

Journal of Materials Chemistry C

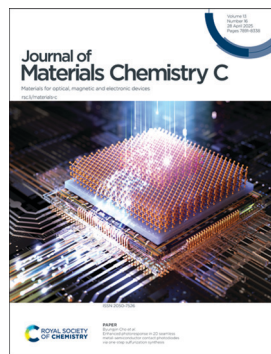
Materials for optical, magnetic and electronic devices

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.

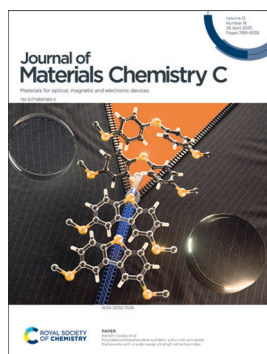
IN THIS ISSUE

ISSN 2050-7526 CODEN JMCCCX 13(16) 7891–8338 (2025)



Cover

See Byungjin Cho *et al.*,
pp. 7924–7932.
Image reproduced
by permission of
Younghee Lee from
J. Mater. Chem. C,
2025, 13, 7924.



Inside cover

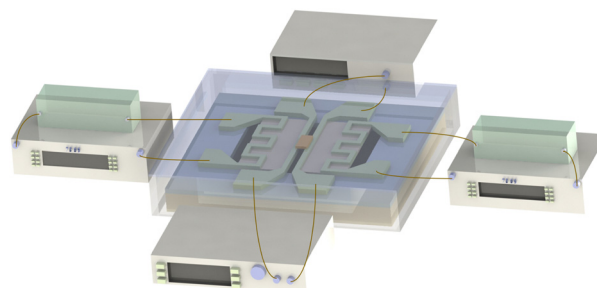
See Kenichi Oyaizu *et al.*,
pp. 7933–7942.
Image reproduced
by permission of
Kenichi Oyaizu from
J. Mater. Chem. C,
2025, 13, 7933.

COMMUNICATIONS

7906

Effects of the thermal rectification phenomenon induced by structural regulation on the thermoelectric performance of two-dimensional Bi_2Se_3 films

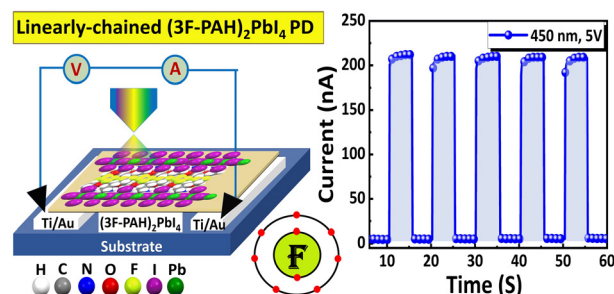
Xiao Yang, Yanan Shen, Haibo Zhao, Chunyang Wang, Pengyu Zhang, Haisheng Chen, Ting Zhang* and Xinghua Zheng*



7912

A trifluoromethyl group-incorporated spacer in 2D perovskite-based photodetectors with good responsivity and a big $\text{Pb}-\text{I}-\text{Pb}$ bond angle: the first example of an aliphatic linearly-chained spacer forming non-classical hydrophobic hydrogen bonding

Gurumallappa Gurumallappa, Norman Lu,* Yi-De Chen, Yu-Ching Lin, Yueh-Fang Hsiao, Pin-Yu Liu and Meng-Lin Tsai



**GOLD
OPEN
ACCESS**

EES Solar

**Exceptional research on solar
energy and photovoltaics**



Part of the EES family

**Join
in**

Publish with us

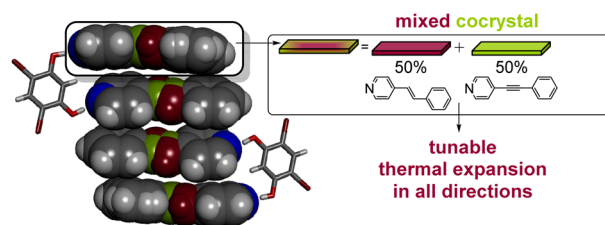
rsc.li/EESolar

COMMUNICATIONS

7918

Tuning thermomechanical properties of hydrogen-bonded materials by using a mixed cocrystal approach

Gary C. George III, Liulei Ma, Jack R. Gaffney, Richard K. Brooks, Daniel K. Unruh, Ryan H. Groeneman* and Kristin M. Hutchins*

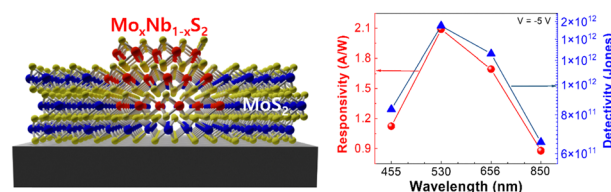


PAPERS

7924

Enhanced photoresponse in 2D seamless metal–semiconductor contact photodiodes via one-step sulfurization synthesis

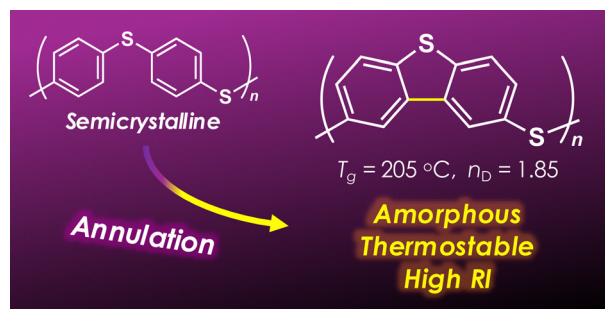
Hyun Young Seo, Ojun Kwon, Minhee Kim, Seyoung Oh, Woojin Park and Byungjin Cho*



7933

Poly(dibenzothiophene sulfide)s: sulfur-rich annulated frameworks with a wide-range ultrahigh refractive index

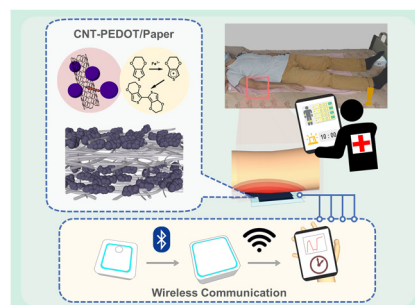
Seigo Watanabe, Zexin An, Hiromichi Nishio, Yoshino Tsunekawa and Kenichi Oyaizu*



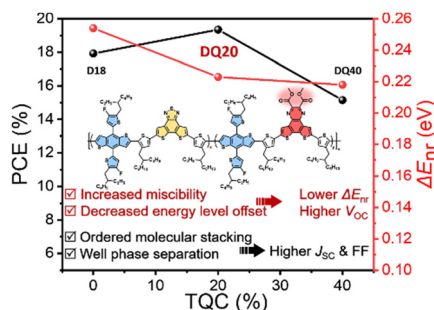
7943

Wireless, flexible, and disposable sensing devices enabling real-time long-term patient medical care for pressure injury prevention

Ta-Sheng Chang, Chiao-Wen Chien, Elmer Ismael Guerra, Ting-Yi Wang, Chien-Wei Huang, Ying-Siou Lin,* Jung-Chen Chang* and Wei-Ssu Liao*



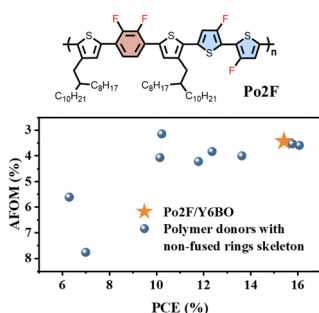
7957



19.35%-Efficiency organic solar cells and reduced non-radiative recombination energy loss by a ternary copolymerization strategy

Dan He, Linwei Xie, Yahui Bai, Xingxing Shen, Xiangxi Wu, Jianqi Zhang, Xiaojun Li, Yongfang Li and Fuwen Zhao*

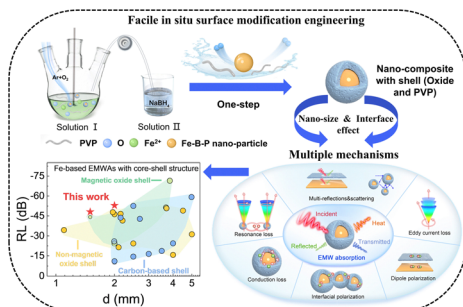
7963



Highly efficient organic solar cells based on a simple polymer donor derived from a difluorinated benzene-quarterthiophene skeleton

Zesheng Zhang, Lingchen Kong, Chao Liu, Hua Tang, Xinkang Wang, Mingqing Chen, Mei Luo, Lianjie Zhang,* Cheng Liu, Xuncheng Liu,* Dongge Ma, Christoph J. Brabec* and Junwu Chen*

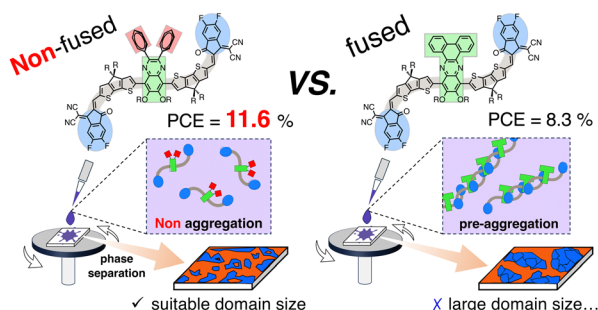
7973



In situ surface modification engineering for synthesizing nano-absorbers with self-forming heterointerfaces and prominent electromagnetic wave absorption

Rongsheng Bai, Yue-e Zhang, Ziqing Yin, Lei Chang, Hongjie Xu,* Zhiyong Xue,* Haibo Ke* and Weihua Wang

7984



Effects of non-fused and fused substituents in quinoxaline-based central units on conformation, aggregation, and photovoltaic properties of non-fused ring electron acceptors

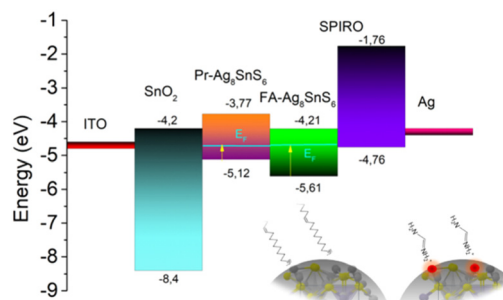
Kenta Yamada, Wataru Suzuki, Motohisa Kubota, Junichi Inamoto, Mizuho Kondo, Tomoyuki Koganezawa, Yuki Chiga, Ryo Takahata, Toshiharu Teranishi, Hiroshi Imahori and Tomokazu Umeyama*



7996

Effects of ligand coordination on Ag_8SnS_6 as a photoabsorber for thin film solar cells

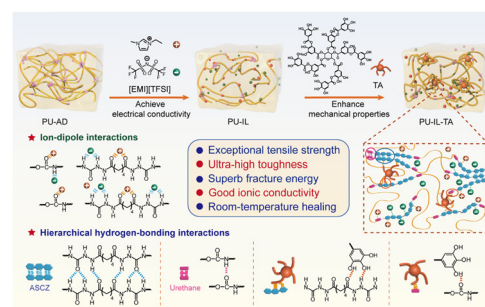
Panagiotis Dallas,* Vasileios K. Tzitzios,* Lida Givalou, Polychronis Tspas, Georgia Basina, Elias Sakellis, Nikos Boukos and Thomas Stergiopoulos*



8006

A mechanically strong, ultra-tough and room-temperature self-healing ionic conductive elastomer based on octopus-like physical cross-linker tannic acid and a robust polyurethane substrate

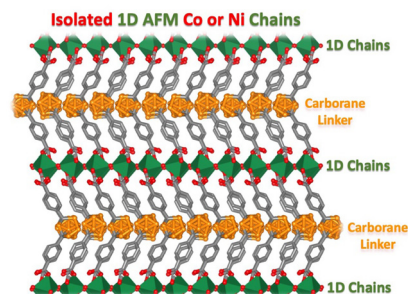
Na Zeng, Yage Wang, Xiaotong Liu, Yunlong Zhang and Wei Huang*



8020

Metal–organic frameworks built from a carborane linker isolating ideal one-dimensional large-spin chains of Co ($S = 3/2$) or Ni ($S = 1$)

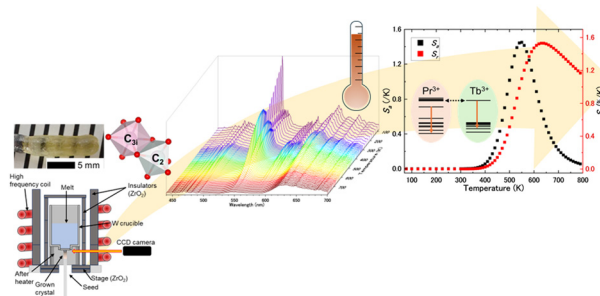
Xiao-Bao Li, Mark E. Light, Ana Arauzo, Elena Bartolomé* and José Giner Planas*



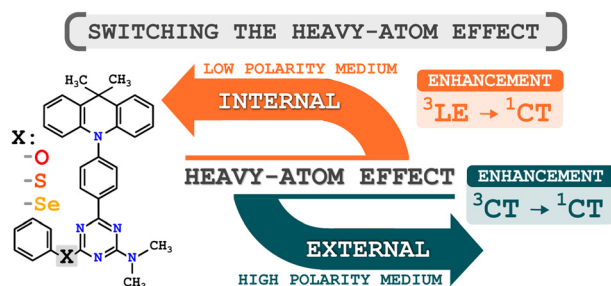
8032

Crystal growth and temperature dependence of luminescence characteristics of Pr^{3+} and Tb^{3+} doped solid-solution sesquioxide single crystals

Yuka Abe,* Takahiko Horai,* Yuui Yokota, Masao Yoshino, Rikito Murakami, Takashi Hanada, Akihiro Yamaji, Hiroki Sato, Yuji Ohashi, Shunsuke Kurosawa, Kei Kamada and Akira Yoshikawa



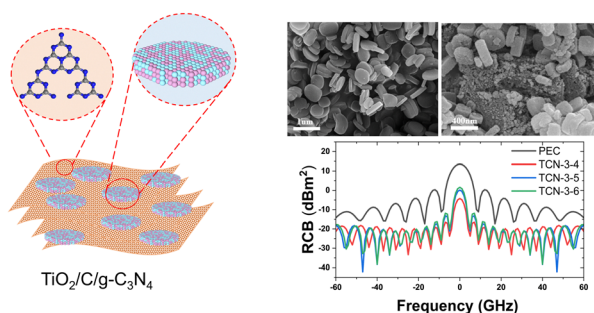
8043



Switching the heavy-atom effect in blue thermally activated delayed fluorescence emitters

Jan Szumilas, Chi Hyun Ryoo, Michał Mońka, Piotr Bojarski, Soo Young Park* and Illia E. Serdiuk*

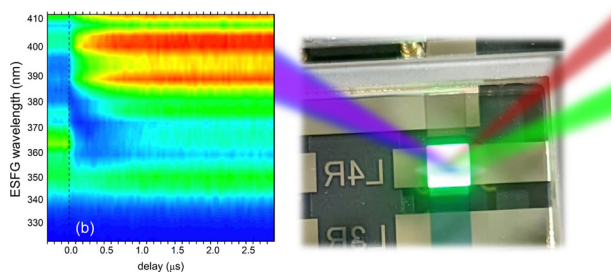
8054



MOF-derived $\text{TiO}_2/\text{C}/\text{g-C}_3\text{N}_4$ composites with dual heterojunction surfaces for efficient electromagnetic absorption

Yanling Weng, Azhar Ali Haidry,* Yucheng Wang, Adil Raza, Kareem Yusuf and Jintang Zhou

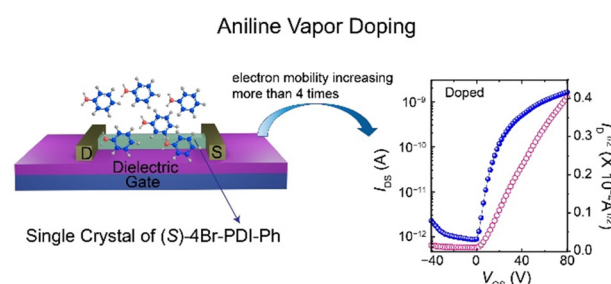
8068



Probing charge behaviour in multilayer organic light-emitting diodes *via* electronic sum-frequency generation spectroscopy

Tatsuya Kaburagi, Kazunori Morimoto and Takayuki Miyamae*

8077



Enhancing optoelectronic performance of organic phototransistors through surface doping of tetra-bromo perylene diimide single crystals

Huagui Zhuo, Ye In Cho, Ke Gao, Zhiwei Wang, Zhenping Li, Xingshuo Chu, Tianhang Cui, Wanuk Choi, Gang Chang, Jaeyong Ahn,* Xiaobo Shang* and Joon Hak Oh*

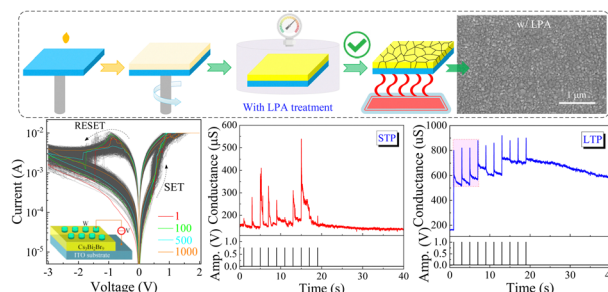


PAPERS

8084

Synaptic plasticity and handwritten digit recognition of a memristor based on a high-stability lead-free $\text{Cs}_3\text{Bi}_2\text{Br}_9$ perovskite thin film

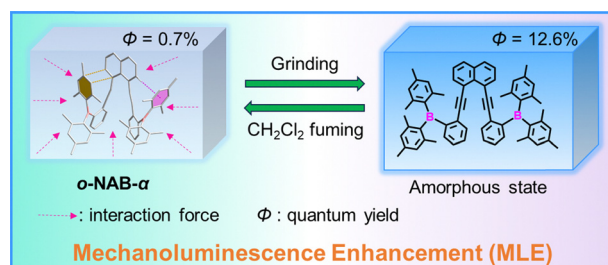
Jian Liu,* Ying Nie, Xiaolong Zhou, Juanjuan Qi, Dongke Li, Jianqiang Luo and Ke Wang*



8095

Congested position isomerism enhanced mechanoluminescence of triarylboranes

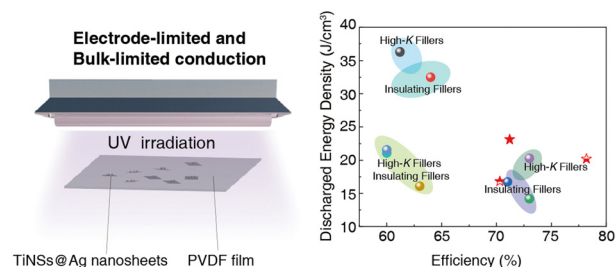
Yangbin Xie, Yujie Zhou, Yan-Ting Zhang, Hanting Zhou, Zhenghua Ju, Shenlong Jiang, Chun-Lin Sun,* Jincai Wu, Qun Zhang* and Xiaobo Pan*



8104

Silver-adsorbed $\text{Ti}_{0.87}\text{O}_2$ nanosheets and UV irradiation synergistically improve the energy storage performance of polyvinylidene fluoride-based nanocomposites

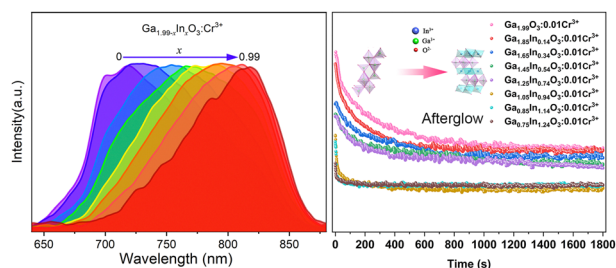
Hexing Liu, Yi Sun, Cong Wang, Jiayu Chen, Zhong-Hui Shen, Xin Zhang and Bao-Wen Li*



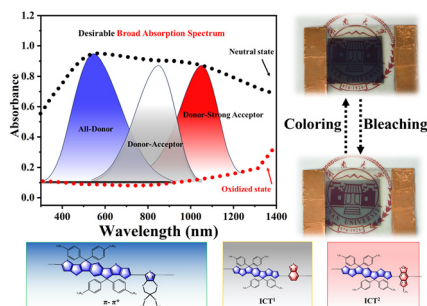
8113

Simultaneous adjustment of afterglow wavelength and intensity in indium-substituted $\text{Ga}_{1.99-x}\text{In}_x\text{O}_3\cdot 0.01\text{Cr}^{3+}$

Qingqing Xie, Ailijiang Tuerdi, Xiangkai Qiao, Yalin Zheng, Aikelaimu Aihemaiti, Peng Yan and Abdukader Abdukayum*



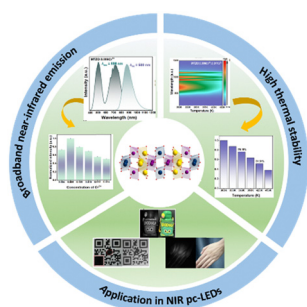
8120



Achieving black-to-transmissive conjugated copolymers enabling ultrabroad spectrum modulation based on benzobisthiadiazole derivatives

Guoqiang Kuang, Hua Liu, Hongbin Yin, Yijie Tao,*
Yafei Guo* and Shiguo Zhang*

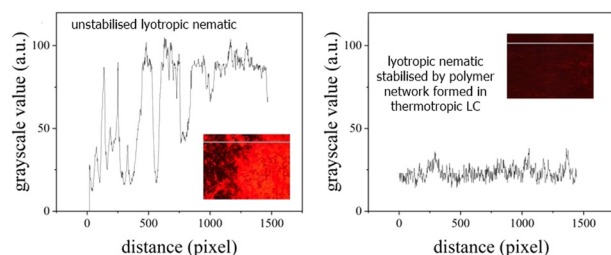
8130



A novel high-efficiency near-infrared phosphor $\text{Mg}_{0.9}\text{Ta}_2\text{Zn}_{2.1}\text{O}_8:\text{Cr}^{3+},\text{Yb}^{3+}$ for spectroscopy applications

Jia Liu, Shuai Wei,* Dashuai Sun, Zeyu Lyu,
Xueying Zhang, Xin Wang, Xiaowei Zhang and
Hongpeng You*

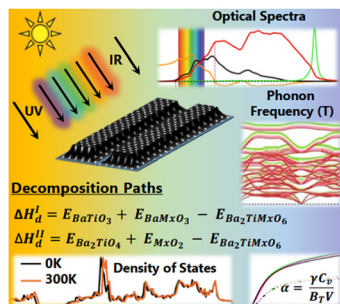
8139



Liquid crystal-refilled polymer network templates formed by photo-polymerisation in an orientationally ordered liquid crystal

Chung-Hao Chen and Ingo Dierking*

8151



Optoelectronic characteristics and stability evaluation of $\text{Ba}_2\text{TiMxO}_6$ ($\text{Mx} = \text{Ge}, \text{Sn}, \text{Se}, \text{Te}$) p-type semiconductors as candidates for functional layers in optoelectronic devices

Zia Ur Rehman* and Zijiang Lin*

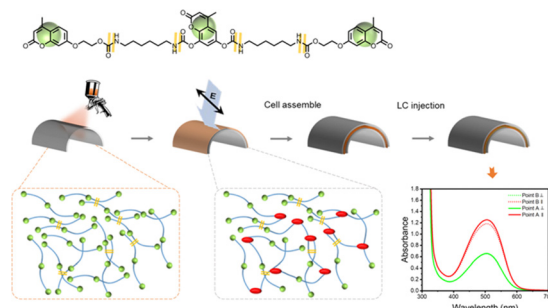


PAPERS

8169

A sprayable H-bonding coumarin-containing compound for photoalignment of liquid crystals on a curved surface

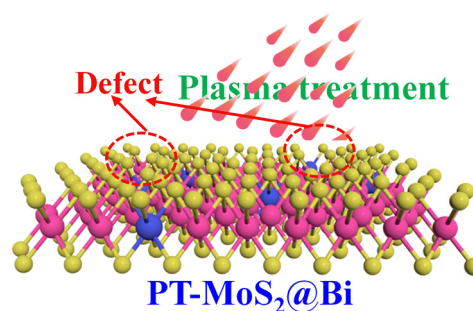
Xinshi Chen and Yue Zhao*



8179

Plasma treatment of bismuth-doped MoS₂ with excellent supercapacitor performance

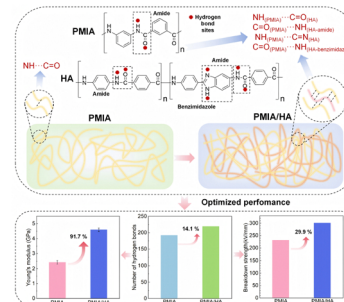
Xulong Yuan, Jing Xu, Yujie Zhao, Shaoqi Rui, Qi Wang, Lingshuai Meng, Qingling Jia, Han Li,* Shun Lu* and Yongxing Zhang*



8188

Tailoring chain-packing structure in co-blended aramid composites for high mechanical and insulating performance

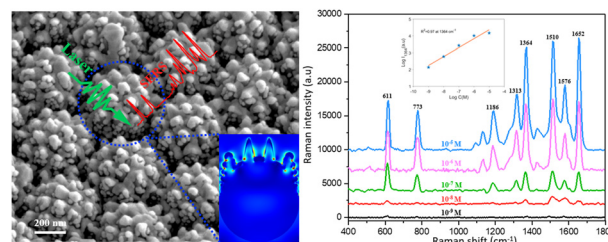
Kaixuan Sun, Kexing Yu, Xiang Yu,* Wenqi Zhang, Rui Yang, Fangcheng Lv and Sidi Fan*



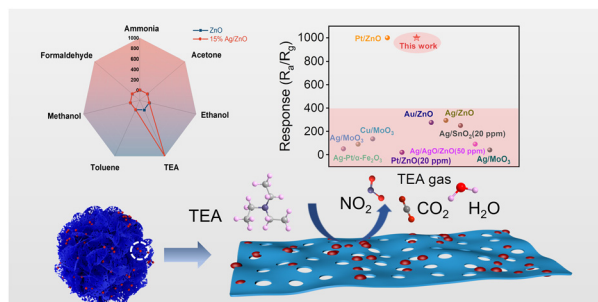
8198

Fabrication of large-area nanostructures of pine needles with a dewdrop array for surface-enhanced Raman spectroscopy

Jing Du, Kuanguo Li,* Yonghua Lu* and Pei Wang



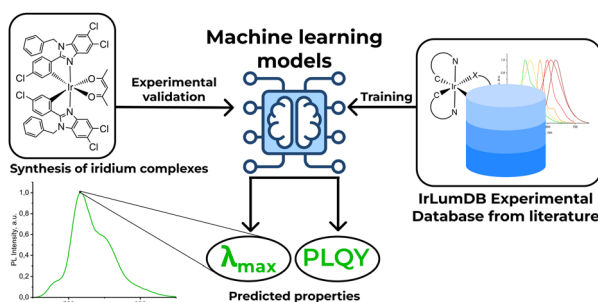
8205



Highly sensitive and selective triethylamine sensor enabled by Ag/ZnO heterojunctions

Meiling Li, Haili Huang, Zhentao Du,* Hung-Chun Wu, Fengmei Gao, Yazhou Cui, Yuxuan Xu, Huilin Hou, Weiyu Yang, Dongdong Zhang* and Lin Wang*

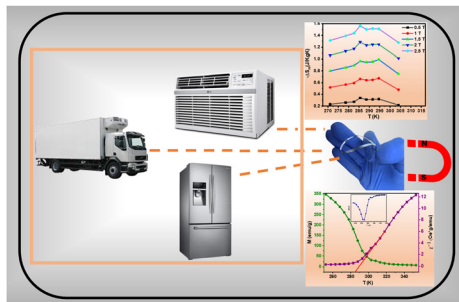
8217



Towards accelerating the discovery of efficient iridium(III) emitters using a novel database and machine learning based only on structural formulas

Sergei V. Tatarin, Lev V. Krasnov, Ekaterina V. Nykhrikova, Maxim M. Minin, Daniil E. Smirnov, Andrei V. Churakov and Stanislav I. Bezzubov*

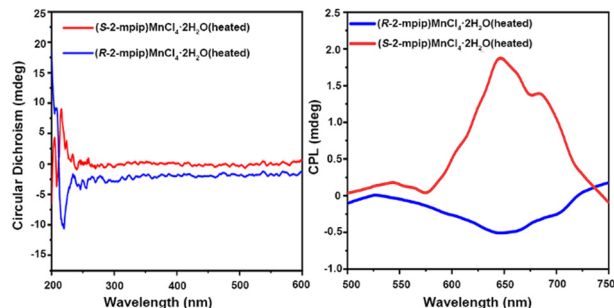
8228



Critical behaviour and magnetocaloric properties of $\text{Fe}_{88}\text{Zr}_5\text{Hf}_2\text{B}_4\text{Cu}_1$ metallic glass for near-room temperature magnetic refrigeration application

Anjana Vinod, D. Arvindha Babu, Manivel Raja Muthuvel, Parthiban Ramasamy and W. Madhuri*

8238



Chiral hybrid manganese(II) chloride single crystals for achieving second harmonic generation and moderate circularly polarized luminescence

Teng Li, Yue Wang, Yanqing Liu, Guokui Liu, Lingqiang Meng,* Yongshen Zheng* and Yangyang Dang*

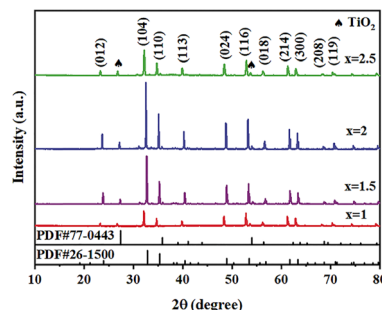


PAPERS

8247

Low loss and excellent stability of $\text{Zn}_{0.7}\text{Mg}_{0.3}\text{TiO}_3$ ceramics with V_2O_5 – TiO_2 addition for application in low-temperature co-fired ceramic technology

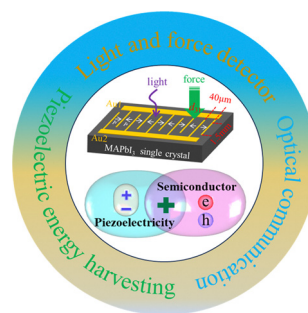
Liangchen Fan, Yulong Liao, Yuanxun Li, Fuyu Li, Jie Li, Wenhao Chen and Qiang Zhao*



8257

MAPbI₃ piezoelectric semiconductor and its multifunctional light-force detector

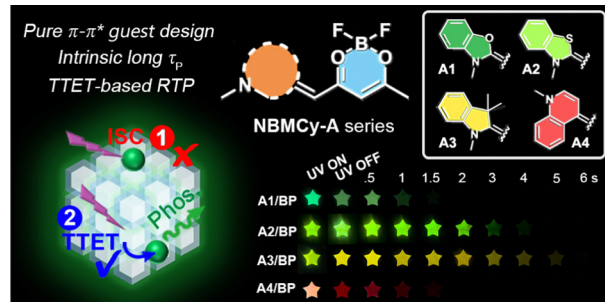
Yong Huang,* Xuefeng Zhao, Yecheng Ding, Zeen Zhao and Guoliang Yuan*



8265

Converting aggregation-induced emission of N-BF₂ merocyanines to colour-tunable ultralong room temperature phosphorescence via Dexter triplet energy transfer: circumventing restriction of intersystem crossing

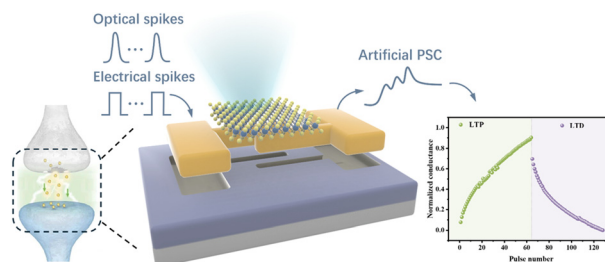
Shan-Shan Gong, Xian-Zhi Tan, Rui-Xue Yang, Chuan-Hui Cao, Chunhong Zheng, Yan-Xue Li, He Zheng, Gang Li, Shouzhi Pu,* Rongwei Shi,* Zhao Chen* and Qi Sun*



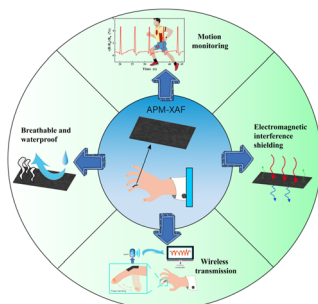
8274

Enhanced multifunctional broadband artificial vision through integration of ReS₂ phototransistors with embedded electrodes

Leyun Zhou, Renxian Qi, Haiyan Nan,* Wenhui Wang, Jing Bai, Meng Wang, Jialing Jian, Zhengjin Weng, Zhengyang Cai, Shaoqing Xiao and Xiaofeng Gu



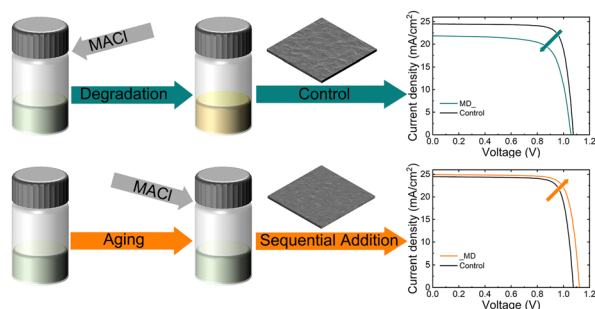
8283



Superhydrophobic, biocompatible MXene-based multifunctional e-textiles for wireless transmission, electromagnetic interference shielding and healthcare monitoring

Junshu Feng, Zhenhua Tang,* Guo-Xun Zeng, Tingsu Liu, Long Ye, Xin-Gui Tang, Yan-Ping Jiang and Xiu-Juan Jiang

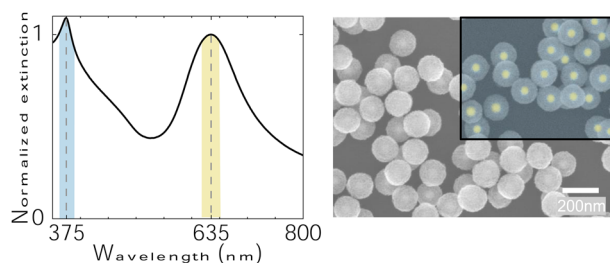
8293



Rapid efficiency loss of FAPbI₃ perovskite solar cells in 2-methoxyethanol-based precursor solutions

Hanyu Yue, Bo Li,* Yang Liu, Wei Pu, Meng Zhang, Yu Huang and Meidan Que*

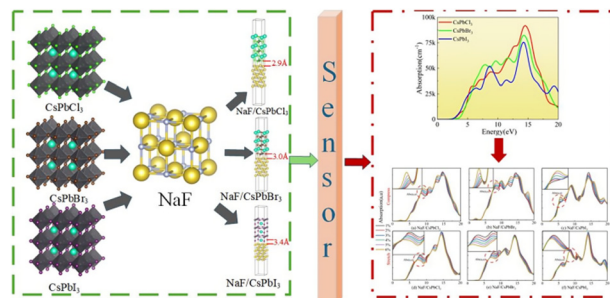
8302



Tailoring core size, shell thickness, and aluminium doping of Au@ZnO core@shell nanoparticles

Quynh Nguyen, Attilio Zilli, Michele Celebrano and Andrea Baldi*

8310



A first-principles study of the structural, electronic, and optical properties of NaF and CsPbX₃ heterojunctions under strain

Min Liu, Pingjian Wang and Zhonghai Lin*

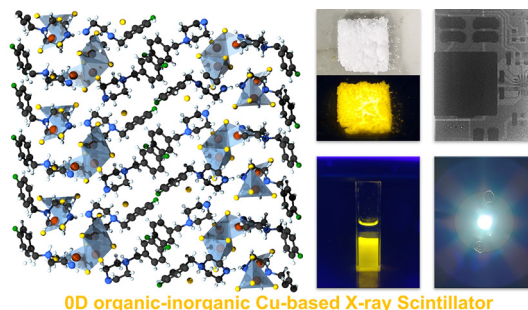


PAPERS

8320

A zero-dimensional hybrid halide with superior water resistance for high-efficiency X-ray scintillation and solid-state lighting

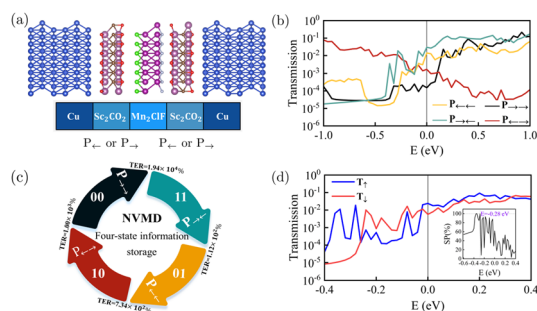
Yu-Yin Wang, Yue Wang, Xin-Wei Du, Xue-Hui Zhang, Lin Zhao, Bing-Rong Yan, Ruo-Fan Zhang, De-Long Liu, Jing Zhang and Guoming Lin*



8328

Ferroelectric heterointerface control of spin polarization in a Janus antiferromagnet and its application in multistate storage

Huan Xiao, Jialong Qi, Zhenzhen Feng, Lili Kang,* Gaofeng Zhao* and Peng Jiang*



CORRECTION

8336

Correction: An ion-gating synaptic memristor based on tri-layer HfO_x composition regulation

Lanqing Zou, Junming Zhang, Yunhui Yi, Jiawang Ren, Huajun Sun,* Chuqian Zhu, Jiyang Xu, Sheng Hu, Lei Ye, Weiming Cheng, Qiang He and Xiangshui Miao

