

# Journal of Materials Chemistry A

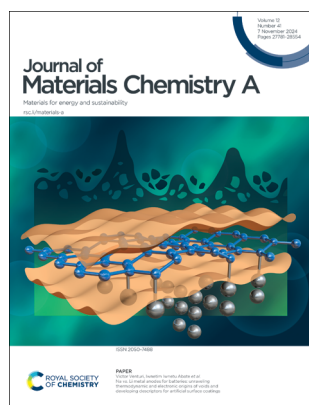
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**Cover**  
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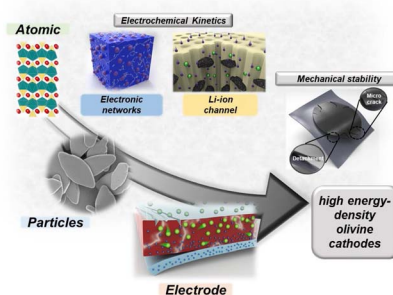
**Inside cover**  
See Jongsup Hong, Kyung Joong Yoon *et al.*, pp. 28002–28011. Image reproduced by permission of Kyung Joong Yoon from *J. Mater. Chem. A*, 2024, 12, 28002.

## REVIEWS

27800

### Unveiling olivine cathodes for high energy-density lithium-ion batteries: a comprehensive review from the atomic level to the electrode scale

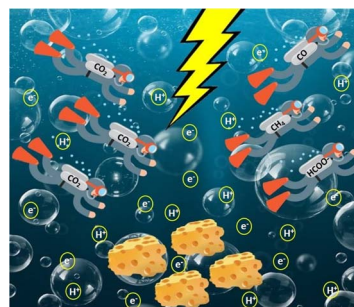
Wonchan Hwang, Jaehwan Kim, Shin-Yeong Kim, Eunseo Ko, Seojin Lee, Minseo Kim, Seung-Ho Yu, Yung-Eun Sung, Hyung-Seok Kim, Chunjoong Kim\* and Jungjin Park\*



27825

### Recent trends in CO<sub>2</sub> electroreduction over metal-organic framework-derived materials: a comprehensive review

Nadia Gholampour,\* Chizoba I. Ezugwu, Hussein A. Younus,\* Damien P. Debecker, Mohamed Al Abri, Rashid Al hajri, Chih-Ming Kao and Francis Verpoort\*



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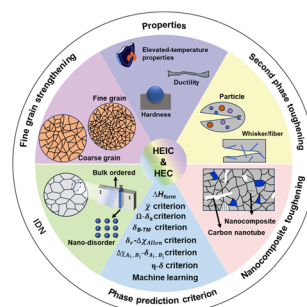
Fundamental questions  
Elemental answers

## REVIEWS

27855

**Mechanical behavior of high-entropy intermetallic compounds and high-entropy ceramics**

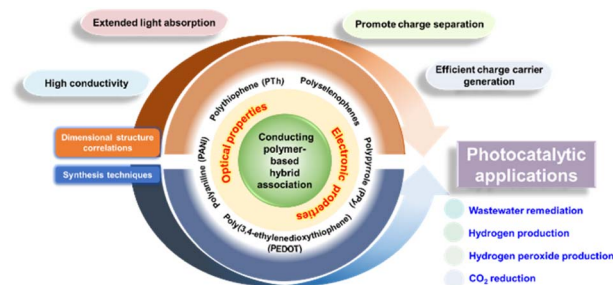
Bin Li, Jialin Sun,\* Xiao Li and Jun Zhao



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**Synergistic interaction and hybrid association of conducting polymer photocatalysts/ photoelectrodes for emerging visible light active photocatalytic applications**

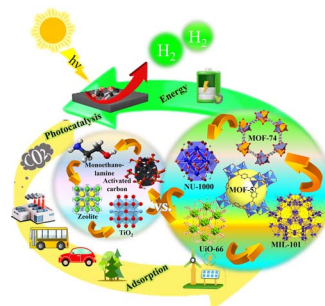
Nur Shamimie Nadzwin Hasnan, Nurul Atikah Nordin and Mohamad Azuwa Mohamed\*



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**Advanced metal–organic frameworks for superior carbon capture, high-performance energy storage and environmental photocatalysis – a critical review**

Farooq Sher,\* Anna Hayward, Abdelqader El Guerraf, Bohong Wang, Imane Ziani, Harun Hrnjić, Emina Boškailo, Alexander Chupin and Monica R. Nemțanu

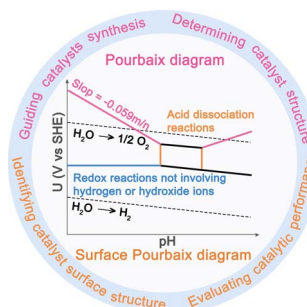


## PERSPECTIVE

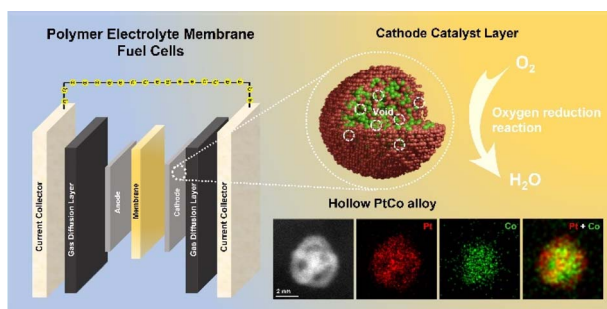
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**Pivotal role of the Pourbaix diagram in electrocatalysis**

Qian Wu and Zhichuan J. Xu\*



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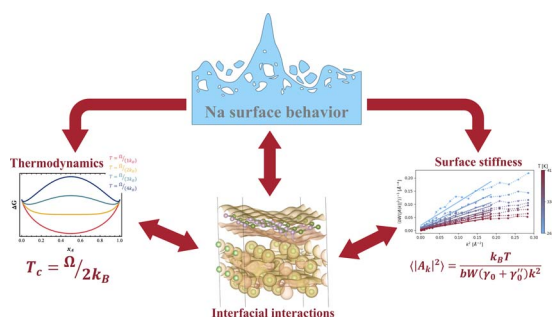


### Hollow PtCo alloy nanostructures for efficient oxygen reduction electrocatalysis in polymer electrolyte membrane fuel cells

Muhammad Irfansyah Maulana, Ha-Young Lee, Caleb Gyan-Barimah, Jong Hun Sung and Jong-Sung Yu\*

PAPERS

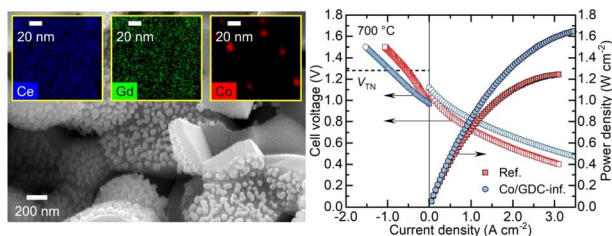
27987



### Na vs. Li metal anodes for batteries: unraveling thermodynamic and electronic origins of voids and developing descriptors for artificial surface coatings

Victor Venturi,\* Rodrigo Freitas and Iwnetim Iwnetu Abate\*

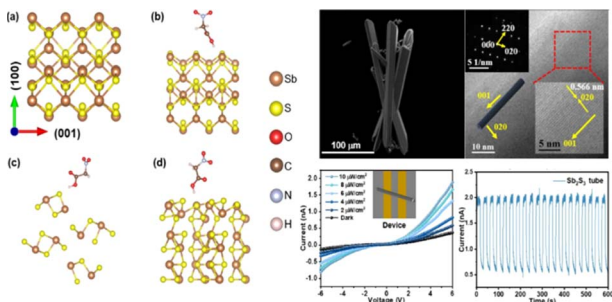
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### In situ synthesis of cobalt-embedded gadolinia-doped ceria nanocatalysts for high-temperature solid oxide cells

Hageong Cho, Haewon Seo, Jihong Min, Ji-eun Won, Jongsup Hong\* and Kyung Joong Yoon\*

28012



### Single-crystalline Sb<sub>2</sub>S<sub>3</sub> microtubes for high-performance broadband visible photodetection

Shili Fu, Xiaohui Liu, Haoyun Dou, Rawaid Ali, Ao Zeng, Jiaxiu Man, Xiaolu Zheng\* and Hong-En Wang\*

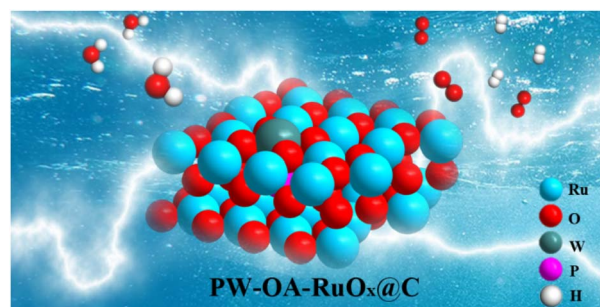


## PAPERS

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### Phosphorus–tungsten dual-doping boosts acidic overall seawater splitting performance over RuO<sub>x</sub> nanocrystals

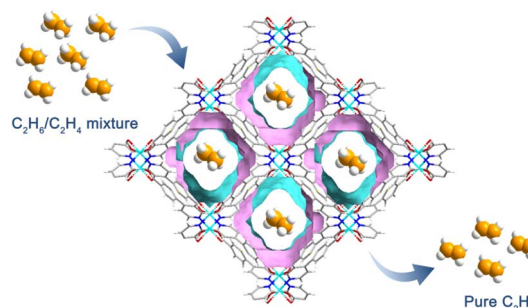
Junyang Ding, Zimo Peng, Zhiwei Wang, Chunhui Zeng,\* Yanhong Feng, Miaosen Yang,\* Guagnzhi Hu, Jun Luo and Xijun Liu\*



28032

### Aromatic pore surface with multiple adsorption sites for one-step C<sub>2</sub>H<sub>4</sub> acquisition from C<sub>2</sub>H<sub>6</sub>/C<sub>2</sub>H<sub>4</sub> mixture

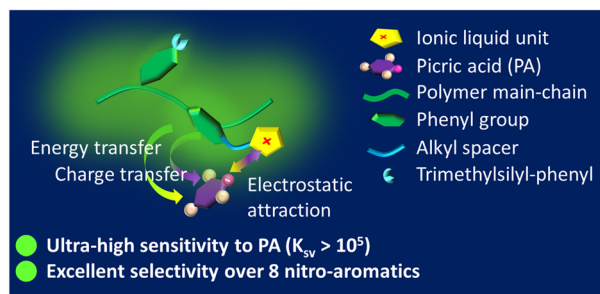
Yongqin Zhu, Zhenyu Ji, Yunzhe Zhou and Mingyan Wu\*



28039

### Ultra-high sensitivity and extremely low limit of detection of picric acid with ionic-liquid modified poly(diphenylacetylene)

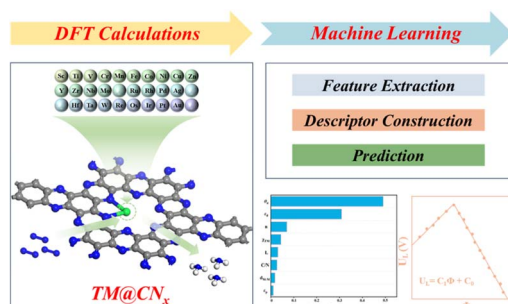
Guangze Hu, Manyu Chen, Zuping Xiong, Haoyuan Hu, Haoke Zhang, Jing Zhi Sun\* and Ben Zhong Tang\*



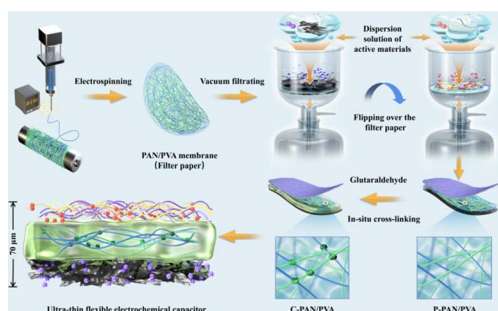
28046

### A universal descriptor for two-dimensional carbon nitride-based single-atom electrocatalysts towards the nitrogen reduction reaction

Mengmeng Xu, Yujin Ji,\* Yuyang Qin, Huilong Dong\* and Youyong Li\*



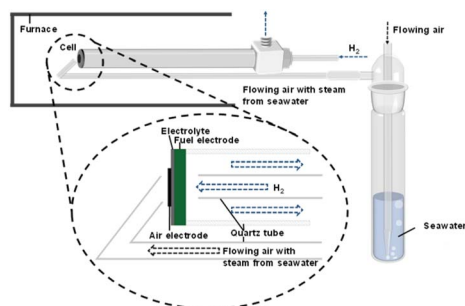
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### Interfacial integration of ultra-thin flexible electrochemical capacitors *via* vacuum filtration based on gelatinized fibrous membranes

Qian Xie, Chengjie Lu, Chengjie Yi, Tao Shui,\* Nosipho Moloto, Jiacheng Liu, Song-Zhu Kure-Chu, Takehiko Hihara, Wei Zhang\* and ZhengMing Sun\*

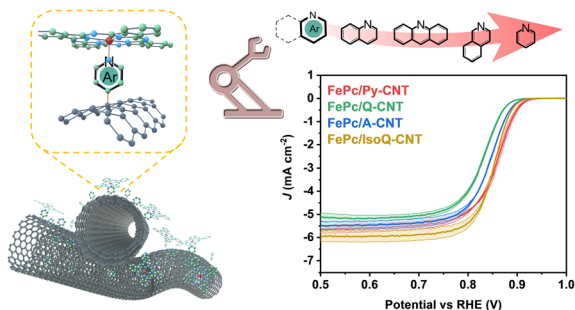
28066



### Protonic ceramic electrochemical cells for hydrogen production from seawater electrolysis

Zhiwei Du, Wenjie Gong, Kang Xu, Feng Zhu, Xirui Zhang and Yu Chen\*

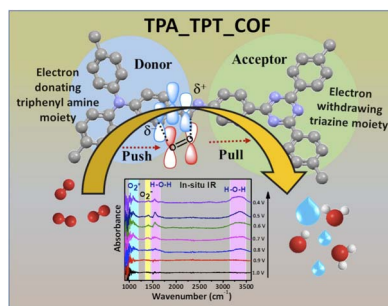
28074



### Investigating the effect of Fe–N<sub>5</sub> configuration in the oxygen reduction reaction using N-heterocycle functionalized carbon nanotubes

Qi Li, Qi Zhao, Angus Pedersen, Mi Zhang, Zhipeng Lin, Yue Xu, Patrick L. Cullen, Andrei Sapelkin, Devis Di Tommaso, Maria-Magdalena Titirici\* and Christopher R. Jones\*

28085



### Donor–acceptor covalent organic frameworks propel the oxygen reduction reaction with push–pull dynamics

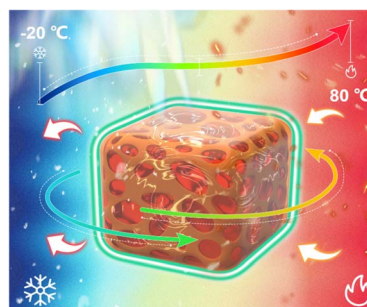
Greesh Kumar, Sabuj Kanti Das, Thakur Rochak Kumar Rana, Surajit Samui, Laurent Billon and Ramendra Sundar Dey\*



28095

### Ultra-wide temperature cycle control based on photo-responsive phase change

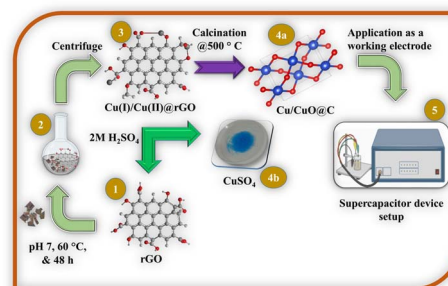
Jing Ge, Xiaoyu Yang, Zedong Wang, Yiyu Feng\* and Wei Feng\*



28107

### Preparation of supercapacitor electrode materials from e-waste: eco-friendly Cu recovery from printed circuit board waste using reduced graphene oxide and upcycling to Cu/CuO@C

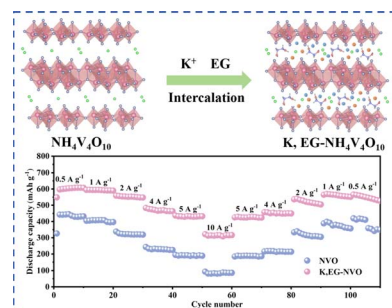
Rajendran Mathaiyan, Aneesh Anand Nechikott, Sajith Babu M. K., Prasant Kumar Nayak and Srinivasarao Kancharla\*



28119

### Unlocking the Zn storage performance of ammonium vanadate nanoflowers as high-capacity cathodes for aqueous zinc-ion batteries via potassium ion and ethylene glycol co-intercalation engineering

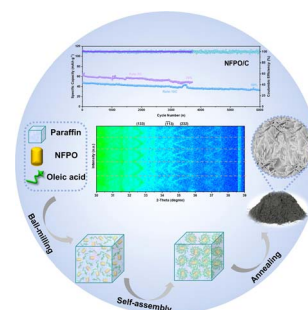
Ji Chen, Xiaoyue Zhang, Yangjie Li, Xiaoying Li, Xiaoqin Zhang, Yuxiang Chen, Qiaoji Zheng, Xingqiao Wu, Heng Zhang,\* Xin Tan\* and Dunmin Lin\*



28130

### Dual-strategy of carbon-coating and nanoengineering enables reversible and durable Na storage in an iron-based pyrophosphate cathode

Zhitao Cao, Xiaoping Hu, Yuyao Wang, Yongqing Xu, Yifan Zhou, Xinxin Cao\* and Shuquan Liang\*

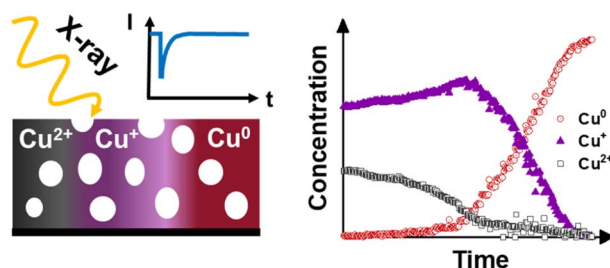




28177

### Impact of $\text{Cu}^+$ and $\text{Cu}^{2+}$ species on the oxide-metal transition processes of $\text{Cu}_x\text{O}$ foams during the $\text{CO}_2\text{RR}$ probed by *operando* Quick-XAS

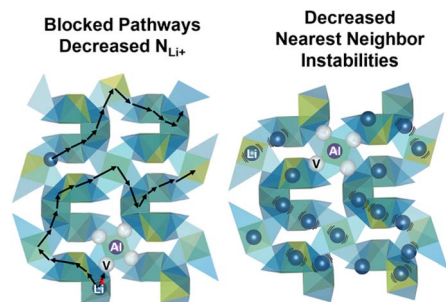
S. Blaseio, C. Dosche, M. Rahaman, K. Kiran, A. Dworzak, B. Mahrt, P. Broekmann, A. Dutta\* and M. Oezaslan\*



28193

### Effects of Al concentration on the structure and conductivity of lithium lanthanum zirconium oxide

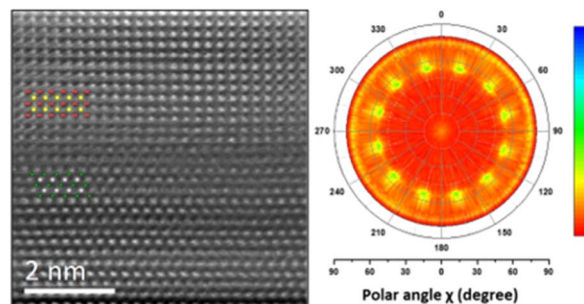
Alexandra C. Moy,\* Alicia Manjón-Sanz, Tori C. Caracciolo, Maxim V. Lobanov, Gabriel M. Veith\* and Jeff Sakamoto\*



28211

### Robust energy storage density and negative capacitance in antiferroelectric heterostructures grown by atomic layer epitaxy

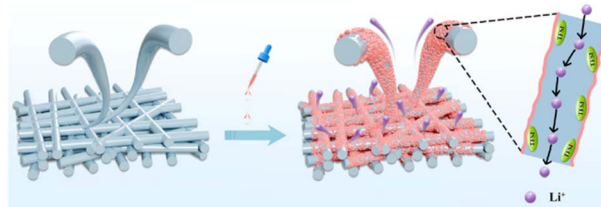
Yu-Sen Jiang, Yi-Hsuan Chao, Makoto Shiojiri, Yu-Tung Yin and Miin-Jang Chen\*



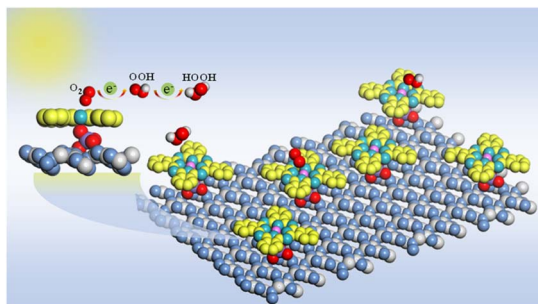
28224

### Rigid and flexible dual-network polymer electrolytes with enhanced interfacial interaction to accelerate $\text{Li}^+$ transfer

Qing Lv, Yuanyuan Sun, Sisi Jiang, Hao Ren, Yan Lin, Qi Li, Liping Lu, Mingbo Wu and Zhongtao Li\*



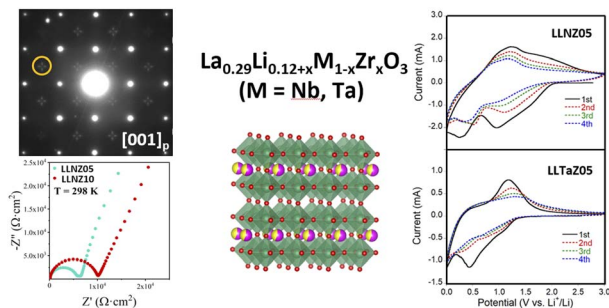
28233



### Photoelectron "bridge" is introduced to realize the precise transport of C<sub>3</sub>N<sub>5</sub>-CoPc interface charge for efficient photocatalytic H<sub>2</sub>O<sub>2</sub> production

Ruixin Chen, Wei Gan, Jun Guo, Yuqing Lu, Sheng Ding, Run Liu, Shouguo Wang, Miao Zhang,\* Qingqing Yang\* and Zhaoqi Sun\*

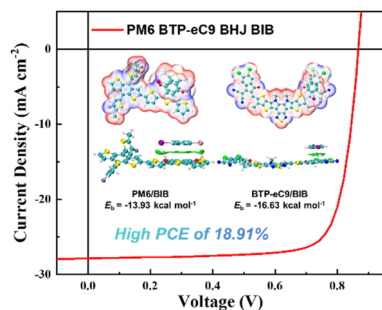
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### In search of widening the electrochemical window of solid electrolytes for Li-batteries: the La<sub>0.29</sub>Li<sub>0.12+x</sub>M<sub>1-x</sub>Zr<sub>x</sub>O<sub>3</sub> (M = Nb, Ta) perovskite-type systems

Ester García-González, Rafael Marín-Gamero, Miguel Kuhn-Gómez, Alois Kuhn, Flaviano García-Alvarado and Susana García-Martín\*

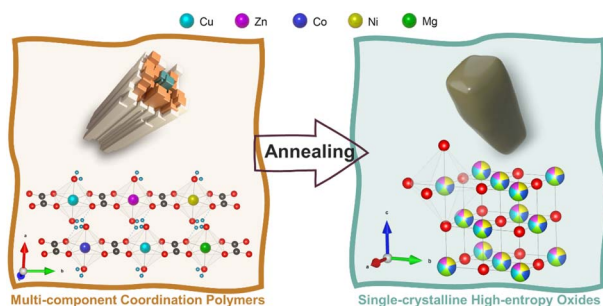
28254



### Modulation of intermolecular interactions in the active layer enables highly efficient organic solar cells *via* introducing solid additives

Zhe Mei, Rong Li, Kun Li, Yishi Wu,\* Yu Chen, Hua Geng,\* Qing Liao, Cunbin An\* and Hongbing Fu\*

28263



### Single-crystalline high-entropy oxide particles synthesized *via* coordination polymerization

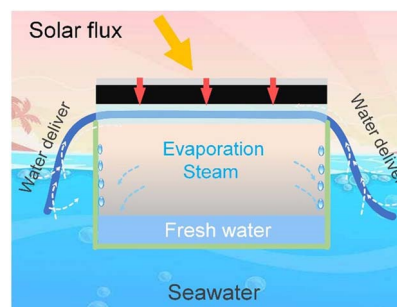
Yuguang Pu, Zhen He,\* Jiameing Liu, Tingxuan Yang, Hongliang Zhang, Saifang Huang, Hong Zhang,\* Wen Zhang, Tianzu Yang, Puqi Jia,\* Wei Gao and Peng Cao\*



28273

### Interface chemical coupling enables Janus elastomer-hydrogel composites for a roof-free evaporator with efficient hydrocooling condensation

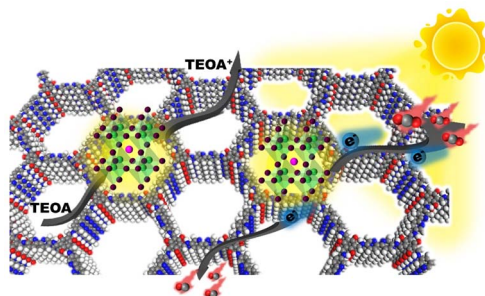
Chang Zhang, Yanhui Zhang,\* Jincui Gu, Baoyi Wu, Peng Xiao\* and Tao Chen\*



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### Chemically bonded interface construction of the covalent organic framework/CsPbBr<sub>3</sub> heterojunction for efficient photocatalytic CO<sub>2</sub> reduction driven by visible light

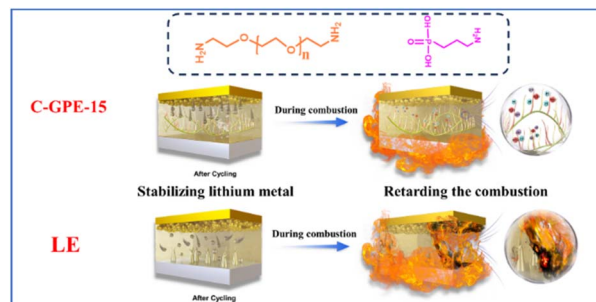
Min Zhou, Zhiqing Wang, Aohan Mei, Keqiang Chen, Jianrong Zeng, Yueli Liu\* and Wen Chen\*



28296

### A grafted flame-retardant gel polymer electrolyte stabilizing lithium metal for high-safety lithium metal batteries

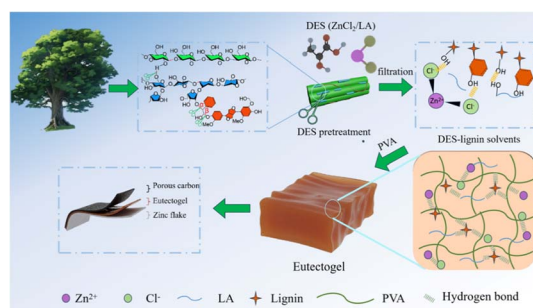
Shaoshan Chen, Yong Wang, Zhongxiu Li, Yiyu Feng and Wei Feng\*



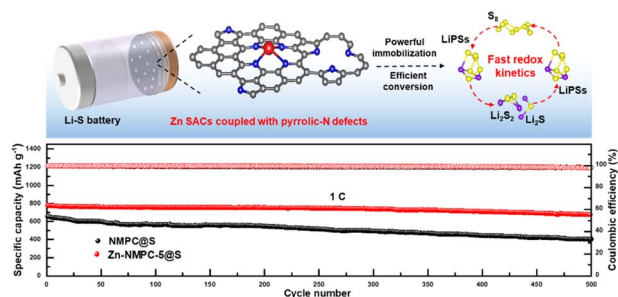
28307

### Deep eutectic solvent-based eutectogels consisting of ZnCl<sub>2</sub> and lignin for quasi-solid-state supercapacitors

Yunhua Bai, Xiong-Fei Zhang, Yufang Wu, Hu Liu and Jianfeng Yao\*



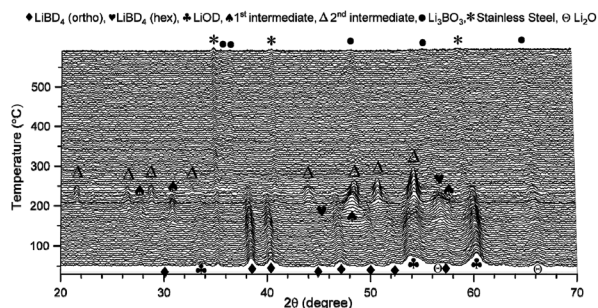
28315



### Embedding Zn single-atom catalysts into pyrrolic-N defect enriched multilayer carbon sheets boosts sulfur redox kinetics

Cuiying Lu, Xiaoting Wang, Songjie He, Siyu Liu, Pei Chen and Juan Yang\*

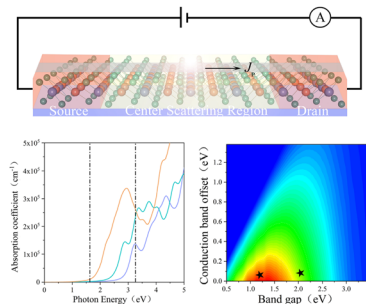
28326



### Understanding the reaction pathway of lithium borohydride-hydroxide-based multi-component systems for enhanced hydrogen storage

Sweta Munshi,\* Gavin S. Walker, Kandavel Manickam, Thomas Hansen, Martin Dornheim and David M. Grant

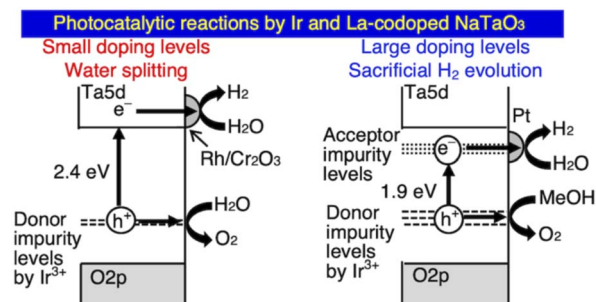
28337



### Efficient absorption of $\text{Cu}_2\text{WX}_4$ ( $\text{X} = \text{S}, \text{Se}, \text{and Te}$ ) for photovoltaic application: a theoretical study

Jiayi Zhang, Zhenghao Li, Fengxiao Che, Chong Li, Kai Han\* and Hongchao Yang\*

28346



### Overall water splitting under visible light irradiation over Ir and La-codoped $\text{NaTaO}_3$ photocatalysts

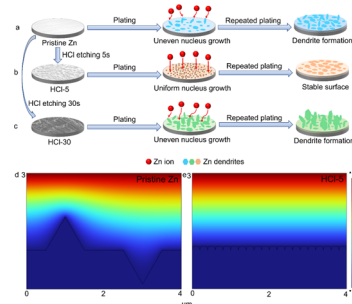
Akihide Iwase\* and Taichi Sato



28353

### Dendrite suppression by scalable acid treatment of zinc metal anodes for aqueous zinc-ion batteries

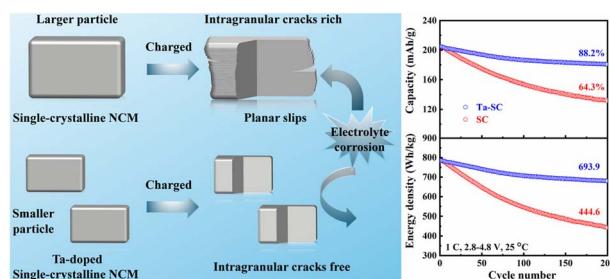
Huanlin Lyu, Suihan Cui, Chao Huang, Qingdong Ruan, Xiaolin Zhang, Junmin Xu, Fangyu Xiong,\* Dan Li\* and Paul K. Chu\*



28363

### Improved high-voltage cycling stability of single-crystalline $\text{LiNi}_{0.8}\text{Co}_{0.1}\text{Mn}_{0.1}\text{O}_2$ cathode by tantalum doping

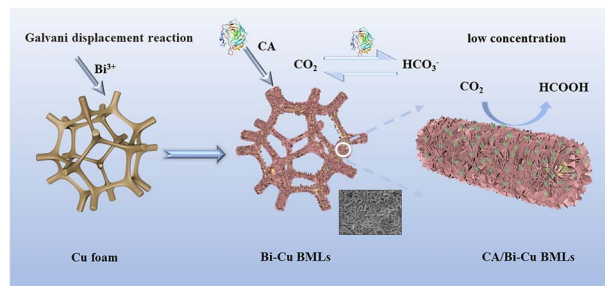
Bokai Cao, Hai-Tao Fang,\* De Li\* and Yong Chen\*



28374

### A Bi–Cu bimetallic array/carbonic anhydrase biohybrid for efficient and selective $\text{CO}_2$ electroreduction at low concentration

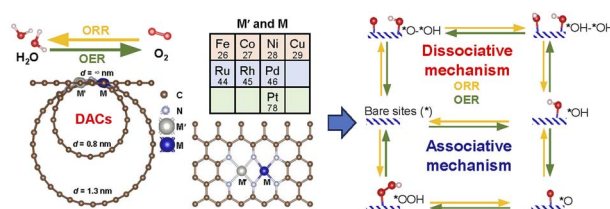
Minli Shu, Xuefang Zhu, Zhe Wang, Xue Xiao,\* Shuni Li, Yu Chen\* and Yucheng Jiang\*



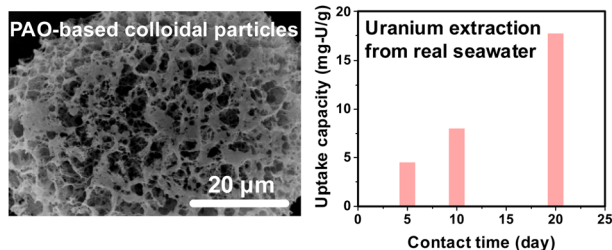
28381

### DFT screening of dual-atom catalysts on carbon nanotubes for enhanced oxygen reduction reaction and oxygen evolution reaction: comparing dissociative and associative mechanisms

Xiangyi Zhou, Mohsen Tamtaji, Weijun Zhou, William A. Goddard III\* and GuanHua Chen\*



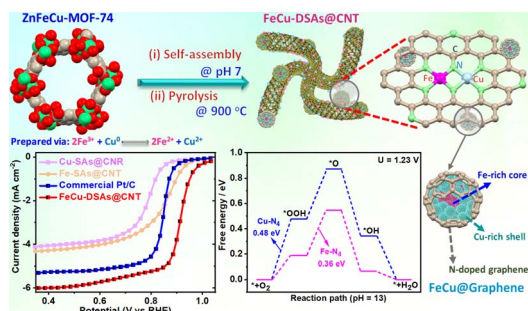
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### Polyamidoxime-based colloidal particles with a 3D network for synergistic uranium extraction from seawater

You Huang, Shufen Zou, Shan Lin, Bing Na,\* Zhuyao Li and Shuang Zhang

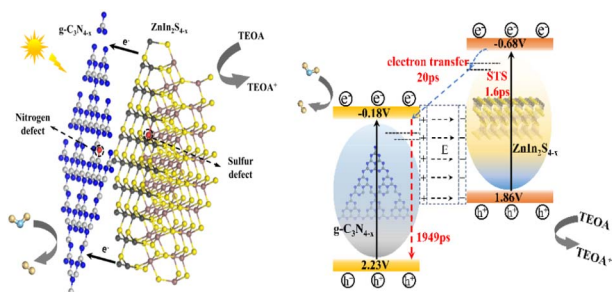
28398



### Dual single-atom sites coupled with graphene-encapsulated core-shell Fe-Cu nanoalloy for boosting the oxygen reduction reaction

Katam Srinivas, Zhuo Chen, Anran Chen, He Huang, Chengtao Yang, Fei Wang,\* Ming-qiang Zhu\* and Yuanfu Chen\*

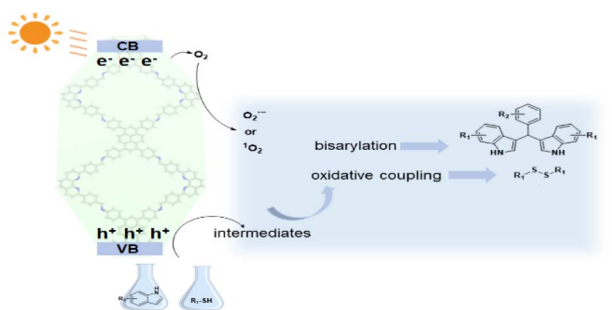
28414



### Integrating dual-defects and the heterojunction in ZnIn<sub>2</sub>S<sub>4-x</sub>/g-C<sub>3</sub>N<sub>4-x</sub> composites induces breaking-symmetry for photocatalytic hydrogen production

Guoxi Zhou, Yige Qi, Yunchao Wu, Hou Wang, Zhiyong Yan and Yan Wu\*

28424



### A pyrenetetrayl/phenanthroline-based one-dimensional covalent organic framework for metal-free photocatalytic organic conversion

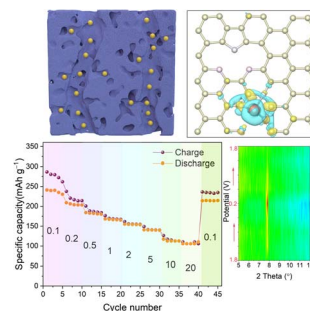
Longfei Wang, Longxin Wang, Qianrui Zhao, Xiaoming Ji, Mingqin Zhao,\* Yujie Zhang\* and Miao Lai\*



28437

## Regulation of dual-atom doped porous carbon towards high-performance capacitive storage devices

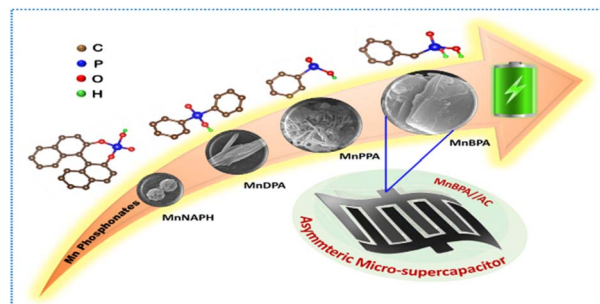
Jizhao Zou, Zhewen Deng, Jingyou Xu, Shunhong Chen, Xin Yu, Hongliang Wu and Fenglin Zhao\*



28447

## Ligand-mediated manganese phosphonates with a variable morphological framework: efficient for energy storage application

Rupali Ipsita Mohanty, Ayan Mukherjee, Piyali Bhanja\* and Bikash Kumar Jena\*

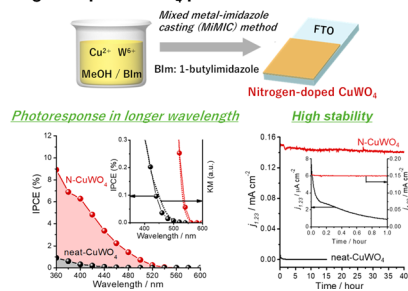


28459

## An anisotropically crystallized and nitrogen-doped CuWO<sub>4</sub> photoanode for efficient and robust visible-light-driven water oxidation

Tomohiro Katsuki, Zaki N. Zahran, Norihisa Hoshino, Yuta Tsubonouchi, Debraj Chandra and Masayuki Yagi\*

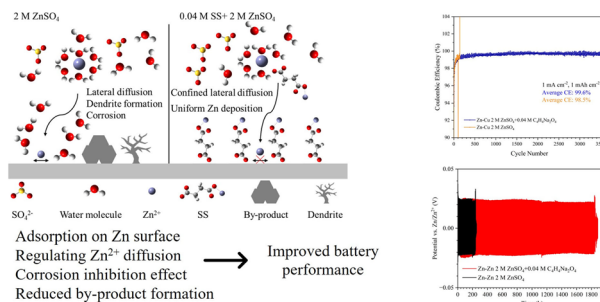
### Nitrogen-doped CuWO<sub>4</sub> photoanode for water oxidation



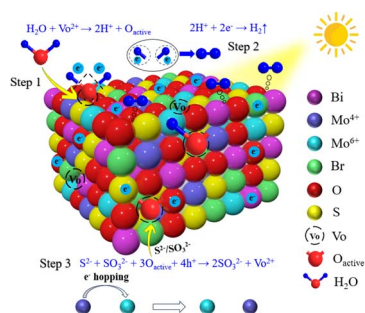
28475

## Sodium succinate as functional electrolyte additive to achieve highly reversible zinc-ion batteries

Jiayao Cui, Yimei Chen, Yan Dong, Hao Zhang and Douglas G. Ivey\*



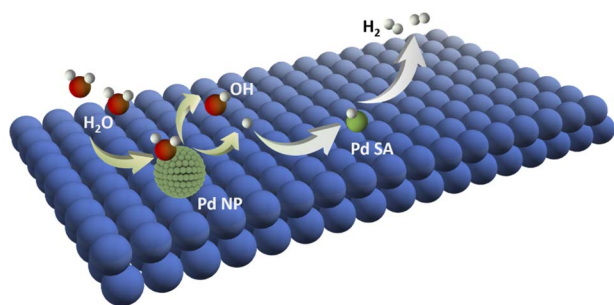
28486



### Synergistic hydrazine-driven regulation and Mo/S co-doping to endow BiOBr with heterovalent molybdenum states and abundant oxygen vacancy defects for photocatalytic hydrogen evolution

Zhengjie Su, Binghong Wu, Dong-Hau Kuo,<sup>\*</sup>  
Longyan Chen, Pengkun Zhang, Baoqian Yang, Xinru Wu,  
Dongfang Lu,<sup>\*</sup> Jinguo Lin<sup>\*</sup> and Xiaoyun Chen<sup>\*</sup>

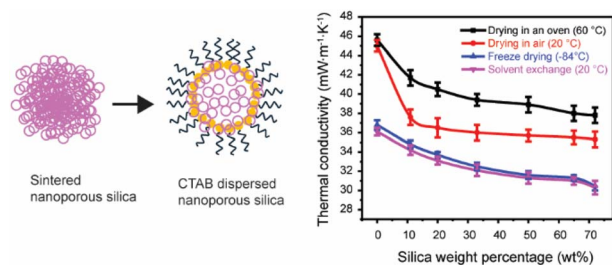
28503



### Atomic layer deposition of Pd nanoparticles and single atoms on self-supported carbon monolithic catalysts synergistically boosts the hydrogen evolution reaction

Bin Zhang, Xulong Song, Zhiheng Wang, Binbin Xu,  
Wenkai Ye, Lilong Zhang, Han Lin, Tuo Ji, Xiaohua Lu  
and Jiahua Zhu<sup>\*</sup>

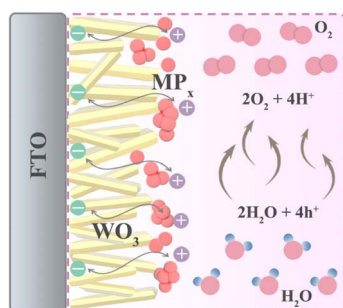
28512



### Surfactant templated biogenic nanoporous silica thermal insulation composite

Long Zhu, Taotao Meng, Saurabh Khuje  
and Shenqiang Ren<sup>\*</sup>

28521



### Integrating transition metal phosphide catalysts on WO<sub>3</sub> photoanodes enabling robust photoelectrocatalytic water oxidation

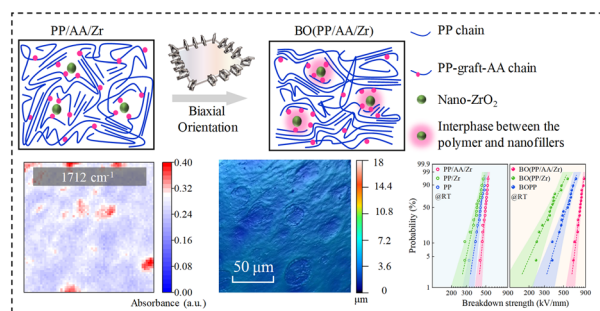
Biao Yang, Changlong Ru, Yuye Jiao, Lihua Gao,  
Yurou Song, Zhiqiang Hu and Jungang Hou<sup>\*</sup>



28531

### Bi-axially oriented ternary polypropylene composite film with enhanced energy storage property at elevated temperature

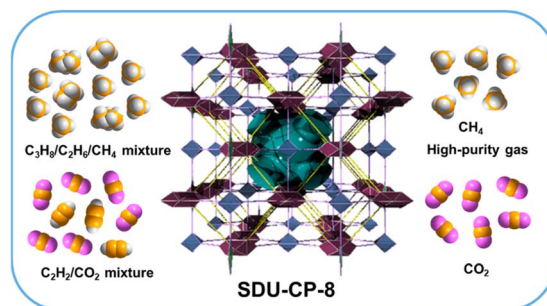
Wenfeng Liu,\* Zhiyuan Li, Hongbo Liu, Yihan Zhou, Jiakai Zeng, Yi Zhao, Lu Cheng,\* Yao Zhou and Shengtao Li



28541

### A novel cage-based metal–organic framework for efficient separation of light hydrocarbons

Muhammad Riaz, Dinesh Acharya, Hongxu Chu, Di Sun,\* Mohammad Azam and Ping Cui\*



28548

### Correction: A focused ion beam-fabricated high-performance electrodeposited nickel–ruthenium–ruthenium oxide nano-supercapacitor

Sudipta Biswas, Ahiud Morag, Nitzan Shauloff, Nitzan Maman and Raz Jelinek\*

28550

### Correction: Review on the synthesis of Li-rich layered oxide cathodes

Kexin Gu, Zhepu Shi, Xiao Li, Bao Qiu\* and Zhaoping Liu\*

