

Journal of Materials Chemistry C

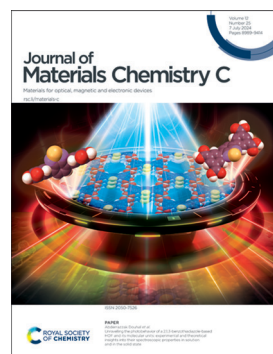
Materials for optical, magnetic and electronic devices

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 12(25) 8989-9414 (2024)



Cover

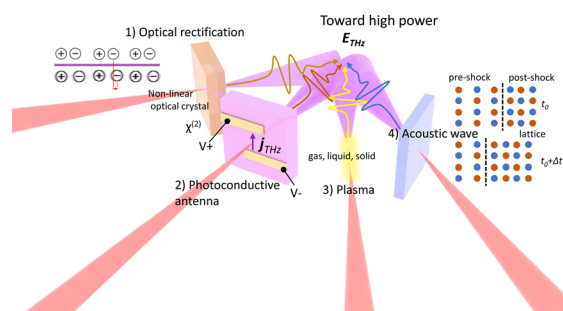
See Abderrazzak Douhal
et al., pp. 9112–9129.
Image reproduced
by permission of
Abderrazzak Douhal from
J. Mater. Chem. C,
2024, 12, 9112.

REVIEWS

9002

Toward high-power terahertz radiation sources based on ultrafast lasers

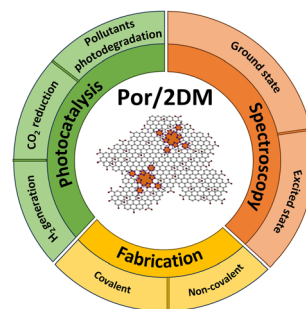
Won Jin Choi,* Michael R. Armstrong, Jae Hyuck Yoo and Taeil Lee



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

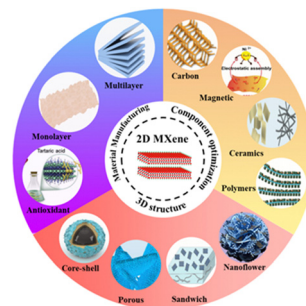


REVIEWS

9068

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

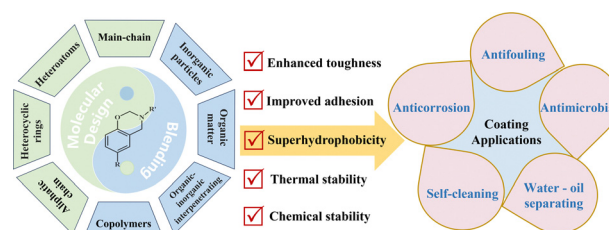
Yizhi Ma, Sainan Wei,* Ruixue Liu, Luning Sun and Wei Wang



9094

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

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

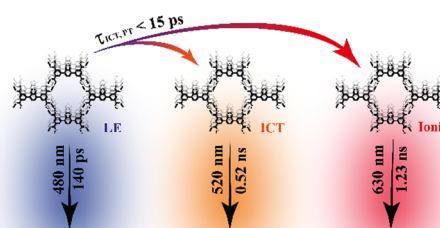


PAPERS

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*

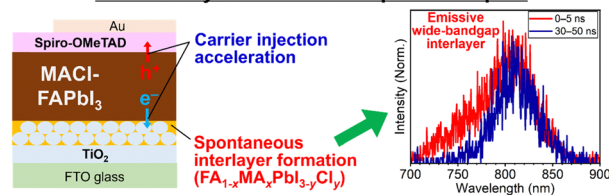


9130

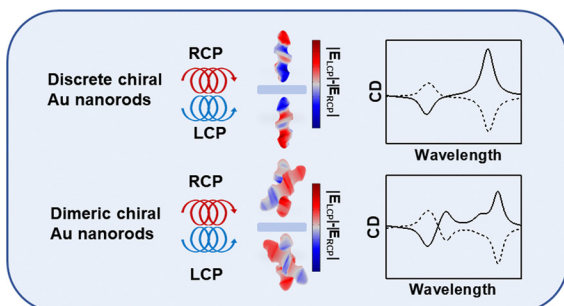
Unveiled effects of the methylammonium chloride additive on formamidinium lead halide: expediting carrier injection from the photoabsorber to carrier transport layers through spontaneously modulated heterointerfaces in perovskite solar cells

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



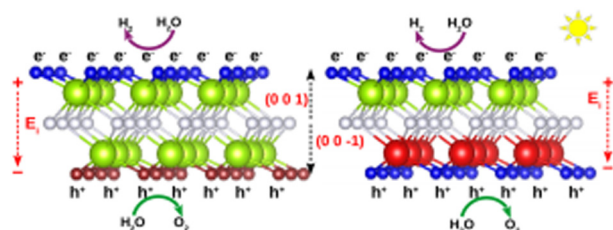
9139



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

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

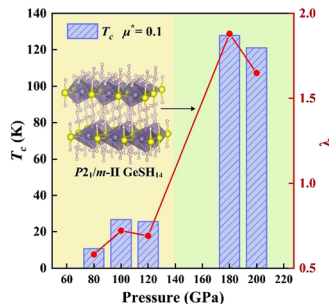
9146



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

Swati Shaw* and Subhradip Ghosh*

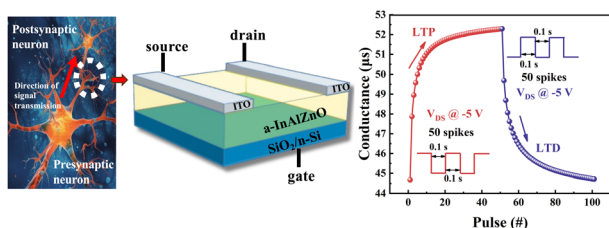
9158



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

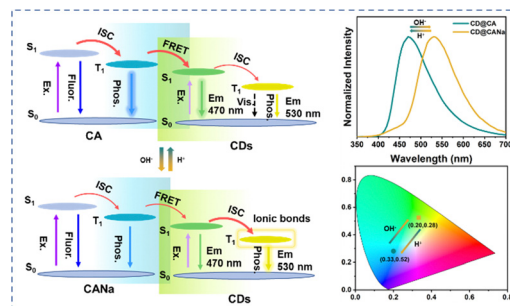
Qiujiang Chen, Ruqi Yang, Dunan Hu, Zhizhen Ye and Jianguo Lu*



9175

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

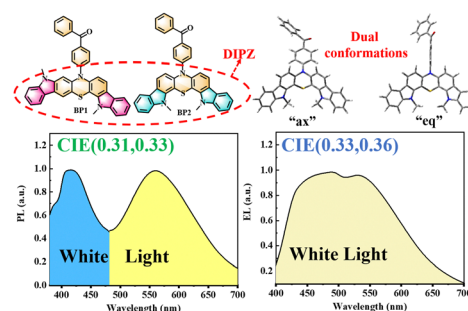
Jing Tan, Hailing Gu, Dengke Cheng, Daiqi Yang, Chi Xiao, Yi Li, Yaobin Ouyang, Changchao Zhu, Songnan Qu and Qijun Li*



9182

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

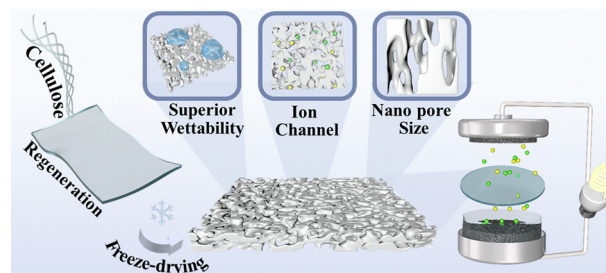
Juan Rui, Junrong Pu, Zijian Chen, Hao Tang, Lingyun Wang, Shi-Jian Su* and Derong Cao*



9189

Enhanced ion transport in ultrathin regenerated cellulose supercapacitor separators

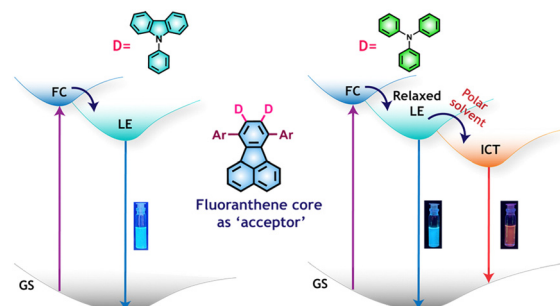
Haocun Huang, Hongqin Wu, Xiao Zhang, Huilin Dong, Sheng Chen, Yanglei Xu* and Feng Xu*



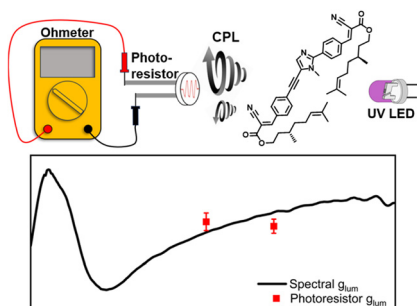
9200

Deciphering intramolecular charge transfer in fluoranthene derivatives

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



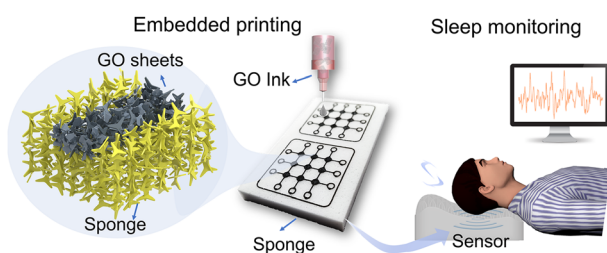
9210



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*

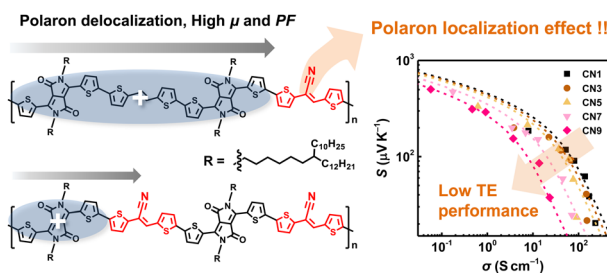
9217



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*

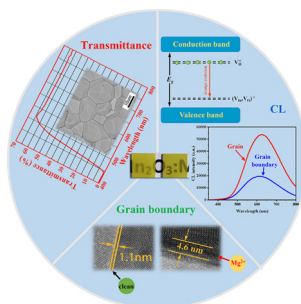
9227



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 In₂O₃ semiconductor ceramics

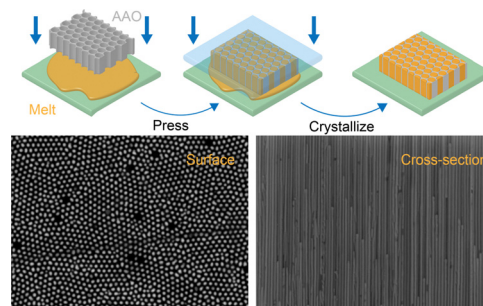
Bo You, Bin Lu,* Dazhen Wu and Ruijie Pei



9247

Templated synthesis of CsPbBr₃ nanowire arrays toward low dark current drift and stable X-ray detectors

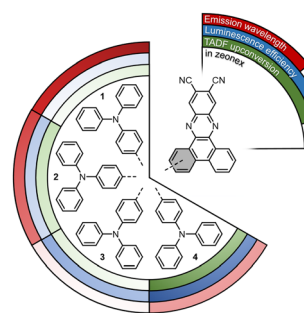
Zhaolin Song, Menghua Zhu,* Sixin Chen, Meng Xu and Wanqi Jie



9255

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

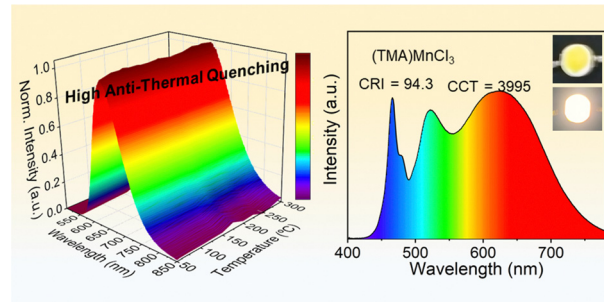
Sonny Brebels, Tom Cardeynals, Louis Jackers, Suman Kuila, Huguette Penxten, Rebecca J. Salthouse, Andrew Danos,* Andrew P. Monkman, Benoît Champagne and Wouter Maes*



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

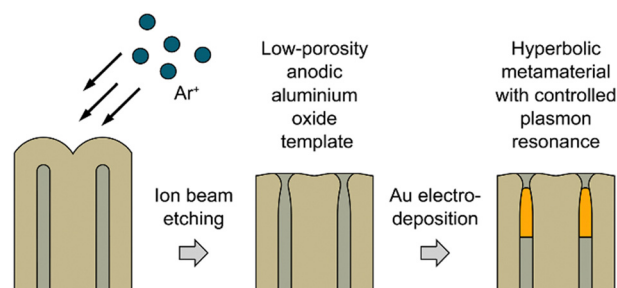
Binbin Su,* Maxim S. Molokeev, Ran Chen and Tao Zhang



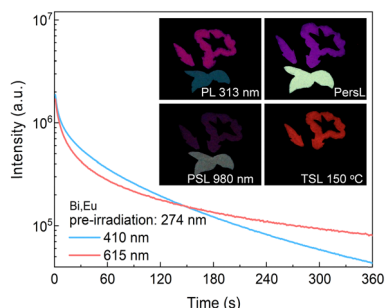
9274

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*



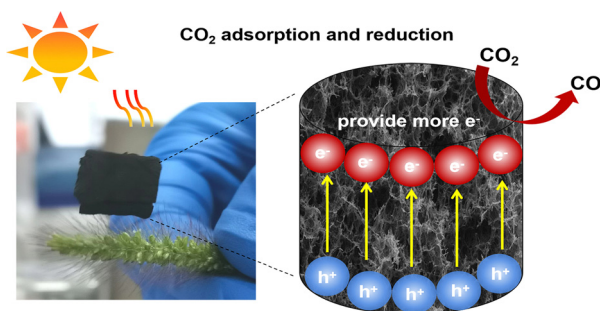
9284



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

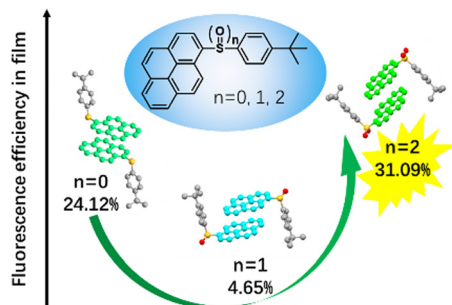
9293



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

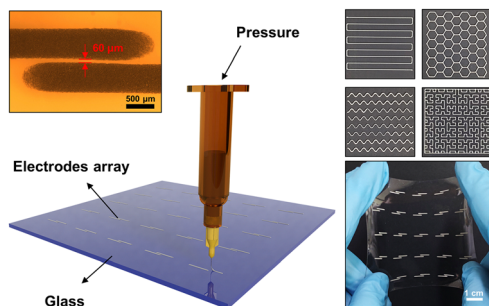
9305



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

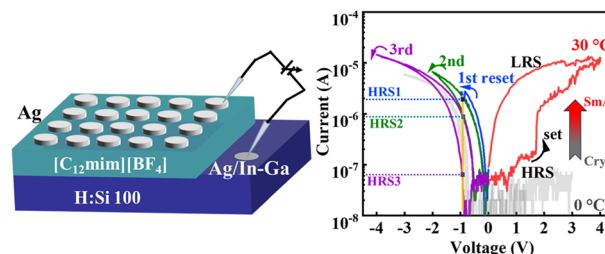
Xingliang Xu, Yu-Dong Zhao, Junmei Hu, Wei-Chen Gao, Jing Qiao, Xuanbo Chen, Ying-Shi Guan,* Hong Yang* and Quan Li*



9321

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

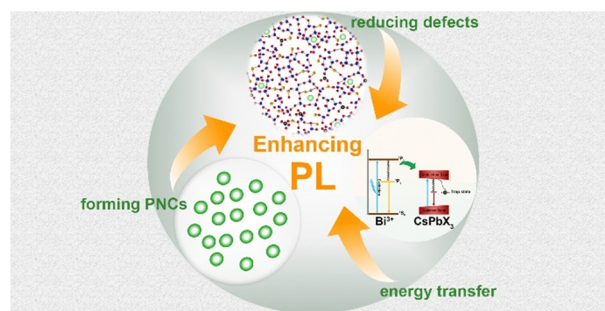
Wenzhong Zhang, Shingo Maruyama,* Kenichi Kaminaga and Yuji Matsumoto



9328

Enhanced optical properties of CsPbX₃ (X = Cl, Br, and I) perovskite nanocrystal glasses through bismuth doping for light-emitting applications

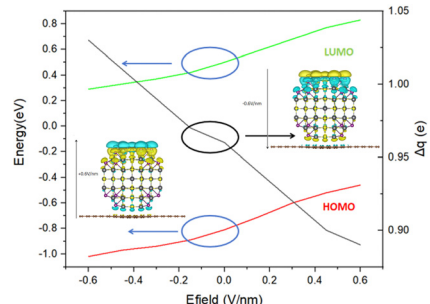
Liping Wang, Yuqiong Wang, Zaiqi Liu, Yu Dong, Puxian Xiong, Chang Xu,* Wen Gao* and Bo Tang*



9339

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

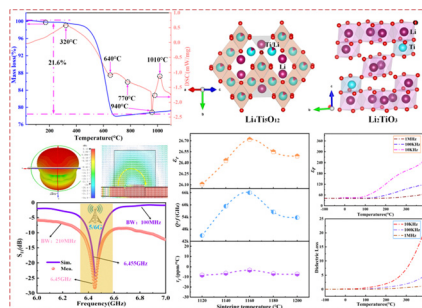
YuXuan Du, ZhuoMan Wang, Chao Wu, JiJie Zhao, Shuai Wen, Shengyong Wang and Huan Liu*



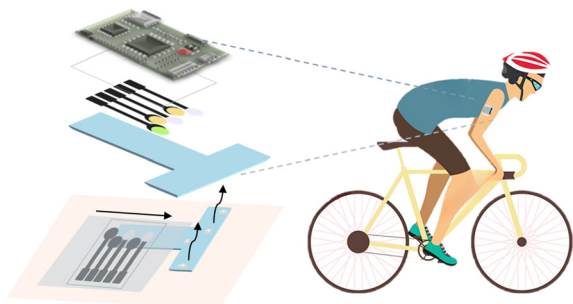
9353

Temperature-stable Li₄Ti₃O₈ composite microwave dielectric ceramics and their applications in dielectric resonator antennas

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



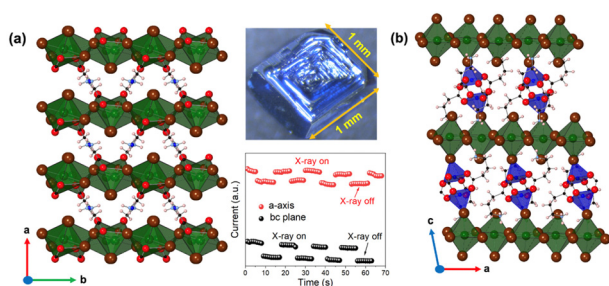
9363



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

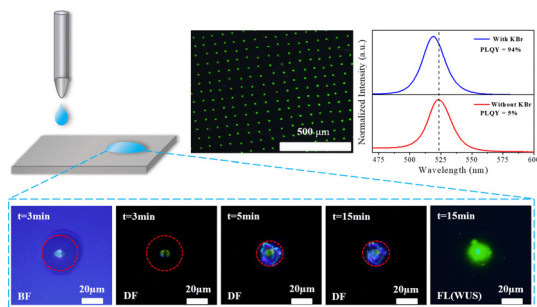
9372



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*

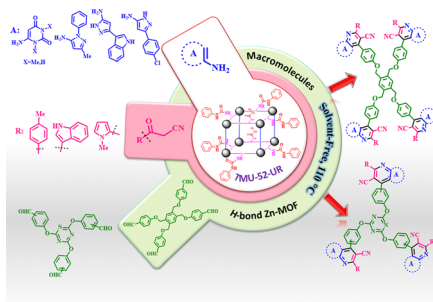
9385



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

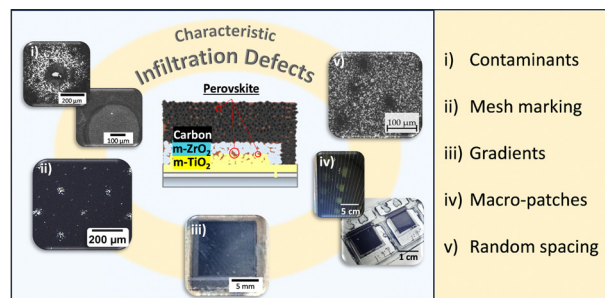


PAPERS

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*

