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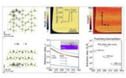
18 Jun 2025

Germanium disulfide as an alternative high refractive index and transparent material for UV-visible nanophotonics

GeS_2 is a high refractive index anisotropic lossless crystal across the whole visible spectrum and near-UV, enabling ultracompact optical elements.

Aleksandr S. Slavich, Georgy A. Ermolaev ... Kostya S. Novoselov



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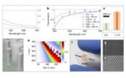
18 Jun 2025

Full color visible imaging with crystalline silicon meta-optics

Johannes E. Fröch, Luocheng Huang ... Arka Majumdar



News & Views
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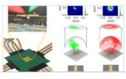
16 Jun 2025

Implementing an encrypted display with the electron-induced colour router array

Hyoseok Park, Minsu Park & Yeonsang Park



Article
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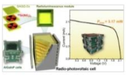
16 Jun 2025

High-efficiency ^{90}Sr radio-photovoltaic cells based on waveguide light concentration structure

A novel radio-photovoltaic cell was developed using a waveguide light concentration design, featuring multilayer-stacked GAGG:Ce scintillation waveguides interleaved with ^{90}Sr sources. The devices achieved a total energy conversion efficiency of 2.96% and demonstrated only 13.8% radioluminescence degradation after 50-year equivalent electron beam irradiation. The study results represent a significant advancement for facilitating nuclear battery applications.

Tongxin Jiang, Sijie Li ... Haisheng San



Article
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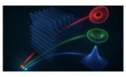
12 Jun 2025

Universal point spread function engineering for 3D optical information processing

A universal framework to engineer 3D point spread functions for optical information processing is introduced.

Md Sadman Sakib Rahman & Aydogan Ozcan



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04 Jun 2025

MetaSeeker: sketching an open invisible space with self-play reinforcement learning

MetaSeeker controls a swarm of metasurfaces for the creation of an open electromagnetic invisible space.

Bei Wu, Chao Qian ... Hongsheng Chen

Article
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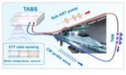
03 Jun 2025

High-spatiotemporal-resolution distributed Brillouin sensing with transient acoustic wave

We develop TABS: a transient acoustic wave-based Brillouin optical time domain analysis sensor for high-spatiotemporal-resolution distributed sensing, exploring the state imaging of evacuated tube maglev transportation system.

Yin Zhou, Yuan Cheng ... Lianshan Yan



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30 May 2025

Pockels laser directly driving ultrafast optical metrology

Shixin Xue, Mingxiao Li ... Qiang Lin

Article
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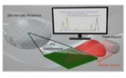
30 May 2025

Scalable miniature on-chip Fourier transform spectrometer for Raman spectroscopy

We present the demonstration of Raman spectroscopy using a SiN photonics chip spectrometer. This spectrometer will contribute significantly to wearable devices for non-invasive detection, forensic analysis, and space exploration.

Sarp Kerman, Xiao Luo ... Chang Chen



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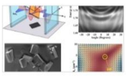
29 May 2025

Unveiling asymmetric topological photonic states in anisotropic 2D perovskite microcavities

Unconventional topological states emerge in anisotropic perovskite microcavities via strong photonic Rashba-Dresselhaus coupling, enabling synthetic gauge fields and non-zero Berry curvature for advanced topological photonics and spinoptronics.

Emmanouil G. Mavrotsoupakis, Leonidas Mouchliadis ... Pavlos G. Savvidis



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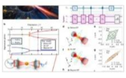
Quantum computing predicts particle trajectories in optical tweezers

Da-Wei Wang



News & Views
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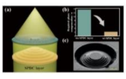
Broadband achromatic metalens for high-resolution imaging

A broadband achromatic metalens with high NA is demonstrated by a concept of stepwise phase dispersion compensation.

Yangkyu Kim & Inki Kim



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Photon-number-resolving detection enables single-photon LiDAR approaching the standard quantum limit

Feihu Xu

Article
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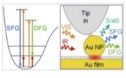
22 May 2025

In-operando control of sum-frequency generation in tip-enhanced nanocavities

We demonstrate on-demand CW sum-frequency generation from nanoparticle-on-mirror cavities positioned beneath a scanning probe tip. The tip controls visible and infrared fields within the nanocavity, allowing for tunable nonlinear spectroscopy.

Philippe Roelli, Isabel Pascual Robledo ... Rainer Hillenbrand



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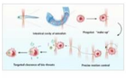
Light-powered phagocytic macrophage microrobot (phagobot): both in vitro and in vivo

Light-powered phagocytic macrophage microrobot (phagobot) enables controllable targeted phagocytosis and elimination of biological threats in vitro and in vivo.

Xing Li, Shuhan Zhong ... Hongbao Xin



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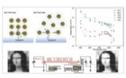
High responsivity colloidal quantum dots phototransistors for low-dose near-infrared photodetection and image communication

Leveraging long-chain dithiol ligand exchange, active image sensors based on PbS colloidal quantum dots enable near-infrared low-dose image sensing and image communication with detectivity exceeding 10^{14} Jones.

Shijie Zhan, Benxuan Li ... Bo Hou



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Nonreciprocal spontaneous parametric process

Changbiao Li, Jiaqi Yuan ... Zhaoyang Zhang

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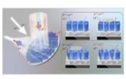
Dispersion-engineered spin photonics based on folded-path metasurfaces

A folded-path metasurface concept is proposed to simultaneously achieve independent dispersion control and wavefront shaping for arbitrary orthogonal polarizations.

Fei Zhang, Hanlin Bao ... Xiangang Luo



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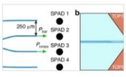
Laser-written reconfigurable photonic integrated circuit directly coupled to a single-photon avalanche diode array

Giulio Gualandi, Simone Atzeni ... Francesco Ceccarelli



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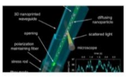
3D nanoprinted fiber-interfaced hollow-core waveguides for high-accuracy nanoparticle tracking analysis

Diana Pereira, Torsten Wieduwilt ... Markus A. Schmidt



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