

# Journal of Materials Chemistry C

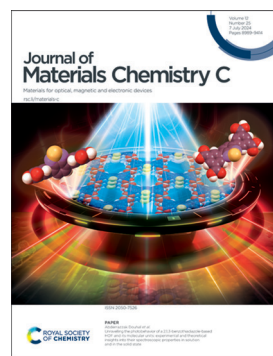
Materials for optical, magnetic and electronic devices

[rsc.li/materials-c](https://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 JMCCCC 12(25) 8989-9414 (2024)



### Cover

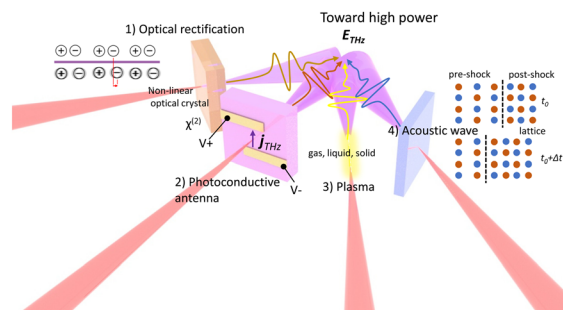
See Abderrazzak Douhal  
*et al.*, pp. 9112–9129.  
Image reproduced  
by permission of  
Abderrazzak Douhal from  
*J. Mater. Chem. C*,  
2024, 12, 9112.

## REVIEWS

9002

### Toward high-power terahertz radiation sources based on ultrafast lasers

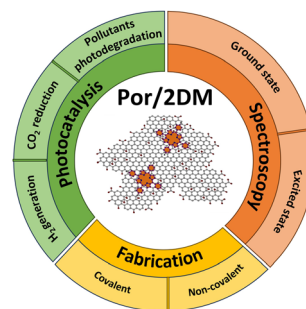
Won Jin Choi,\* Michael R. Armstrong, Jae Hyuck Yoo and Taeil Lee



9012

### When porphyrins meet 2D materials: spectroscopic and photocatalytic properties

Aleksandra Lindner, Aleksandra Lesniewicz, Aleksander Kolman, Daria Larowska-Zarych, Bronislaw Marciniak and Anna Lewandowska-Andralojc\*



# Advance your career in science

with professional recognition that showcases  
your **experience, expertise and dedication**

## Stand out from the crowd

Prove your commitment  
to attaining excellence in  
your field

## Gain the recognition you deserve

Achieve a professional  
qualification that inspires  
confidence and trust

## Unlock your career potential

Apply for our professional  
registers (RSci, RSciTech)  
or chartered status  
(CChem, CSci, CEnv)

## Apply now

[rsc.li/professional-development](https://rsc.li/professional-development)

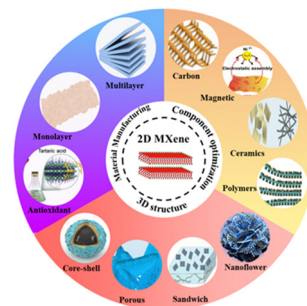


## REVIEWS

9068

### A review on MXene-based microwave absorption composites: engineering, component optimization and structure regulation

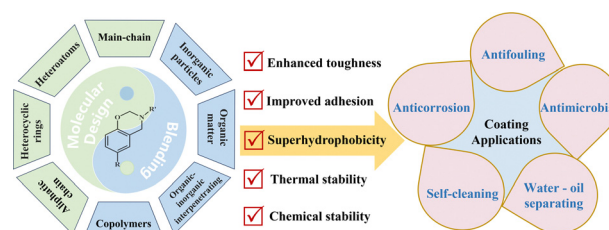
Yizhi Ma, Sainan Wei,\* Ruixue Liu, Luning Sun and Wei Wang



9094

### Advancing coatings with polybenzoxazines: insights into molecular design, synthesis, and modification

Jing Song, Hongrui Liang, Yu Cao, Mengyao Wang and Zhi Wang\*

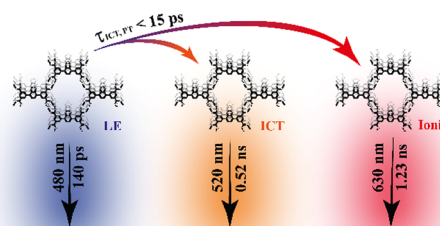


## PAPERS

9112

### Unravelling the photobehavior of a 2,1,3-benzothiadiazole-based HOF and its molecular units: experimental and theoretical insights into their spectroscopic properties in solution and in the solid state

Mario de la Hoz Tomás, Juan Ángel Organero, Maria Rosaria di Nunzio, Taito Hashimoto, Ichiro Hisaki and Abderrazzak Douhal\*

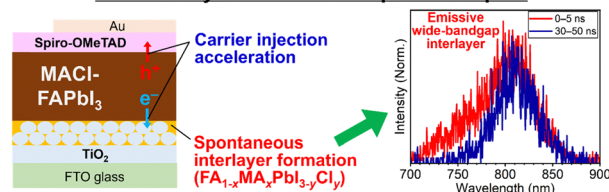


9130

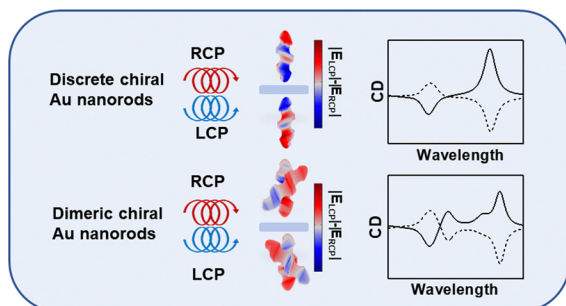
### Unveiled effects of the methylammonium chloride additive on formamidinium lead halide: expediting carrier injection from the photoabsorber to carrier transport layers through spontaneously modulated heterointerfaces in perovskite solar cells

Naoyuki Nishimura,\* Ranjan Kumar Behera, Ryuzi Katoh, Hiroyuki Kanda, Takuro N. Murakami and Hiroyuki Matsuzaki\*

#### Spontaneous heterointerface modulation by MACl additive revealed by time-resolved spectroscopies



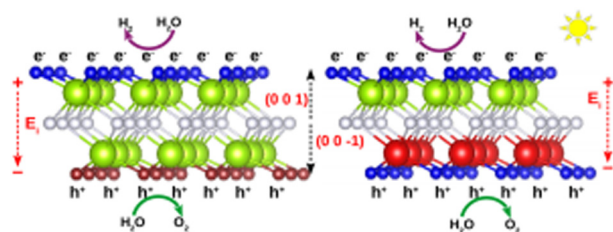
9139



### Discrete and dimeric chiral plasmonic nanorods: intrinsic chirality and extrinsic chirality

Weiwei Fu, Jiaqi Chen, Shunping Zhang, Guangchao Zheng\* and Yuan Zhang\*

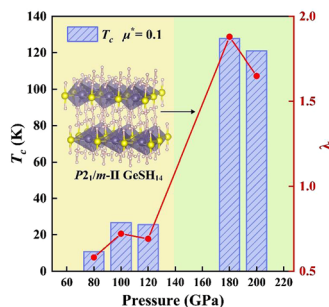
9146



### Computational study based prediction of new photocatalysts for water splitting by systematic manipulation of MXene surfaces

Swati Shaw\* and Subhradip Ghosh\*

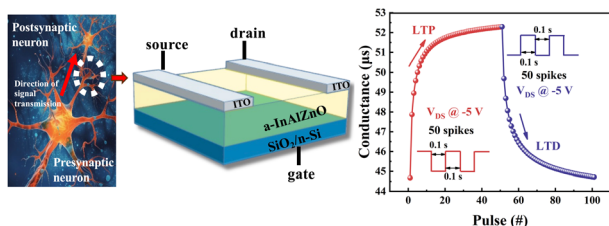
9158



### Orientated hydrogen chains favor superconductivity in germanium sulfur hydrides

Xiaojun Wang, Xiao Tang, Limin Shi, Xin Chen\* and Xiaobing Liu

9165



### Artificial neurosynaptic device based on amorphous oxides for artificial neural network constructing

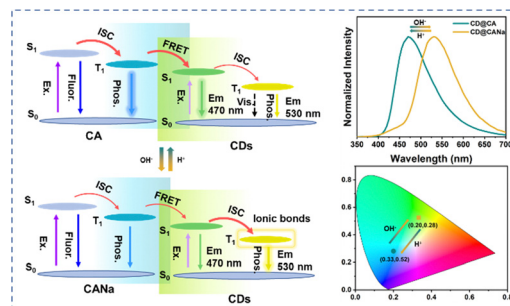
Qiujiang Chen, Ruqi Yang, Dunan Hu, Zhizhen Ye and Jianguo Lu\*



9175

### Achieving a colour-tuneable afterglow through pH-responsive exciton transfer channels in a carbon dot matrix system

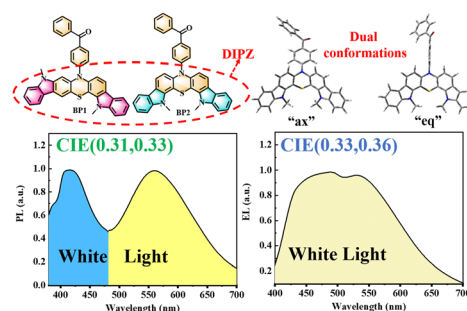
Jing Tan, Hailing Gu, Dengke Cheng, Daiqi Yang, Chi Xiao, Yi Li, Yaobin Ouyang, Changchao Zhu, Songnan Qu and Qijun Li\*



9182

### Single-molecule white organic light-emitting diodes based on dual-conformation diindolophenthiazine derivatives

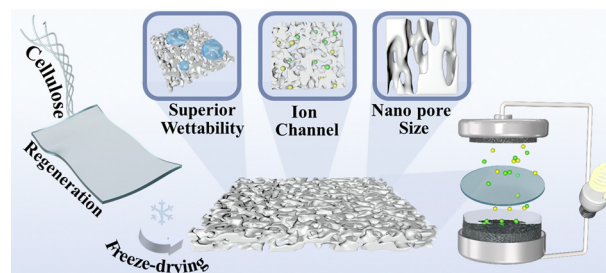
Juan Rui, Junrong Pu, Zijian Chen, Hao Tang, Lingyun Wang, Shi-Jian Su\* and Derong Cao\*



9189

### Enhanced ion transport in ultrathin regenerated cellulose supercapacitor separators

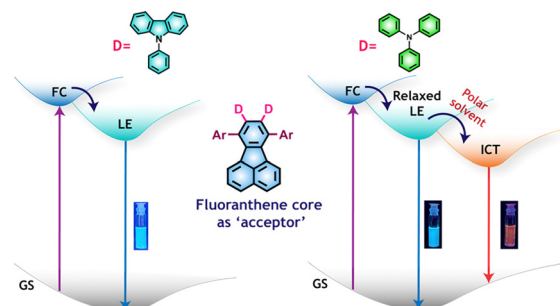
Haocun Huang, Hongqin Wu, Xiao Zhang, Huilin Dong, Sheng Chen, Yanglei Xu\* and Feng Xu\*



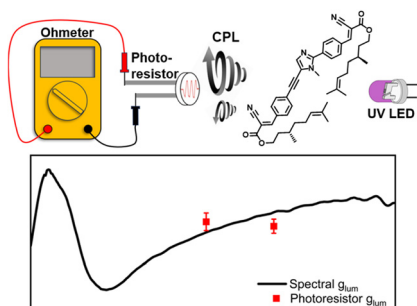
9200

### Deciphering intramolecular charge transfer in fluoranthene derivatives

Sanchari Debnath, Aisworika Mohanty, Praveen Naik, Ulrike Salzner, Jyotishman Dasgupta\* and Satish Patil\*



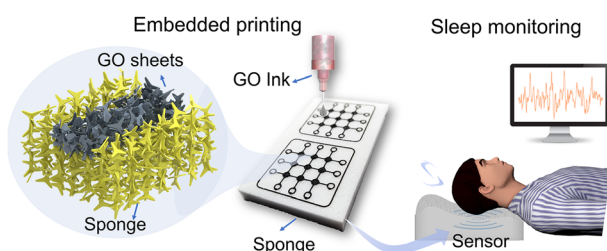
9210



### Strong chiroptical properties from thin films of chiral imidazole derivatives allowing for easy detection of circularly polarized luminescence

Andrea Taddeucci, Caterina Campinoti, Francesca Sardelli, Gennaro Pescitelli, Lorenzo Di Bari, Marco Lessi\* and Francesco Zinna\*

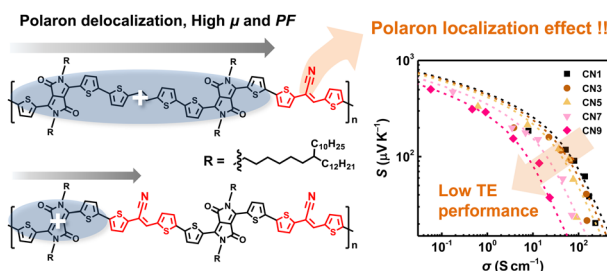
9217



### Embedded printing of graphene sponge sensors for sleep monitoring

Wenbo Li, Jing Liu, Zhiyuan Sun, Jiabing Zhang, Jing Li, Jiawei Wang, Xintao Wu, Jiongli Li, Meng Su, Teng Han, Xudong Wang\* and Zhandong Huang\*

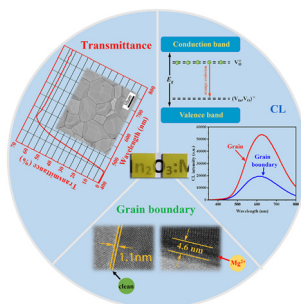
9227



### Influence of the electronic structures of diketopyrrolopyrrole-based donor-acceptor conjugated polymers on thermoelectric performance

Sang Beom Kim, Seunghoon Song, Taek Seong Lee, Muhamad Kiki Afindia Joenata, Eui Hyun Suh, Yong Jin Jeong,\* Jaeyoung Jang\* and Yun-Hi Kim\*

9236



### Insights into the roles of the MgO additive in crystal structures, sintering behaviors, and optical properties of transparent In<sub>2</sub>O<sub>3</sub> semiconductor ceramics

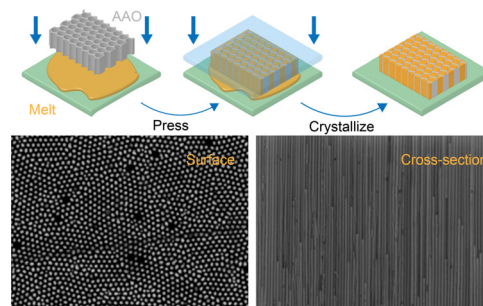
Bo You, Bin Lu,\* Dazhen Wu and Ruijie Pei



9247

### Templated synthesis of CsPbBr<sub>3</sub> nanowire arrays toward low dark current drift and stable X-ray detectors

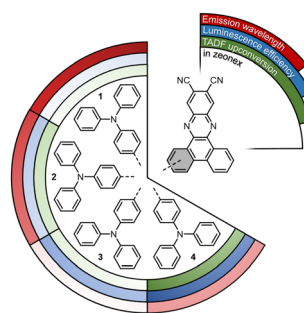
Zhaolin Song, Menghua Zhu,\* Sixin Chen, Meng Xu and Wanqi Jie



9255

### Isomeric modulation of thermally activated delayed fluorescence in dibenzo[a,c]phenazine-based (deep) red emitters

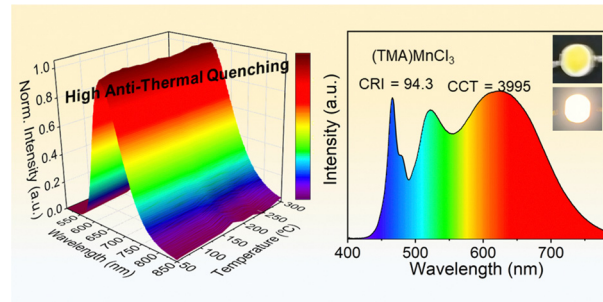
Sonny Brebels, Tom Cardeynals, Louis Jackers, Suman Kuila, Huguette Penxten, Rebecca J. Salthouse, Andrew Danos,\* Andrew P. Monkman, Benoît Champagne and Wouter Maes\*



9266

### Near-unity PLQY and high anti-thermal quenching red luminescence from one-dimensional hybrid manganese chloride for efficient and stable white light-emitting diodes

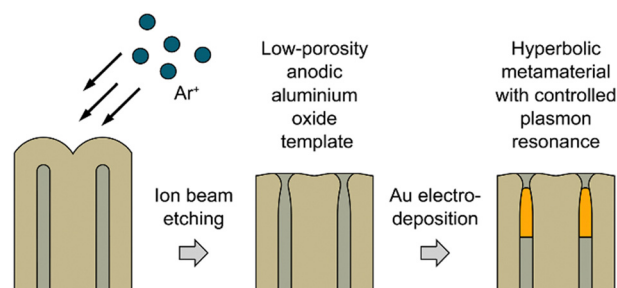
Binbin Su,\* Maxim S. Molokeev, Ran Chen and Tao Zhang



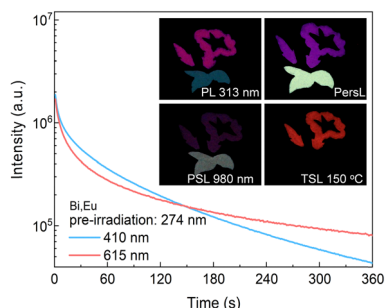
9274

### Ion beam etching of anodic aluminium oxide barrier layer for Au nanorod-based hyperbolic metamaterials

Alexey P. Leontiev, Stepan V. Sotnichuk, Alexey A. Klimenko, Irina V. Malysheva, Irina A. Kolmychek, Alexander M. Mumlyakov, Iliia I. Tsiniakin, Tatiana V. Murzina and Kirill S. Napolskii\*



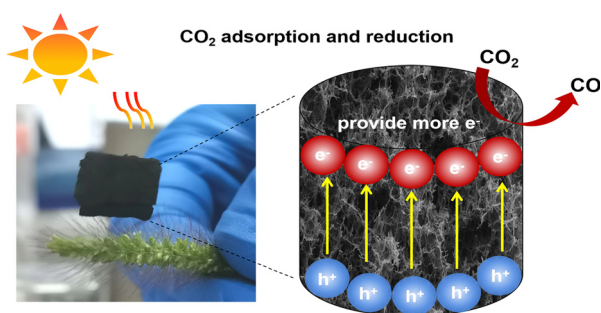
9284



### Deep trap engineering in $\text{Gd}_3\text{GaO}_6:\text{Bi}^{3+}$ persistent phosphors through co-doping lanthanide ions

Chengxue Du, Dangli Gao,\* Xiaochun Hou, Xiangyu Zhang, Qing Pang and Sining Yun

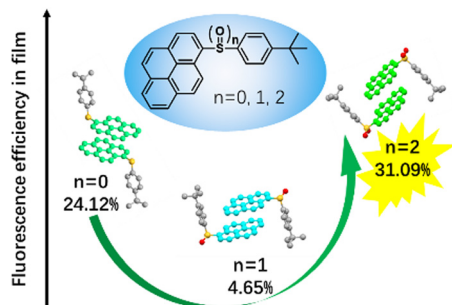
9293



### Effects of N,S doping on a graphene oxide aerogel for adsorption and photocatalytic reduction of carbon dioxide

Yuhan Liu, Jing Shang\* and Tong Zhu

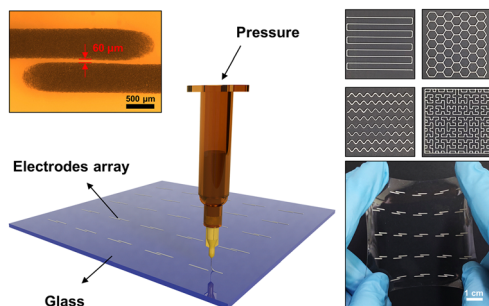
9305



### Tailoring pyrene excimer luminescence via controlled sulfur oxidation

Zhou-An Xia, Mingming Yao, Shiyin Wang, Daojie Yang, Ziyuan Wang, Ruiya Wu, Shi-Tong Zhang, Haichao Liu\* and Bing Yang\*

9312



### Rubbery stretchable conductors based on 3D printed silver nanowires and their application in wearable optoelectronic devices

Xingliang Xu, Yu-Dong Zhao, Junmei Hu, Wei-Chen Gao, Jing Qiao, Xuanbo Chen, Ying-Shi Guan,\* Hong Yang\* and Quan Li\*

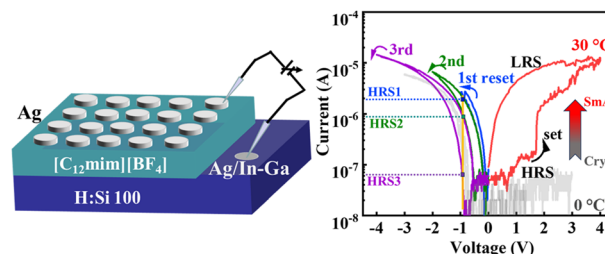




9321

### Near room temperature multilevel resistive switching memory with thin film ionic liquid crystals

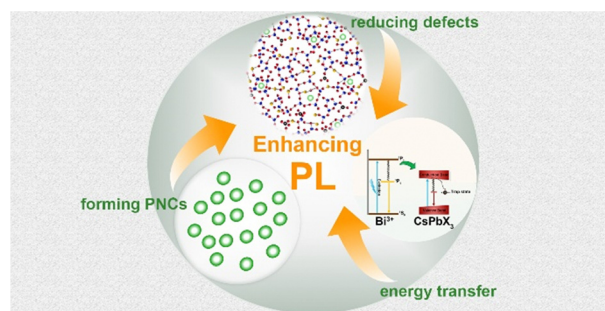
Wenzhong Zhang, Shingo Maruyama,\* Kenichi Kaminaga and Yuji Matsumoto



9328

### Enhanced optical properties of CsPbX<sub>3</sub> (X = Cl, Br, and I) perovskite nanocrystal glasses through bismuth doping for light-emitting applications

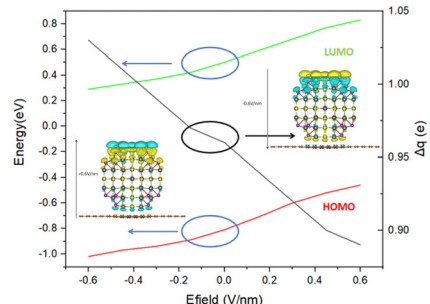
Liping Wang, Yuqiong Wang, Zaiqi Liu, Yu Dong, Puxian Xiong, Chang Xu,\* Wen Gao\* and Bo Tang\*



9339

### A first-principles study of optoelectronic properties and electric field modulation in PbS quantum dot/graphene hybrid systems

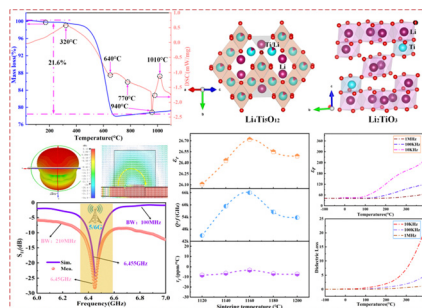
YuXuan Du, ZhuoMan Wang, Chao Wu, JiJie Zhao, Shuai Wen, Shengyong Wang and Huan Liu\*



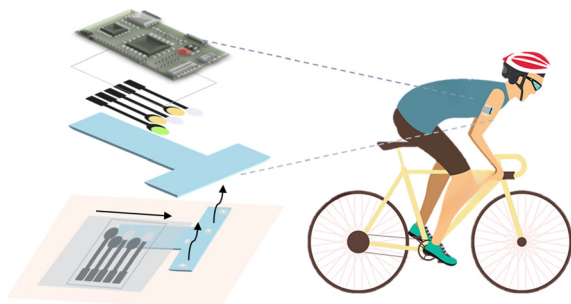
9353

### Temperature-stable Li<sub>4</sub>Ti<sub>3</sub>O<sub>8</sub> composite microwave dielectric ceramics and their applications in dielectric resonator antennas

Linzhao Ma, Chao Zhang, Zitong Zhao, Guo Tian, Gaosheng Li\* and Hao Li\*



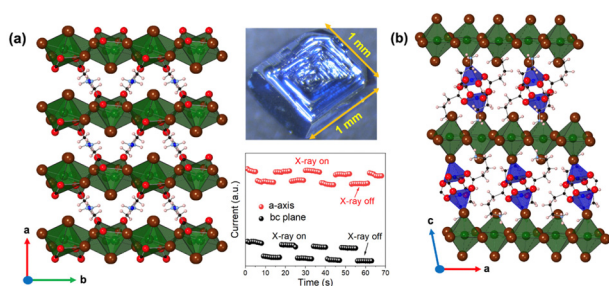
9363



### An integrated leather-based fluid transport wearable sweat device for electrolyte balance monitoring

Tong Zhou, Shi Hu, Wenhui Ji, Yuning Liu, Rui Zhang, Huanzhan Liu, Feng Wang, Jingyu Zhu, Chao Tao, Baoli Zha, Jiansheng Wu\* and Fengwei Huo

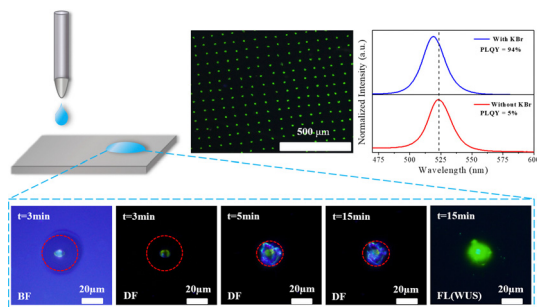
9372



### Structural and physical properties of two distinct 2D lead halides with intercalated Cu(II)

Kanika Parashar, Zheng Zhang, Volodymyr Buturlim, Jie Jiang, Alexander Roseborough, May Nyman, Krzysztof Gofryk, Ruth Pachter and Bayram Saparov\*

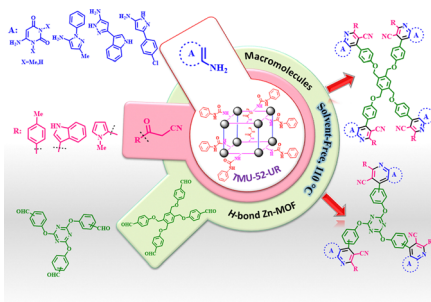
9385



### Highly efficient and stable $\text{Cs}_4\text{PbBr}_6@\text{KBr}$ color conversion films constructed through inkjet printing technology

Yue Zhai, Kecheng Dai, Tongtong Xuan, Wenhao Bai, Shuchen Shi, Hong Zhang, Rongjun Xie\* and Le Wang\*

9392



### Postsynthetic modification of a Zn-MOF to yield an efficient H-bond catalyst in the preparation of biologically active macromolecules

Elham Tavakoli, Hassan Sephehrmansourie, Mahmoud Zarei,\* Mohammad Ali Zolfigol,\* Ardeshir Khazaei, Abdolmajid Mohammadzadeh and Elaheh Ghytasranjbar

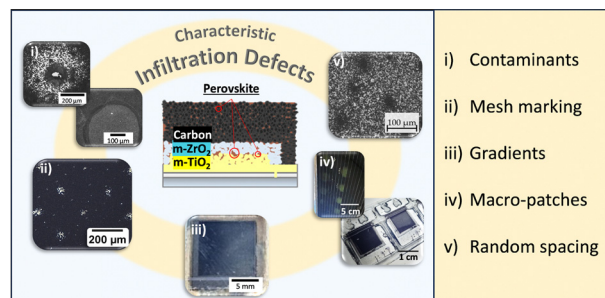


## PAPERS

9401

**Infiltration issues in printed mesoporous carbon perovskite solar cells: a troubleshooting guide**

C. A. Worsley,\* T. Dunlop, S. J. Potts, R. Bolton, E. Jewell and T. M. Watson\*



- i) Contaminants
- ii) Mesh marking
- iii) Gradients
- iv) Macro-patches
- v) Random spacing

## CORRECTION

9412

**Correction: Time-dependent phosphorescence color of carbon dots in boric acid matrix for dynamic information encryption**

Xiaopeng Wang, Shixin Xie, Liangliang Tao, Mengting Ouyang and Xiangying Sun\*

