

# Journal of Materials Chemistry C

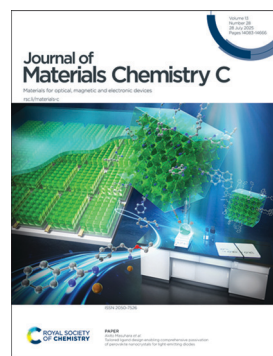
Materials for optical, magnetic and electronic devices

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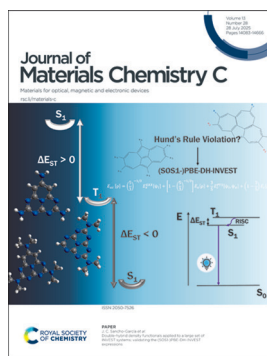
## IN THIS ISSUE

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### Cover

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## EDITORIAL

14098

### Molecular crystals: mechanics and photonics

Rajadurai Chandrasekar,\* Panče Naumov,\*  
Xue-Dong Wang\* and Kristin M. Hutchins\*

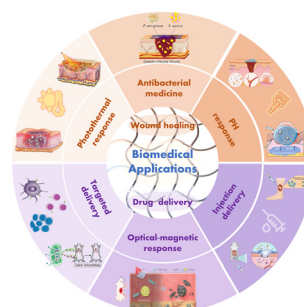


## REVIEWS

14101

### Intelligent responsive polymeric hydrogels: unlocking a new code for precision medicine in clinical practice

Haixiang Zeng, Yujia Han, Hongxia Li, Xiaohui Niu,  
Li Chen, Deyi Zhang and Kunjie Wang\*



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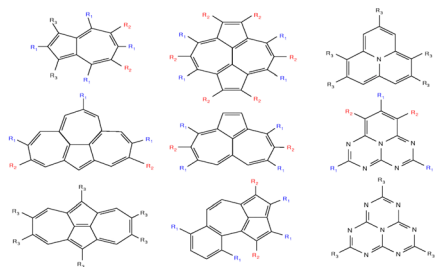


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14211

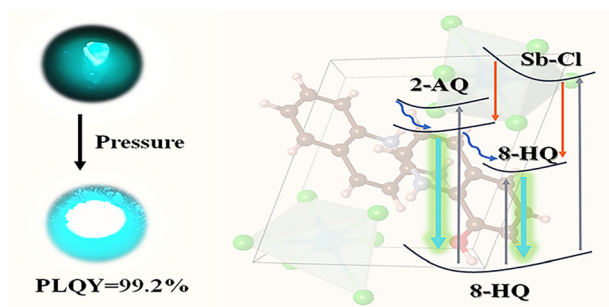


NAH159  
dataset:  
an affordable  
method for  
Hund's rule  
violation?

### Double-hybrid density functionals applied to a large set of INVEST systems: validating the (SOS1-)PBE-DH-INVEST expressions

P. Maiz-Pastor, A. J. Pérez-Jiménez and J. C. Sancho-García\*

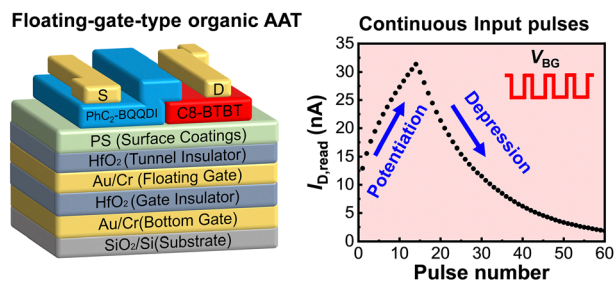
14224



### Inner structure and outer pressure synergistically trigger highly efficient luminescence in antimony-based perovskites

Xiaoming Zhang, Bihao Zhuang, Qinglin Meng, Ziqiao Wu, Zhiyan Yi, Panheng Wang, Jiayi Li, Jiandong Fan\* and Wenzhe Li\*

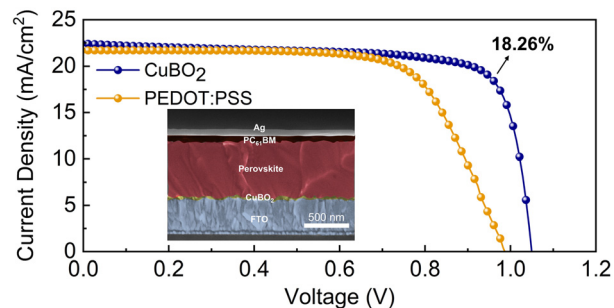
14234



### Reconfigurable artificial synapses with an organic antiambipolar transistor for brain-inspired computing

Ryoma Hayakawa,\* Yuho Yamamoto, Kosuke Yoshikawa, Yoichi Yamada and Yutaka Wakayama\*

14242



### Solution-processed CuBO<sub>2</sub> hole transport layers for stable p-i-n perovskite solar cells

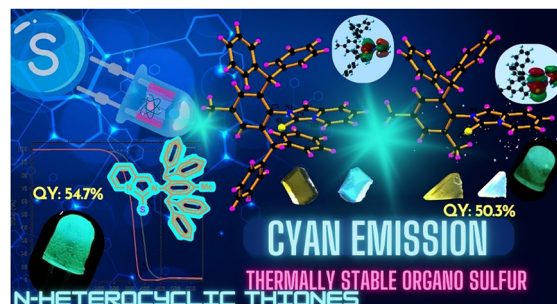
Shichao Wang, Jiangshan Shi, Jianhui Li, Yuanqiang Wang, Jingxia Yang and Yichuan Rui\*



14251

### Modulation of luminescent behaviour in N-heterocyclic thiones

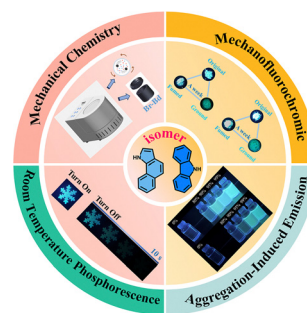
Joginder Singh, Gopendra Muduli, Sabari Veerapathiran, Arushi Rawat, Muneshwar Nandeshwar, Abhilash Sahu, Kohsuke Matsumoto, Osamu Tsutumi and Ganesan Prabusankar\*



14261

### Mechanochemical synthesis of a carbazole isomer phosphor with mechanofluorochromic and AIE properties

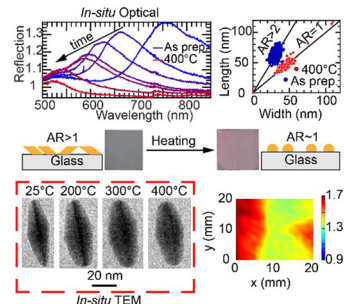
Xinyue Xu, Dong Ding, Jianan Niu, Bifang Liu, Feng Li,\* Aziz Saparbaev, Erkin Zakhidov, Liangmin Yu and Mingliang Sun\*



14270

### Thermally driven resonance tuning in nanobipyramid plasmonic substrates

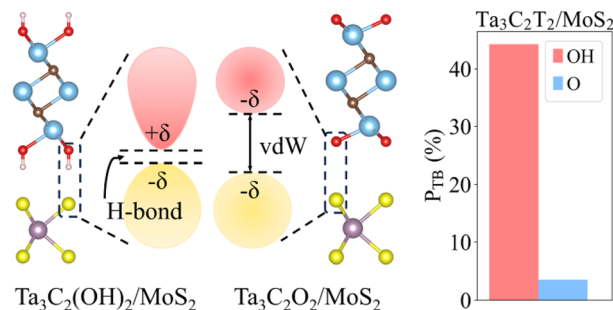
Arka Jyoti Roy, Sai Rama Krishna Malladi and Shourya Dutta-Gupta\*



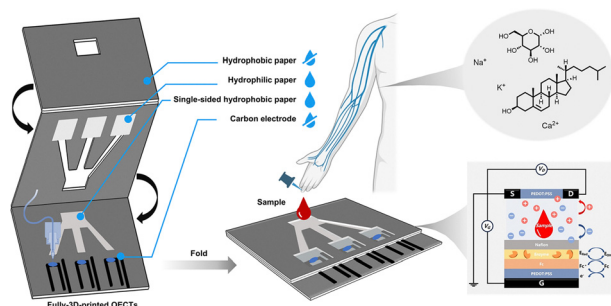
14283

### Hydrogen-bonded MXene ohmic contacts: overcoming Schottky and tunneling barriers for quantum-limit 2D MoS<sub>2</sub> electronics

Weishu Chen, Tao Shen, Ji-Chang Ren\* and Shuang Li\*



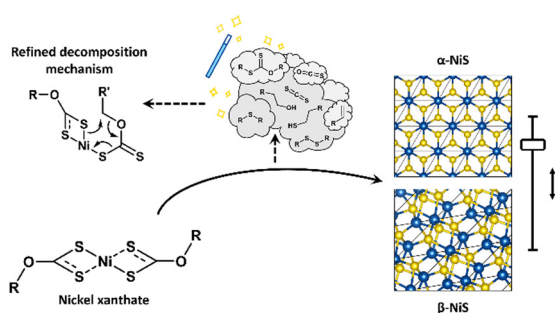
14291



### 3D-printed organic electrochemical transistors on microfluidic paper for multianalyte point-of-care testing

Yanchen Qiu, Qi Zhang, Ruizhe Wang, Weichu Chen, Xiang Li, Yuwen Zhu,\* Meifang Zhu, Gang Wang\* and Hengda Sun\*

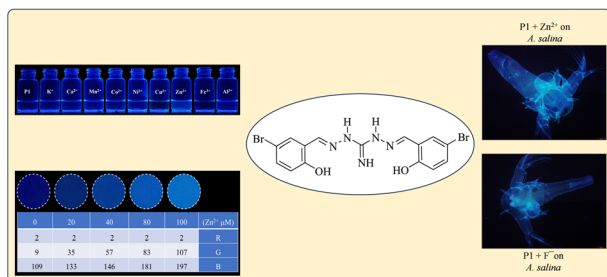
14301



### Insights into the thermal decomposition and conversion mechanism of nickel xanthates to nickel sulfides

Melissa Sophie Egger, Marco Sigl, Robert Saf, Heinz Amenitsch, Ana Torvisco, Thomas Rath\* and Gregor Trimmel\*

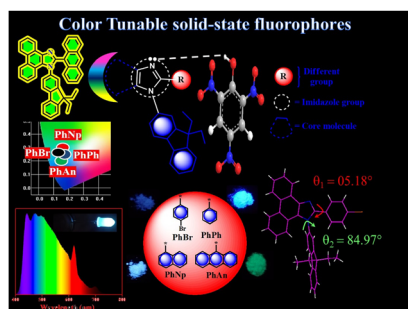
14316



### Guanidine-based dual-responsive 'turn on' fluorometric probes for the selective detection of Zn<sup>2+</sup> cations and F<sup>-</sup> anions: spectral and theoretical investigations, smartphone assisted colorimetric detection, and applications in bio-imaging of the *Artemia salina* animal model and molecular logic gate operation

Abbas Khaja Raees Ahmed, Ramalingam Gajendhiran, Anbazhagan Sathiyaseelan, Lina Zhang, Myeong-Hyeon Wang,\* Rajakkani Paulpandiyan and Aziz Kalilur Rahiman\*

14333



### Broad-band emissive phenanthroimidazole-based donor-acceptor luminogens for hybrid white light emitting diodes and sensors for picric acid detection

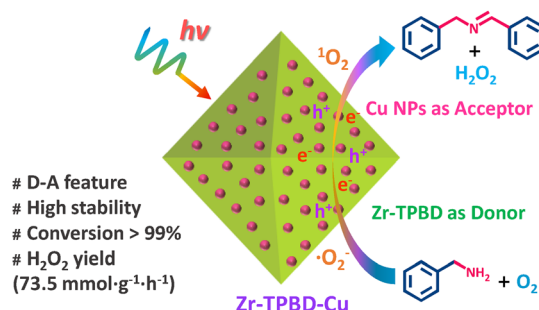
Swetha Maredi, Sandhya Rani Nayak, Md Intekhab Alam, Diksha Thakur and Sivakumar Vaidyanathan\*



14349

### Incorporating electron-deficient Cu nanoparticles in photoactive Zr-MOFs for highly efficient amine oxidative coupling with H<sub>2</sub>O<sub>2</sub> photosynthesis

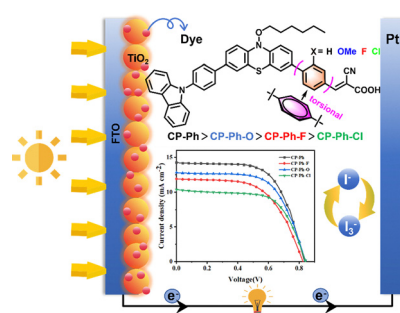
Leixin Hou,\* Ziyang Li, Congfa Bian, Mi Zhang, Daofu Liu, Mai Xu and Huilin Huang\*



14360

### Carbazole–phenothiazine-based organic sensitizers via $\pi$ -bridge functionalization with different electro-negative/steric substituents: photophysical properties and DSSC performance

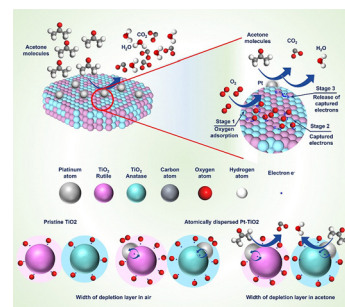
Wenjiao Xu, Xingyi Hu, Jiaxuan Yuan, Shuo Fu, Ying Guang, Baoxiu Mi,\* Zhiqiang Gao\* and Tingchun Ma\*



14369

### MOF-derived TiO<sub>2</sub> nano-disks decorated with Pt nanoparticles for enhanced acetone sensing

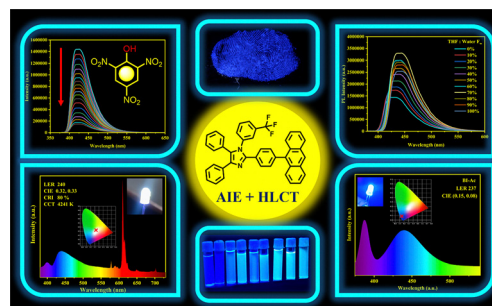
Azhar Ali Haidry,\* Yucheng Wang,\* Qawareer Fatima, Yanling Weng, Fazal Ghani, Wan Izhan Nawawi Wan Ismail and Kareem Yusuf



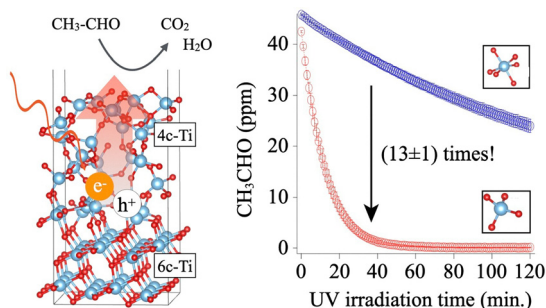
14385

### HLCT-AIE active deep blue fluorophores and their versatile applications: a multifunctional approach for advanced white LED materials, picric acid sensing and fingerprint visualization

Bhabana Priyadarshini Debata, Jagannath Dash, Sabita Patel\* and Sivakumar Vaidyanathan\*



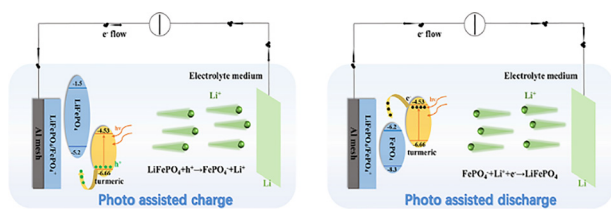
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### Ultra-thin layer of oxygen vacant amorphous titania for enhanced photocatalysis

Mitsuhiro Honda,\* Motoyasu Kato, Tsuyoshi Ochiai and Tomoyuki Tamura

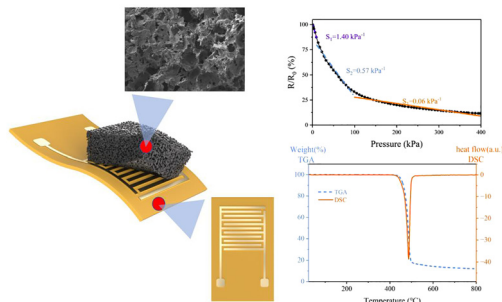
14413



### Enhanced photo-assisted lithium-ion batteries using natural dye-impregnated $\text{LiFePO}_4$ cathodes

Can Cui, Beili Pang,\* Song Xu, Jianguang Feng, Hongzhou Dong, Mingwei Shang,\* Liyan Yu\* and Lifeng Dong\*

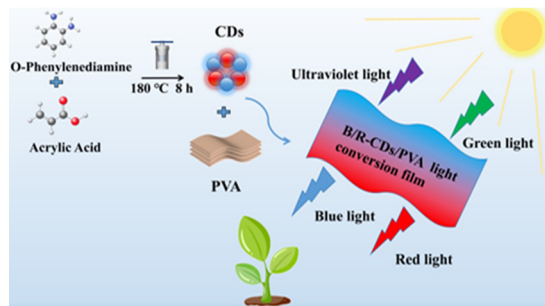
14422



### Ultrastable fluoropolymer-based porous conductive elastomer composites (PVDF-HFP/CB) for high-sensitivity pressure sensing applications

Sanfa Xie, Yaoqi Wei, Yaping Zhang, Wei Zhu and Xiangfei Liang\*

14433



### Preparation of high-performance blue-red dual-emission carbon dots and their application in light conversion films

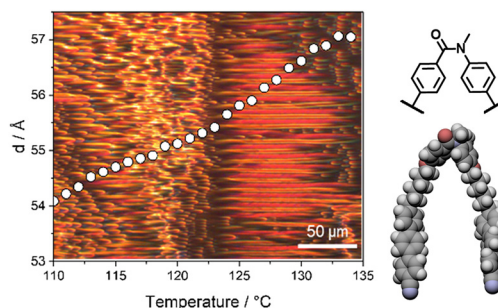
Siyuan Yu, Yiyun Song, Hongmei Yu,\* Shaoyan Wang\* and Wei Chen\*



14443

### Liquid crystal trimers containing tertiary benzanilide groups

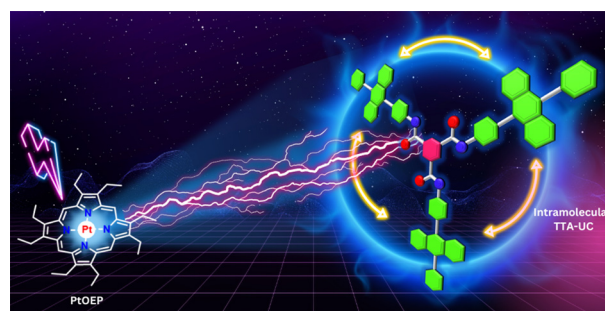
Grant J. Strachan, Magdalena M. Majewska, Ewan Cruickshank, Damian Pocięcha, Ewa Gorecka, John M. D. Storey and Corrie T. Imrie\*



14452

### Diphenylanthracene-based trimeric systems for efficient photon upconversion through triplet-triplet annihilation

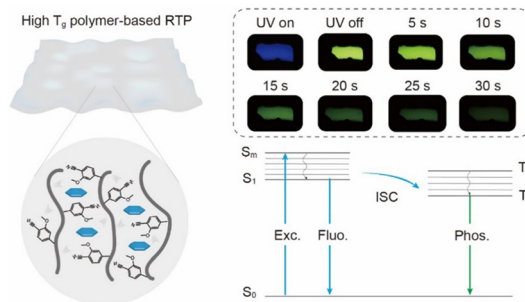
Alisha Sengupta, Sakura Nakagawa, Aakash Ravikant Likhari, Masanori Uji, Nobuhiro Yanai\* and Deepak Asthana\*



14458

### Chain-stiffening enhanced ultralong organic phosphorescence in high glass transition temperature polymers

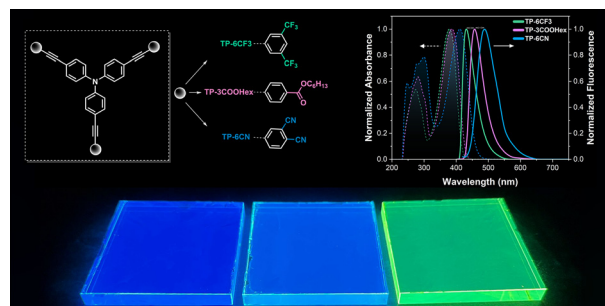
Huan Chen, Mengyang Dong,\* Yanxin Wu, Jingyi Shan, Zehua Long, Yaru Gao\* and Long Gu\*



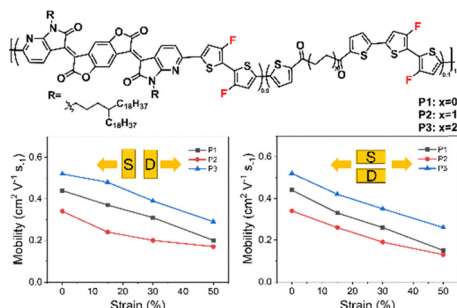
14465

### Luminescent solar concentrators based on environmentally friendly tripodal D-( $\pi$ -A)<sub>3</sub> triarylamine luminophores

Elisavet Tatsi, Venanzio Raglione, Gaia Roberta Ragno, Stefano Turri, Giuseppe Mattioli, Francesco Porcelli, Daniela Caschera, Chiara Botta, Gloria Zanotti\* and Gianmarco Griffini\*



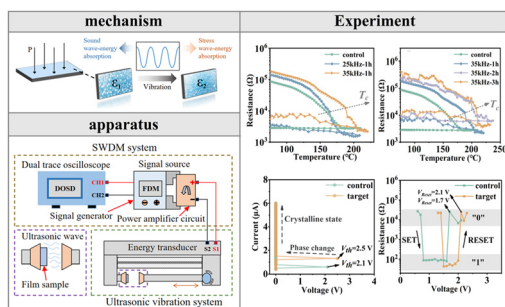
14478



## High-performance n-type stretchable OFETs enabled by molecular engineering of flexible polymers

Qian Che, Tianhao Zhang, Weifeng Zhang,\* Jiadi Chen, Yunchao Zhang, Zhihui Chen, Youjia Li, Lei Yang, Liping Wang\* and Gui Yu\*

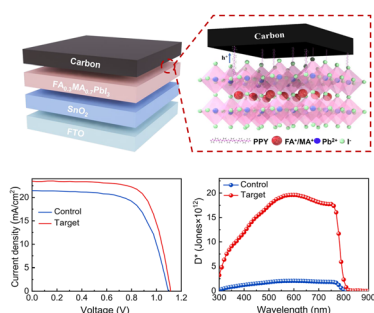
14487



## Regulation of properties of Sb flexible phase change films induced by ultrasonic vibration: a multi-dimensional study

Jinyang Huang and Yifeng Hu\*

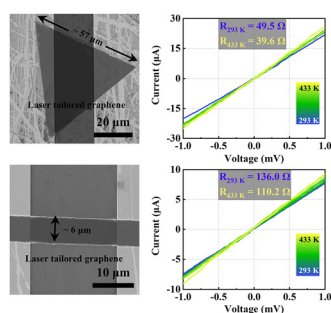
14498



## Conductive polymer doped carbon electrode for high-performance hole transport layer free perovskite photovoltaics and self-powered photodetectors

Dongchang Shi, Hongkai Zhang, Xian Zhang, Jiayu Chen, Fanxiu Feng, Jingyi Wang, Yue Zhang, Panjie Shao, Zhixin Zhao, Yan Guan, Fangzhou Liu, Yangyang Zhang, Cuncun Wu,\* Lixin Xiao\* and Shijian Zheng

14506



## Shape customization of 2D materials using maskless ultrafast laser lithography

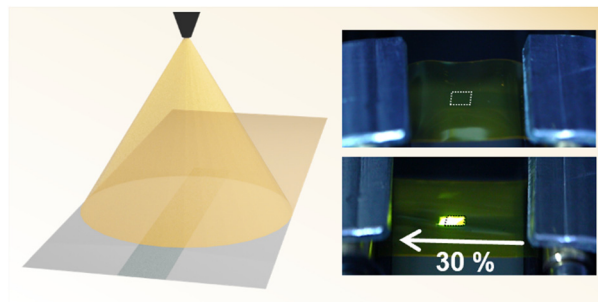
Weiqing Wu, Luchan Lin,\* Xiaoyang Fu, Yifan Hu, Junde Ji, Xinde Zuo, Yiwei Yu and Zhuguo Li\*



14518

### Stretchable light-emitting electrochemical cells fabricated by spray-coating

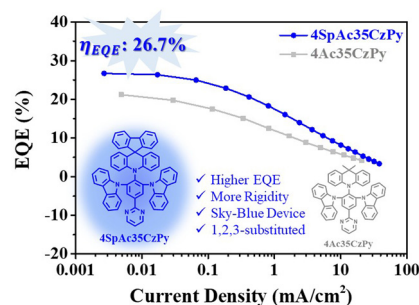
Sandra Gellner,\* Etienne Auroux, Joan Ràfols-Ribé, Nicole Stracke, Kumar Saumya, Anton Kirch, Christian Larsen, Ekaterina Nannen and Ludvig Edman\*



14527

### High-efficiency TADF materials featuring carbazole-modified spiroacridan-pyrimidine skeletons with an external quantum efficiency exceeding 26% in sky-blue light emission

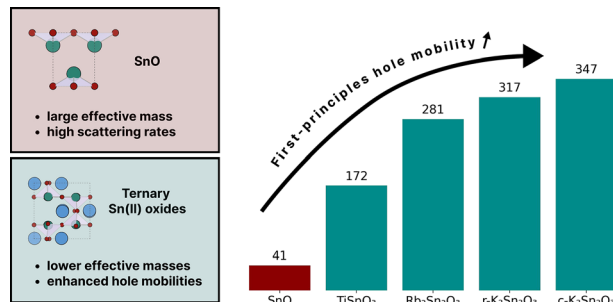
Yi-Zhen Li, Fu-En Szu, Han-Yun Szu, Chao-Che Wu, Yong-Yun Zhang, Zong-Huan Li, Jiun-Haw Lee,\* Tien-Lung Chiu\* and Man-kit Leung\*



14539

### First-principles understanding of hole mobility and intrinsic transport mechanisms in Sn(II) oxides

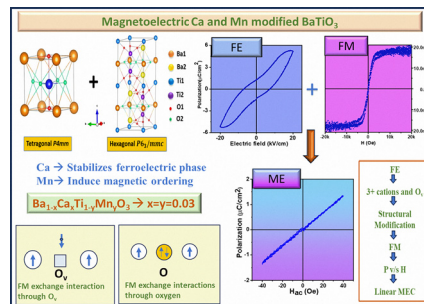
Romain Claes, David O. Scanlon, Gian-Marco Rignanese and Geoffroy Hautier\*



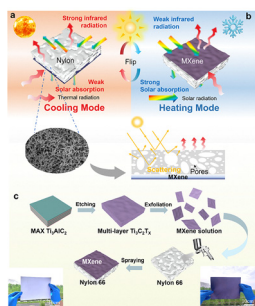
14552

### Room temperature multiferroicity and magnetoelectric coupling in Ca/Mn-modified BaTiO<sub>3</sub>

P. Maneesha, Koyal Suman Samantaray, Rakhi Saha, Tabinda Nabi, Rajashri Urkude, Biplab Ghosh, Arjun K. Pathak, Indranil Bhaumik, Abdelkrim Mekki, Khalil Harrabi and Somaditya Sen\*



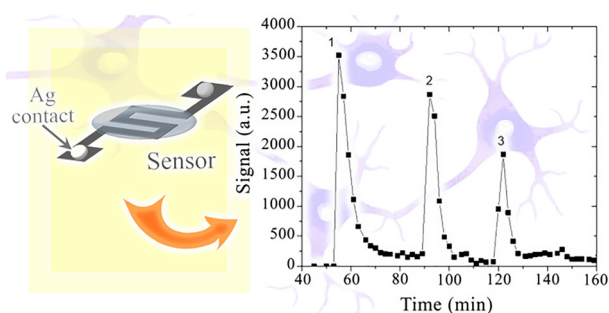
14574



## The elegance of simplicity: a cost-effective Janus membrane for all-day radiative thermal management inspired by complementary photothermal design

Ze Yang, Pengcheng Li, Tairan Wang, Yulin Liu, Hengzhi Zhang, Ke Wang and Chunyang Jia\*

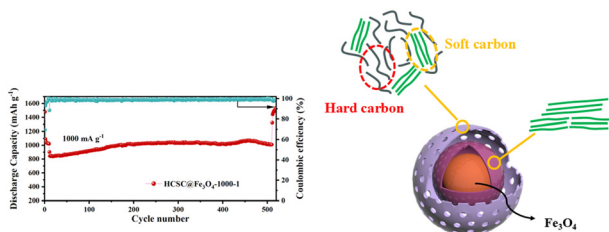
14586



## Wearable resistive graphene-based sensor for human behavioral and mental monitoring

I. V. Antonova,\* A. I. Ivanov, A. A. Buzmakova, O. P. Cherkasova, M. B. Shavelkina and N. A. Nebogatikova

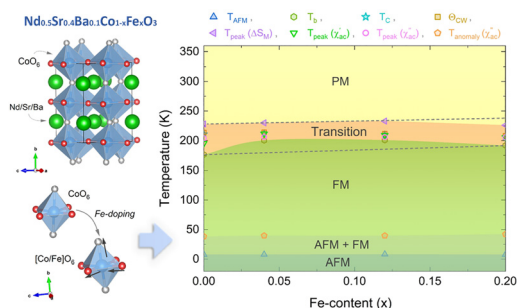
14596



## Superior lithium storage performance of an Fe<sub>3</sub>O<sub>4</sub> anode encapsulated by dual-layered interwoven carbon nanostructures using a facile one-step pyrolysis approach

Yuxuan Zhang, Dongfeng Li, Peng Wang, Qinliang Li, Bingbing Hu, Yuheng Sun, Anke Du and Xiaoya Yuan\*

14608



## Magnetostructural coupling, Kondo-like behavior, and magnetocaloric performance in Fe-doped Nd<sub>0.5</sub>(Sr<sub>0.4</sub>Ba<sub>0.1</sub>)CoO<sub>3</sub> perovskites

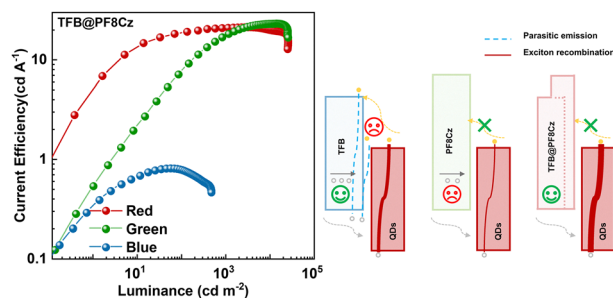
R. S. Silva Jr.,\* F. Serrano-Sánchez, J. E. Rodrigues, C. Santos, J. M. Attah-Baah, R. D. dos Reis, J. L. Martínez, J. A. Alonso and N. S. Ferreira\*



14624

## Blended hole-transport layer for efficient and stable full-color NiO<sub>x</sub>-based QLEDs

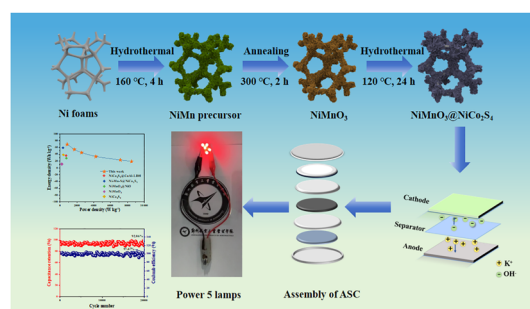
Meng-Wei Wang, Yin-Man Song, Hang Liu, Ting Ding, Jing Jiang, Pei-Li Gao,\* Kar Wei Ng\* and Shuang-Peng Wang\*



14631

## Flower-shaped NiMnO<sub>3</sub>@NiCo<sub>2</sub>S<sub>4</sub> heterojunction nanosheets for a high-performance asymmetric supercapacitor

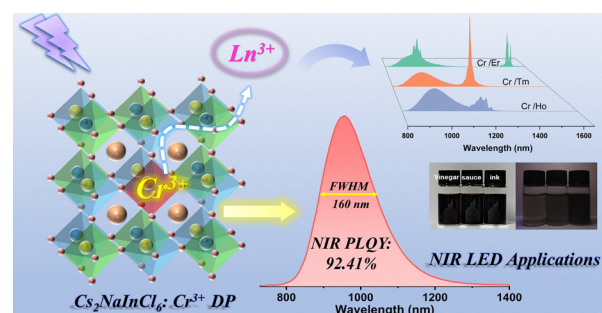
Zhanjun Yu,\* Kanglei Xu, Erbin Liu, Xinlong Yao, Meng Wei, Yan Li and Jiehu Cui\*



14648

## Cr<sup>3+</sup>-induced broadband near-infrared I combined with near-infrared II emission via rare earth co-doping in Cs<sub>2</sub>NaInCl<sub>6</sub> for multifunctional detection

Hui Xie, Hui Fu,\* Zhentao Du,\* Linjie Tong, Jinliang Jiang, Xue Jiang, Jialong Zhao, Weiyu Yang and Jinju Zheng\*



14657

## Halogen-bonded ionic liquid crystals: supramolecular organization and ionic transport

Mercedes Marcos, Alberto Concellón, Almudena Terrel, Rosa I. Merino, Rosa M. Tejedor, Joaquín Barberá, José L. Serrano\* and Santiago Uriel\*

