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Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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IN THIS ISSUE

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Cover
See L. Marciniak *et al.*, pp. 6793–6804. Image reproduced by permission of L. Marciniak from *J. Mater. Chem. C*, 2024, **12**, 6793.

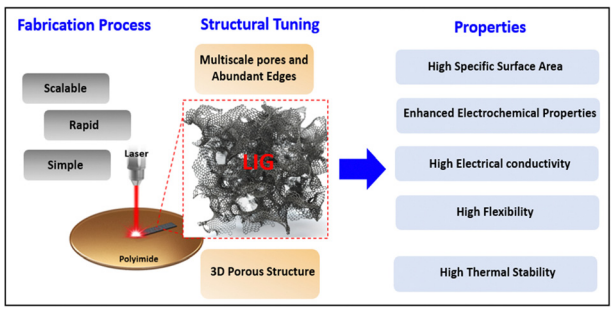
Inside cover
See Mickael Dollé, W. G. Skene *et al.*, pp. 6805–6815. Image reproduced by permission of Aidee Sea from *J. Mater. Chem. C*, 2024, **12**, 6805.

REVIEWS

6718

Laser-induced graphene: synthesis advances, structural tailoring, enhanced properties, and sensing applications

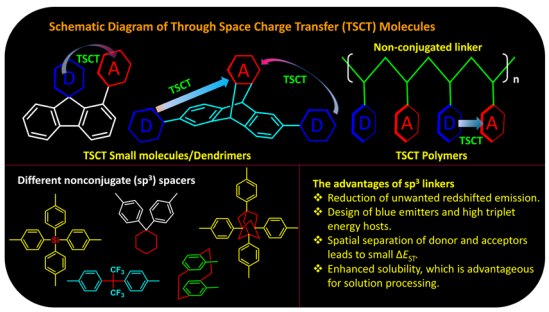
Shirin Movaghgharnezhad* and Pilgyu Kang*



6743

Unveiling the potential of nonconjugate linkers (sp^3-cores) in through-space charge transfer emitters and host materials for thermally activated delayed fluorescence organic light emitting diodes

Purusottam Reddy Bommireddy, Chandra Sekhar Musalikunta, Young-Woong Lee, Youngsuk Suh, Mallesham Godumala* and Si-Hyun Park*



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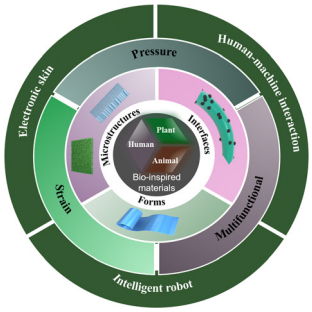
REVIEWS

6770

The role of bio-inspired micro-/nano-structures in flexible tactile sensors

Xiyao Fu, Hao Xu, Jie Fan, Yonggang Zou,* Wei Han* and Lili Wang*

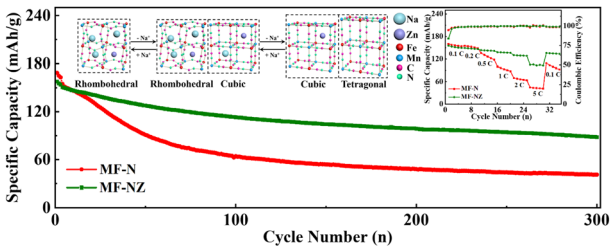


COMMUNICATION

6785

Introducing zinc ions into manganese-based Prussian blue for improving the structural stability of sodium-ion batteries

Hongyu Cheng, Yinping Qin, Yi-Nuo Liu, Zhuo-Er Yu, Ruyi Li, Riming Chen, Jingjing Zhou, Yang Liu* and Bingkun Guo*

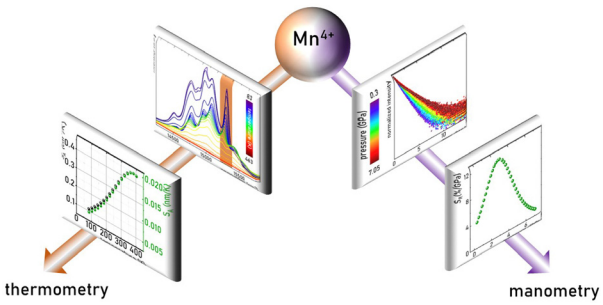


PAPERS

6793

A highly sensitive lifetime-based luminescent manometer and bi-functional pressure–temperature sensor based on a spectral shift of the R-line of Mn^{4+} in $K_2Ge_4O_9$

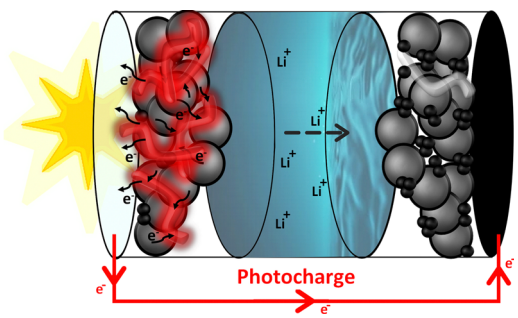
M. Szymczak, W. M. Piotrowski, P. Woźny, M. Runowski and L. Marciniak*



6805

A multifunctional binder capable of harvesting light, electronic transport, and photocharging a lithium-ion photobattery

Elsa Briqueleur, Mickael Dollé* and W. G. Skene*



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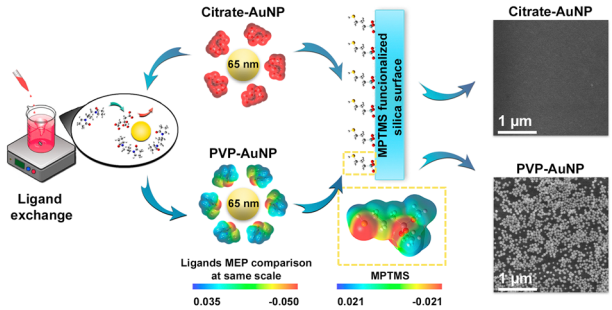
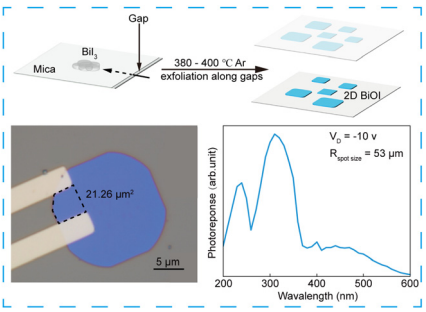
6816



Enhancing gold nanoparticle immobilization on thiolated silica: utilizing neutral ligands to achieve maximum surface coverage for improved SERS substrates

Orisson P. Gomes, Sanggon Kim,* Paulo N. Lisboa-Filho, Augusto Batagin-Neto, Yves De Koninck and Younes Messaddeq*

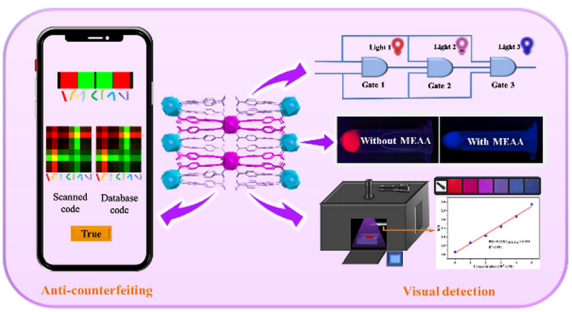
6826



Synthesis of large-area high quality 2D BiOI for highly sensitive ultraviolet photodetection

Yixiang Li, Zhipeng Fu, Bicheng Wang, Yu Yao, Jiashuai Yuan, Meng Li, Xu He* and Wei Liu*

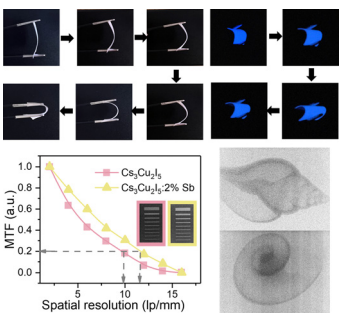
6831



Robust lanthanide MOFs as multifunctional luminescent sensors for intelligent visualization monitoring of MEAA and texture code anti-counterfeiting applications

Hui-Min Yang, Guo-Ping Yang* and Yao-Yu Wang*

6841



Sb-enhanced $Cs_3Cu_2I_5$ scintillators for ionizing radiation detection

Yuwei Li, Haitao Tang, Bin Yu, Zhu Wang,* Gaokui He* and Qianqian Lin*

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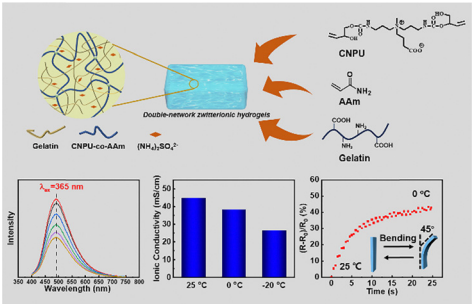
PAPERS

6849

The design of multi-functional ionic hydrogels with anti-freezing, temperature response and luminescence properties

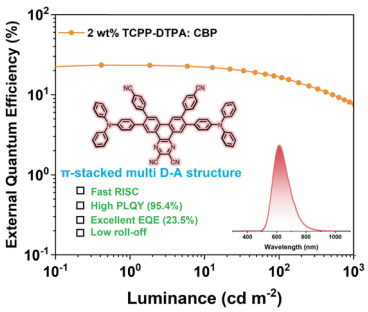
Yutong Ding, Weikun Xu, Tairong Kuang, Mi Ouyang and Feng Chen*



6858

A red thermally activated delayed fluorescence emitter with mitigated efficiency roll-off *via* a π-stacked multiple donor–acceptor structure

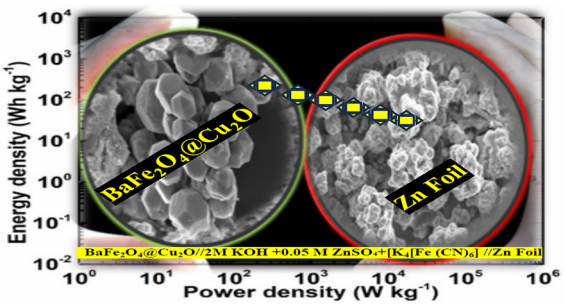
Min Song, You-Jun Yu, Zi-Qi Feng, Zhi-Hao Qu, Peng Zuo, Hong-Yan Yan, Zuo-Quan Jiang, Dong-Ying Zhou* and Liang-Sheng Liao*



6865

Redox electrolyte mediated performance enhancement in aqueous zinc ion hybrid supercapacitors composed of spinel $BaFe_2O_4$ and cubic Cu_2O

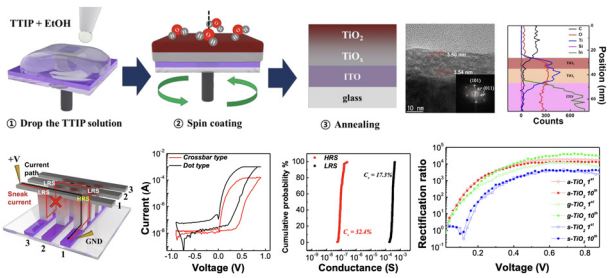
Sevda Yetiman, Fatma Kilic Dokan,* M. Serdar Onses, Erkan Yilmaz, Ahmet Turan Ozdemir and Ertugrul Sahmetlioglu*



6881

A facile solution processible self-rectifying and sub-1 V operating memristor *via* oxygen vacancy gradient within a TiO_2 single layer

Min Ho Park, Jun Hyung Jeong, Wonsik Kim, Soohyung Park, Byeong Min Lim, Hong-Sub Lee and Seong Jun Kang*



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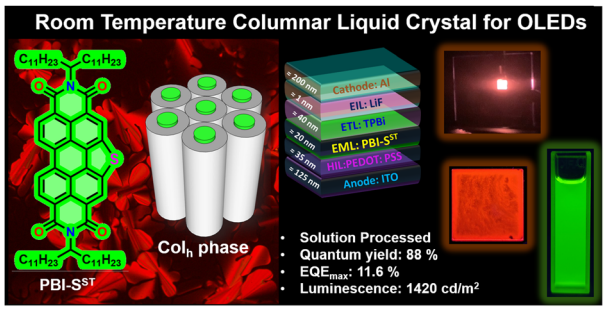
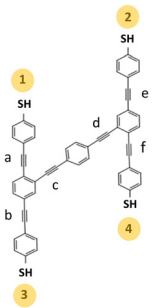
6893



Highly fluorescent room temperature liquid crystalline S-annulated swallow tail perylene bisimide exhibiting enhanced electroluminescence (EQE > 11%)

Paresh Kumar Behera, Sushanta Lenka, Feng-Rong Chen, Prakalp Gautam, Iram Siddiqui, D. S. Shankar Rao, Jwo-Huei Jou* and Ammathnadu Sudhakar Achalkumar*

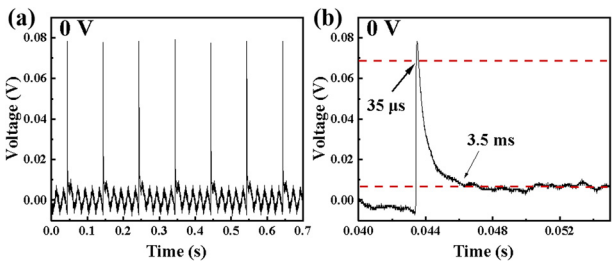
6905



Tuning quantum interference through molecular junctions formed from cross-linked OPE-3 dimers

Bashayr Alanazi, Asma Alajmi, Alaa Aljobory, Colin Lambert and Ali Ismael*

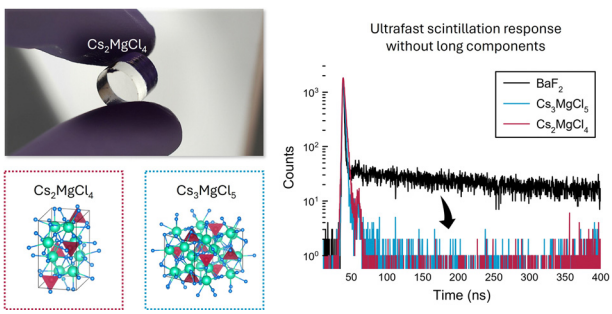
6911



Performance optimization of self-powered ultraviolet and short-wavelength blue photodetectors based on ZnO/$SrTiO_3$ heterojunctions by annealing treatment

Lujia Cong,* Yurui Han, Huimin Zhao, Chunyue Gao, Wei Zhang, Shan Zhang and Hongbin Wang*

6920



New ultrafast scintillators with core valence luminescence: Cs_2MgCl_4 and Cs_3MgCl_5

Daniel Rutstrom,* Luis Stand, Dylan Windsor, Haixuan Xu, Maciej Kapusta, Charles L. Melcher and Mariya Zhuravleva

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PAPERS

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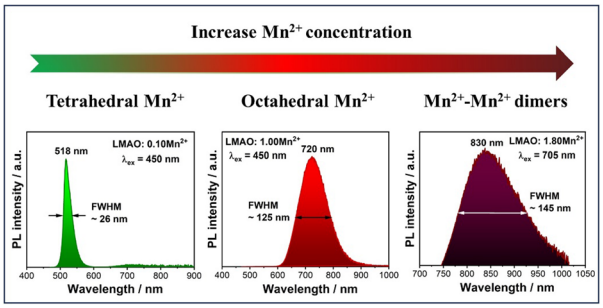
Luminescence analysis of heavily Mn^{2+}-doped $LaMgAl_{11}O_{19}$ phosphors: crystallographic site occupation and the formation of Mn^{2+}–Mn^{2+} dimers

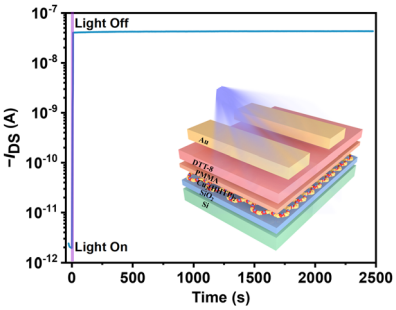
Chenyang Zhan, Haomiao Zhu,* Sisi Liang, Yingping Huang, Wendong Nie, Zihao Wang and Maochun Hong*



6943

MOF-enabled high-density 2D molecular crystal optoelectronic memory transistor with floating gate architecture

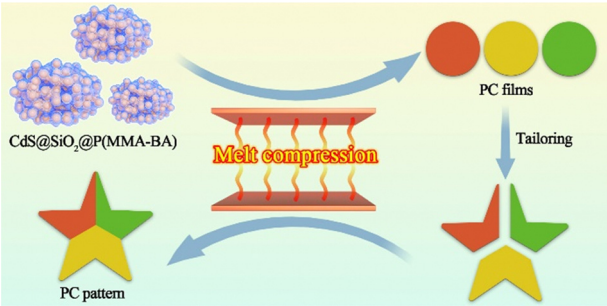
Shaosong Gao, Yiwen Ren, Dong Zhang, Xianshuo Wu, Yidi Xie, Lingjie Sun, Rongjin Li, Fangxu Yang* and Wenping Hu



6952

Fabrication of flexible and robust CdS composite photonic crystal films through melt-compression

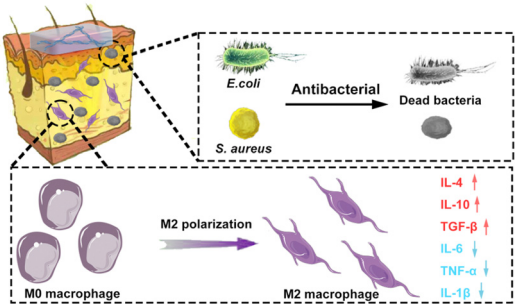
Chengcai Wu, Qianyao Fang, Jiahao Li and Xin Su*



6961

Chiral hydrogels facilitate rapid diabetic wound healing by promoting macrophage M2 polarization and cellular proliferation

Yi-Ping Hu, Kui Xiao, Ma-Chao Si, Cai-Xia Wang, Yong Miao* and Zhi-Qi Hu*



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PAPERS

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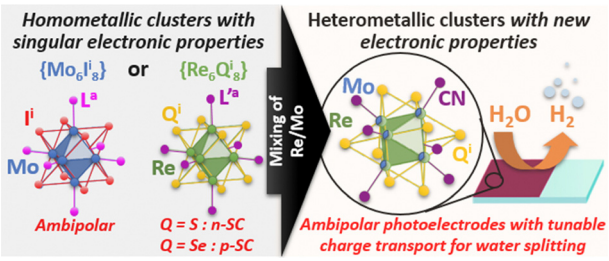
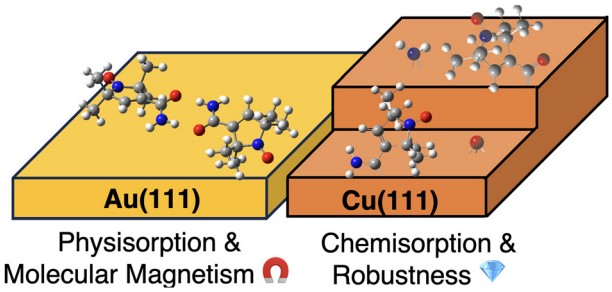


Heterometallic $\{Re_4Mo_2Q^i_8\}$ cluster-based building blocks: towards the rational nanoarchitectonics of optimized photoelectrodes for solar cells and water splitting

Tatiana I. Lappi, Stéphane Cordier,* Yakov M. Gayfulin, Soraya Ababou-Girard, Ngan T. K. Nguyen, Fabien Grasset, Tetsuo Uchikoshi, Nikolay G. Naumov and Adèle Renaud*

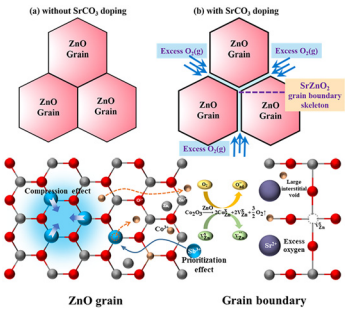
6985



Evidence for efficient anchoring in nitroxyl radical thin films: an experimental XPS/NEXAFS and theoretical DFT/TD-DFT study

Roberta Totani,* Ivan Ljubić,* Sascha L. Mehl, Viacheslav Kalinovych, Matteo Jugovac, Gabriele Bonano, Alessandra Ciavardini, Cesare Grazioli, Federico Galdenzi, Sergio D'Addato, Monica de Simone, Polina M. Sheverdyaeva, Paolo Moras, Nataliya Tsud and Marcello Coreno

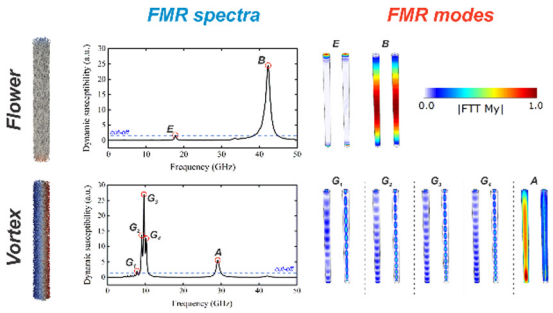
6999



Research method and mechanism analysis of a novel high-performance quaternary Zn–Sr–Co–Sb varistor ceramic

Kai Wang, Zhijun Xu,* Ruiqing Chu and Guorong Li

7009



Tailoring ferromagnetic resonance properties of cobalt nanowires: effects of shape and magnetocrystalline anisotropies

Martín I. Broens,* Eduardo Saavedra,* Enzo F. Pusiol, Noelia Bajales and Juan Escrig

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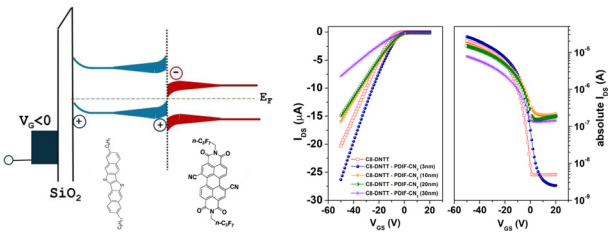
PAPERS

7017

Interfacial charge doping effect in C8-DNTT/PDIF-CN_2 heterojunction field-effect transistors

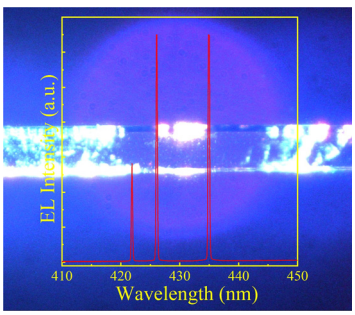
Fabio Chiarella,* Antonio Carella, Antonio Cassinese and Mario Barra*



7029

An electrically driven exciton–polariton microlaser diode based on a ZnO:Ga microribbon heterojunction

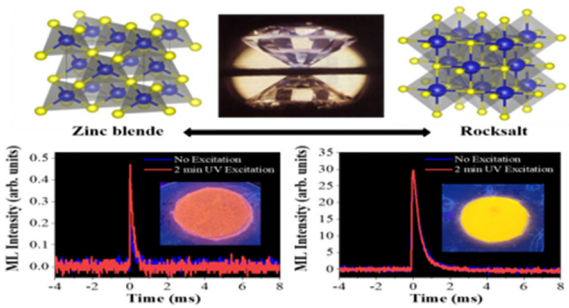
Yuzhou Sun, Mingming Jiang,* Maosheng Liu, Kai Tang, Peng Wan, Binghui Li,* Dezhen Shen and Chongxin Shan*



7041

Temperature and pressure dependent luminescence mechanism of a zinc blende structured ZnS:Mn nanophosphor under UV excitation

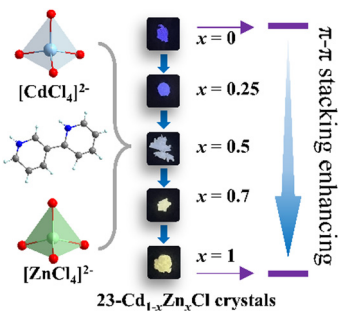
Ajeesh Kumar Somakumar, Yaroslav Zhydachevskyy, Damian Wlodarczyk, Syed Shabhi Haider, Justyna Barzowska, Kodavamparambil Rajagopalan Bindu, Yadhu Krishnan Edathumkandy, Tatiana Zayarniuk, Andrzej Szewczyk, Saranya Narayanan, Anastasiia Lysak, Hanka Przybylinska, Edathottiyil Issac Anila and Andrzej Suchocki*



7053

Tailoring the π–π stacking interaction among organic cations in hybrid metal halide crystals towards tunable light emission

Qi Zhang, Xinyi Lin, Shanji Guo, Yaqing Zhang, Yan Jiang, Wei Zhang, Hui Li, Ya-Nan Feng, Lingyun Li,* Zheyuan Liu* and Yan Yu*



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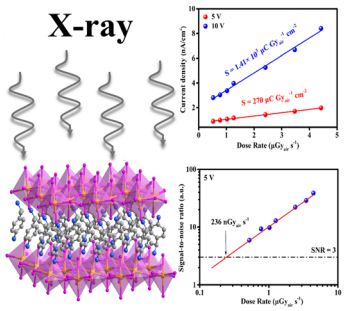
PAPERS

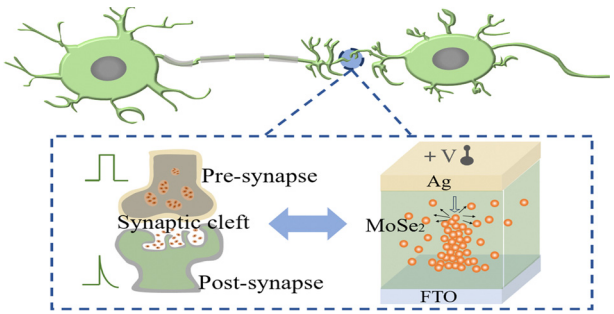
7062



Exploring centimeter-sized single crystals of a 2D Dion–Jacobson halide perovskite toward efficient X-ray detection

Yipeng Fan, Jiayi Chen, Xinping Ouyang* and Shuhua Zhang*

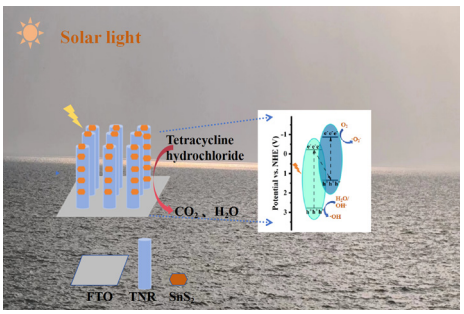
7068



High-performance artificial synapses based on two-dimensional $MoSe_2$ powder with Se vacancies

Xinci Chen, Li Deng, Feifei Luo, Yanzhao Wu, Fubo Tian and Xianmin Zhang*

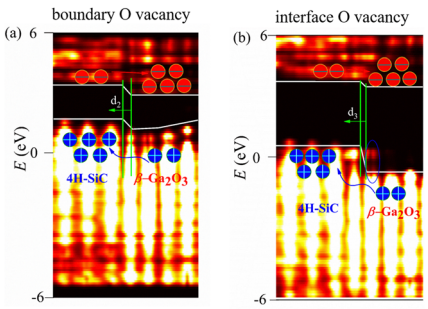
7079



Construction of a SnS_2/TiO_2 S-scheme heterostructure photocatalyst for highly efficient photocatalytic degradation of tetracycline hydrochloride

Sheng Ding, Wei Gan, Jun Guo, Ruixin Chen, Run Liu, Ziwei Zhao, Jianrou Li, Miao Zhang* and Zhaoqi Sun*

7095



Engineered interface states and optical absorption of β-Ga_2O_3/4H-SiC heterojunctions by irradiation-induced oxygen defects from first-principles

Xiaoning Zhang, Xi Liang, Haoyu Dong, Jia-Yue Yang* and Linhua Liu*

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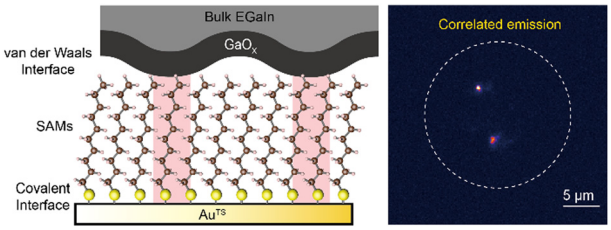
PAPERS

7103

Revealing the correlation relation between conducting channels in self-assembled monolayer tunnel junctions

Shu Zhu, Xiang Li, Wenrui Xu, Qianqian Guo, Wei Du* and Tao Wang*



CORRECTION

7110

Correction: Saturated-blue-emitting [3+2+1] coordinated iridium(III) complexes for vacuum-deposited organic light-emitting devices

Meng Zhang, Maggie Ng, Chengcheng Wu, Kai-Ning Tong, Wansi Li, Yuan Wu, Chen Yang,* Min Wang, Man-Chung Tang* and Guodan Wei*