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Advanced Optical Materials: Volume 14, Issue 13

3 April 2026

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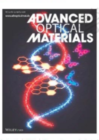
Bay-functionalized [7]Helicene Bilayer Nanographenes (Advanced Optical Materials 13/2026)

Anmol Thanai, Vikas Sharma, Louis Minion, Hassan Khan, Hadeel Abbas, George F. S. Whitehead, Avantika Hasija, Jessica Wade, Matthew John Fuchter, Ashok Keerthi

e71133 | First Published: 05 April 2026

This article relates to:



Helical Bilayer Nanographene

A chiral π-conjugated [7]helicene nanographene forms the central helical scaffold, decorated at the bay positions with butterfly-like chromophores that symbolize tailored functionalization. The composition visually highlights tunable circularly polarized luminescence emerging from helical bilayer nanographene emitters, emphasizing the interplay between molecular helicity, electronic structure, and chiroptical emission. More details can be found in the Research Article by Ashok Keerthi and co-workers (DOI: 10.1002/adom.202502564).

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Photonics of Topological Magnetic Textures (Advanced Optical Materials 13/2026)

Vakhtang Jandieri, Ramaz Khomeriki, Daniel Erni, Nicolas Tsagareli, Qian Li, Douglas H. Werner, Jamal Berakdar

e71131 | First Published: 05 April 2026

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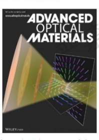

Topological Photonics

Topologically nontrivial magnetic textures (arrows) can mold impinging electromagnetic waves endowing it with local chirality, spin, and orbital angular momentum. Characteristics of the scattered waves reflect the inherent geometry and topology of the magnetic texture. More details can be found in the Research Article by Jamal Berakdar and co-workers (DOI: 10.1002/adom.202503479).

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e71132 | First Published: 05 April 2026

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CORRECTION

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Correction to "Efficient Interfacial Upconversion Enabling Bright Emission at an Extremely Low Driving Voltage in Organic Light-Emitting Diodes"

e71111 | First Published: 19 March 2026

This article corrects the following:

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PERSPECTIVE

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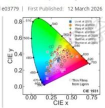
Beyond Brown: Lignin's Emerging Role in Structural Color

Ravi Shanker, Anna Justina Svagan

e03779 | First Published: 12 March 2026



Lignin, long regarded as a brown industrial byproduct, is emerging as a sustainable platform for structural color. This Perspective highlights how lignin's refractive index, intrinsic absorption, and nanoscale assembly enable tunable photonic responses in colloidal and thin-film architectures, and outlines design strategies to advance scalable, bio-based optical materials beyond conventional pigment systems.

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REVIEW

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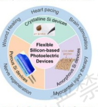
Flexible Silicon Photoelectric Biointerfaces for Wireless and Noninvasive Tissue Stimulation and Regeneration

Zongguang Liu, Zhipeng Ding, Shuyi Wang, Jianmei Chen, Linwei Yu

e03041 | First Published: 19 March 2026



This review presents the current progress of flexible Si-based photoelectric biointerfaces for wireless and noninvasive tissue stimulation. It outlines device designs, biointerface mechanisms, and biomedical applications including cardiac pacing, nerve modulation, wound healing, and myocardial protection, while also providing perspectives on future directions toward multimodal, adaptive, and transient bioelectronic systems.

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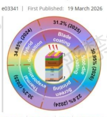
Solution and Vacuum-Based Scalable Deposition Methods for Perovskite/Si Tandem Solar Cells

Bhaskar Parida, Ahmer A.B. Baloch, Omar Albadwawi, Baloji Adothu, Shahzada Pamir Aly, Vivian Alberts, Madhulita Sundaray

e03341 | First Published: 19 March 2026



This review highlights scalable solution, vacuum, and hybrid deposition strategies, such as blade coating, slot-die coating, screen printing, and inkjet printing, for perovskite/Si tandem solar cells, which have enabled recent efficiency breakthroughs beyond 30% in an industrial context. Emerging performance trends, large-area manufacturability, and compatibility with fully textured silicon are discussed to outline viable pathways toward next-generation tandem photovoltaics and commercial deployment.

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Research Article

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Bay-functionalized [7]Helicene Bilayer Nanographenes

Anmol Thanai, Vikas Sharma, Louis Minion, Hassan Khan, Hadeel Abbas, George F. S. Whitehead, Avantika Hasija, Jessica Wade, Matthew John Fuchter, Ashok Keerthi

e02564 | First Published: 26 January 2026

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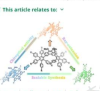

Bay-functionalized [7]helical bilayer nanographenes are synthesized via a scalable, modular strategy enabling late-stage diversification. Tailored methoxy, diketone, and phenazine substitutions precisely tune redox, photophysical, and chiroptical properties, delivering strong electronic circular dichroism and bright circularly polarized luminescence for advanced optoelectronic and chiral photonic applications.

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Photonics of Topological Magnetic Textures

Vakhtang Jandieri, Ramaz Khomeriki, Daniel Erni, Nicolas Tsagareli, Qian Li, Douglas H. Werner, Jamal Berakdar

e03479 | First Published: 18 January 2026

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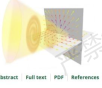

Localized noncollinear magetic textures imprint their geometry and topology onto traversing photonic fields endowing them with orbital angular-momentum, chirality, and magnetoelectric densities.

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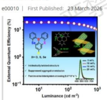
RESEARCH ARTICLE

Full Access

Nitrogen-Free Multi-Resonance Skeletons With Intrinsically Twisted Structures, Fast Spin-Flipping Rates and Aggregation-Resistant Characteristics for Efficient Deep-Blue Narrowband Electroluminescence

Fan Chen, Weili Li, Liang Chen, Lei Zhao, Xingdong Wang, Jianhong Lv, Hongkun Tian, Shiyang Shao, Lixiang Wang

e00010 | First Published: 23 March 2026



Nitrogen-free multi-resonance emitters with intrinsically twisted structures, fast spin-flipping rates and weak intermolecular π-stacking and aggregation emissions, are developed by doping selenium/chalcogen as electron-rich atom and boron as electron-deficient atom in naphtho[3,2,1-*de*]anthracene skeleton, revealing the best external quantum efficiency of 20.4% for non-sensitized deep-blue narrowband electroluminescence by solution process.

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Photochromic Diarylethene-doped SU-8 for Rewritable Optics and Integrated Photonic Switching

Yao Chang, Hsiu-Hui Chen, Chun-Ta Wang

e03814 | First Published: 23 March 2026

Erasing
Writing
Erasing
Writing
Erasing ↑↓ Writing
Thin film
Before UV
Port-2
Port-1
After UV
Port-2
Port-1
Waveguide device

A CMOS-compatible photochromic host–guest material platform is realized by incorporating diarylethene molecules into SU-8 photoresist. Reversible photoisomerization enables light-programmable optical absorption, allowing rewritable optical patterning and port-selective attenuation in integrated waveguides. The DAE–SU-8 platform bridges molecular photochromism and reconfigurable on-chip photonics.

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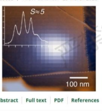
Phonon-Dressed States of Dark Excitons in Transition Metal Dichalcogenides

Saroj B. Chand, John M. Woods, Jiamin Quan, Enrique Mejia, Ashok Adhikari, Wei Wang, Takashi Taniguchi, Kenji Watanabe, Andrea Alù, Gabriele Grosso

e03833 | First Published: 23 March 2026



Strain-localized momentum-dark excitons in monolayer WS_2 and WSe_2 exhibit strong exciton–phonon coupling, forming phonon-dressed replicas with a large Huang–Rhys factor (~5). Their replica spacing, polarization, and lifetime sensitively track local strain and phonon environment, establishing dark excitons as optically addressable nanoscale probes for quantum sensing in 2D semiconductors.

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Projector-Induced Waveguide Encoded Lattices (ProWELs) with Optical Functionality: From Enhanced Fields of View (FOV) to 3D Data Encoding

Kyle Stegman, Dusan Srdic, Fariha Mahmood, Kalaichelvi Saravanamuttu

e03455 | First Published: 17 March 2026

McMaster Chemistry

We describe the fabrication of 3D polymeric waveguide architectures with tunability of waveguide diameter, lattice symmetry and long and short-range order using an inexpensive (< $400 CAD) digital light projector. We demonstrate that Projector induced Waveguide Encoded Lattices (ProWELs) possess advanced functionality including tuneable Fields of View (FOV) (>400%), 3D-encoding and subsequent "reading" of high-resolution data including photographs.

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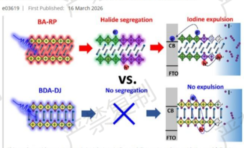
Stabilizing Iodine in 2D Mixed Halide Perovskites: Dion–Jacobson Versus Ruddlesden–Popper Phases

Junsang Cho, Manish Mukherjee, Gábor Szabó, Seonhong Min, Prashant V. Kamat

e03619 | First Published: 16 March 2026



This work provides spectroscopic insight into iodine stability against photooxidation and following iodine expulsion observed in Ruddlesden-Popper (RP) type BA-based 2D perovskites and Dion-Jacobson (DJ) type BDA-based 2D perovskites. The DJ binding configuration with dual anchoring ammonium groups into inorgniac layer can stabilize the mixed halide under a contionous photoirradiation within the 2D lattices.

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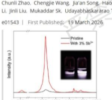
Broadband and Enhanced Near-Infrared Luminescence from Bandgap Engineered Single-Sensitizer Sb^{3+}-Activated $Cs_2NaTmCl_6$ Double Perovskites

Chunli Zhao, Chengjie Wang, Jia'an Song, Haolan Wang, Zhaoliu Yu, Jiaqi Wang, Zixun Zhao, Xiuling Li, Jinli Liu, Mukaddar Sk, Udayabhaskararao Thumu, Kebin Lin, Zhiming Wang, Arup Neogi

e01543 | First Published: 19 March 2026



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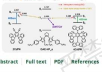
Visible-Light Photoprogrammable Transistors Enabled by an All-Organic Triplet-Sensitized Diarylethene Channel Layer

Jieun Kwon, Syed Zahid Hassan, Gayoung Ham, Seonghyeon Kang, Geoneop Choi, Sanghyeok An, Hye Ryun Sim, Suryeon Jang, Chang Yun Son, Hyojung Cha, Dae Sung Chung

e03525 | First Published: 16 March 2026



All-organic channel-layer OFETs are shown to enable visible-light photoprogramming via triplet-sensitized diarylethene switching. Preferential localization of the photoswitch and organic sensitizer in intercrystalline amorphous domains preserves polymer crystalline packing while ensuring short-range Dexter-type triplet–triplet energy transfer and solid-state isomerization. Visible-light cyclization/cycloreversion yields high-contrast modulation and robust cycling stability, comparable to UV-addressed diarylethene OFET platforms.

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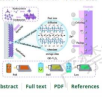
Engineering Vanadium Oxide Coordination Structure and Exposing Specific Crystal Planes for High-Performance Electrochromism

Shichuang Cui, Zuhao Shi, Desheng Chen, Liwen Lei, Quanyao Zhu, Neng Li, Jingyong Zhang

e03630 | First Published: 19 March 2026



We achieve the rearrangement and reconstruction of the V_2O_5 crystal structure through a hydroxylation and condensation strategy. As illustrated in the schematic illustration, the synergistic effects of lattice distortion and preferential crystal-plane exposure substantially enhance both structural stability and diffusion kinetics in V_2O_5.

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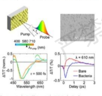
Controlling Ultrafast Photonic-Plasmonic Coupling in a Hybrid Platform for Biosensing Applications

Diego Florio, Andrea Chiappini, Laura Pasquardini, Mario Barozzi, Monica Bollani, Salvatore Stagira, Tersilla Virgili

e03745 | First Published: 17 March 2026



A metal–dielectric hybrid composed of gold nanocaps on opal exhibits a broad near-infrared plasmonic resonance interacting with the photonic bandgap under ultrafast transient conditions. This coupling can be controlled by varying the excitation wavelength and is responsive to bacterial deposition, opening new opportunities for ultrafast biosensing applications.

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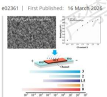
Solvent-Kinetics-Regulated Anti-Solvent Crystallization Enables Tunable-Bandgap $CsPbBr_xCl_{3-x}$ Perovskite Microcrystal Films for High-Performance Photodetectors

Ronghuan Liu, Sean Pan, Dingjun Wu, Bihua Hu, Zi-Wei Zheng, Hai Zhou

e02361 | First Published: 16 March 2026



A synergistic crystallization strategy combining inverse temperature crystallization and anti-solvent infusion enables the scalable growth of high-quality $CsPbBr_xCl_{3-x}$ perovskite microcrystal films with tunable thickness, composition, and optoelectronic properties. The resulting films exhibit near-single-crystal quality, low trap-state density, and excellent performance in UV photodetection and bandgap engineering.

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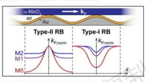
Quasi-Single-Mode Polaritonic Crystal for Hyperbolic Phonon-Polaritons

Sergey G. Menabde, Yongjun Lim, Alexey Y. Nikitin, Pablo Alonso-González, Jacob T. Heiden, Heerin Noh, Seungwoo Lee, Min Seok Jang

e02662 | First Published: 16 March 2026



Near-field study of the polaritonic Fourier crystal with α-MoO_3 reveals that the hyperbolic phonon-polaritons within the Type-I Reststrahlen band may form a quasi-single-mode Bloch wave where only the fundamental mode propagates in the crystal. Our results demonstrate the realization of a quasi-single-mode regime for the inherently multimode hyperbolic phonon-polaritons.

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