

# 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 JMCCCX 12(33) 12637-13152 (2024)



### Cover

See Abdelaziz Jouaiti,  
Hai-Ching Su,  
Matteo Mauro *et al.*,  
pp. 12769–12783.  
Image reproduced  
by permission of  
Matteo Mauro from  
*J. Mater. Chem. C*,  
2024, 12, 12769.

## REVIEWS

12653

### Recent advances and perspectives on iron-based photocatalysts

Nayab Arif, Muhammad Nadeem Zafar, Maria Batool,  
Muhammad Humayun, Muhammad Ahsan Iqbal,  
Muhammad Younis, Luyan Li, Kui Li\* and Yu-Jia Zeng\*



12692

### Research progress in fluorescent gas sensors based on MOFs

Ruixiao Dong, Zhengqi Shen, Huizi Li,\* Jiangong Cheng\*  
and Yanyan Fu\*



# Royal Society of Chemistry approved training courses

Explore your options.  
Develop your skills.  
Discover learning  
that suits you.

**Courses in the classroom,  
the lab, or online**

Find something for every  
stage of your professional  
development. Search our  
database by:

- subject area
- location
- event type
- skill level

Members **get at least 10% off**

Visit [rsc.li/cpd-training](https://rsc.li/cpd-training)



**SAVE  
10%**



## REVIEWS

12708

**Artificial spider bioelectronic dressings for intelligent wound management**

Shuhuan Li, Baoyang Lin, Yongji Xiong, Qian Zhou, Bingbing Gao\* and Bingfang He



## PERSPECTIVE

12721

**The new material science towards sustainable robotics**

Wusha Miao and Hedan Bai\*

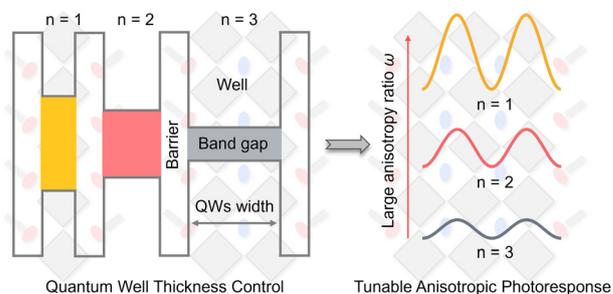


## COMMUNICATIONS

12734

**Quantum well thickness control of a hybrid perovskite to achieve a tunable anisotropic photoresponse**

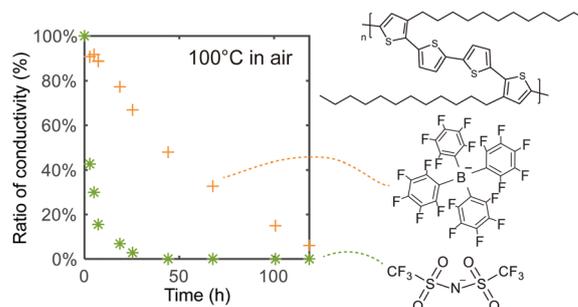
Cheng-Dong Liu, Chang-Chun Fan, Bei-Dou Liang, Wei Wang, Ming-Liang Jin, Chang-Qing Jing, Jing-Meng Zhang and Wen Zhang\*



12739

**Chemical doping of a semicrystalline polymeric semiconductor realizing high stability and work function**

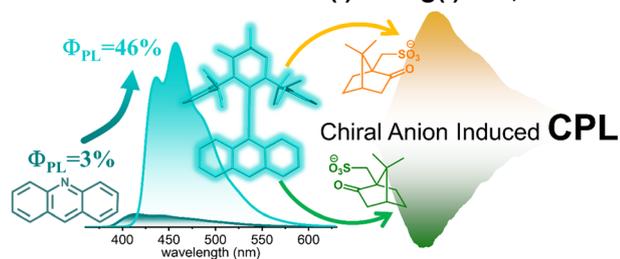
Zhenyun Xiao, Masaki Ishii, Jun Takeya, Katsuhiko Ariga and Yu Yamashita\*



## COMMUNICATIONS

12747

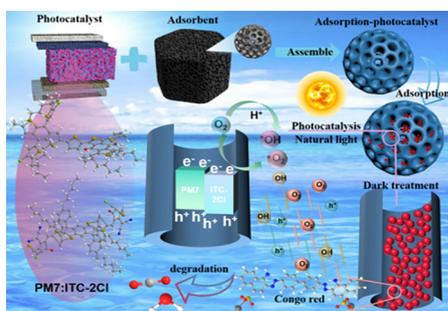
## Cationic Two-coordinate Cu(I) and Ag(I) Complexes



## Enhancement of the intrinsic fluorescence of acridine and its induced circularly polarized luminescence (CPL) in ionic two-coordinate coinage metal complexes

Ke-Die Li, Shu-Jia Zheng, Shi-Quan Song, Si-Qi Yu, Yue-Yang Feng, Junzi Liu, You-Xuan Zheng and Tian-Yi Li\*

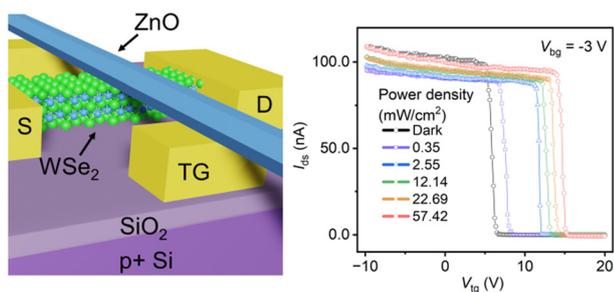
12752



## Carbon-based binary organic photocatalysts for rapid dye degradation under weak light: performance and mechanistic study

Ciyuan Huang, Shasha Shi, Songlin Cai, Yue Qiao, Caiyun Wang,\* Linji Yang, Yuchen Wang, Hao Cheng,\* Tao Yang, Kai Huang, Bingsuo Zou and Tao Liu\*

12763



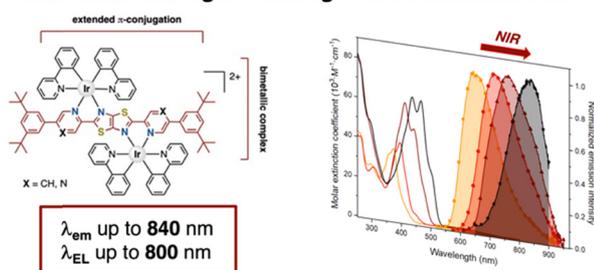
## Photovoltage junction memtransistor for optoelectronic in-memory computing

Xueming Li, Sujuan Wang, Yani Yang, Shankun Xu, Xueyan Bao, Lei Zhao, Xueting Liu, Zhidong Pan, Yujue Yang,\* Shichen Su\* and Nengjie Huo\*

## PAPERS

12769

## Near-Infrared Light-Emitting Electrochemical Cells



## Binuclear iridium(III) complexes for efficient near-infrared light-emitting electrochemical cells with electroluminescence up to 800 nm

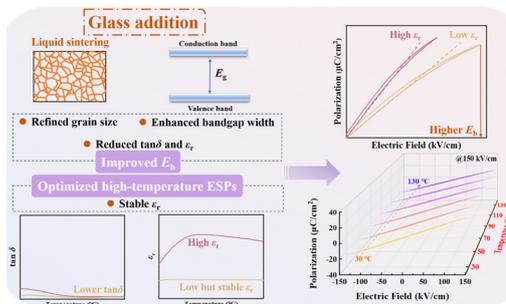
Lavinia Ballerini, Wei-Min Zhang, Thomaz Groizard, Christophe Gourlaouen, Federico Polo, Abdelaziz Jouaiti,\* Hai-Ching Su\* and Matteo Mauro\*



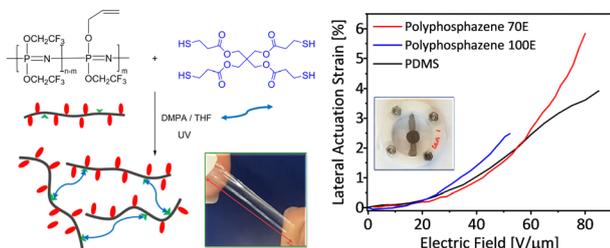
12784

### Glass modified $\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ -based energy-storage ceramics for high-temperature applications at low/moderate electric fields

Chunhui Wu, Yongping Pu,\* Xiang Lu, Yating Ning, Zhemin Chen, Lei Zhang and Yongqiang Yang



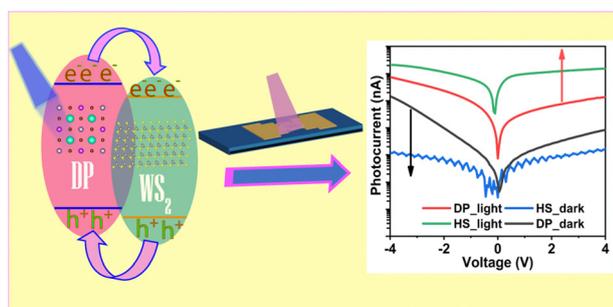
12825



### A polyphosphazene elastomer containing 2,2,2-trifluoroethoxy groups as a dielectric in electrically responsive soft actuators

Cansu Zeytun Karaman, Thulasinath Raman Venkatesan, Johannes von Szczepanski, Frank A. Nüesch and Dorina M. Opris\*

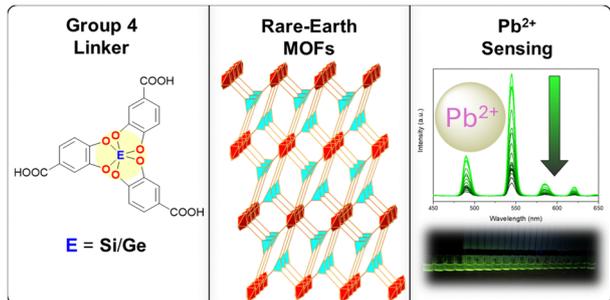
12835



### Facile *in situ* synthesis of double perovskite Cs<sub>2</sub>AgBiBr<sub>6</sub>/WS<sub>2</sub> heterostructure and interfacial charge transfer mediated high-performance ultraviolet photodetection

Ravinder Chahal, Abdul Kaim Mia, Abhilasha Bora and P. K. Giri\*

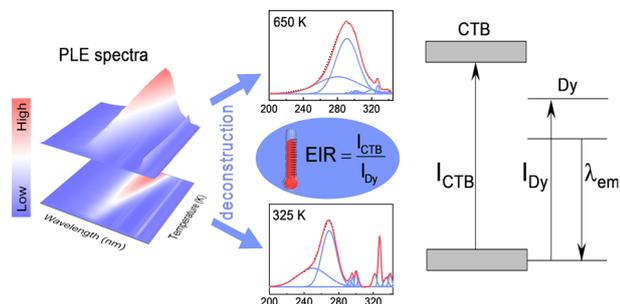
12847



### Hexacoordinate germanate metal-organic frameworks for the detection of Pb<sup>2+</sup> ions in aqueous solution

Shouyi Tian, Peter N. Horton, Simon J. Coles, Andrew J. P. White, Paul D. Lickiss and Robert P. Davies\*

12854



### Deconstructing excitation transitions in Dy<sup>3+</sup>-doped CaWO<sub>4</sub> to develop a new ratiometric luminescent thermometry for achieving ultra-high sensing sensitivity

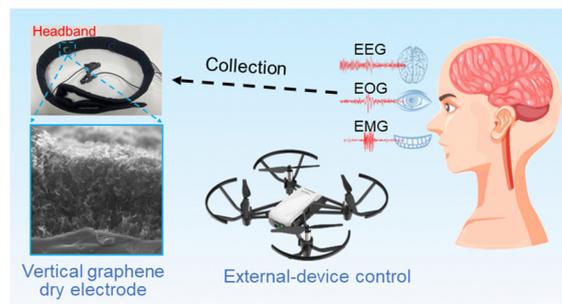
Qianrui Liu, Baosheng Cao,\* Miao Gao, Lulu Qiu, Yujie Weng, Yangyang He, Xiaoguang Han\* and Bin Dong



12862

### Wearable gold–graphene dry electrode-based headband for effective brain–computer interface applications

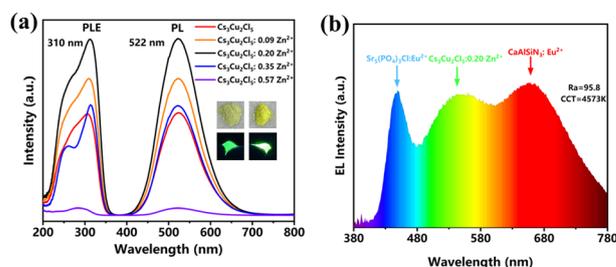
Yuhang Zheng, Yongyue Sun,\* Hongji Li,\* Xiuwei Xuan, Penghai Li and Mingji Li\*



12874

### Enhancement of photoluminescence quantum yield in lead-free inorganic copper based halide perovskites via zinc doping

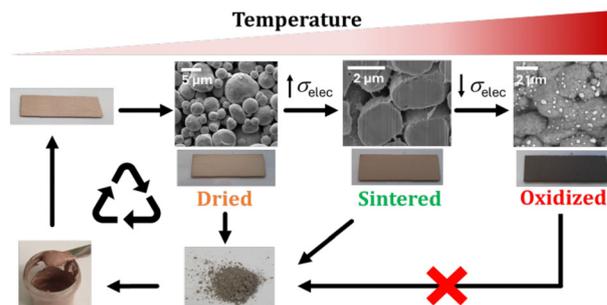
Yuchen Peng, Jing Guo,\* Jingrui Guo, Jianghua Wu, Na Zhang, Guoying Zhao, Jingshan Hou, Ganghua Zhang, Yufeng Liu\* and Yongzheng Fang\*



12882

### Low-temperature sintering of Cu@Ag microparticles in air for recyclable printed electronics

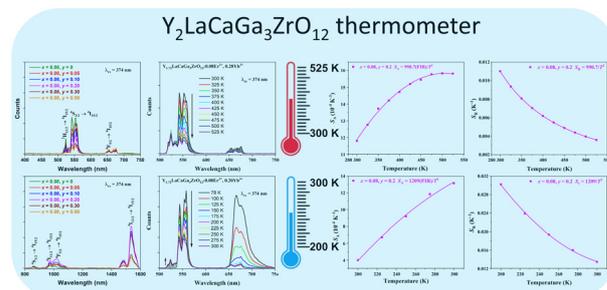
David van Impelen, Lola González-García\* and Tobias Kraus\*



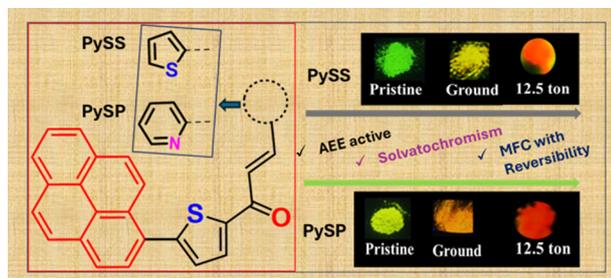
12890

### Synthesis, dual mode luminescence and down-conversion based thermometric properties of novel $Y_{2-x-y}LaCaGa_3ZrO_{12}:xEr^{3+}, yYb^{3+}$ phosphors

Zhurong Mo, Hongli Wen,\* Xin Gao, Chong Ta, Zhongfei Mu,\* E. A. Dawi and Deshmukh Abdul Hakeem\*



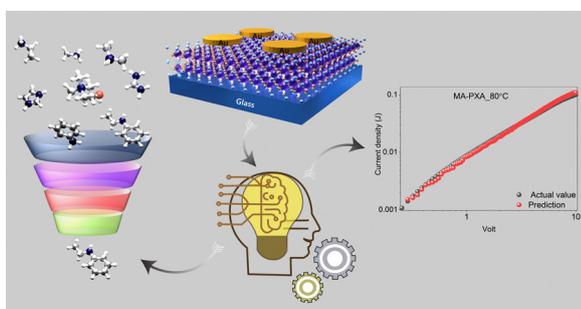
12906



### Precise molecular design for a twisted pyrene-thiophene based mechanofluorochromic probe with large Stokes shift and feasibility study towards security ink and re-writable papers

Ram Prasad Bhatta, Sumit, Vishal Kachwal, Vandana Vishwakarma, Angshuman Roy Choudhury and Inamur Rahaman Laskar\*

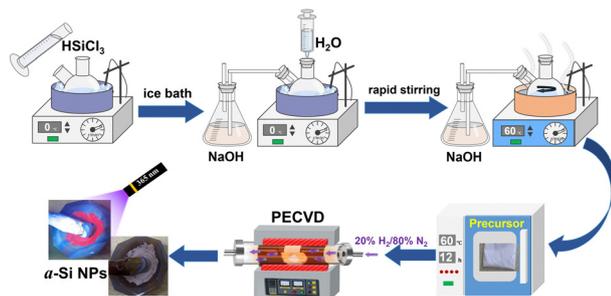
12919



### Perovskite single crystal SCLC measurement prediction using a machine learning model

Sarvani Jowhar Khanam, Harinath Kuruva, Salman Abdul Moiz\* and Murali Banavoth\*

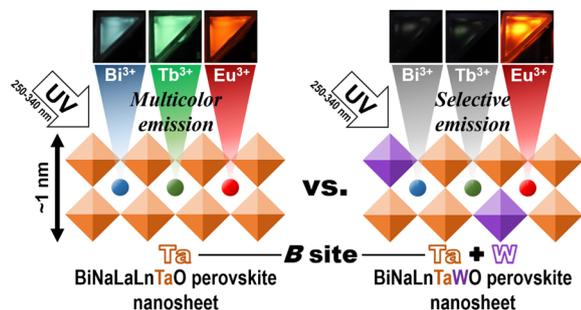
12928



### A near-infrared fluorescence enhancement strategy of amorphous silicon nanoparticles for night vision imaging and visualizing latent fingerprints

Qian Zhang, Wanyin Ge,\* Yunting Wang, Di Han, Maohao Yang, Xin Xie, Peng He and Honglei Yin

12941



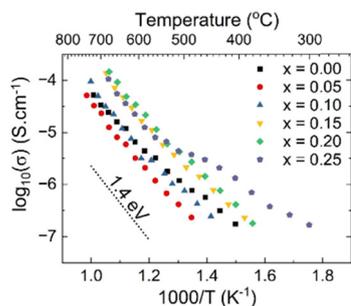
### Photoluminescence study of perovskite materials derived from tungsten- and lanthanide-containing aurivillius layered perovskite, $\text{Bi}_2\text{Na}_{0.63}\text{Ln}_{0.37}\text{Ta}_{1.75}\text{W}_{0.25}\text{O}_9$

Keisuke Awaya,\* Ayaka Yamamoto, Kazuto Hatakeyama and Shintaro Ida\*





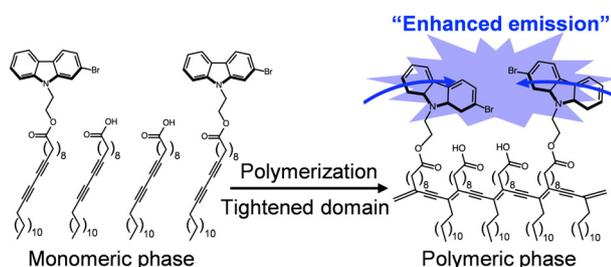
12992



### Structural, dielectric, and conduction behaviour of A-site deficient $\text{Sr}_x\text{Na}_{1-2x}\text{NbO}_3$ ceramics

Thomas E. Hooper\* and Derek C. Sinclair

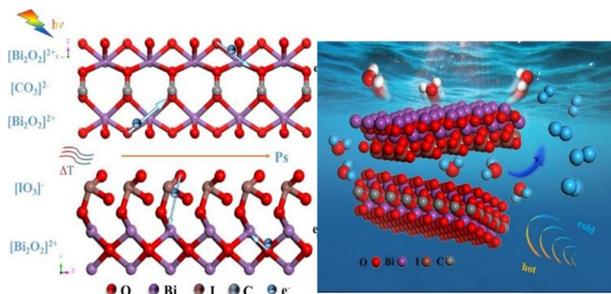
13002



### Photo-polymerization-induced tightened domain enhancing the room-temperature phosphorescence emission

Cheng Yuan, Sang Yup Lee, Jingyuan Huang, Yong Ho Cho, Yujie Liu, Dong June Ahn\* and Chunzhi Cui\*

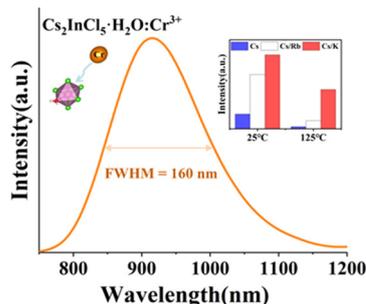
13010



### Construction of 2D/2D $\text{BiOI}/\text{O}_3/\text{Bi}_2\text{O}_2\text{CO}_3$ composite structures with face-to-face contacts can facilitate carrier transfer via a built-in electric field and a polar field for pyro-photo-electric catalysis

Yunfei Wu, Mengnan Ruan, Chengyi Wang, Tingting Zhong and Zhifeng Liu\*

13021



### Enhancing the thermal stability of the NIR emitting $\text{A}_2\text{InCl}_5\cdot\text{H}_2\text{O}:\text{Cr}^{3+}$ phosphor based on A site regulation

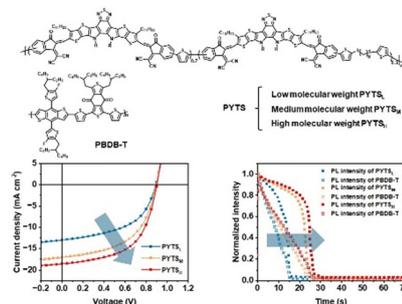
Lingkang Yu, Yining Wang, Xiaole Xing, Zheng Xu and Mengmeng Shang\*



13029

### *In situ* monitoring drying process to disclose the correlation between the molecular weights of a polymer acceptor with a flexible spacer and the performance of all-polymer solar cells

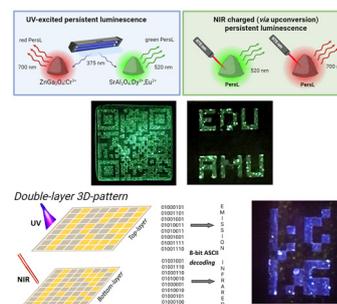
Jiale Xiang, Sven Englund, Zewdneh Genene, Guanzhao Wen, Yanfeng Liu,\* Nannan Yao, Rui Zhang, Lei qiang Qin, Lei Wang, Ergang Wang,\* Wei Zhang\* and Fengling Zhang\*



13040

### Unleashing the glow: upconverting nanoparticles recharge persistent luminescent materials – applications in 3D-printing and optical coding

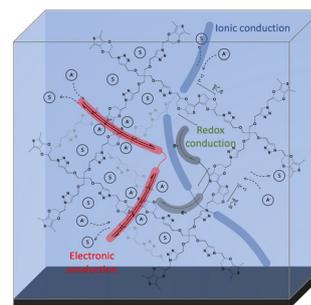
Adrian Drozdowski, Dirk Poelman, Marcin Runowski, Hanoch Hemmerich, Fernando Rivera-López and Tomasz Grzyb\*



13050

### Polymerization of EDOT functionalized star-shaped pentaerythritol and study of the structure and conducting properties of polymers

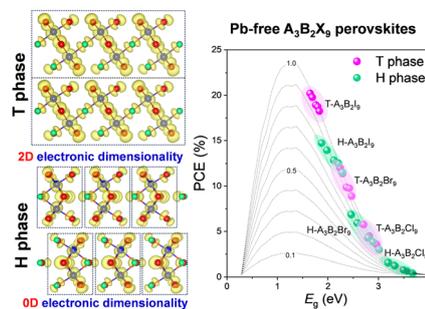
Rana Abdel Samad, Frédéric Gohier, Barbara Daffos, Pierre-Louis Taberna and Charles Cougnon\*



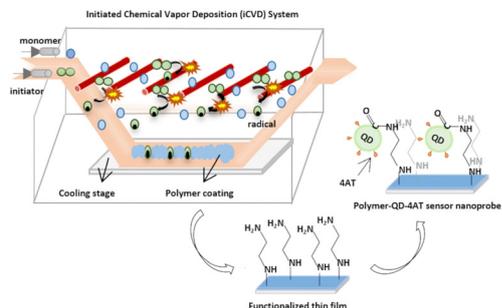
13061

### Unravelling phase-dependent electronic dimensionality and optoelectronic properties in lead-free layered A<sub>3</sub>B<sub>2</sub>X<sub>9</sub> perovskites for photovoltaic applications

Qingyuan Luo, Dabao Xie, Yiqian Tian, Congmin Zhang, Dan Cao, Xiaoshuang Chen, Pei Liang and Haibo Shu\*



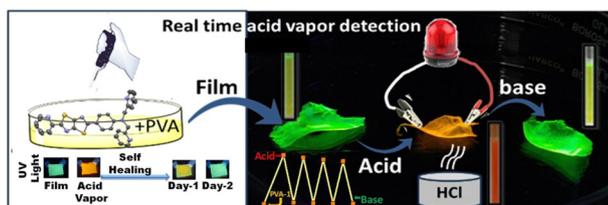
13073



### Reusable polymer-based fluorescent sensor nanoprobe for selective detection of Cd<sup>2+</sup> ions in real water sources

Merve Karabiyik\* and Özgenç Ebil

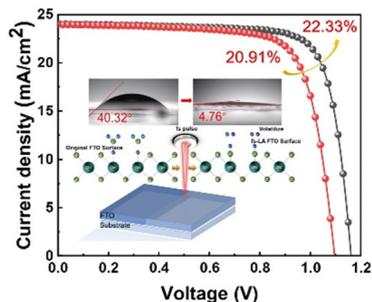
13088



### An asymmetric thiazolo-thiazole derivative as a solvatochromic, reversible and self-color recovery acid–base molecular switch

Sanchita Shah, Neeraj Naithani, Subash Chandra Sahoo, Prakash P. Neelakandan\* and Nidhi Tyagi\*

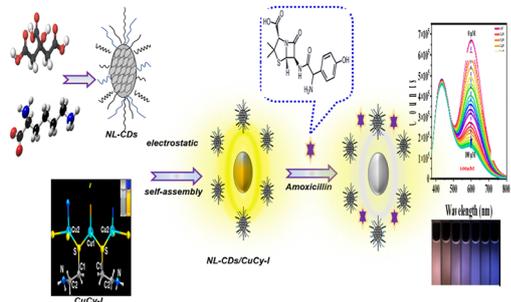
13096



### Femtosecond laser annealing of fluorine-doped tin oxide films towards high-performance perovskite photovoltaics

Weihan Li, Nianyao Chai, Xiangyu Chen, Zhongle Zeng, Yunfan Yue, Fengyi Zhao and Xuewen Wang\*

13104



### Exploration of novel dual-emission NL-CDs/ Cu–Cy–I ratio fluorescent probe for the sensitive detection of amoxicillin

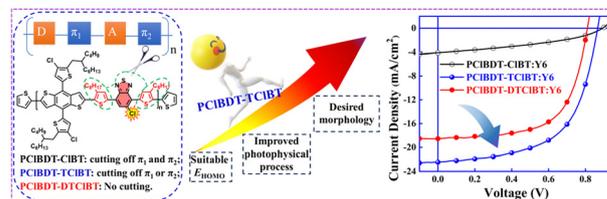
Bowen Shi, Zirui Yin, Xiaodan Tang,\* Hongmei Yu,\* Shuanping Cui and Wei Chen\*



13115

### The optimized energy level, morphology and photophysical procedure boosted the photovoltaic performance of monochlorinated benzothiadiazole-based polymer donors

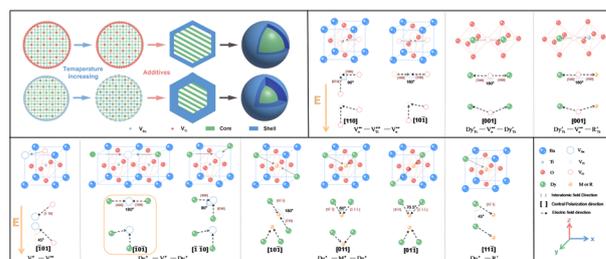
Junfeng Tong,\* Wuyan Liu, Lili An, Shilei Qu, Aoxiang Zhang, Pengzhi Guo, Zezhou Liang, Lihe Yan, Chunyan Yang, Jianfeng Li and Yangjun Xia\*



13131

### Exceptional dielectric performance of MLCCs enabled by defect-engineered BaTiO<sub>3</sub>

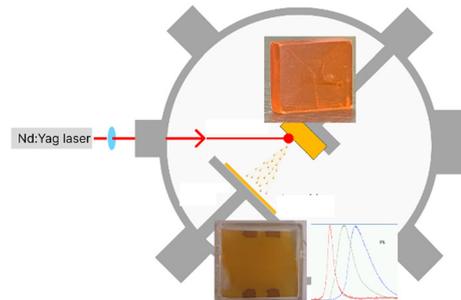
Pengfei Wang, Xiong Huang, Saiwei Luan, Jianwei Zhao, Bo Li, Jun Yang, Zhenxiao Fu,\* Xiuhua Cao, Lei Zhang,\* Shuhui Yu and Rong Sun



13141

### High quality MAPbBr<sub>3</sub> films via pulsed laser deposition of single-crystalline targets

E. Ghavidel, A. Di Carlo, A. Ishteev, J. Barichello, K. Konstantinova, D. Saranin, V. Campanari, F. Martelli, B. Paci, A. Generosi, M. Guaragno, A. Cricenti, D. Becerrill, M. Luce, F. Matteocci and A. Di Trollo\*



13149

### Correction: Perovskite single crystal SCLC measurement prediction using a machine learning model

Sarvani Jowhar Khanam, Harinath Kuruva, Salman Abdul Moiz\* and Murali Banavoth\*



## CORRECTIONS

13150

**Correction: Photo-gain optimization in multilayer organic phototransistors by study of space-charge limited current**

Giulia Baroni, Francesco Reginato, Mario Prosa, Marco Brucale, Federico Prescimone, Mirko Seri, Katherine Gallegos-Rosas, Caterina Soldano, Margherita Bolognesi\* and Stefano Toffanin\*

Open Access Article. Published on 22 August 2024. Downloaded on 4/29/2026 4:24:04 PM.  
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

