

# Journal of Materials Chemistry A

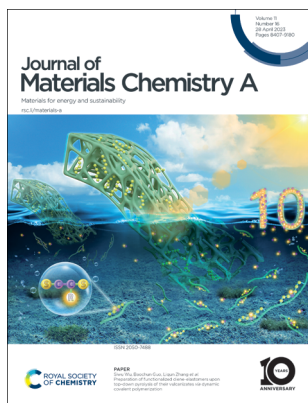
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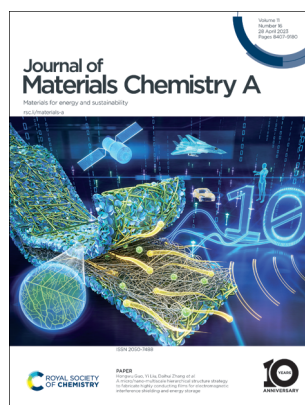
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ISSN 2050-7488 CODEN JMCAET 11(16) 8407–9180 (2023)



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### Inside cover

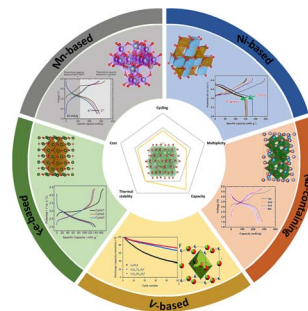
See Hongwu Guo, Yi Liu, Daihui Zhang *et al.*, pp. 8656–8669. Image reproduced by permission of Daihui Zhang from *J. Mater. Chem. A*, 2023, **11**, 8656.

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### Recent progress and perspectives on cation disordered rock-salt material for advanced Li-ion batteries

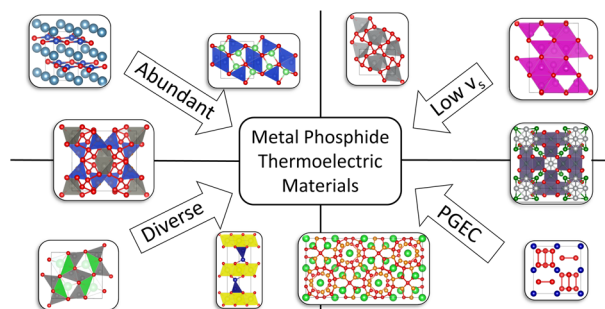
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### Recent progress in phosphide materials for thermoelectric conversion

Robert J. Quinn and Jan-Willem G. Bos\*



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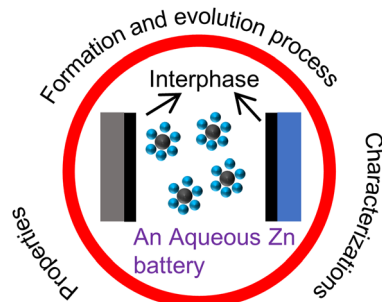
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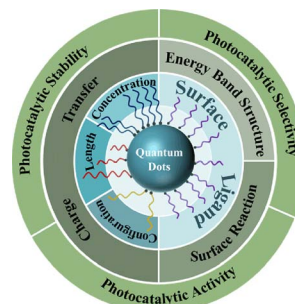


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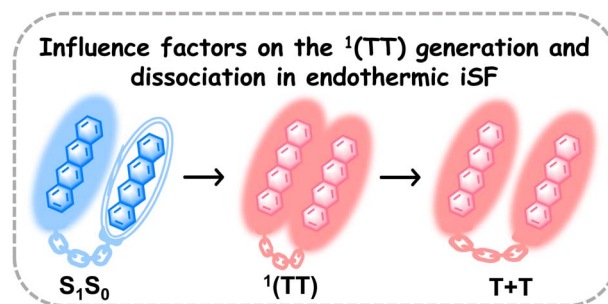
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**Interphases in aqueous rechargeable zinc metal batteries**Rishivandhiga Jayakumar, Daniel M. Harrison, Jun Xu,\*  
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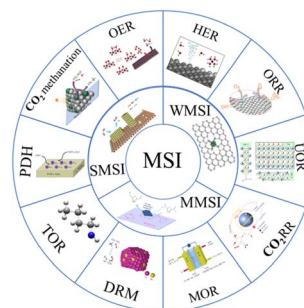
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**Mechanistic insights into the influence of surface ligands on quantum dots for photocatalysis**Yijiang Chen, Shan Yu,\* Xiang-Bing Fan, Li-Zhu Wu\*  
and Ying Zhou\*

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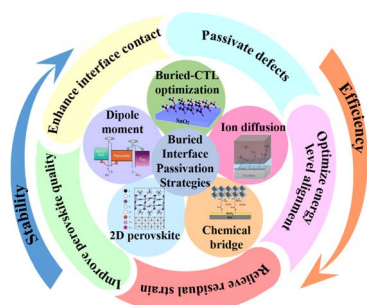
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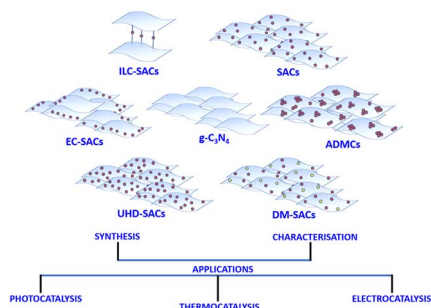
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### Buried interface passivation strategies for high-performance perovskite solar cells

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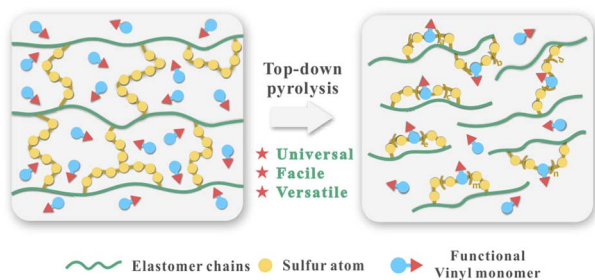


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Suja P, Jubi John, T. P. D. Rajan, Gopinathan M Anilkumar, Takeo Yamaguchi, Suresh C. Pillai and U. S. Hareesh\*

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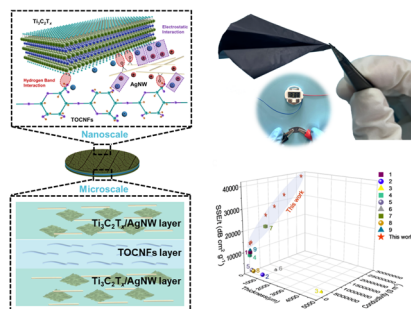
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### Preparation of functionalized diene-elastomers upon top-down pyrolysis of their vulcanizates via dynamic covalent polymerization

Xinglong An, Siwu Wu,\* Shafan Xiong, Shuangjian Yu, Zhenghai Tang, Baochun Guo\* and Liqun Zhang\*

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### A micro/nano-multiscale hierarchical structure strategy to fabricate highly conducting films for electromagnetic interference shielding and energy storage

Beibei Wang, Weiye Zhang, Jingmeng Sun, Chenhuan Lai, Shengbo Ge, Hongwu Guo,\* Yi Liu\* and Daihui Zhang\*



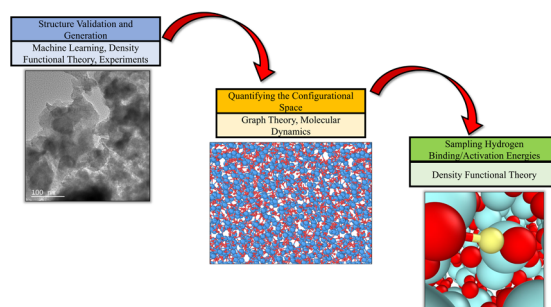


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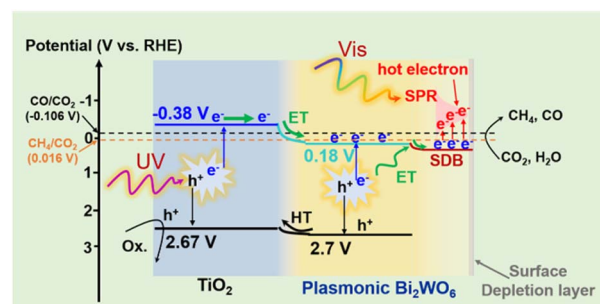
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## Surface electron modulation of a plasmonic semiconductor for enhanced CO<sub>2</sub> photoreduction

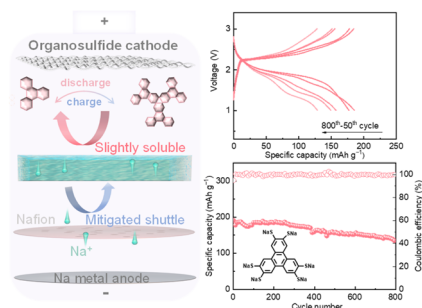
Dehua Tian, Changhai Lu, Xiaowei Shi, Haifeng Wu, Lu Liu, Wenjie Mai, Baojun Li, Juan Li<sup>\*</sup> and Zaizhu Lou<sup>\*</sup>



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## An extended $\pi$ -conjugated organosulfide-based cathode for highly reversible sodium metal batteries

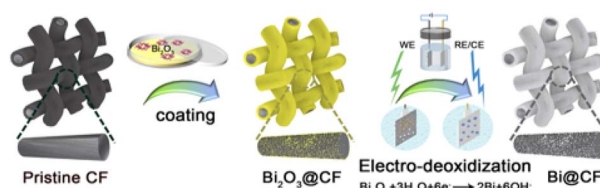
Xin Li, Yubing Si, Shuai Tang<sup>\*</sup> and Yongzhu Fu<sup>\*</sup>



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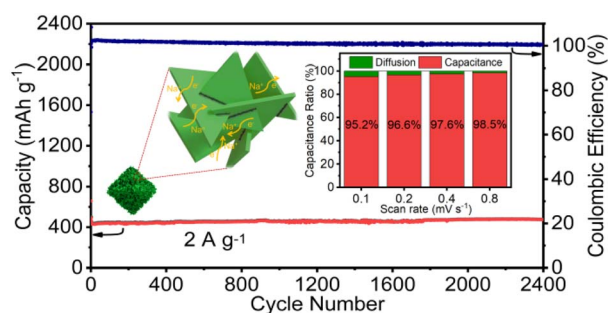
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Qi-an Zhang, Hui Yan, Yuanfang Song, Jing Yang, Yuxi Song and Ao Tang<sup>\*</sup>



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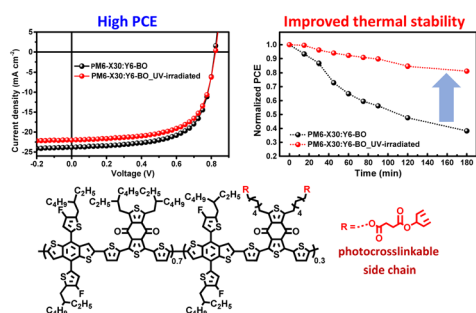
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**Bimetallic selenide  $\text{Cu}_4\text{Mo}_6\text{Se}_8$  nanosheet arrays grown on a carbon skeleton *via* MOF-derived with enhanced electrochemical kinetics for high-performance sodium-ion batteries**

Shuai Wang, Rujia Zou,\* Qian Liu and Huifang Chen\*

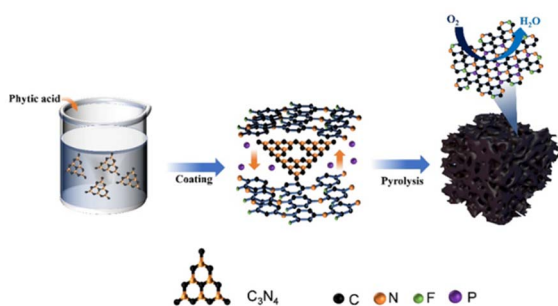
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**Rational strategy to enhance the thermal stability of solar cell performance using a photocrosslinkable conjugated polymer**

Hong Diem Chau, Su Hong Park, Sung Hoon Jung, Jin Young Park, Min Ji Kang, Amit Kumar Harit, Han Young Woo, Min Ju Cho\* and Dong Hoon Choi\*

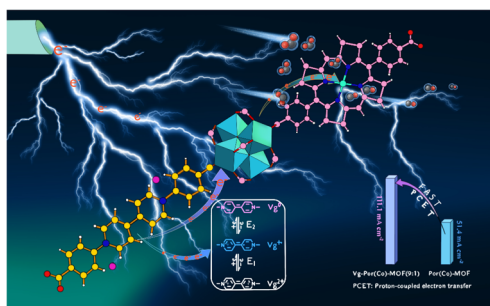
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**Fluorine and phosphorus atoms cooperated on an N-doped 3D porous carbon network for enhanced ORR performance toward the zinc–air batteries**

Mengwei Li, Qilong Ye, Sanying Hou, Jinlin Yang, Bin Chi,\* Yijie Deng\* and Xinlong Tian\*

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Yu-Liang Dong, Zi-Yan Jing, Qiu-Jin Wu, Zi-Ao Chen, Yuan-Biao Huang\* and Rong Cao\*

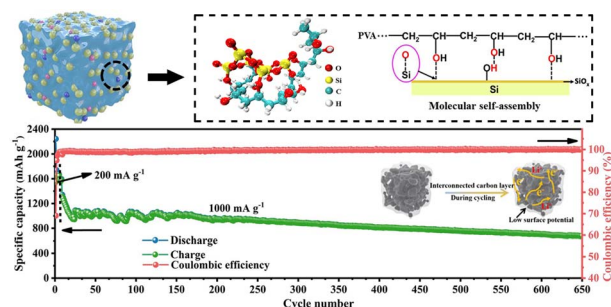


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# An interconnected silicon–carbon conductive framework for dissipating mechanical strain for advanced Li-ion storage

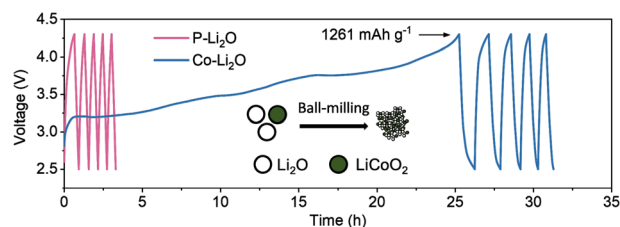
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# Activated nanolithia as an effective prelithiation additive for lithium-ion batteries

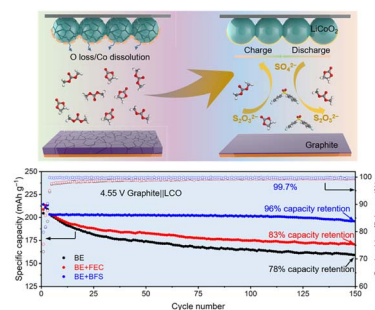
Jingxi Zhang, Xi Chen, Gang Shao, Hailong Wang, Yanhao Dong\* and Chang-An Wang\*



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Junbo Zhang, Chengwu Liu, Haikuo Zhang, Ruhong Li, Ling Lv, Di Lu, Shuoqing Zhang, Xuezhong Xiao, Shujiang Geng, Fuhui Wang, Tao Deng, Lixin Chen and Xiulin Fan\*



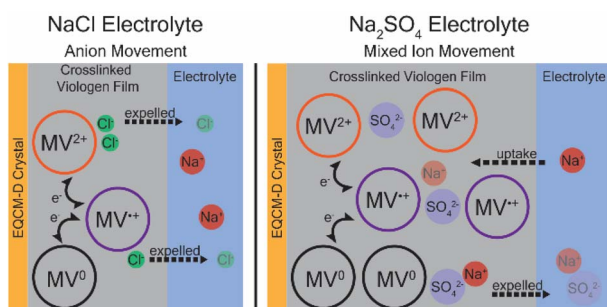
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# Defect-enrichment in porous interface of ultrathin CuO nanobelts realizes a novel CO<sub>2</sub> photoreduction pathway

Qiang Wang, Yanan Zhou, Kaifu Zhang,\* Yu Yu, Qiquan Luo,\* Shan Gao\* and Yi Xie\*



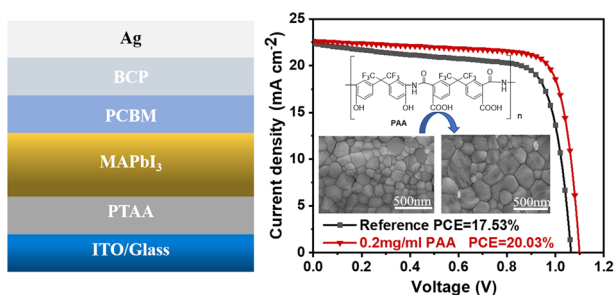
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### Water-coupled monovalent and divalent ion transport in polyviologen networks

Alexandra D. Easley, Khirabdhhi Mohanty and Jodie L. Lutkenhaus\*

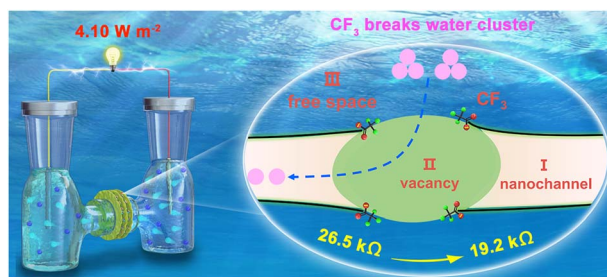
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Huanting Luo, Fanlin Tu, Xiaotong Chen, Longjiang Xing, Leliang Cao, Guoxing Ren, Shaomin Ji, Yuanhong Zhong, Liangang Xiao, Wen-Cheng Chen, Qing-Dan Yang,\* Chen Yang\* and Yanping Huo\*

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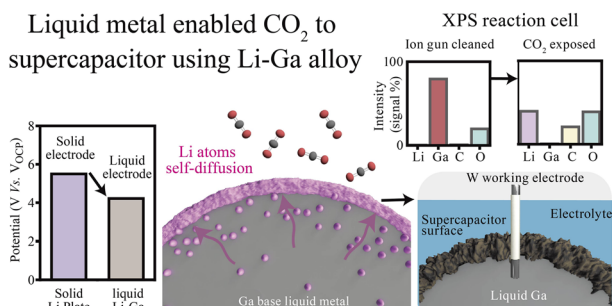


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Zhengmao Ding, Tiancheng Gu, Shouyi Sun, Gang Tang, Hanli Zhang, Teng Wang, Yunjun Luo\* and Jinjin Li\*

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Linlin Ye, Nitu Syed, Dingqi Wang, Billy J. Murdoch, Karma Zuraqi, Masood S. Alivand, Penny Xiao, Ranjeet Singh, Lianhai Zu, Kathryn A. Mumford, Amanda V. Ellis, Chris F. McConville, Gang Kevin Li\* and Ali Zavabeti\*



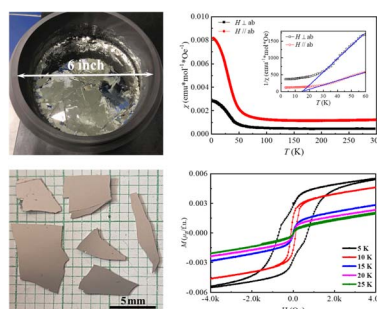


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# Observation of ferromagnetism in CeCr<sub>2</sub>Si<sub>2</sub>C single crystals

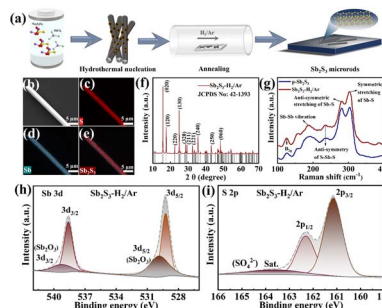
Guobin Wang, Long Chen, Jun Deng, Yuxin Yang, Tao Sun, Zesheng Zhang, Xu Chen\* and Hui Li\*



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# Improving the optoelectronic properties of single-crystalline antimony sulfide rods through simultaneous defect suppression and surface cleaning

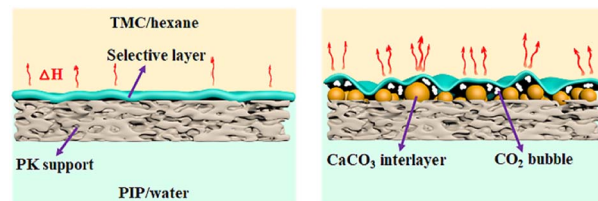
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# Regulating interfacial polymerization via a multi-functional calcium carbonate based interlayer for a highly permselective nanofiltration membrane

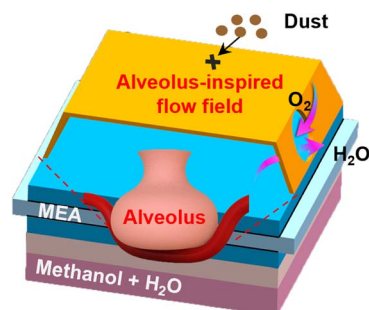
Mengyang Hu, Wenming Fu, Kecheng Guan, Ralph Rolly Gonzales, Qiangqiang Song, Atsushi Matsuoka, Zhaohuan Mai, Yu-Hsuan Chiao, Pengfei Zhang, Zhan Li and Hideto Matsuyama\*



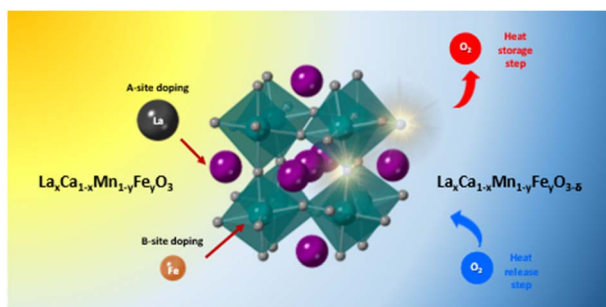
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# A 3D printed alveolus-inspired flow field for direct methanol fuel cells with enhanced performance and durability

Pengpeng Xu, Qinglin Wen, Siyi Zou, Hanqing Jin, Yali Li, Wei Li, Can He, Saifei Pan, Bin Tian, Liuming Yan, Fandi Ning\* and Xiaochun Zhou\*



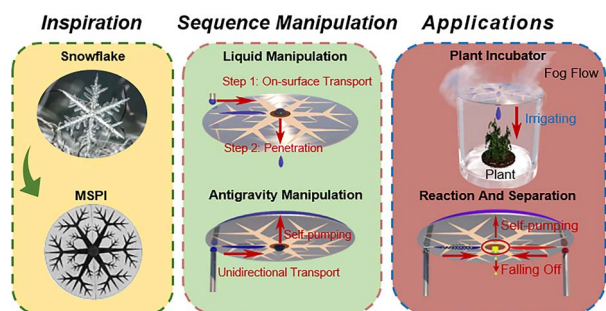
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### A and B site Co-doping of $\text{CaMnO}_3$ : a route to enhanced heat storage properties

Emanuela Mastronardo,<sup>\*</sup> Xin Qian, Juan M. Coronado and Sossina M. Haile<sup>\*</sup>

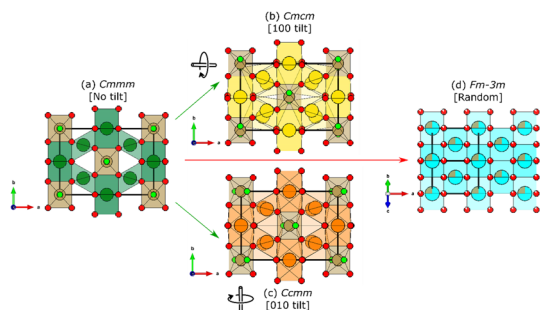
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### Sequence liquid manipulation on a multifunctional snowflake-patterned interface with dual unidirectional wettability

Weiming Wu, Haoyu Bai, Yi Yang, Guoqiang Li,<sup>\*</sup> Zuqiao Chen, Chengning Tang, Huan Yin, Lin Lai, Jiasong Liu, Sensen Xuan, Yuegan Song, Senyun Liu, Kai Yin<sup>\*</sup> and Moyuan Cao<sup>\*</sup>

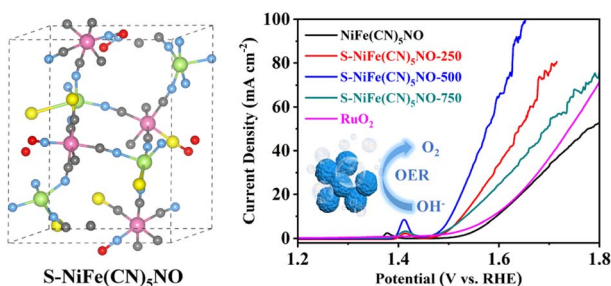
8886



### Systematic study of short- and long-range correlations in $\text{RE}_3\text{TaO}_7$ weberite-type compounds by neutron total scattering and X-ray diffraction

Igor M. Gushev, Eric C. O'Quinn, Matthew Tucker, Rodney C. Ewing, Cale Overstreet, Jörg Neuefeind, Michelle Everett, Qiang Zhang, David Sprouster, Daniel Olds, Gianguido Baldinozzi<sup>\*</sup> and Maik Lang<sup>\*</sup>

8904



### Sulfur-doped $\text{NiFe(CN)}_5\text{NO}$ nanoparticles as efficient electrocatalysts for the oxygen evolution reaction

Yi Zhang, Xiaoping Shen,<sup>\*</sup> Chunsen Song, Zhenyuan Ji and Fei-Hu Du<sup>\*</sup>

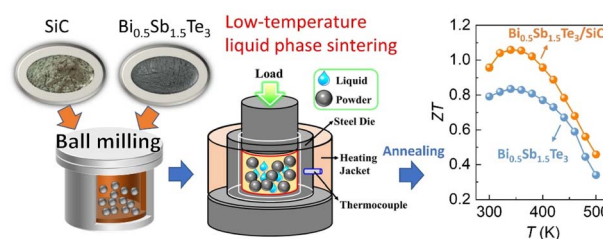


## PAPERS

8912

### Enhanced thermoelectric performance in $\text{Bi}_{0.5}\text{Sb}_{1.5}\text{Te}_3/\text{SiC}$ composites prepared by low-temperature liquid phase sintering

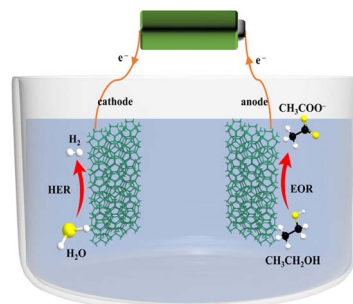
Bo Zhu, Yi Luo, Haiyi Wu, Du Sun, Luo Liu, Shengcheng Shu, Zhong-Zhen Luo, Qiang Zhang,\*  
 Ady Suwardi\* and Yun Zheng\*



8922

### Energy-efficient hydrogen production coupled with simultaneous electrosynthesis of acetate over a mesoporous OsRh film

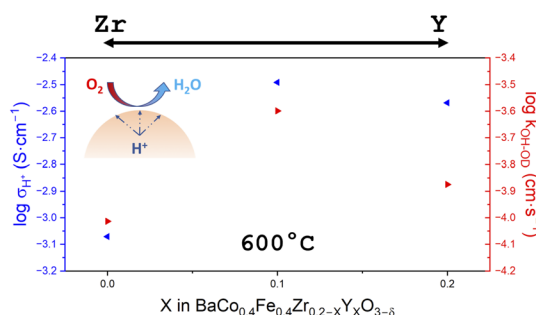
Ziqiang Wang, Peng Wang, Hugang Zhang, Kai Deng, Hongjie Yu, You Xu, Xiaonian Li, Hongjing Wang and Liang Wang\*



8929

### Tuning proton kinetics in $\text{BaCo}_{0.4}\text{Fe}_{0.4}\text{Zr}_{0.2-x}\text{Y}_x\text{O}_{3-\delta}$ triple ionic-electronic conductors via aliovalent substitution

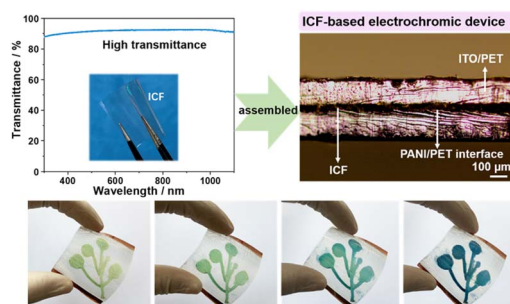
Jack H. Duffy, Harry W. Abernathy and Kyle S. Brinkman\*



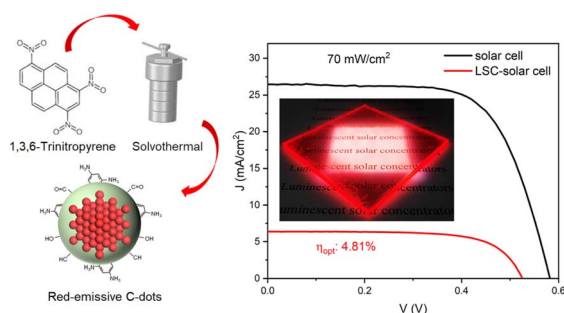
8939

### Ultrathin flexible electrochromic devices enabled by highly transparent ion-conducting films

Hui Gong, Ang Li, Guoxing Fu, Meiyu Zhang, Zilong Zheng, Qianqian Zhang,\* Kailing Zhou, Jingbing Liu and Hao Wang\*



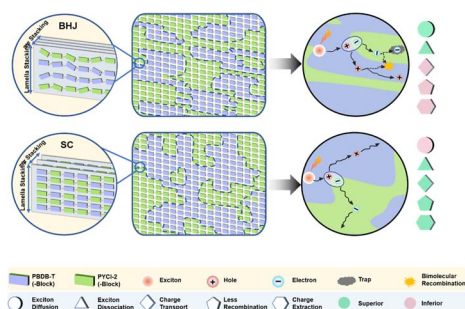
8950



### Red-emissive carbon quantum dots enable high efficiency luminescent solar concentrators

Guiju Liu,<sup>\*</sup> Margherita Zavelani-Rossi, Guangting Han, Haiguang Zhao<sup>\*</sup> and Alberto Vomiero<sup>\*</sup>

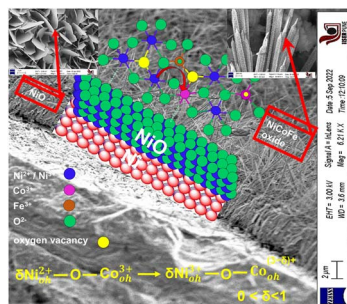
8961



### Unraveling the device performance differences between bulk-heterojunction and single-component polymer solar cells

Yina Zheng, Yao Wu, Zhihao Chen, Xinxin Xia, Yawen Li, Qiang Wu, Yuze Lin, Xinhui Lu, Xiaotao Hao and Jie Min<sup>\*</sup>

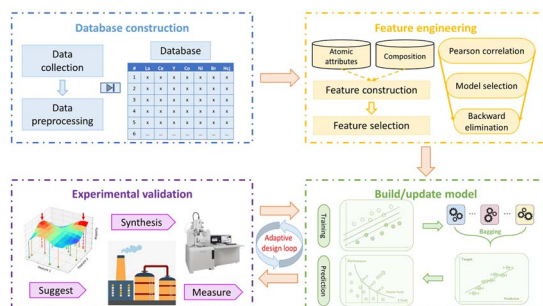
8972



### Superior oxygen evolution reaction performance of NiCoFe spinel oxide nanowires *in situ* grown on β-Ni(OH)<sub>2</sub> nanosheet-decorated Ni foam: case studies on stoichiometric and off-stoichiometric oxides

Prerna Upale, Seema Verma<sup>\*</sup> and Satishchandra B. Ogale

8988



### Accelerated discovery of cost-effective Nd-Fe-B magnets through adaptive learning

Jie Chen, Jian Liu, Minjuan Zhang,<sup>\*</sup> Zhanji Dong, Zhongjie Peng, Xinyi Ji, Mei Liu, Lanting Zhang, Anqi Zhang and Hong Zhu

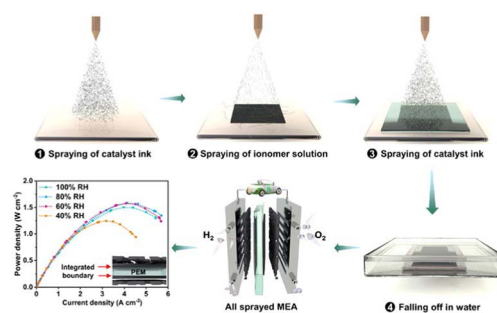




9002

## All sprayed fluorine-free membrane electrode assembly for low-platinum and low-humidity proton exchange membrane fuel cells

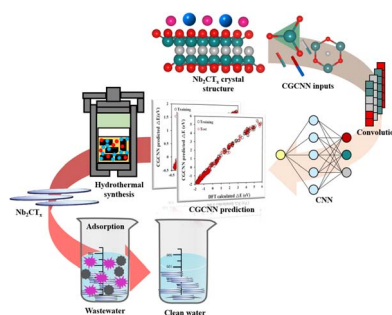
Weisheng Yu, Xiaoqi Yang, Xian Liang, Yan Xu, Xianhe Shen, Xiaolin Ge, Liang Wu\* and Tongwen Xu\*



9009

## Crystal graph convolution neural networks for fast and accurate prediction of adsorption ability of Nb<sub>2</sub>CT<sub>x</sub> towards Pb(II) and Cd(II) ions

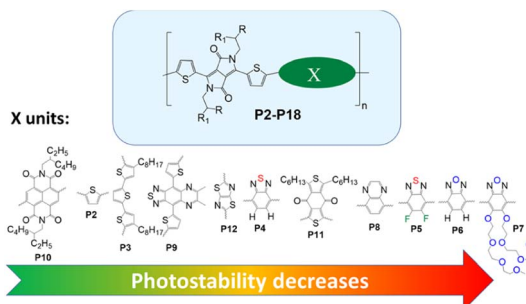
Zeeshan Haider Jaffari, Ather Abbas, Muhammed Umer, Eun-Sik Kim\* and Kyung Hwa Cho\*



9019

## Molecular structure – intrinsic photostability relationships for diketopyrrolopyrrole-based conjugated polymers

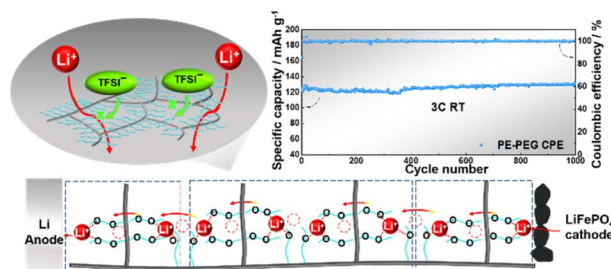
Petr M. Kuznetsov, Ilya V. Martynov, Ivan S. Zhidkov, Lavrenty G. Gutsev, Ekaterina A. Khakina, Elena N. Zakharchenko, Nikita A. Slesarenko, Andrey I. Kukhareenko and Pavel A. Troshin\*



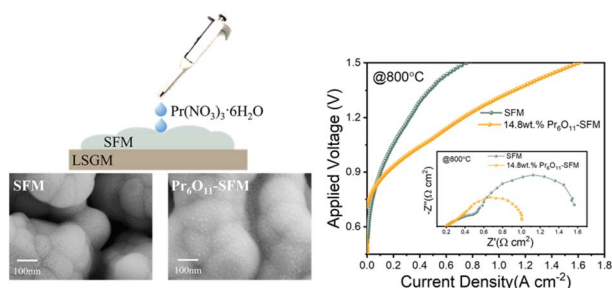
9029

## Enhancing Li ion conduction through polyethylene glycol brushes towards long-life solid-state lithium metal batteries

Yuxuan Li, Jing Yang, Xingzhao Zhang, Ximing Cui and Qinmin Pan\*



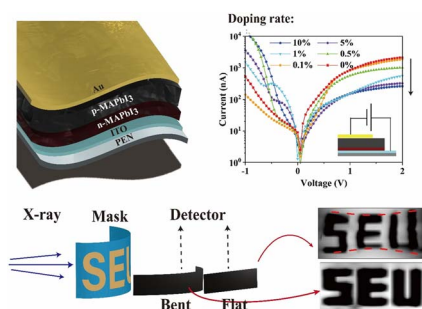
9039



### Improving the performance for direct electrolysis of $\text{CO}_2$ in solid oxide electrolysis cells with a $\text{Sr}_{1.9}\text{Fe}_{1.5}\text{Mo}_{0.5}\text{O}_{6-\delta}$ electrode via infiltration of $\text{Pr}_6\text{O}_{11}$ nanoparticles

Wanhua Wang, Haixia Li, Clarita Y. Regalado Vera, Jie Lin, Ka-Young Park, Taehee Lee, Dong Ding\* and Fanglin Chen\*

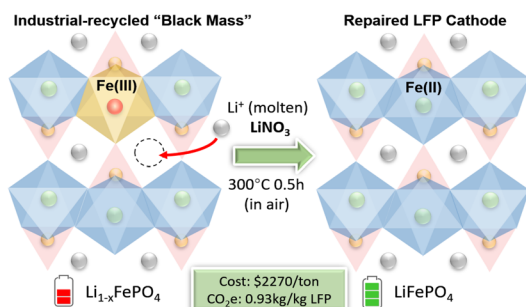
9049



### A flexible perovskite homojunction with metallic ion doping for large-scale and high sensitivity X-ray detection

Jingda Zhao, Xin Wang,\* Yijing Ding, Ziyu Wei, Yubing Xu, Yuzhu Pan, Yuwei Li, Byung Seong Bae, Mamoru Furuta, Zhuoya Zhu, Qing Li, Jianming Zhou, Xiaobing Zhang and Wei Lei\*

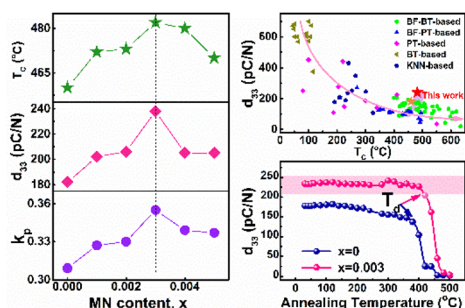
9057



### A recrystallization approach to repairing spent $\text{LiFePO}_4$ black mass

Zhongheng Wang, Hui Xu, Zhiruo Liu, Mingzhe Jin, Linghao Deng, Sa Li\* and Yunhui Huang\*

9066



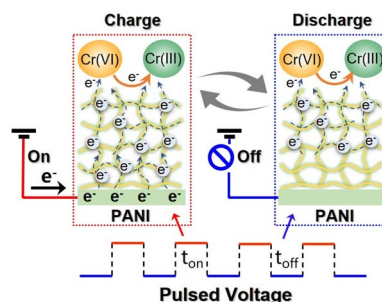
### Superior lead-free high-temperature piezoceramics of $\text{BiFeO}_3\text{-BaTiO}_3\text{-(Bi}_{0.5}\text{Na}_{0.5})\text{TiO}_3$ through cooperative regulation

Aiwen Xie, Mengshan Wang, Jian Fu, Zide Yu, Xinchun Xie and Ruzhong Zuo\*

9074

### Pulsed-waveform electrocatalytic detoxification of hexavalent chromium promoted by pseudocapacitive effects

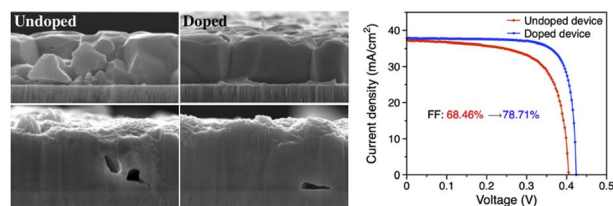
Huaijia Xin, Hang Wang, Wei Zhang, Yang Liu, Jun Zhang, Gong Zhang, Qinghua Ji,\* Huijuan Liu and Jiuhui Qu



9085

### Efficiency enhancement of CZTSe solar cells based on *in situ* K-doped precursor

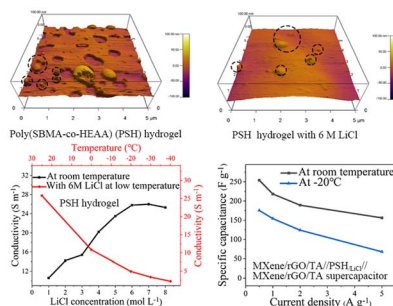
Shengye Tao, Liangzheng Dong, Junsu Han, Yafei Wang, Qianming Gong, Jinquan Wei, Ming Zhao\* and Daming Zhuang\*



9097

### Ultrahigh conductivity and antifreezing zwitterionic sulfobetaine hydrogel electrolyte for low-temperature resistance flexible supercapacitors

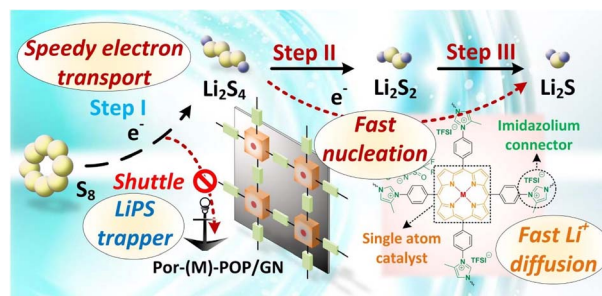
Geliang Zhang, Xinguo Yang,\* Honghao Shu and Wenbin Zhong\*



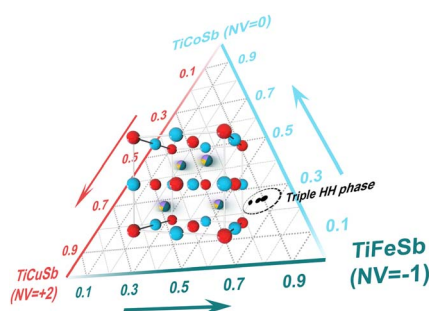
9112

### Integrating the multiple functionalities in metalloporphyrin porous organic polymers enabling strong polysulfide anchoring and rapid electrochemical kinetics in Li-S batteries

Yun Sheng Ye,\* Mohamed Gamal Mohamed, Wei Cheng Chen and Shiao Wei Kuo\*



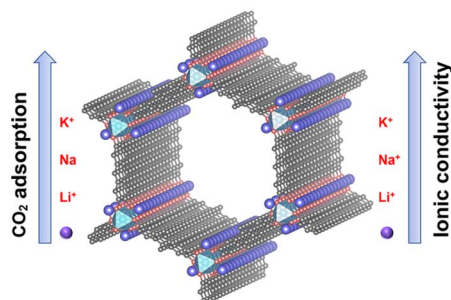
9125



### Alloyed triple half-Heuslers: a route toward high-performance thermoelectrics with intrinsically low lattice thermal conductivity

Peng-Fei Luo, Shengnan Dai, Yuting Zhang, Xin Liu, Zhili Li, Jiye Zhang, Jiong Yang\* and Jun Luo\*

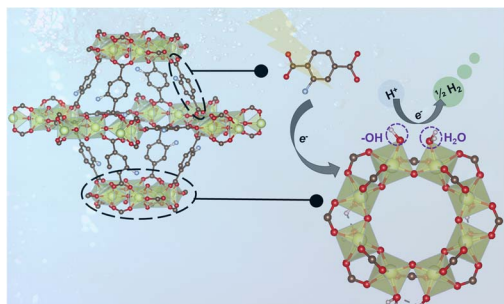
9136



### 2D titanium catecholate metal-organic frameworks with tunable gas adsorption and ionic conductivity

Yueting Li, Huanyu Liu, Lu Dai, Changli Wang, Jianning Lv, Xiangjian Meng, Anwang Dong, Bo Wang and Pengfei Li\*

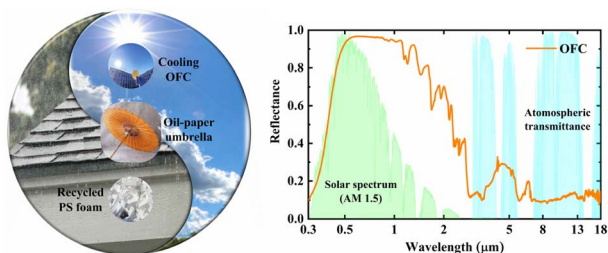
9143



### Defect engineering in MIL-125-(Ti)-NH<sub>2</sub> for enhanced photocatalytic H<sub>2</sub> generation

Ladawan Pukdeejorhor, Suttipong Wannapaiboon, Jan Berger, Katia Rodewald, Sutarat Thongratkaew, Sarawoot Impeng, Julien Warnan,\* Sareeya Bureekaew and Roland A. Fischer\*

9152



### Oil-paper-umbrella-inspired passive radiative cooling using recycled packaging foam

Yang Liu, Xiaojie Liu, Fangqi Chen, Yanpei Tian, Andrew Caratenuto and Yi Zheng\*





9160

## Predicting the Na<sup>+</sup> ion transport properties of NaSICON materials using density functional theory and Kinetic Monte Carlo

Judith Schuett, Antonia S. Kuhn and Steffen Neitzel-Grieshammer\*

