

# Journal of Materials Chemistry C

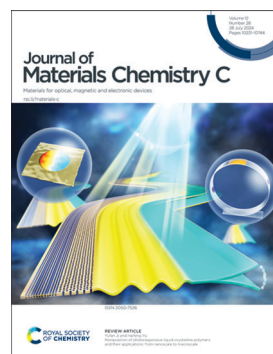
Materials for optical, magnetic and electronic devices

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## IN THIS ISSUE

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### Cover

See Yufan Ji and Haifeng Yu, pp. 10246-10266. Image reproduced by permission of Haifeng Yu from *J. Mater. Chem. C*, 2024, 12, 10246.

## EDITORIAL

10244

### Perovskites: from materials science to devices

Małgorzata Kot,\* Chittaranjan Das, Clara Patricia Aranda Alonso and Daniel Prochowicz

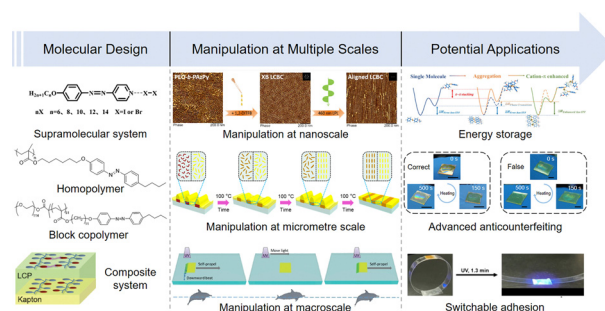


## REVIEWS

10246

### Manipulation of photoresponsive liquid-crystalline polymers and their applications: from nanoscale to macroscale

Yufan Ji and Haifeng Yu\*



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Elemental answers

## REVIEWS

10267

**Recent advances in lead-free halide perovskites: from synthesis to applications**

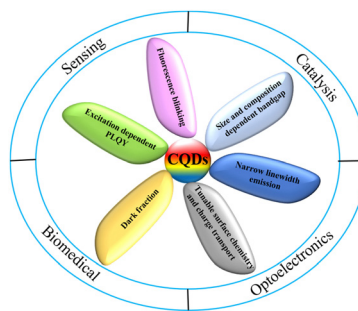
Yunuan Wang, Jianxiang Liu, Yujun Liu, Shaopeng Li, Xiulai Xu\* and Zhidong Lou\*



10330

**Advancements in semiconductor quantum dots: expanding frontiers in optoelectronics, analytical sensing, biomedicine, and catalysis**

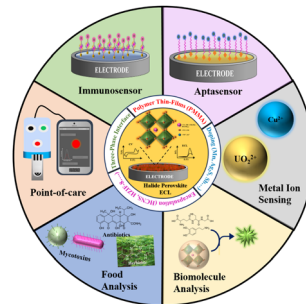
Jiban Mondal, Rohan Lamba, Yukta Yukta, Rohit Yadav, Ram Kumar, Balaram Pani\* and Bholey Singh\*



10390

**A review on perovskite-based nanocrystals as potential electrochemiluminescence emitters: challenges and future opportunities**

Indhu Leka Kottaiveedu Sivakumar, Vaishnavi B. Shettya, Selvaraj Paramasivam, Maithili K. Rao, Selvakumar Muthu and Shanmugam Senthil Kumar\*

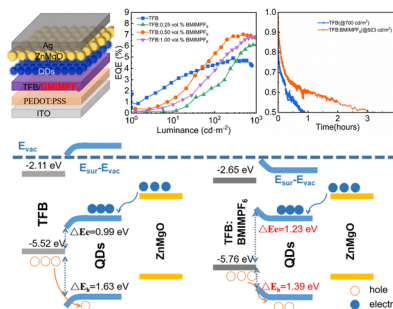


## PAPERS

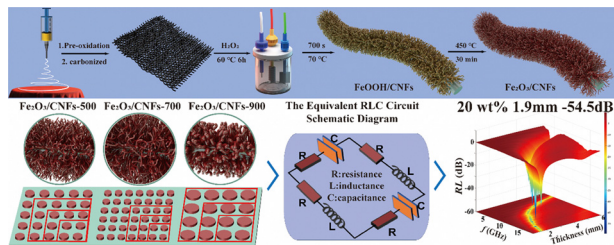
10408

**Enhancing the efficiency and stability of ZnSe pure blue quantum dot light-emitting diodes via ionic liquid doping**

Lihua Lin, Xiaoxue Ye, Zhiqi Luo, Weiguo Chen, Tailiang Guo, Hailong Hu and Fushan Li\*



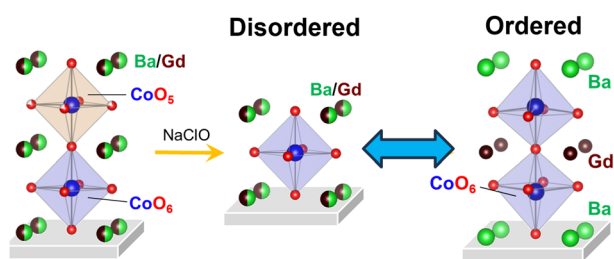
10417



### An equivalent RLC circuit loss mechanism introduced by Fe<sub>2</sub>O<sub>3</sub> nanoneedle arrays towards high-performance electromagnetic wave absorption materials

Jingshen Xu, Na Lu, Kefan Shi, Yuelin Zhao, Mengwei Yuan and Genban Sun\*

10428

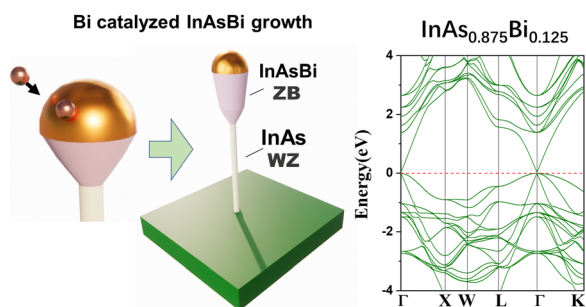


Changes in magnetism and electrical conductivity

### Cation-placement control in double-perovskite GdBaCo<sub>2</sub>O<sub>6</sub> and its impact on magnetism *via* spin-state modification

Tsukasa Katayama,\* Kento Magara, Shiro Sakai, Yijie Zeng, Akira Chikamatsu and Tetsuya Hasegawa

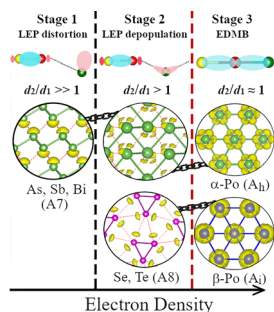
10437



### The roles of Bi in InAs and InAsBi nanostructure growth

Bijun Zhao, Xutao Zhang,\* Lei Ao, Nian Jiang, Suixing Shi, Zifan Huo, Yanhui Zhang, Ruixuan Yi, Jin Zou, Xuetao Gan\* and Pingping Chen\*

10447



### Electron-deficient multicenter bonding in pnictogens and chalcogens: mechanism of formation

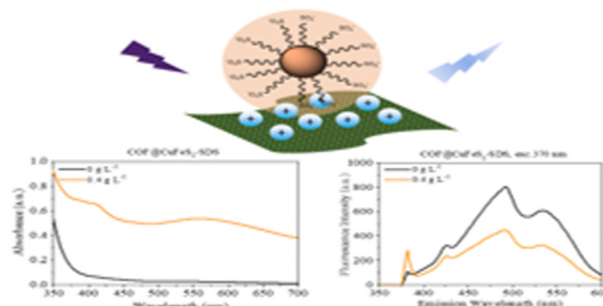
Hussien H. Osman,\* Alberto Otero-de-la-Roza, P. Rodríguez-Hernández, Alfonso Muñoz and Francisco J. Manjón\*



10475

### Electron transfer and energy exchange between a covalent organic framework and CuFeS<sub>2</sub> nanoparticles

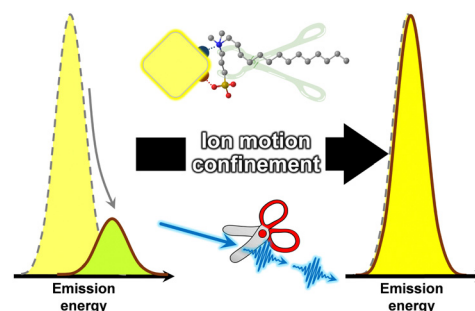
Panagiota Bika, Vasileios K. Tzitzios, Elias Sakellis, Spyros Orfanoudakis, Nikos Boukos, Saeed M. Alhassan, Polychronis Tsipas, Vasileios Psycharis, Thomas Stergiopoulos\* and Panagiotis Dallas\*



10487

### Overcoming the luminescence instability of colloidal mixed-halide perovskite quantum dots through ion motion confinement

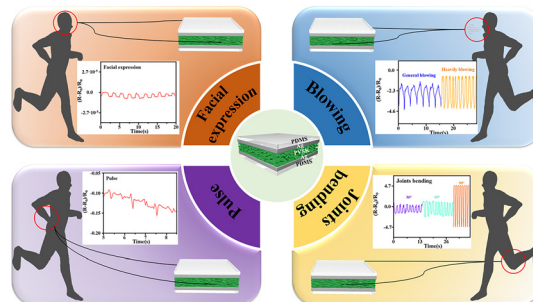
Xinli Wang, Yang Sun, Jie Gao, Xiao Huang, Dandan Cao, Xiaowen Gao, Hao-Yi Wang, Qi Li, Yi Wang,\* Li-Min Fu, Xi-Cheng Ai, Dongsheng Xu and Jian-Ping Zhang\*



10494

### A flexible piezoresistive pressure sensor based on a perovskite MAPbBr<sub>3</sub> nanocrystal-embedded polymer composite

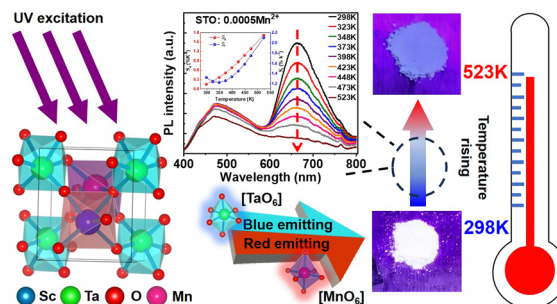
Yuyan Zhuang, Ruiqi Li, Mingzhi Jiao, Xinjian He,\* Xiuquan Gu\* and Sheng Huang\*



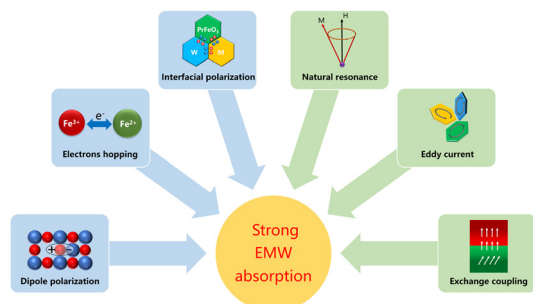
10504

### A novel Mn<sup>2+</sup> doped ScTaO<sub>4</sub> dual-emitting phosphor for high temperature optical thermometry

Jingshan Hou,\* Zhiyu Qin, Jianghua Wu, Tong Li, Langping Dong, Ganghua Zhang, Guoying Zhao, Yufeng Liu, Haijie Chen\* and Yongzheng Fang\*



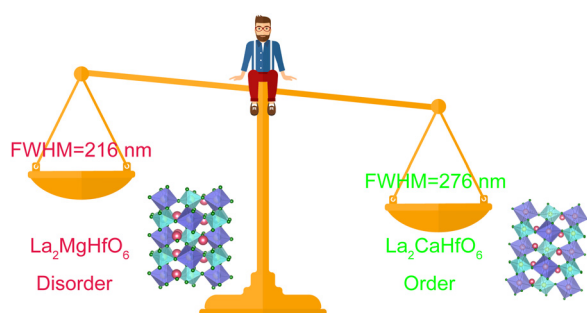
10513



### Enhanced X and Ku band microwave absorption powered by a magnetic–dielectric synergistic effect in Pr-doped M/W composite hexaferrites

Xiaoqiang Xiong, Xiaodong Jing,\* Zitao Chen, Qianqian Zhao, Zuoguang Li, Xi Yang, Qun Wang, Tongyun Zhao\* and Huayang Gong

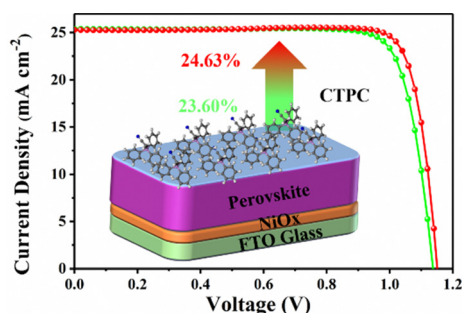
10532



### Abnormal spectral broadening of ordered-structure near-infrared phosphor $\text{La}_2\text{CaHfO}_6:\text{Cr}^{3+}$

Yulei Zhao, Xudong Wang, Qihao Wang, Tianliang Zhou,\* Yousan Chen, Jianxing Xu, Xueyuan Tang\* and Rong-Jun Xie\*

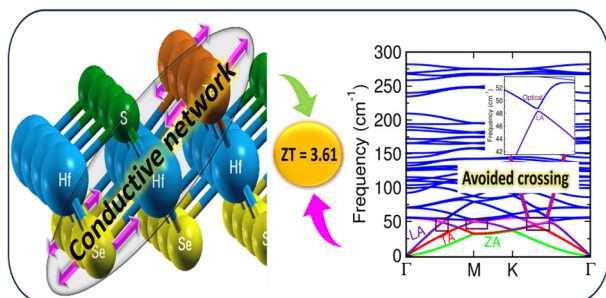
10540



### Achieving a high-quality active film through surface passivation to enhance the stability of inverted perovskite solar cells

Ming Chen, Zhonghua Dai, Nan Yan, Yang Cao, Yin Yuan, Jiafan Zhang, Danyang Qi, Lanxiang Meng, Shengzhong (Frank) Liu\* and Jiangshan Feng\*

10548



### Emergence of promising n-type thermoelectric material through conductive network and strong phonon softening

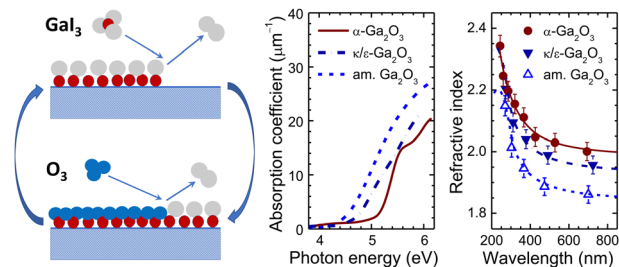
Jipin Peter, Tanu Choudhary and Raju K Biswas\*



10562

### Optical properties of Ga<sub>2</sub>O<sub>3</sub> thin films grown by atomic layer deposition using GaI<sub>3</sub> and O<sub>3</sub> as precursors

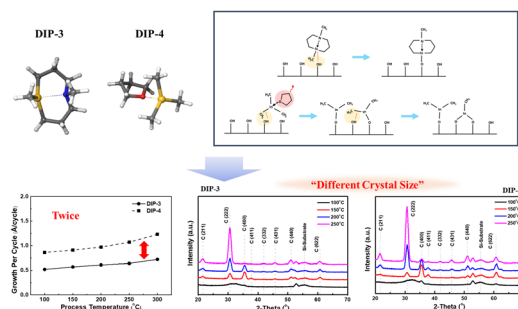
Lauri Aarik,\* Hugo Mändar, Arne Kasikov, Aivar Tarre and Jaan Aarik



10575

### Unveiling growth mechanisms of PEALD In<sub>2</sub>O<sub>3</sub> thin films with amide-based versus alkyl-based novel indium precursors

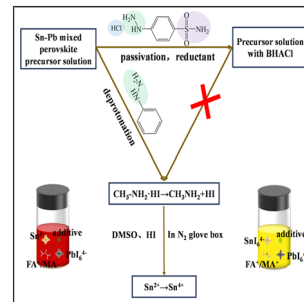
Gyeong Min Jeong, Hae Lin Yang, Ara Yoon, Yoon-Seo Kim, Sangick Lee, Yonghee Kwone, Sangyong Jeon, Youngjae Im and Jin-Seong Park\*



10585

### Selection of phenyl hydrazine derivatives as an Sn<sup>4+</sup> reductant for tin–lead perovskite solar cells

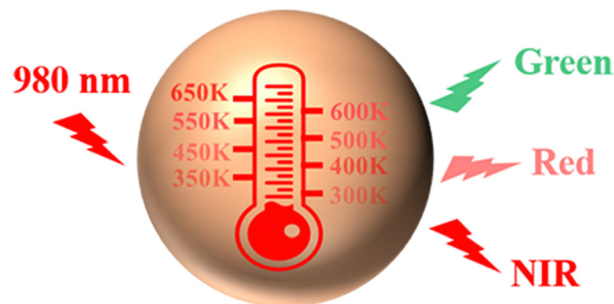
YanJun Xing, Jiaxing Xiong, Qiuxiang Wang, Changlei Wang,\* Like Huang, Xiaohui Liu, Qidong Tai, Yuejin Zhu and Jing Zhang\*



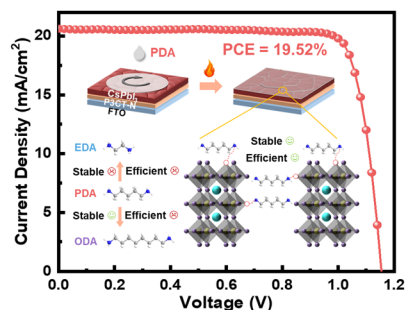
10592

### Defect band enhanced Ca<sub>9</sub>Y(VO<sub>4</sub>)<sub>7</sub>: Yb<sup>3+</sup>/Er<sup>3+</sup>/Sr<sup>2+</sup> phosphor upconversion luminescence for multimode optical temperature measurement

Junshan Hu,\* Bin Duan,\* Yao Kuang, Yuxiang Wu, Yongqiang Li, Wei Jin, Fengyi Wang and Changchun Ding



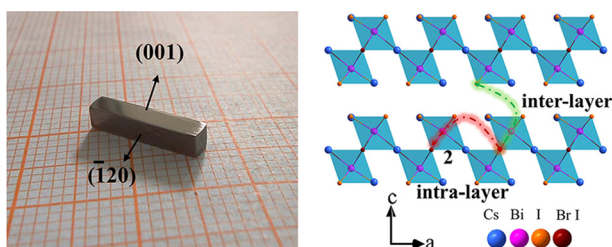
10604



### Tailoring the molecular size of alkylamine modifiers for fabricating efficient and stable inverted CsPbI<sub>3</sub> perovskite solar cells

Zhongyu Liu, Hongwei Wang, Haijun Han, Hong Jiang, Ning Liu, Jianwei Wang, Jing Zhang, Tian Cui\* and Xiaohui Liu\*

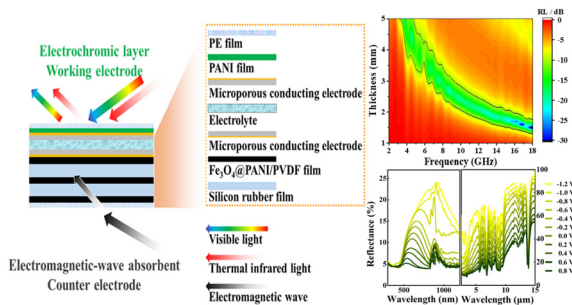
10613



### Two-dimensional lead-free perovskite Cs<sub>3</sub>Bi<sub>2</sub>I<sub>8.3</sub>Br<sub>0.7</sub> single crystals with anisotropic ion migration and hard X-ray responses

Xiang Li, Guodong Zhang,\* Yunqiu Hua, Xue Sun, Jiaxin Liu, Hongjie Liu, Zhongjie Yue, Zhongjun Zhai, Haibing Xia and Xutang Tao\*

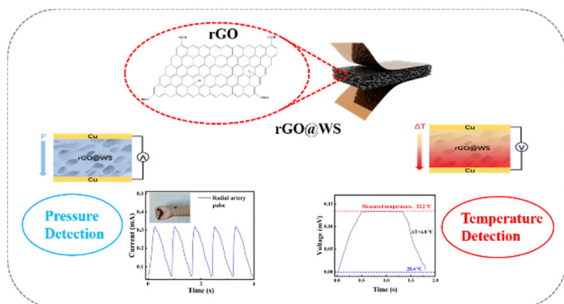
10621



### VIS-IR electrochromic device with electromagnetic wave absorption function based on a Fe<sub>3</sub>O<sub>4</sub>@PANI composite material

Shengwei Tang, Junlong Niu, Changle Gu, Hengzhi Zhang, Rongzong Zheng, Xiaolong Weng\* and Chunyang Jia\*

10635



### An eco-friendly wood sponge-based multifunctional pressure and temperature sensor for electronic skin

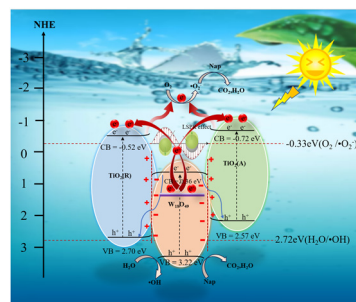
Jie Liang, Huinan Zhang, Qingchao Zhang, Yanli Liu,\* Bo Li, Junbin Zang, Xiyuan Cao, Zhidong Zhang,\* Libo Gao and Chenyang Xue



10646

### Dual-defected pine-needle $W_{18}O_{49}$ - $TiO_2$ (R)- $TiO_2$ (A) heterojunctions for the complete elimination of naphthalene

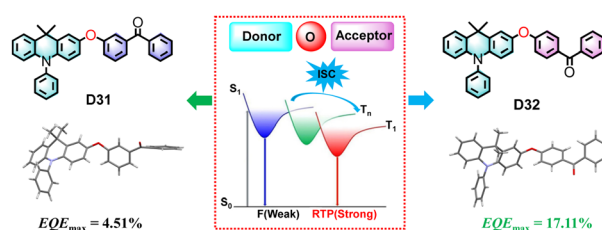
Zhiwei Zhou, Jingbo Li, Yaxian Zhang, Lulu Wang, Xiaojuan Qin and Wenliang Wu\*



10660

### Connection position-induced aggregation-diminished and aggregation-enhanced organic room temperature electrophosphorescence

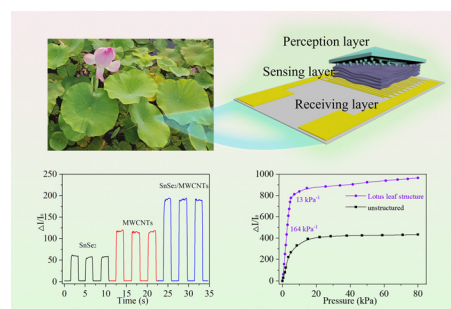
Jiaxin Lou, Lulin Xu, Wanting Ju, Dong Wang, Tianlin Cheng, Weiguo Zhu, Ning Su\* and Junqiao Ding\*



10669

### High sensitivity $SnSe_2$ /MWCNTs flexible pressure sensors based on a lotus leaf biomimetic microstructure for electronic skin

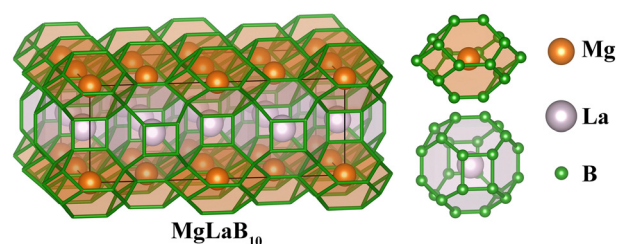
Chunqing Yang, Weiwei Wang,\* Bao Zhang, Wenzhe Liu, Hao Zhang and Dongzhi Zhang\*



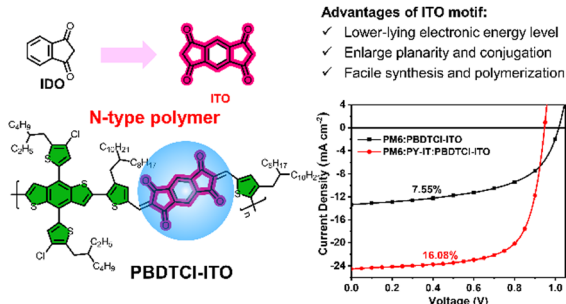
10678

### Unveiling the influence of the boron clathrate lattice on superconductivity in a ternary Mg-La-B system

Yiming Zhang, Meiling Xu,\* Jian Hao and Yinwei Li\*



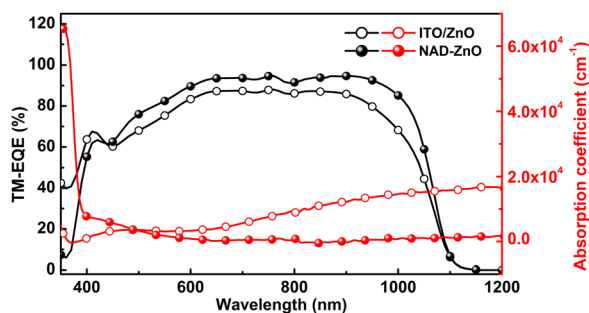
10688



## Novel indacene-1,3,5,7-tetraone-based polymerized small molecular acceptors for efficient all-polymer solar cells

Jianchao Jia, Yongdie Meng, Biao Xiao, Wei Zeng,\*  
Manjun Xiao\* and Chuluo Yang\*

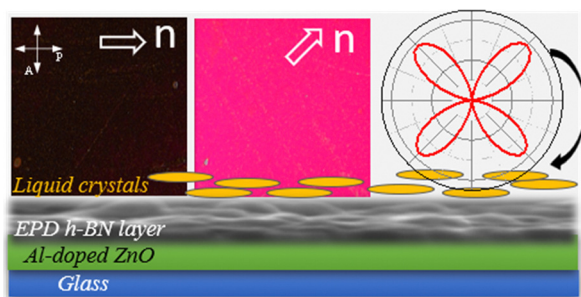
10697



## Enhancing performance of organic photovoltaic and photodetector devices using non-atomically doped ZnO electrodes with superior optical properties

Ziqi Su, Hailin Pan, Yi Lin, Zheng Li, Ming Wang\* and  
Zaifei Ma\*

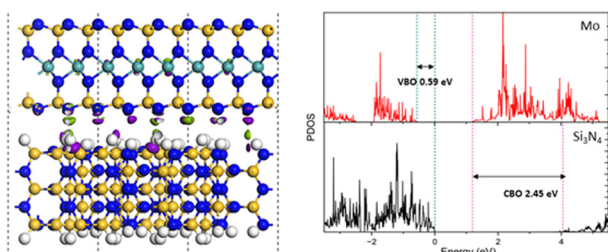
10707



## A generic approach for aligning liquid crystals using solution-processed 2D materials on ITO-free surfaces

Gayathri R. Pisharody, Priyabrata Sahoo,  
Abhishek Kumar Mishra, D. S. Shankar Rao,  
H. S. S. Ramakrishna Matte\* and S. Krishna Prasad\*

10718



## Modulating interface performance between 2D semiconductor MoSi<sub>2</sub>N<sub>4</sub> and its native high-*k* dielectric Si<sub>3</sub>N<sub>4</sub>

Jiahao Chen, Yang Zuo, Chin Yuan Ong, Jingyu He,  
Yulin Yang, Lai Mun Wong, Xiaoman Zhang\* and  
Ming Yang\*

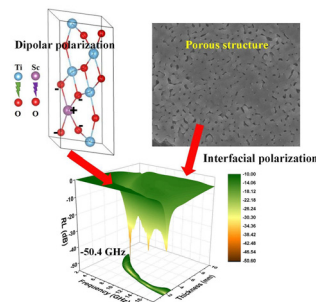


## PAPERS

10726

High purity  $\lambda$ -Ti<sub>3</sub>O<sub>5</sub> prepared by Sc doping for enhanced microwave absorption

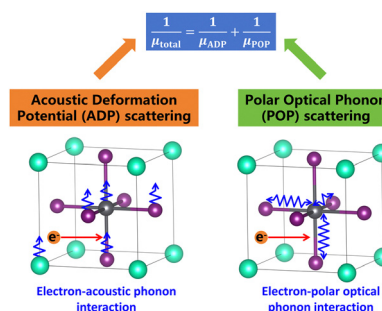
Xiankai Fu\* and Huiyao Liu\*



10733

Carrier mobilities and band alignments of inorganic perovskites of CsBX<sub>3</sub>

Weitao Yan, Yao Sun, Xiaokun Zhao, Wen Yang, Boyan Li,\* Dalong Zhong, Feng Lu and Wei-Hua Wang\*



## CORRECTION

10742

## Correction: How to tune luminescent Cu(I) complexes with strong donor carbenes towards TADF?

Jasper Guhl, Dragana Sretenović, Philipp Schmeinck, Suren Felekyan, Ralf Kühnemuth, Christian Ganter,\* Claus A. M. Seidel,\* Christel M. Marian\* and Markus Suta\*

