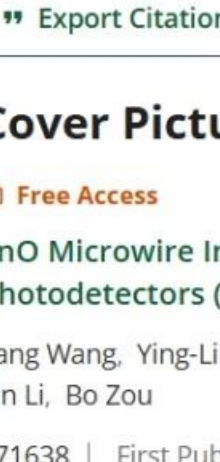


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Advanced Optical Materials: Volume 14, Issue 34
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Free Access
ZnO Microwire Integration on Nondevelopable Surfaces for High-Performance Photodetectors (Advanced Optical Materials 34/2026)
Yang Wang, Ying-Li Ma, Zongxuan Liu, Rui Wei, Yujing Wang, Chen-Yang Zhang, Yining Meng, Shun-Xin Li, Bo Zou
e71638 | First Published: 11 September 2026
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Photodetectors
Featuring flexible and curved artificial vision systems, this cover illustrates the integration of ZnO microwire array photodetectors with bionic eye architectures. The represented work presents a template-assisted fabrication strategy for high-performance photodetectors on flexible substrates and non-developable curved surfaces, enabling advanced micro/nano bionic eyes with exceptional responsivity and broad application potential in future bio-inspired imaging technologies. More details can be found in the Research Article by Shun-Xin Li and co-workers (DOI: 10.1002/adom.71451).

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RESEARCH ARTICLE

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ZnO Microwire Integration on Nondevelopable Surfaces for High-Performance Photodetectors
Yang Wang, Ying-Li Ma, Zongxuan Liu, Rui Wei, Yujing Wang, Chen-Yang Zhang, Yining Meng, Shun-Xin Li, Bo Zou
e71451 | First Published: 21 July 2026
This article relates to: ▼



Photodetectors
A template-assisted method is reported for fabricating ZnO microwire array photodetectors on flexible substrates and nondevelopable curved surfaces, achieving high-performance micro/nano bionic eyes with responsiveness of 47.668 and 14.450 A W⁻¹, respectively, providing an effective approach for bionic eyes.

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Full Access
Bi-layer Spectral Engineering of Bi³⁺/Te⁴⁺-Doped Cs₂ZrCl₆ for Human-Centric Solid-State Lighting
Yannai Chen, Christopher Dzorokata, Hongyang Zhu, Azmin Islam, Somayeh Saadat Naviol, Andrew C. Meng, Pefen Zhu
e71541 | First Published: 31 July 2026
This article relates to: ▼



Bi-layer Spectral Engineering
Bi-layer spectral engineering in Bi³⁺/Te⁴⁺-doped Cs₂ZrCl₆ creates complementary blue and yellow self-trapped emission under UV excitation, enabling rare-earth-free white LEDs with tunable color temperature, high color rendering, and adjustable melatonin response. The stacked color-conversion architecture offers a practical route toward human-centric, high-fidelity solid-state lighting while preserving spectral balance across device designs.

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Full Access
Phase Transformation Directed Mn²⁺ Incorporation and Chiral Self-Assembly Unlocks Tunable Multicolor and Circularly Polarized Light Emission in Metal Halide Perovskite Nanoparticles
Jomy Jose Philip, Athish K. Ajith, Gouranga H. Debnath, R. Geetha Balakrishna
e71595 | First Published: 13 August 2026
This article relates to: ▼



Phase Transformation
Phase transformation of 3D CsPbBr₃ nanoparticles (NPs) into Mn²⁺ doped 3D CsPbBr_{3-x}Mn_x(Br_{1-x}Cl_x) NPs, enabling tunable multicolor emission and quantified Mn-sensitized photophysics for anticounterfiling and photonic encryption. Co-assembly of 3D CsPbBr_{3-x}Mn_x(Br_{1-x}Cl_x) NPs with chiral gelators (DGA and LGAm) induces circularly polarized light (L- and R-CPL) positioning these chiral perovskites for applications in spintronics.

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Eco-Designed Transparent Bacterial Cellulose Composites for Next-Generation Opto-Electronics
Liya Antony, Sanosh Kunjakkall Padmanabhan, Amal Aliyankal Vijayakumar, Marco Pugliese, Maria Assunta Signore, Antonella Giuri, Vincenzo Maiorano, Antonio Licculli, Sonia Carallo, Aurora Rizzo, Carola Esposito Corcione
e71621 | First Published: 27 August 2026
This article relates to: ▼



Eco-Designed Transparent Bacterial Cellulose Composites
The developed transparent bacterial cellulose (BC) composite film using bio-based resin results in higher transparency (89%) and lower haze (12%) at 550 nm, combined with insulative, hydrophobic and mechanically robust properties, thereby, enabling successful fabrication of an electrochromic device with efficient optical modulation on a sustainable, light weight substrate.

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Highly Spin-Polarized Luminescent Quantum Nanomaterials Integrated with a Defect-Enabled Spin-Filtering Function
Ayano Morita, Matthias Jansson, Junichi Takayama, Irina A. Buyanova, Weimin M. Chen, Akihiro Murayama, Satoshi Hara
e71622 | First Published: 01 September 2026
This article relates to: ▼



Highly Spin-Polarized Luminescent Quantum Nanomaterials
Highly spin-polarized luminescent nanomaterials that function at room temperature were developed by integrating a defect-enabled spin-polarization amplification function unique to dilute nitride semiconductors with a quantum dot emission layer. The achievement of this study demonstrates an advancement toward the development of practical spin-polarized light-emitting devices using quantum dots for optical communication of spin information.

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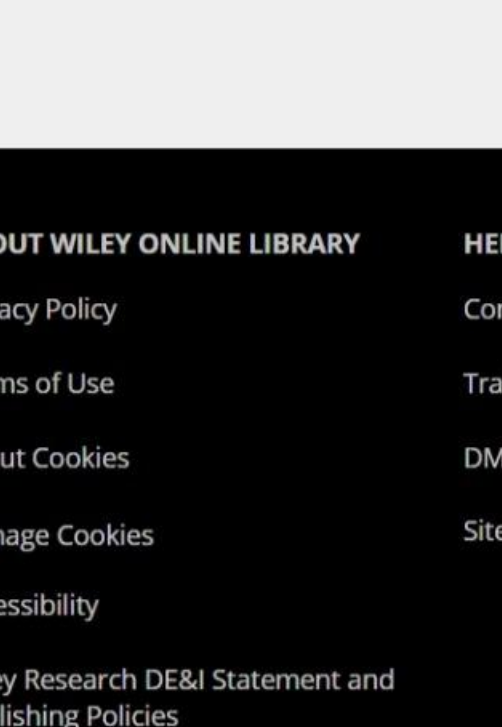
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Stirring-Induced Modulation of NIR Emission in Tm³⁺-Doped Nanoparticles: Evidence of Apparent Risettime Sensitivity
York Estewin Serre-Corneilles, Mohammadreza Khodabakhsh, Nayara de Melo Costa-Serge, Rogéria Rocha Gonçalves, Eva Hemmer
e71644 | First Published: 24 August 2026
This article relates to: ▼



Stirring-Induced Modulation of NIR Emission
Motion was found to induce significant variation in the luminescence intensity ratio of NIR-emitting Tm³⁺-doped NaYbF₄ nanoparticles, which has been ascribed to the population dynamics of the Tm³⁺ ions' excited states. These findings provide the groundwork for the design of motion nanosensors that can operate in environments not accessible with UV-vis light.

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Full Access
Buried Layer Enhances Interfacial Dipole Toward Ultrabright Blue Perovskite Light-Emitting Diodes
Bufan Yu, Jiacheng Liu, Yutong Pan, Shangwei Feng, Qing Du, Yue Liang, Lei Wang, Jiangshan Chen, Dongge Ma
e71645 | First Published: 17 August 2026
This article relates to: ▼



Buried Layer Enhances Interfacial Dipole
A buried KSCN interfacial dipole layer simultaneously strengthens interfacial polarization, improves hole injection, and regulates perovskite film formation in blue LEDs. The resulting devices achieve high efficiency and ultrahigh brightness with an EQE of 17.73% and a luminance of 41890 cd m⁻², demonstrating an effective route toward high-performance blue emitters.

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Fused Framework: Visible-Light-Excited, Robustly Time-Dependent Multicolor Phosphorescence From a Dispersed Organic Molecule
Darmun Guo, Yiling Miao, Tong Zou, Jinzheng Chen, Wei Zhang, Di Wu, Yi Zhang, Zhenguo Chi, Huahua Huang
e71646 | First Published: 21 August 2026
This article relates to: ▼

Fused Framework: Visible-Light-Excited, Robustly Time-Dependent Multicolor Phosphorescence
A visible light-excited, time-dependent multicolor phosphor, TPTZ, was designed by integrating a triplet-stabilizing triphenylene unit with a conformationally dynamic phenothiazine unit. This fused-framework strategy endows TPTZ with dynamic bending-vibrational conformations in electronic states. Therefore, even at an ultralow doping concentration of 0.1 wt.% in polar polymer matrices, its afterglow color shifts from yellow to green within seconds, and this behavior persists at elevated temperatures up to 343 K.

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Achieving Large Emission Shifts in Organic Lumiphores by Pressure-Regulated Charge-Transfer Characteristic
Huining Liu, Yajing Jiang, Zirun Chen, Zhoukun Xiao, Aisen Li, Kai Wang, Wenbo Wu, Qian Li
e71647 | First Published: 21 August 2026
This article relates to: ▼

Achieving Large Emission Shifts in Organic Lumiphores
Under hydrostatic pressure, TTNB exhibited a broad emission shift from 626 to 771 nm with a high piezochromic coefficient of 27.80 nm/GPa and excellent linearity, alongside full reversibility upon pressure release. This work clarifies the excited-state regulation mechanism in ICT systems and provided key design guidelines for high-performance piezochromic materials.

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Pixel-Engineered Deep Ultraviolet Micro-LED Arrays for High-Speed Optical Interconnects
Muhammad Hunain Memon, Yang Kang, Junxing Qiu, Jikai Yao, Leihao Sun, Alireza Hosseini, Yuchen Du, Yiguo Yan, Chao Shen, Yong Yan, Haochen Zhang, Haidong Sun
e71648 | First Published: 19 August 2026
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Pixel-Engineered Deep Ultraviolet Micro-LED Arrays
Pixel-engineered AlGaIn deep-ultraviolet micro-LED arrays reveal how light extraction, heat flow, capacitance, and modulation speed compete within a fixed footprint. By balancing these effects, optimized pixel density enables Gbps free-space communication and proof-of-concept fiber-guided signal delivery, pointing toward compact, high-speed optical interconnects.

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Acetylene Functionalization of Multiple-Resonant Materials Enabling Strong Two-Photon Absorption and Delayed Luminescence With Highly Efficient Exciplex-Sensitized Electroluminescence
Ikechukwu D. Nwosu, Debarshi Barman, Samuel L. Powley, Tárcius N. Ramos, Nguyen Le Phuoc, Tomi Leinonen, Charles T. Smith, Mireille Blanchard-Desce, Jonathan Daniel, Mikko Linnoila, Yoann Olivier, Chihaya Adachi, Alexander S. Romanov
e71649 | First Published: 03 September 2026
This article relates to: ▼

Acetylene Functionalization of Multiple-Resonant Materials
Multiple-resonance thermally activated delayed fluorescent (MR-TADF) material absorbs two near-infrared 760 nm photons with cross-section up to 156 GM, emit 26 nm narrowband green light at 491 nm with unity luminescence quantum yield and electroluminescence efficiency up to 25.2% in organic light-emitting diode.

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Tunable Asymmetric Thermal Transport via Phonon Polaritons Enhancement in Nanophotonic Cavities
Siqi Xie, Shuo Qiao, Hongxin Zhu, Jinlong Du, Lin Yang, Haidong Wang, Bingyang Cao
e71650 | First Published: 25 August 2026
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Tunable Asymmetric Thermal Transport via Phonon Polaritons
Polaritonic resonance-dependent thermal transport is demonstrated by introducing a photonic degree of freedom to nanoscale heat management. Engineering graphene nanoresonators on SiO₂ enhances thermal conductivity by 219% via resonant phonon polariton modes, while unilateral resonator placement achieves a 143% thermal rectification ratio. This strategy surpasses conventional phonon limits, establishing a new paradigm for active thermal control.

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Novel Sr₂GaNbO₆Dy³⁺/Mn⁴⁺ Materials Toward Excellent Dual-Mode Fluorescent Temperature Sensing, Optical Anti-Counterfeiting, Information Encryption, and Latent Fingerprint Recognition Applications
Jianing Liu, Zhenyu Huang, Qing Li, Zhiyu Zhang, Kai Li
e71651 | First Published: 17 August 2026
This article relates to: ▼

Novel Sr₂GaNbO₆Dy³⁺/Mn⁴⁺ Materials
A novel kind of niobate perovskite phosphors Sr₂GaNbO₆(SGNO)/Dy³⁺/Mn⁴⁺ was synthesized, which simultaneously enables dual-mode temperature sensing (PR and FLR techniques with excellent relative/absolute sensitivities), optical anti-counterfeiting, information encryption, and latent fingerprint detection through wavelength-dependent excitation and thermally responsive luminescence modulation.

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Spontaneous Spin-Orbital Terahertz Emission in Ferromagnet/Nonmagnet Bilayers
Younghun Kim, Pinki Yadav, Byungwoo Son, Jooyoung Heo, Sejin Shin, Do-Kyeong Ko, Rahul Mishra, Kyusup Lee
e71652 | First Published: 19 August 2026
This article relates to: ▼

Spontaneous Spin-Orbital Terahertz Emission
While the initial generation mechanism of picosecond orbital currents remains elusive, we reveal a cascading spin-orbital transport mechanism that induces optically driven terahertz emission in ferromagnet/nonmagnet heterostructures. Using a ferromagnet with strong spin-orbit coupling, we identify a thickness-driven transition from spin-dominated to orbital-dominated transport, establishing a platform for engineering spin-orbital materials operating in the terahertz range.

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A Biomimetic Binocular Visual System Based on β-Ga₂O₃ Optoelectronic Synaptic Device for Motion Recognition
Haolan Guo, Haodong Jiang, Changshu Liu, Kerui Li, Hongzhi Wang, Tiangui You, Xin Du, Wenhui Xu, Xinbo Zou
e71653 | First Published: 22 August 2026
This article relates to: ▼

A Biomimetic Binocular Visual System Based on β-Ga₂O₃ Optoelectronic Synaptic Device
A biomimetic binocular visual motion recognition system based on β-Ga₂O₃ optoelectronic synaptic devices acted as photodetector, compressor, and activation function generator are achieved. Based on this binocular visual system, nineteen motion directions in 3D space are successfully identified. Furthermore, the capability to recognize other motion information such as motion state and speed is also demonstrated.

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Defect-Induced Circularly Polarized Luminescence of Zero-Dimensional Cs₄PbBr₈ Perovskite Nanocrystals With Ligand-Ratio Dependent CPL Inversion
Jiaqi Zhao, Yuan Wang, Laipeng Sun, Ting Li, Yu Wang
e71654 | First Published: 19 August 2026
This article relates to: ▼

Defect-Induced Circularly Polarized Luminescence
The chiral zero-dimensional Cs₄PbBr₈ perovskite NCs with CPL response are successfully synthesized by employing a defect-induced strategy through a phase transformation process. Furthermore, the change of the ratio of chiral amines and achiral amines can give rise to the inversion of CPL signal with the crystallographic structure keeping constant.

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Highly-Stable InP Quantum Dots With a Mesoporous ZIF-8 and PMMA Double Layers and Its Application in LCD Panels
Ke Wang, Ziyang Zhao, Aidi Zhang, Jicun Ren
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Highly-Stable InP Quantum Dots With a Mesoporous ZIF-8 and PMMA Double Layers
A dual-layer encapsulation strategy is developed to address the instability of InP quantum dots (QDs). QDs are embedded in a modified mesoporous ZIF-8 and subsequently coated with PMMA, forming mZIF-8@QDs@PMMA composites. This material exhibits enhanced photostability and thermostability, retaining >95% of its initial luminance after 1000 h of accelerated aging under harsh conditions, demonstrating great potential for durable display applications.

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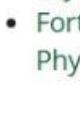
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