

Journal of Materials Chemistry C

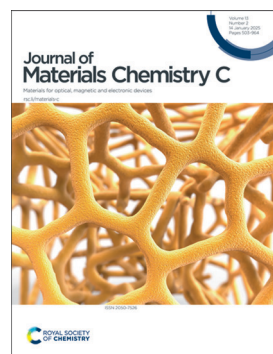
Materials for optical, magnetic and electronic devices

rsc.li/materials-c

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2050-7526 CODEN JMCCCX 13(2) 503-964 (2025)



Cover

Image credit: Alfred Pasieka/Science Photo Library/Getty Images

EDITORIAL

518

Advanced functional inorganic materials for information technology and applications

Xuebin Wang,* Haibo Zeng* and Zhiguo Xia*

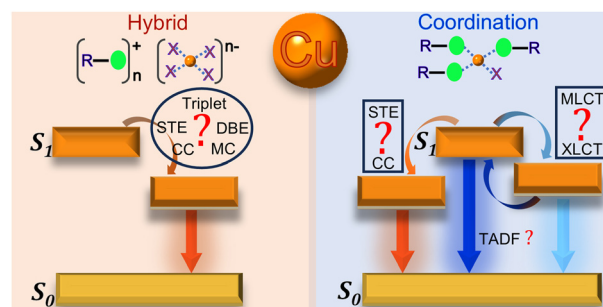


REVIEW

521

"This or that" – light emission from hybrid organic–inorganic vs. coordination Cu(I) halides

Dilruba A. Popy and Bayram Saparov*



RSC Applied Polymers

The application of polymers,
both natural and synthetic

Interdisciplinary and open access



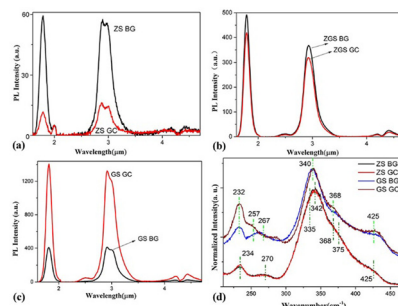
rsc.li/RSCApplPolym

Fundamental questions
Elemental answers

561

Structural engineering of glass for regulating chemical surroundings of dopants

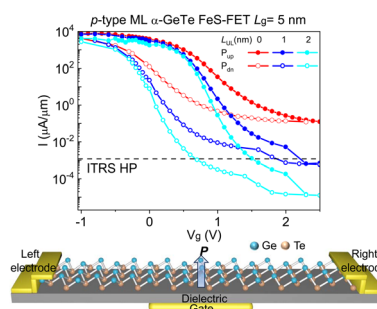
Yuan Gao, Yikang Jiang, Xiaosong Lu* and Zhiyong Yang*



568

Quantum transport simulation of α -GeTe ferroelectric semiconductor transistors

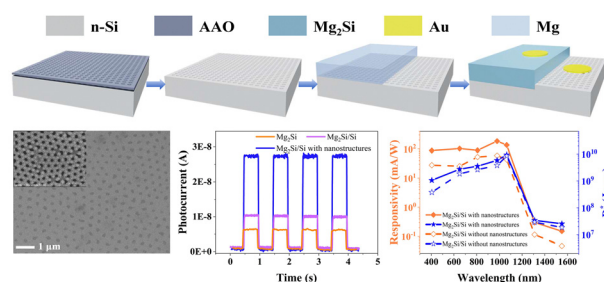
Qiang Li, Zongmeng Yang, Xingyue Yang, Wenjing Zhou, Chen Yang, Xiaotian Sun, Shibo Fang* and Jing Lu*



578

Enhanced performance of a $\text{Mg}_2\text{Si}/\text{Si}$ heterojunction photodetector grown with the assistance of nanostructures

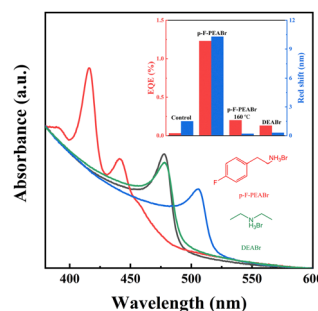
Hang Yu, Jun Gou,* Yanshuai Zhang, Xiutao Yang, Gaoyun Zhang, Lixin Liu, He Yu, Zhiming Wu and Jun Wang



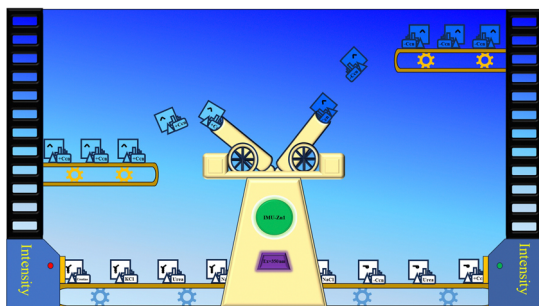
585

Role of Br–Cl distribution uniformity on the spectral stability of blue emitting mixed-halide perovskites

Dan Chen, Yu Mao, Xianglan Huang, Jichen Zhao, Zhiyuan Zhang, Jian Wang* and Junbiao Peng



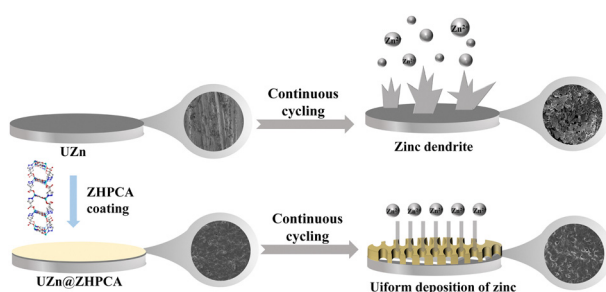
592



The fluorescence distinction of chiral enantiomers: a Zn coordination polymer sensor for the detection of cinchonine and cinchonidine

Wenping Hu, Nan Wu, Dechao Li, Yefang Yang, Shaowen Qie, Shuai Su, Ruijie Xu, Wenting Li and Ming Hu*

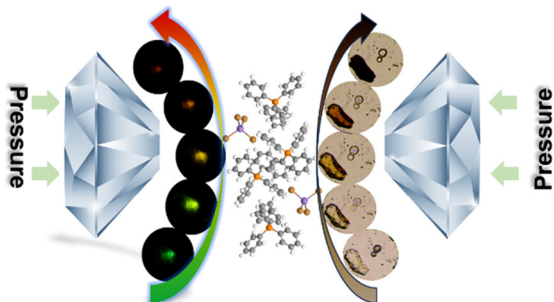
600



Zincophilic MOF with N-functional groups for interfacial modification of stable aqueous zinc metal anodes

Na Sun, Han Yu, Xue Zhou, Xiuwen Si, Pengfei Wang, Zhe Gong,* Yaguang Sun* and Mingdong Zhou*

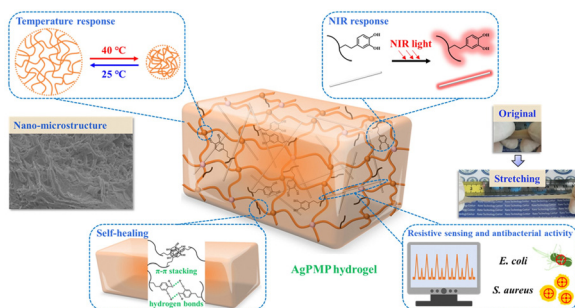
609



Pressure-induced tunable emission colors and irreversible bandgap narrowing in organic–inorganic manganese bromide hybrids

Ruijing Fu, Junpeng Gao, Pinsen Zhang, Lingrui Wang, Bo Wang, Guangxia Wang, Xiaoshuang Li,* Youchao Kong,* Qingguang Zeng* and Guanjun Xiao*

617



Hybrid nano-microstructured and bioinspired conductive hydrogels with tunable multifunctionality

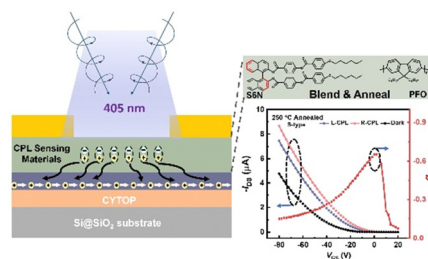
Manting Wang, Jiaqi Zhang, Yaoyi Guo, Xiaoyong Zhou, Jie-Xin Wang and Yuan Le*



628

High-performance circularly polarized photodetectors based on chiral transfer of achiral poly(9,9-dioctylfluorene)

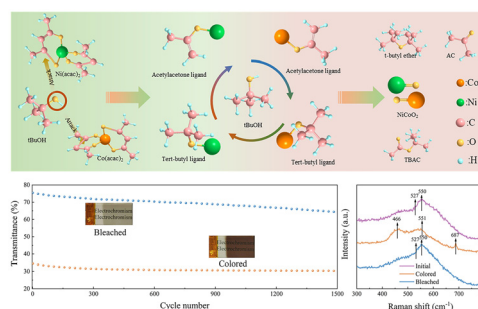
Xiaocheng Wu, Junjie Liu, Yunhao Xu, Longzhen Qiu* and Xiaohong Wang*



639

Interlaced NiCoO₂ nanoparticle/nanosheet films for electrochromic energy storage devices with wide-band optical modulation and robust stability

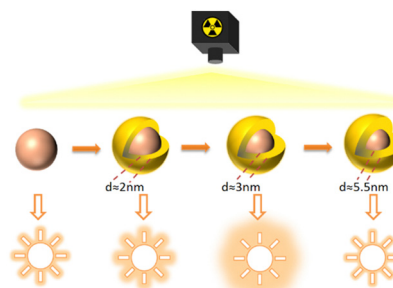
Yongchao Liu, Yu Zhong, Huanhuan Liu, Pengyang Lei, Shiyong Liu, Jinhui Wang* and Guofa Cai*



649

Unveiling the mechanism behind shell thickness-dependent X-ray excited optical and persistent luminescence in lanthanide-doped core/shell nanoparticles

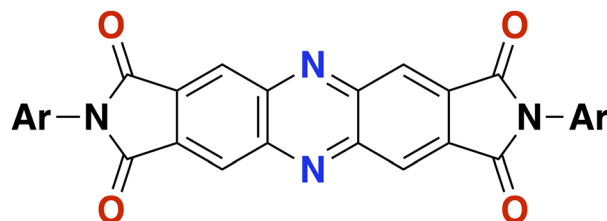
Zezen Liu, Jingtao Zhao, Danyang Shen, Lei Lei* and Shiqing Xu*



655

Synthesis and electron-transporting properties of phenazine bisimides

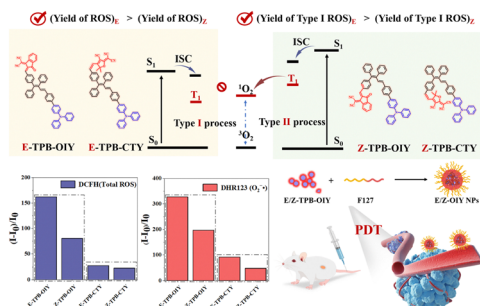
Keita Tajima, Taito Moribe, Kyohei Matsuo, Hiroko Yamada,* Shu Seki,* Seiya Yokokura, Toshihiro Shimada, Norihito Fukui* and Hiroshi Shinokubo*



Phenazine bisimide (PzBI)



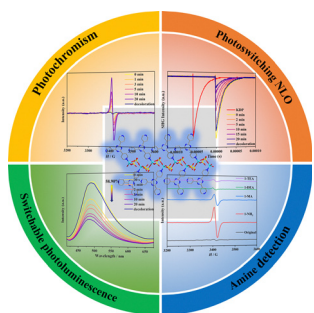
663



An *E/Z* isomer strategy of photosensitizers with tunable generation processes of reactive oxygen species

Xiaochun Liu, Hairong Li, Hui Tang, Ning Ma, Shiyu Wu, Wenbo Dai, Yahui Zhang* and Xiaoqi Yu

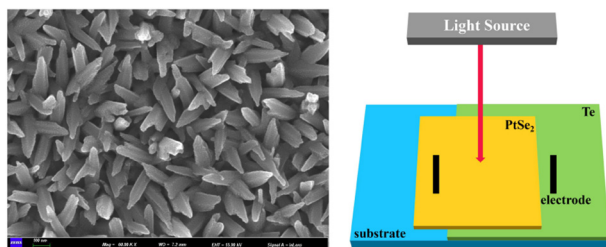
672



Stimulus-responsive multifunctions in a zinc(II) sulfate complex: photochromism, photoswitching nonlinear optical properties, amine detection and visual film application

Shuai Liang, Shi-Kun Yan, Yu-Xuan Wen, Yan-Rui Zhao, Jin Zhang and Ji-Xiang Hu*

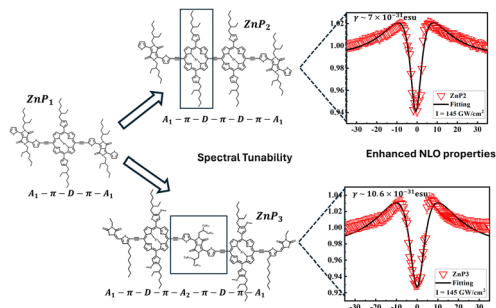
680



Design of a self-powered 2D Te/PtSe₂ heterojunction for room-temperature NIR detection

Fengtian Xia, Dongbo Wang,* Wen He,* Xiangqun Chen,* Chenchen Zhao, Bingke Zhang, Donghao Liu, Sihang Liu, Jingwen Pan, Shujie Jiao, Dan Fang,* Xuan Fang,* Lihua Liu* and Liancheng Zhao*

691



Influence of a diketopyrrolopyrrole spacer on the ultrafast nonlinear optical properties and excited state dynamics of dimeric zinc porphyrin molecules

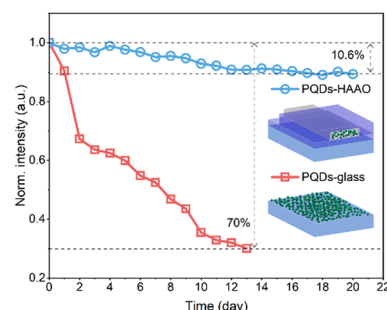
Rahul Murali, Chinmoy Biswas, Sudhanshu Kumar Nayak, Hanping Wu, Xiaobin Peng, Vipin Kumar, Prabhakar Chetti, Venugopal Rao Soma and Sai Santosh Kumar Raavi*



709

Stabilizing perovskite quantum dot oxygen sensors through ultra-long 2 mm horizontally aligned nanopores in anodic alumina oxide templates

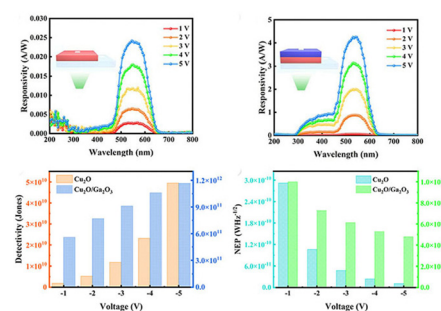
Johan Iskandar, Chih-Yi Liu,* Chih-Chien Lee, Kuan-Yu Ke, M. Rivaldi Ali Septian, Richie Estrada, Humaidi Humaidi, Sajal Biring,* Cheng-Shane Chu, Zong-Liang Tseng* and Shun-Wei Liu*



718

Cu₂O/Ga₂O₃ pn-junction photodetector with low dark current and high detectivity

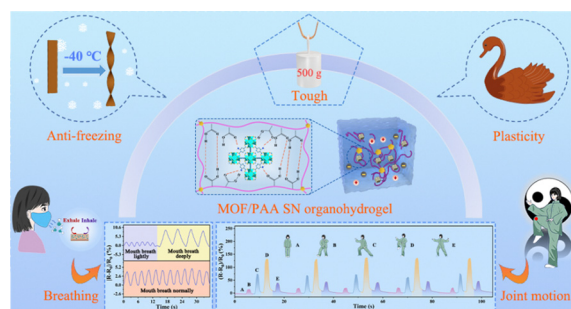
Mingyang Li, Dayong Jiang* and Man Zhao*



724

A metal–organic framework enhanced single network organohydrogel with superior low-temperature adaptability and UV-blocking capability towards human-motion sensing

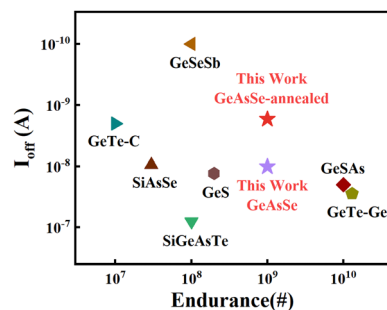
Ying Li, Zhongquan Yu, Jialuo Zhang, Enke Feng,* Xiaoqin Li, Linan Cao,* Zhiming Yang and Zhiqiang Wu*



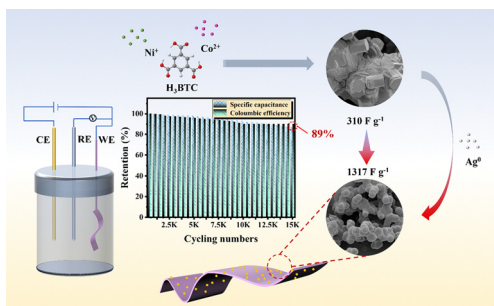
735

Modulation of GeSe and As₂Se₃ motifs to optimise GeAsSe OTS performance and its mechanism

Yukun Li, Haotian Wang, Mingyue Shao, Yuhao Wang, Sannian Song,* Yuan Xue* and Zhitang Song



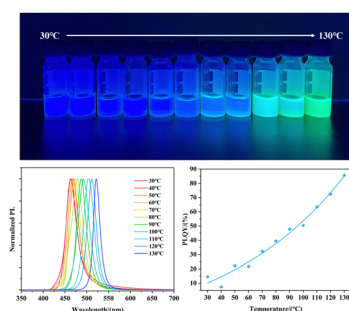
743



Silver-incorporated NiCo metal–organic frameworks with controlled morphology for enhanced cycling in flexible supercapacitor applications

Chu Chu, Wenjing Zhang, Xuehua Yan,* Yingnan Yan, Jianmei Pan, Zohreh Shahnavaaz and Jamile Mohammadi Moradian

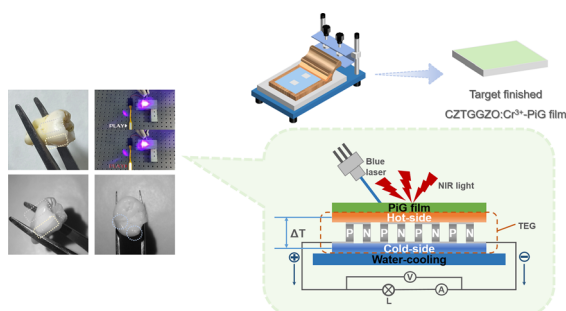
758



Microfluidic synthesis of monodispersed sharp emitting perovskite CsPbBr₃ quantum dots via multidimensional parameterization

Yunhao Ning, Shuo Guan, Chuantong Cheng,* Bao Zhang,* Bingyu Qin and Beiju Huang

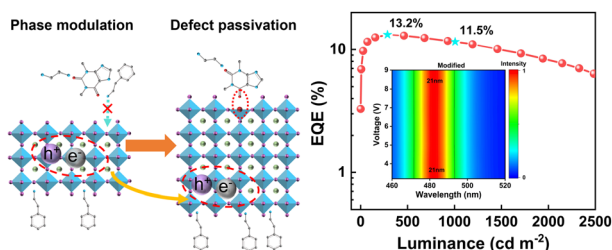
766



Laser-pumped high-power compact near-infrared light sources based on phosphor-in-glass films

Xue Meng, Zhijun Wang,* Xiaoxue Huo, Mingxin Zhou, Yu Wang and Panlai Li*

776



Modification of mixed-halide quasi-2D perovskites by aminophylline towards efficient and spectrally stable blue light-emitting diodes with low efficiency roll-off

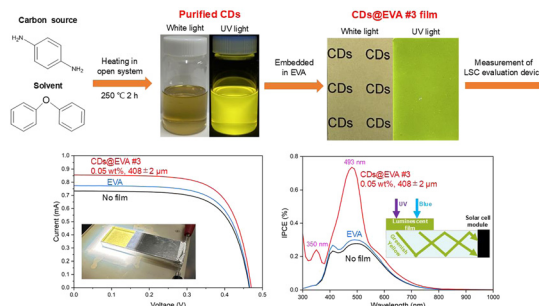
Xingxing Duan, Bufan Yu, Guangrong Jin, Dengliang Zhang, Jiangshan Chen* and Dongge Ma



786

Greenish yellow-emitting carbon dot-based films for luminescent solar concentrator applications

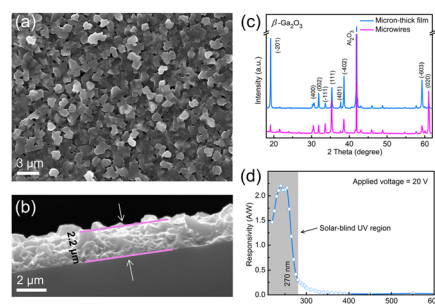
Yunxiang Liu, Yoshiki Iso* and Tetsuhiko Isobe*



793

High-performance solar-blind imaging photodetectors based on micrometer-thick β -Ga₂O₃ films grown by thermal oxidation of gallium

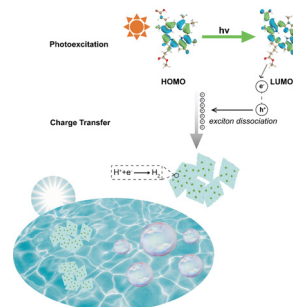
Haitao Zhou, Hongbin Wang, Jiangang Ma,* Bingsheng Li, Haiyang Xu and Yichun Liu



802

Synergistic bio-inspired photocatalytic hydrogen production by chlorophyll derivative sensitized Nb₂CT_x MXene nanosheets

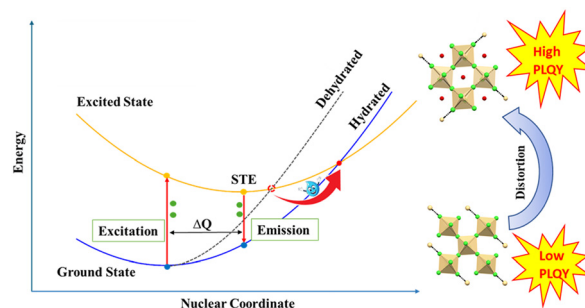
Tianfang Zheng, Lin Yang,* Hai Xu, Aijun Li, Shin-ichi Sasaki and Xiao-Feng Wang*



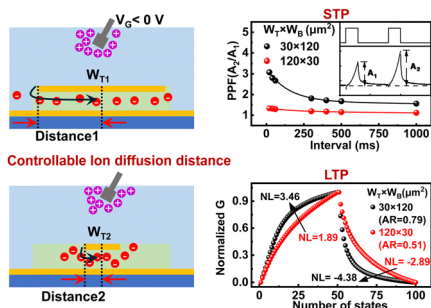
808

Unravelling the structure–luminescence relationship in two dimensional antimony(III)-doped cadmium(II) halide hybrids

Ashwath Kudlu, Dhritismita Sarma, Deep Kumar Das, Alisha Basheer Shamlu, Rangarajan Bakthavatsalam, Venkatesha R. Hathwar, Arup Mahata* and Janardan Kundu*



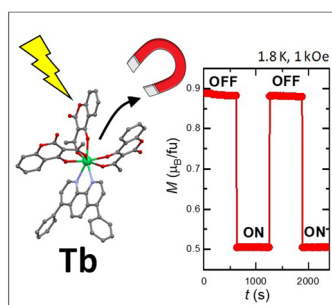
821



Plasticity tunable artificial synapses based on organic electrochemical transistors with aqueous electrolytes

Ruhua Wu, Miao Xie, Yuhua Cheng, Dan Zhao,*
Liang-Wen Feng,* Jianhua Chen* and Wei Huang*

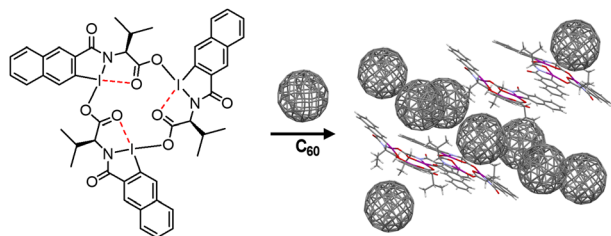
831



Light-induced magnetic switching in a coumarin-based Tb single molecule magnet

Elena Bartolomé,* Ana Arauzo,* Javier Luzón and
Laura Gasque

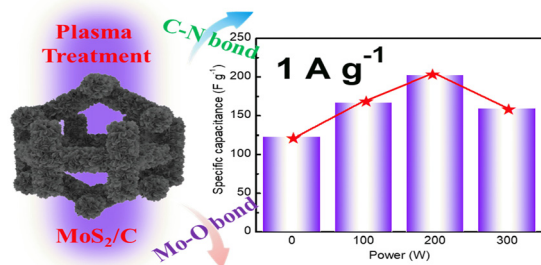
842



Pi-extended hypervalent iodine macrocycles and their supramolecular assembly with Buckminsterfullerene

Krishna Pandey, Samsul Arafin, Grayson Venus, Eli Jones,
Yachu Du, Mina Dumre Pandey, Tahir Awais,
Lichang Wang and Kyle N. Plunkett*

849



Citric acid and plasma treated MoS₂ for high-performance supercapacitors

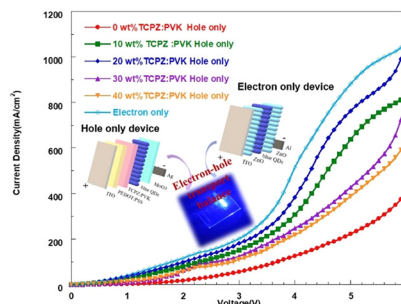
Shaoqi Rui, Zijian Li, Lingshuai Meng, Qi Wang, Jing Xu,
Yujie Zhao, Qingling Jia, Han Li,* Shun Lu* and
Yongxing Zhang*



858

Enhancing performance in blue quantum-dot light-emitting diodes by using a deep HOMO carbazol-phenyl-triazine small molecule blended hole transporting layer

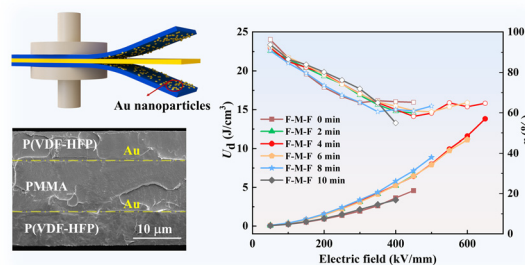
Yuyu Liu, Minming Yan,* Fan He, Weina Zhang, Yunwei Wang, Ziyu Qin, Kai Zhang, Ye Chen and Yong Zhang*



868

Ultra-low loadings of gold nanoparticles significantly boost capacitive energy storage of multilayer polymer composites

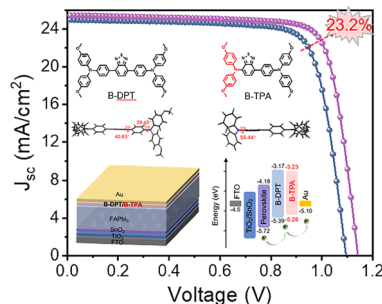
Yihui Qian, Houmeng Du, Li Lei, Shuimiao Xia, Yuchao Li, Davoud Dastan and Zhicheng Shi*



876

Enhanced performance of perovskite solar cells via construction of benzothiadiazole-based hole transport materials utilizing an asymmetric strategy

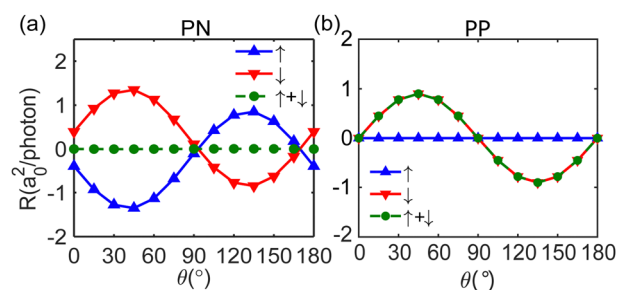
Yawei Miao,* Tingting Xue, Xue Zhou, Shaoyun Jia and Chuantao Gu*



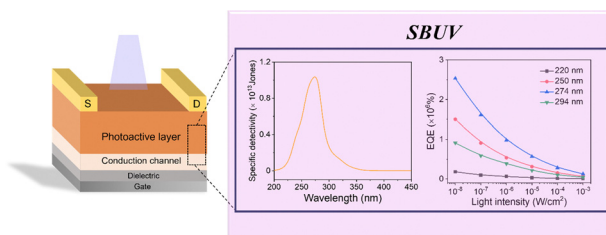
884

Gate controllable fully spin-polarized and pure spin current in γ -graphyne nanoribbons

Liwen Zhang,* Yanjing Hao, Yaqing Yang, Jun Chen and Lei Zhang*



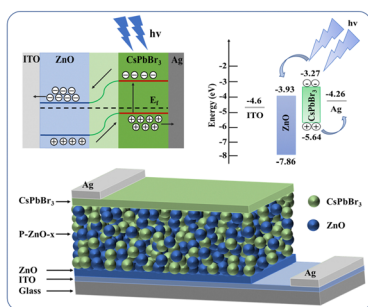
892



An ultrasensitive narrowband organic phototransistor for solar-blind ultraviolet detection and imaging

Jianing Wang, Yuanhong Gao, Minming Yan, Xiwei Zheng, Meili Xu, Hong Chen, Lingqiang Meng,* Wei Huang* and Hong Meng*

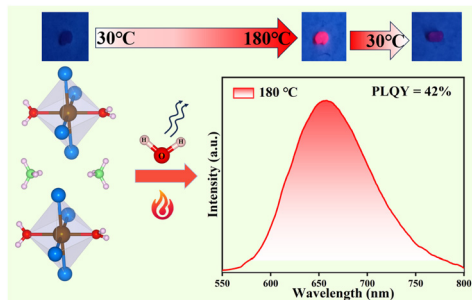
902



A high-performance photodetector based on a ZnO/CsPbBr₃ quantum-dot-level-contact hybrid sandwich structure

Song Wang, Shuhua Yang,* Zenglong Xu, Huiyan Xu, Guangbin Duan, Degang Zhao, Xiutong Wang and Bingqiang Cao*

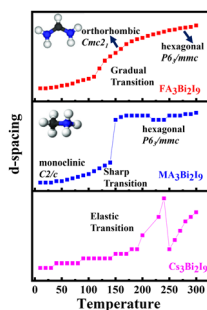
910



Thermally induced reversible phase transition and photoluminescence switching behavior of (NH₄)₂MnBr₄(H₂O)₂ crystals

Guanfeng Liu, Yaoyu Liu, Zongshuai Ji, Tianyu Wang, Shuai Zhang, Bing Teng* and Shaohua Ji*

918



Unraveling low-temperature structural and dielectric characteristics in lead-free bismuth halide perovskites

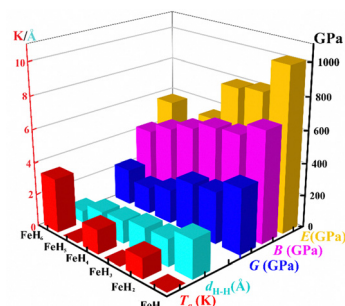
Naveen Kumar Tailor, Rohit Kumar Rohj, Krishanu Dey, Samuel D. Stranks, D. D. Sarma and Soumitra Satapathi*



928

Electronic, phononic, and superconducting properties of FeH_x (x = 1–6) at 150 GPa

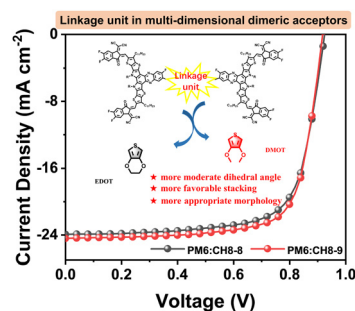
Hao Quan, Shi-Na Li,* Yu-Lin Han,* Jian-Guo Si, Wen-Xue Zhang, Wei-Dong Li and Bao-Tian Wang*



938

Investigation of 3,4-ethylenedioxythiophene and 3,4-dimethoxythiophene as linkage units for multi-dimensional dimeric acceptors

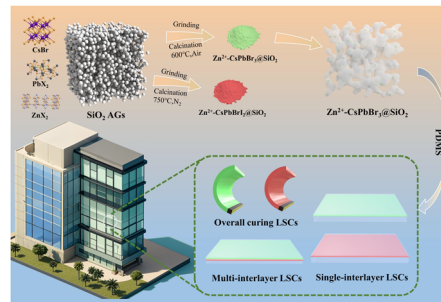
Shaohui Yuan, Baofa Lan, Xinyi Ji,* Jiaying Wang, Wenkai Zhao, Guankui Long, Xiangjian Wan, Bin Kan* and Yongsheng Chen



945

Highly efficient, ultra-stable multi-interlayer luminescent solar concentrators based on green and red-emitting perovskite nanocrystal composites

Changwen Li, Yuxin Gao, Zhiqiang Ren, Shoujun Xiong, Changwei Li, Jun Wu,* Jinhua Li, Xianbao Wang* and Jianying Wang*



954

Influence of shape on crystal structure and optical properties of heterocyclic conjugated molecules

Elisa Guzmán, Yu Yan, Peter Müller and Justin Amengual, Mu-Ping Nieh and Samuel W. Thomas III*

