

# Journal of Materials Chemistry A

Materials for energy and sustainability

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## IN THIS ISSUE

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### Cover

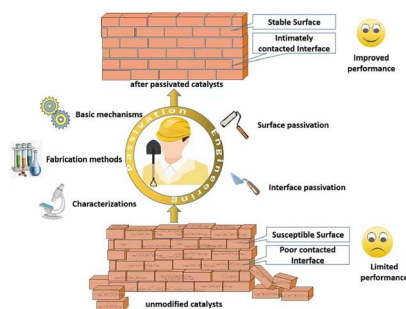
See Kangming Li, Jason Hattrick-Simpers *et al.*, pp. 12412–12422. Image reproduced by permission of Kangming Li from *J. Mater. Chem. A*, 2024, **12**, 12412.

## REVIEWS

12293

### A review on passivation engineering for improving photocatalytic hydrogen evolution performance

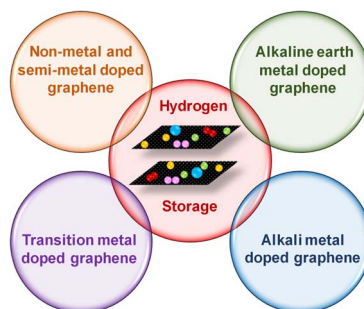
Dandan Ma, Jiantao Chen, Jun Li, Xin Ji and Jian-Wen Shi\*



12325

### Hetero-atom doped graphene for marvellous hydrogen storage: unveiling recent advances and future pathways

Shankar Ghotia, Tripti Rimza, Shiv Singh, Neeraj Dwivedi, Avani Kumar Srivastava and Pradip Kumar\*



# Environmental Science: Atmospheres

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Elemental answers

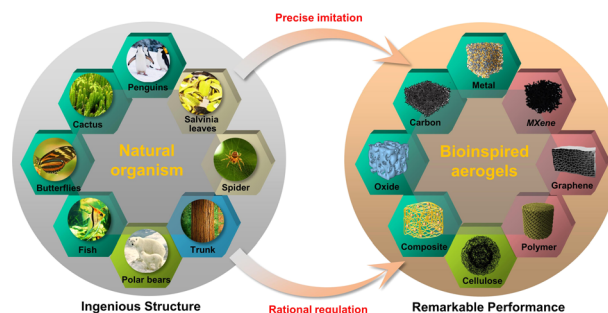


## REVIEWS

12358

**Bioinspired aerogels: ingenious structure, remarkable performance, and versatile applications**

Hao Sun, Bin Yang,\* Dexian Ji, Cong Ma, Ruixue Pang, Baolong Yuan, Jiawei Liu, Hui Zhang and Meiyun Zhang\*

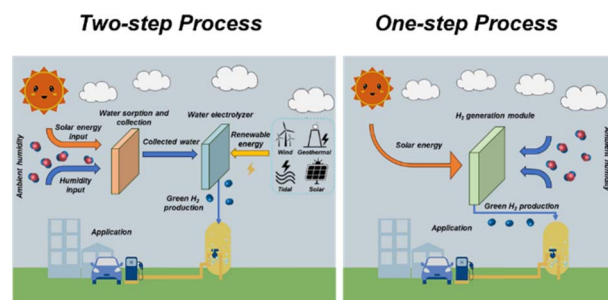


## PERSPECTIVE

12381

**Hydrogen generation from atmospheric water**

Jining Guo, Joshua D. Butson, Yuecheng Zhang, Guoping Hu,\* Xiaolei Fan\* and Gang Kevin Li\*

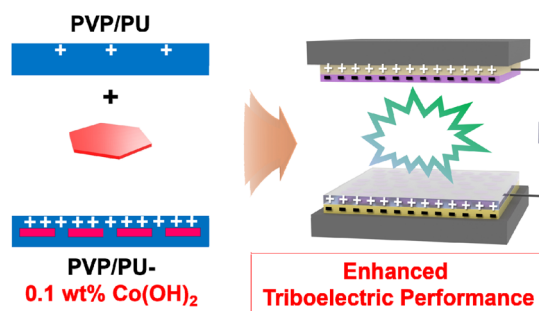


## COMMUNICATIONS

12397

**A very small amount (0.1 wt%) of Co(OH)<sub>2</sub> nanoplates enhances triboelectric performance of polymers**

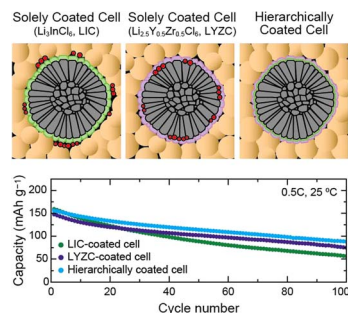
Jina Park, Inah Hyun, Yoon Kee Kim, Hanbyeol Jung, Dong-Min Lee, Sang-Woo Kim\* and Seung Uk Son\*



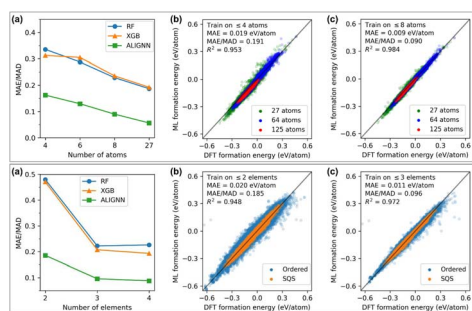
12405

**Hierarchically coated halide layers: enhancing the performance at composite cathode interfaces in solid-state Li-metal batteries**

Jee Yun Jung, Hyeseong Jeong, Young Jung Kim, Sung Man Cho, Yongjun Jang and Hyounghul Kim\*



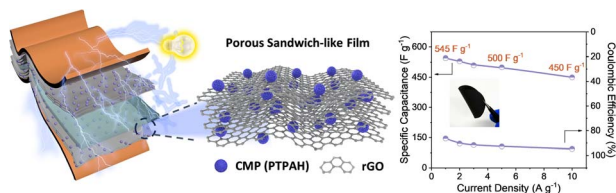
12412



## Efficient first principles based modeling *via* machine learning: from simple representations to high entropy materials

Kangming Li,<sup>\*</sup> Kamal Choudhary, Brian DeCost, Michael Greenwood and Jason Hattrick-Simpers<sup>\*</sup>

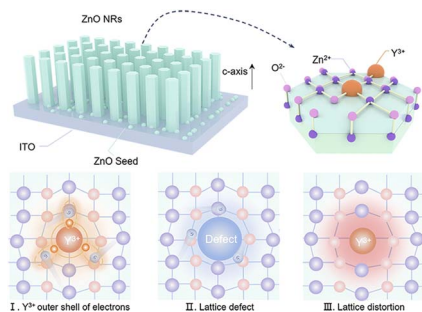
12423



## A conjugated microporous polymer–graphene composite porous sandwich-like film for highly efficient flexible supercapacitors

Likuan Teng, Ju Duan, He Liu, Xinzeyu Zhang, Jiaqiang Li, Yitao Li, Jianhao Hong, Wei Lyu<sup>\*</sup> and Yaozu Liao<sup>\*</sup>

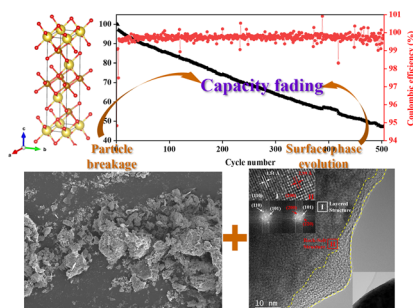
12435



## Insight into piezoelectricity modulation mechanism of ZnO doped with Y ions

Zihan Wang, Yue Sun, Shenglong Wang, Da Xiong, Guo Tian, Longchao Huang, Boling Lan, Long Jin, Weiqing Yang and Weili Deng<sup>\*</sup>

12443



## Insights into the capacity fading and failure mechanism of an O3-NaNi<sub>1/3</sub>Fe<sub>1/3</sub>Mn<sub>1/3</sub>O<sub>2</sub> layered oxide cathode material for sodium-ion batteries

Xiaohan Zhao, Lijuan Hou, Qi Liu,<sup>\*</sup> Yanshuo Zhao, Daobin Mu, Zhikun Zhao,<sup>\*</sup> Li Li, Renjie Chen and Feng Wu

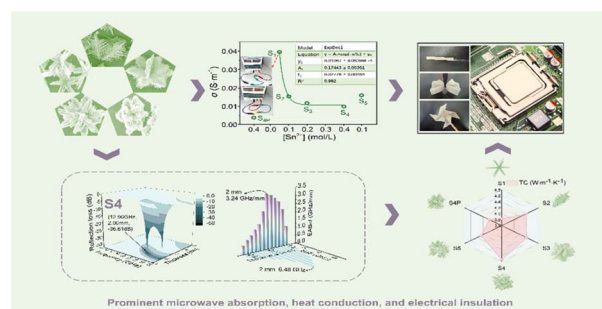


## PAPERS

12452

# Morphology- and defect-coordinated prominent microwave absorption, thermal exhaustion, and electrical insulation in $\text{SnO}_2@\text{SnP}_2\text{O}_7@\text{Sn}_2\text{P}_2\text{O}_7$ hierarchical architectures

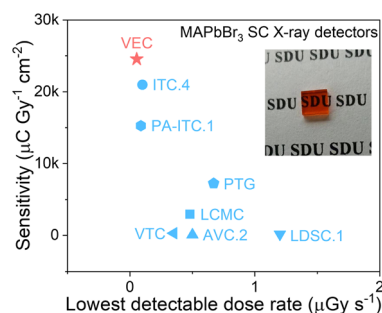
Xinyu Liu, Siyu Xie, Shiyang Cai, Kang Fu, Xiangyang Liu, Lingling Lin, Zhenjie Yu, Guoxiu Tong\* and Wenhua Wu



12467

# Ultralow detection limit and high sensitivity X-ray detector of high-quality $\text{MAPbBr}_3$ perovskite single crystals

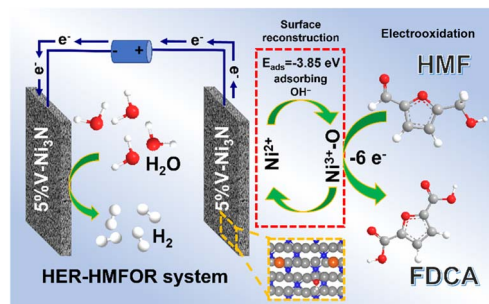
Dong Liu, Xue Sun, Li Jiang, Xianyuan Jiang, Hao Chen, Fucai Cui, Guodong Zhang,\* Yong Wang, Ying-Bo Lu, Zhongchen Wu,\* Zhijun Ning and Xutang Tao



12475

# Enhanced surface reconstruction of V-doped $\text{Ni}_3\text{N}$ driven by strong OH adsorption to boost 5-hydroxymethylfurfural electrooxidation for energy-saving $\text{H}_2$ production

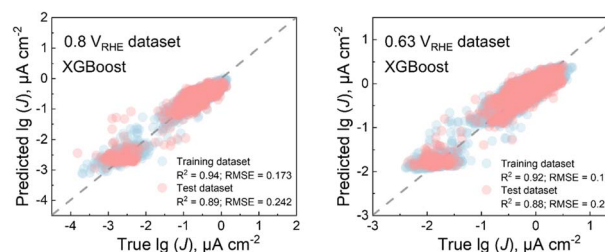
Qi Zhou, Juan Wang, Ga Jin, Huiling Liu\* and Cheng Wang



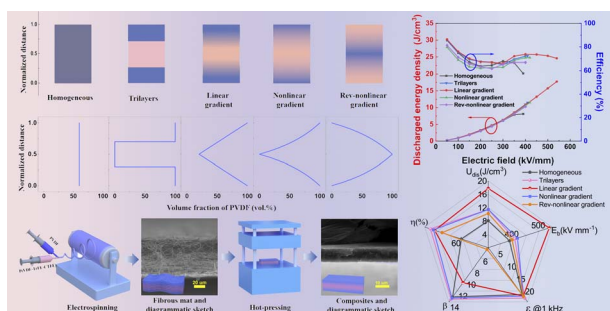
12487

# Machine learning enabled exploration of multicomponent metal oxides for catalyzing oxygen reduction in alkaline media

Xue Jia\* and Hao Li\*



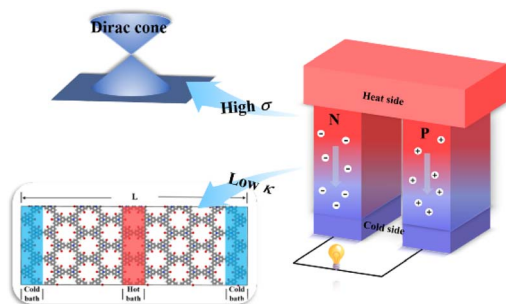
12501



### Gradient structured all-organic dielectrics by electrospinning for enhanced energy storage performance

Yuan Liu, Hang Luo,\* Haiyan Chen, Minxi Li, Yuting Wan, Bo Peng, Xiaona Li and Dou Zhang\*

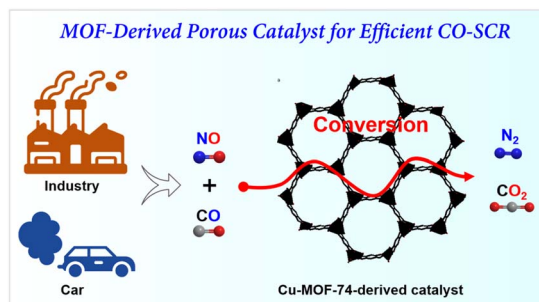
12515



### Exploring the thermoelectric properties of two-dimensional organic conjugated polymers with Dirac cone-like electronic structures

Jie Zhu, Yajing Sun,\* Zhen Zhang\* and Wenping Hu

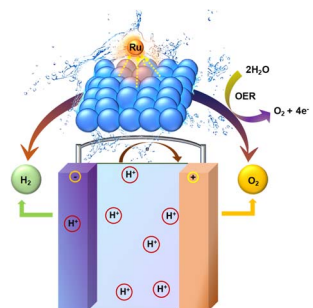
12524



### Modulation of active metal species in MOF-derived catalysts for efficient NO reduction by CO

Ning-Rui Zhou, Zhen Yang, Ying Tang, Ming-Qi Zhang, Yun-Peng Zha, Min-Min Liu,\* Feng Yu\* and Jiang Liu\*

12533



### Atomically dispersed Ru sites on MOF-derived NC-ZnO for efficient oxygen evolution reaction in acid media

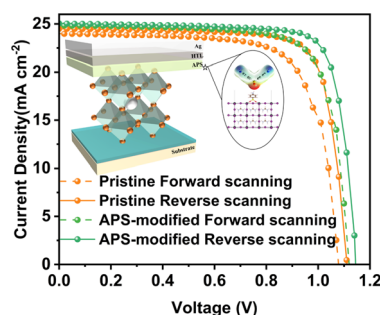
Sagar Varangane, Ragunath Madhu, Saad Mehmood, Bhavya Jaksani, Vidha Bhasin, B. Moses Abraham, Ammavasi Nagaraj, Chandra Shobha Vennapoosa, B. V. Subba Reddy, Subrata Kundu\* and Ujjwal Pal\*



12545

## Surface passivation with an electron-donating sulfonate group for high-performance and stable perovskite solar cells

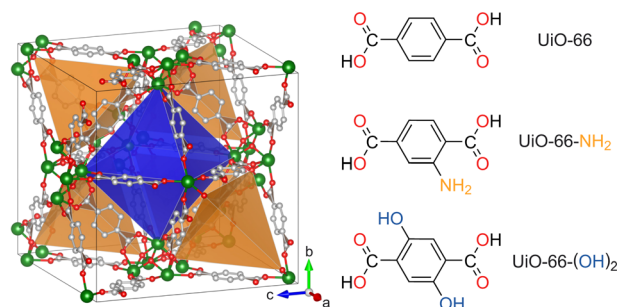
Qingquan He, Zenan Zhang, An Chen, Tao Zhang, Xiuyuan Chen, Xiaolong Bian, Gaopeng Xu, Ting Chen, Shicheng Pan, Jiewen Yu, Guochao Lu, Jing Li and Jun Pan\*



12552

## Tuning the ion conductivity of Zr-based metal-organic framework ionogels by linker functionalization

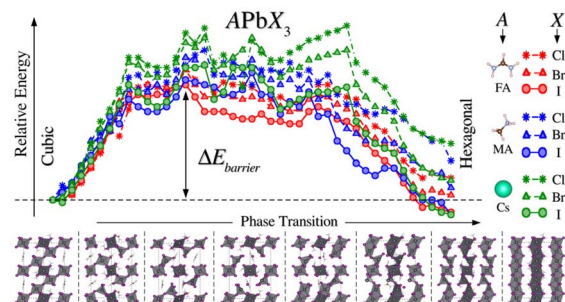
Antonija Ferbezar, Roman Zettl, Katharina Hogrefe, Harald Fitzek, Bernhard Gadermaier, H. Martin R. Wilkening and Ilie Hanzu\*



12564

## Cubic-to-hexagonal structural phase transition in metal halide compounds: a DFT study

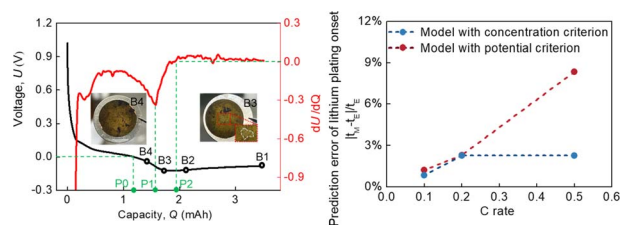
Iván Ornelas-Cruz, Ramiro M. dos Santos, José E. González, Matheus P. Lima and Juarez L. F. Da Silva\*



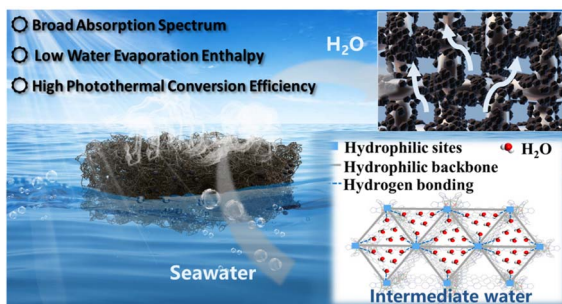
12581

## Investigation of the lithium plating triggering criterion in graphite electrodes

Jiani Li, Lubing Wang and Jun Xu\*



12592

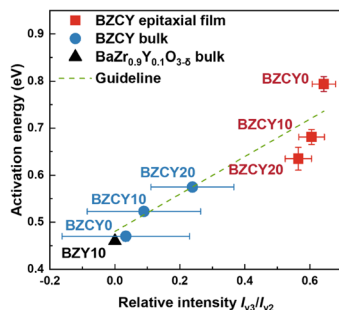
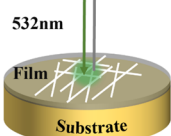


### A cationic radical metal-organic framework enabling low water evaporation enthalpy and high photothermal conversion efficiency for solar-driven water purification

Zi-Yu Wang, Rui Wang, Hannah M. Johnson, Lei Cai, An-An Zhang, Qiang Zhang\* and Tian-Fu Liu\*

12599

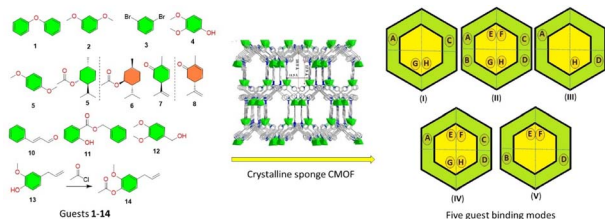
Surface enhanced Raman spectroscopy



### Symmetry-induced modulation of proton conductivity in Y-doped Ba(Zr,Ce)O<sub>3</sub>: insights from Raman spectroscopy

Yiming Yang, Jiachen Lu, Xinyu Zhang, Yanuo Shi, Peng Du, Xiao Ling, Nan Yang\* and Qianli Chen\*

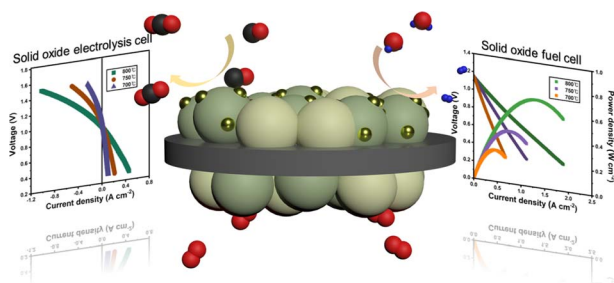
12609



### A new versatile crystalline sponge for organic structural analysis without the need for activation

Jin-Chang Liu, Wei-Ping Huang, Yu-Xin Tian, Wei Xu,\* Wen-Cai Ye\* and Ren-Wang Jiang\*

12619



### Multi-functional perovskite oxide Pr<sub>0.6</sub>Sr<sub>0.4</sub>Mn<sub>0.2</sub>Fe<sub>0.7</sub>Ni<sub>0.1</sub>O<sub>3-δ</sub> as an efficient quasi-symmetric electrode for solid oxide fuel/electrolysis cells

Junil Choi, Daehee Jang, Minh Kim, Jungseub Ha, Hwicheon Ahn and Won Bae Kim\*

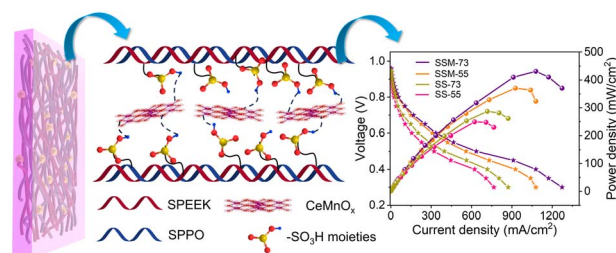


## PAPERS

12628

### Ce–Mn bimetallic oxide-doped SPEEK/SPPO blend composite membranes to induce high oxidative tolerance and proton conductivity for hydrogen fuel cells

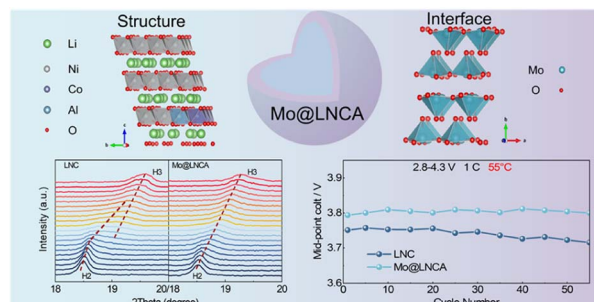
Sk Miraz Hossain, Pratyush Patnaik, Suman Sarkar, Ritika Sharma and Uma Chatterjee\*



12645

### Structure/interface synergy stabilizes high-nickel cathodes for lithium-ion batteries

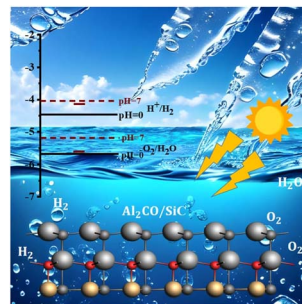
Guihong Mao, Liming Zeng, Jieyu Yang, Tengyu Yao, Fangming Xiao, Renheng Tang, Xin Shu, Ying Wang\* and Laifa Shen\*



12657

### Probing the potential of Al<sub>2</sub>CO/SiC heterostructures for visible light-driven photocatalytic water splitting using first-principles strategies

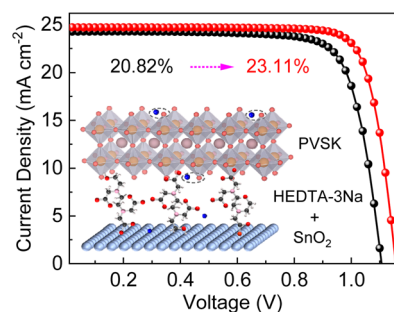
Amina Shehbaz, Abdul Majid,\* Hira Batool, Mohammad Alkhedher, Sajjad Haider and Kamran Alam



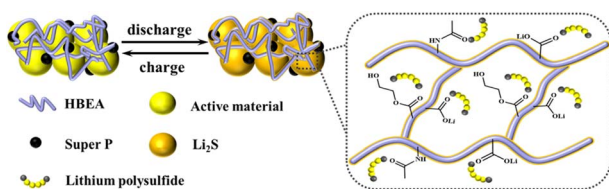
12672

### Multifunctional buried interface modification for efficient and stable SnO<sub>2</sub>-based perovskite solar cells

Rui Wu, Junhua Meng,\* Yiming Shi, Zhengchang Xia, Chunxia Yan, Lisheng Zhang, Wenkang Liu, Jinliang Zhao, Jinxiang Deng and Xingwang Zhang



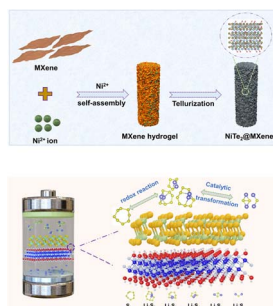
12681



### Amphipathic emulsion binder for enhanced performance of lithium–sulfur batteries

Yuan He, Xulong Jing, Tianxing Lai, Dong Jiang, Chao Wan,<sup>\*</sup> Pavel S. Postnikov, Olga Guselnikova, Lixin Xu, Xiaojun He,<sup>\*</sup> Yusuke Yamauchi and Biyu Jin<sup>\*</sup>

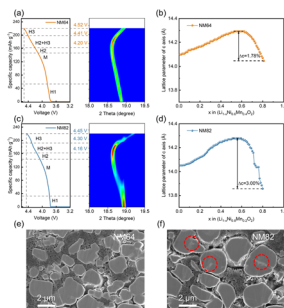
12691



### Constructing metal telluride-grafted MXene as electron “donor–acceptor” heterostructure for accelerating redox kinetics of high-efficiency Li–S batteries

Tianli Li, Yizhou Liu, Jian Wang, Hua Hao, Zhiyong Yu<sup>\*</sup> and Hanxing Liu<sup>\*</sup>

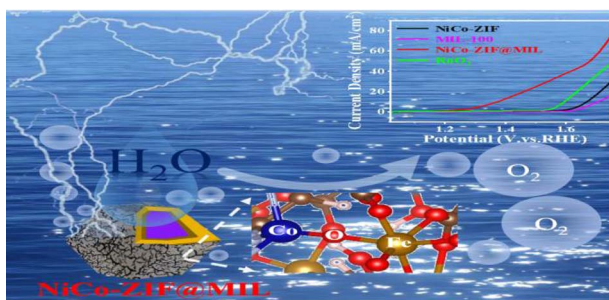
12702



### Insights into the enhanced cycling stability of cobalt-free single-crystal layered oxide cathodes at elevated voltage

Tiancheng Liu, Ke Fan, Changsheng Chen, Mingxia Dong, Yanping Zhu, Gao Chen, Jiangtong Li, Zezhou Lin, Liuqing Li, Ye Zhu, Huangxu Li and Haitao Huang<sup>\*</sup>

12712



### Interfacial Co–O–Fe bonding in novel amorphous NiCo-ZIF@MIL-100 as efficient active sites enabling electrocatalytic water oxidation

Tianhao Yu, Peng Gao, Hong Du<sup>\*</sup> and Ling Dong<sup>\*</sup>

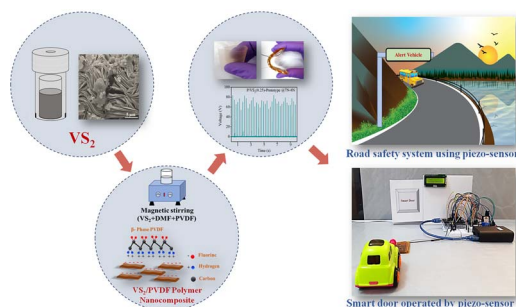


## PAPERS

12721

# Vanadium disulfide-incorporated polymer nanocomposites for flexible piezoelectric energy generators and road safety sensors

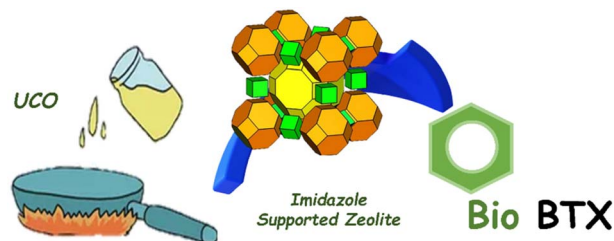
Ankur Verma, Arjun Hari M. and Subash Cherumannil Karumuthil\*



12733

# Renewable aromatic hydrocarbons from waste cooking oil over hierarchical imidazole supported zeolites

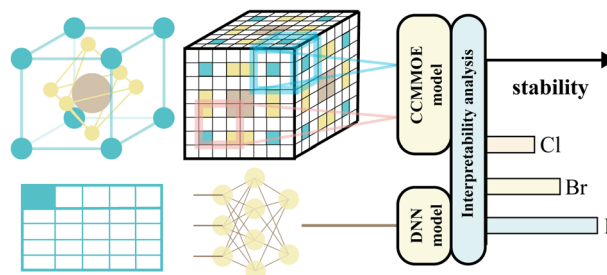
Bhanu Joshi, Omvir Singh,\* Ankit Agrawal, Neha Dhiman, Bhanu Prasad Vempatapu, Navin Gopinathan, Anjan Ray and Bipul Sarkar\*



12744

# The influence of perovskite crystal structure on its stability

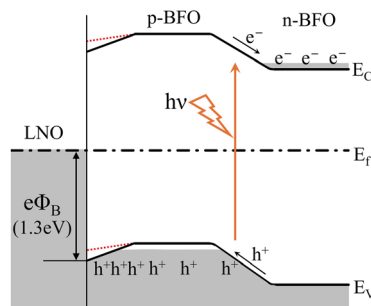
Hualin Bi, Mengke Wang, Lei Liu, Jiahe Yan, Rongfei Zeng, Zhang Xu and Jun Wang\*



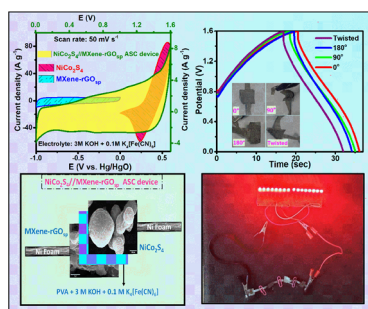
12752

# Growth of p/n-type BiFeO<sub>3</sub> thin films for construction of a bilayer p–n junction for photodegradation of organic pollutants

Hao-Yun Tu and Xiaoding Qi\*



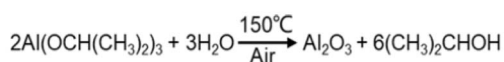
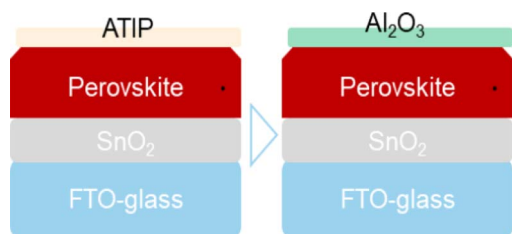
12762



### High-performance flexible solid-state asymmetric supercapacitor with $\text{NiCo}_2\text{S}_4$ as a cathode and a MXene-reduced graphene oxide sponge as an anode

Rajeshvari Samatbhai Karmur, Debika Gogoi, Shrishti Sharma, Manash R. Das, Anshuman Dalvi and Narendra Nath Ghosh\*

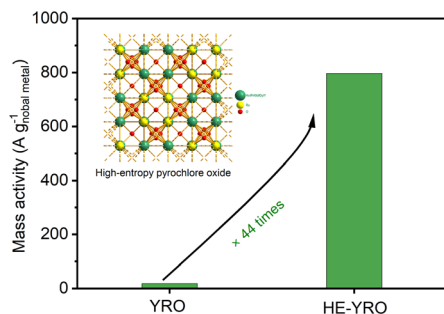
12777



### A facile solution-based aluminum oxide interface layer for enhancing the efficiency and stability of perovskite solar cells

Xinning Jiao, Guoqing Ma, Wei-Min Gu, Ke-Jian Jiang,\* Tangyue Xue, Guanghui Yu, Limei Wu, Qing-Wu Zhang, Cai-Yan Gao, Xin-Heng Fan, Lian-Ming Yang\* and Yanlin Song\*

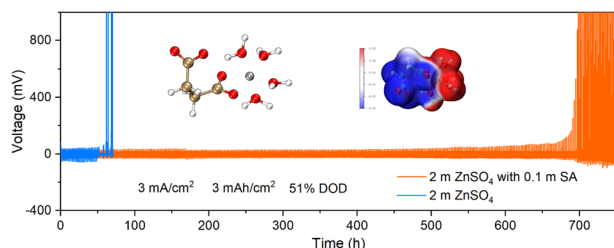
12785



### A new-type high-entropy electrocatalyst with a pyrochlore structure for acid-water oxidation

Jinhui Zhang, Lei Shi,\* Xianbing Miao, Liping Yang and Shiming Zhou

12795



### Regulation of the solvation structure and electrode interface using a succinic acid additive for highly stable aqueous Zn batteries

Yuanjun Zhang, Fangfang Yu, Haoxuan Liu, Nana Wang, Xianzhong Yang, Shunjian Xu, Chao Wu,\* Hua-Kun Liu and Shi-Xue Dou\*

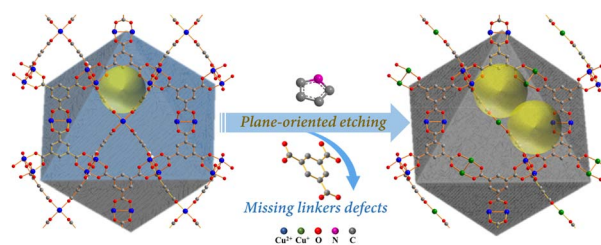


## PAPERS

12803

### Reduction on specific lattice planes for metal–organic frameworks/poly-pyrrole composites with dilated porosity

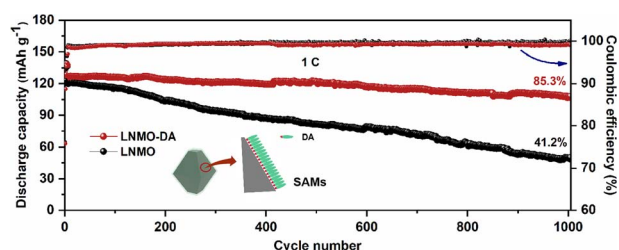
Wenxiu He, Xu Zhai, Zhipeng Qiao, Huan Chen, Weiliang Tian, Yu Fu\* and Junyi Chen\*



12810

### Extraordinary cycling performance of high-voltage spinel $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ materials enabled by interfacial engineering *via* molecular self-assembly

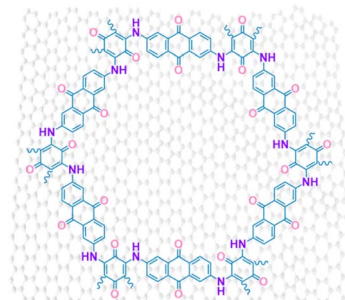
Chao Zhang, Jing-Zhe Wan, Liang Gao, Zhi-Peng Cai, Chao Ma, Kai-Xue Wang\* and Jie-Sheng Chen\*



12818

### Bipolar conjugated microporous polymer anchoring graphene hybrids for high-performance zinc–organic batteries

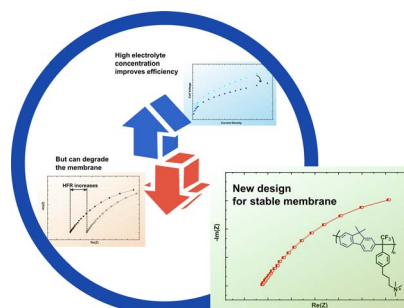
Chengmin Hu, Yumin Chen, Ziyang Song, Ling Miao,\* Hui Duan,\* Yaokang Lv, Li Xie, Mingxian Liu\* and Lihua Gan\*



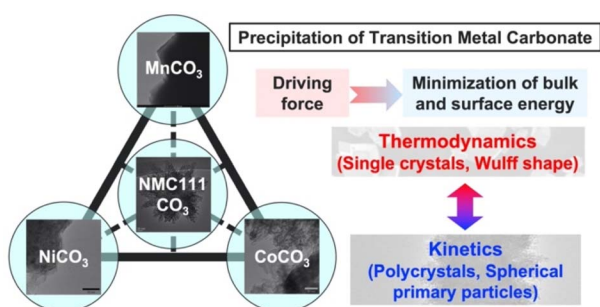
12826

### High performance water electrolysis using a poly(fluorene phenylpropylammonium) anion-exchange membrane with 2 M aqueous KOH

Matteo Rossini,\* Dong Pan, Burak Koyutürk, Si Chen, Amirreza Khataee, Göran Lindbergh, Patric Jannasch and Ann Cornell



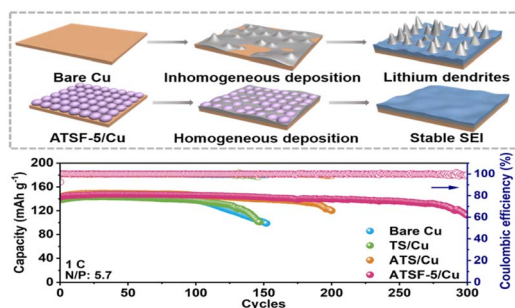
12835



### Deciphering the morphology of transition metal carbonate cathode precursors

Pallab Barai, Xiaoping Wang, Mark Wolfman, Jiajun Chen, Arturo Gutierrez, Juan C. Garcia, Jianguo Wen, Tiffany Kinnibrugh, Timothy T. Fister, Hakim H. Iddir and Venkat Srinivasan\*

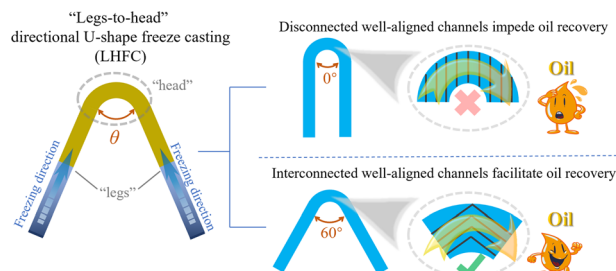
12856



### A "three in one" strategy realized using a fluorinated gold-doped titanium silicalite layer on a copper current collector for stable lithium metal batteries

Xiaopan Jin, Gaoxu Huang, Xianming Zhao, Honghao Liu, Rongjie Wang,\* Mengjia Guan\* and Yongsheng Li\*

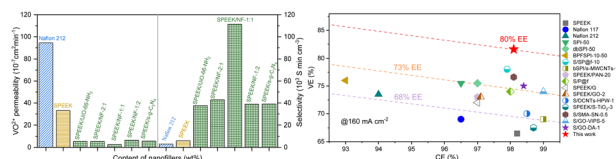
12866



### Designing interconnected passages by "legs-to-head" directional U-shape freeze casting to boost solar-driven self-pumping oil spill recovery

Shiwen Wu, Amirarsalan Mashhadian, Ruda Jian, Siyu Tian, Tengfei Luo and Guoping Xiong\*

12876



### A highly selective and high-performance sulfonated poly(ether ether ketone)-based hybrid membrane enabled by complexed UiO-66-NH<sub>2</sub> and sulfonated graphitic carbon nitride for vanadium flow batteries

Caiyuan Zhao, Haixia Wang, Lang Li, Liping Liu, Xinrui Cui and Haifeng Shi\*

