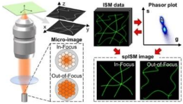
Yuran Huang, Zitong Ye, Zhimin Zhang, Hanchu Ye, Liang Xu, Xiang Hao, Yubing Han*, Cuifang Kuang*, and Xu Liu

ACS Photonics 2025, 12, 2, 1155-1162 **(Article)** Subscribed

Publication Date (Web): January 10, 2025

Abstract Full text PDF

ABSTRACT


z
x
y
Micro-image
In-Focus
Out-of-Focus
ISM data
Phasor plot
s
g
spISM image
In-Focus
Out-of-Focus

Accessing Beyond-Light Line Dispersion and High-*Q* Resonances of Dense Plasmon Lattices by Bandfolding

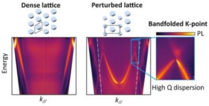
Nelson de Gaay Fortman, Debapriya Pal, Peter Schall, and A. Femius Koenderink*

ACS Photonics 2025, 12, 2, 1163-1173 **(Article)** Open Access

Publication Date (Web): January 7, 2025

Abstract Full text PDF

ABSTRACT



Tunable Transmissive Metasurface Based on Thin-Film Lithium Niobate

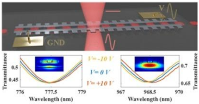
Zetian Chen*, Noa Mazurski, Jacob Engelberg, and Uriel Levy*

ACS Photonics 2025, 12, 2, 1174-1183 **(Article)** Open Access

Publication Date (Web): February 5, 2025

Abstract Full text PDF

ABSTRACT



Enhancing High-Degree-of-Freedom Meta-Atom Design Precision and Speed with a Tandem Generative Network

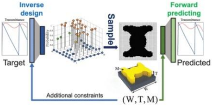
Haolan Yang, Chuanchuan Yang*, and Hongbin Li

ACS Photonics 2025, 12, 2, 1184-1195 **(Article)** Subscribed

Publication Date (Web): January 31, 2025

Abstract Full text PDF

ABSTRACT


Inverse design
Sample
Forward predicting
Transmittance
Target
Probability
Transmittance
Predicted
M
T
W
Additional constraints
(W, T, M)

All-Optical DCT Encoding and Information Compression Based on Diffraction Neural Network

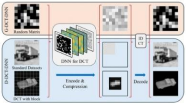
He Ren, YuXiang Feng, Shuai Zhou, Di Wang, Xu Yang, and ShouQian Chen*

ACS Photonics 2025, 12, 2, 1196-1211 **(Article)** Subscribed

Publication Date (Web): February 5, 2025

Abstract | Full text | PDF

ABSTRACT


G-DCT-DNN
Random Matrix
D-DCT-DNN
Standard Datasets
DCT with block
DNN for DCT
Encode & Compression
ID CT
Decode

Polarization-Independent Volume Lens Based on Cholesteric Liquid Crystal Templates

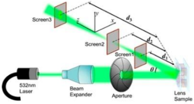
Mingyuan Tang, Weiping Ding, Jianxin Yang, Feng Jiang, Changli Sun, and Jiangang Lu*

ACS Photonics 2025, 12, 2, 1212-1219 **(Article)** Subscribed

Publication Date (Web): February 4, 2025

Abstract | Full text | PDF

ABSTRACT


Screen3
Screen2
Screen1
d_3
d_2
d_1
z
y
x
θ
532nm Laser
Beam Expander
Aperture
Lens Sample

GeSn μ-LED Array with Programmable Spectra for Near-Infrared Microspectrometer

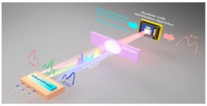
Xiangquan Liu, Qinxin Huang, Jun Zheng*, Jinlai Cui, Yupeng Zhu, Yazhou Yang, Zhi Liu, Yuhua Zuo, and Buwen Cheng

ACS Photonics 2025, 12, 2, 1220-1226 **(Article)** Subscribed

Publication Date (Web): February 2, 2025

Abstract | Full text | PDF

ABSTRACT


Random walk optimization algorithm

Regulation of Additive-Cs^+ Interactions for Efficient Cesium Copper Iodide Light-Emitting Diodes

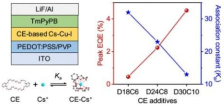
Chunxue Zhuo, Chengcheng Wang, Pinliang Xie, Zhiyuan Kuang, Yuyang Zhang, Junjie Feng, Mian Dai, Nana Chen, Lei Xu, Xiaozhen Li, Jin Chang*, and Jianpu Wang*

ACS Photonics 2025, 12, 2, 1227-1234 **(Article)** Subscribed

Publication Date (Web): February 6, 2025

Abstract | Full text | PDF

ABSTRACT



UV-Transparent Bifocal Meta-Lens for Spin-Space Multiplexing with High-Quality Aluminum Nitride Buffer

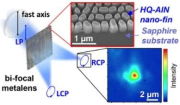
Tien-Chiu Chen, Zhi-Yan Lin, Wen-Hsuan Hsieh, Ming Lun Tseng, Tien-Chang Lu, and Chia-Yen Huang*

ACS Photonics 2025, 12, 2, 1235-1242 **(Article)** Open Access

Publication Date (Web): February 4, 2025

Abstract | Full text | PDF

ABSTRACT


fast axis
LP
bi-focal metalens
LCP
RCP
1 μm
HQ-AlN nano-fin
Sapphire substrate
Intensity
2 μm

COMMENTS

Comment on "Synthesis and Direct Sampling of Single-Cycle Light Transients by Electron Tunneling in a Nanodevice"

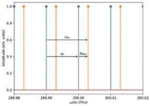
Phillip D. Keathley* and Felix Ritzkowsky

ACS Photonics 2025, 12, 2, 1243-1248 **(Comment)** Subscribed

Publication Date (Web): January 23, 2025

Abstract | Full text | PDF

ABSTRACT



Reply to Comment on "Synthesis and Direct Sampling of Single-Cycle Light Transients by Electron Tunneling in a Nanodevice"

Yang Luo, Alberto Martin-Jimenez, Frank Neubrech, Na Liu, and Manish Garg*

ACS Photonics 2025, 12, 2, 1249-1251 **(Comment)** Open Access
Publication Date (Web): January 22, 2025

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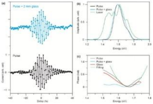

MASTHEADS

Issue Editorial Masthead

ACS Photonics 2025, 12, 2, XXX-XXX **(Article)** Subscribed
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Issue Publication Information

ACS Photonics 2025, 12, 2, XXX-XXX **(Article)** Subscribed
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