

# Journal of Materials Chemistry A

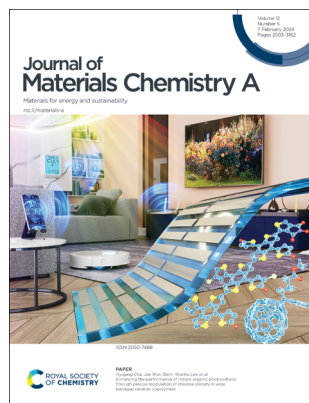
Materials for energy and sustainability

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## IN THIS ISSUE

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### Cover

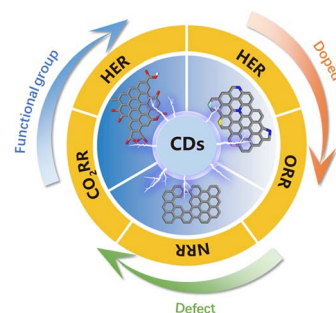
See Hyojung Cha, Jae Won Shim, Wonho Lee *et al.*, pp. 2685–2696. Image reproduced by permission of Wonho Lee from *J. Mater. Chem. A*, 2024, **12**, 2685.

## REVIEWS

2520

### Electrochemical reactions catalyzed by carbon dots from computational investigations: functional groups, dopants, and defects

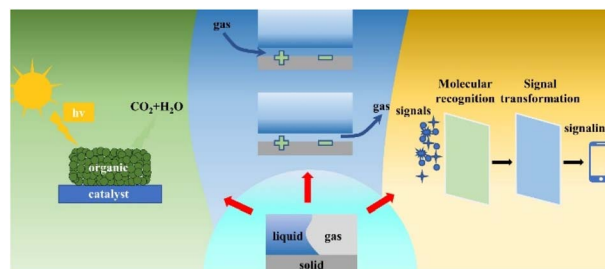
Min Yang, Bin Qin, Chaowei Si, XiaoYing Sun\* and Bo Li\*



2561

### The fabrication and application of a triphasic reaction interface based on superwettability for improved reaction efficiency

Mengwei Li, Fengyi Wang\* and Zhiguang Guo\*



# RSC Applied Interfaces

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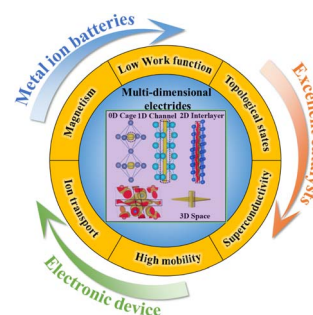
**Fundamental questions  
Elemental answers**

## REVIEWS

2583

### Multi-dimensional inorganic electrides for energy conversion and storage

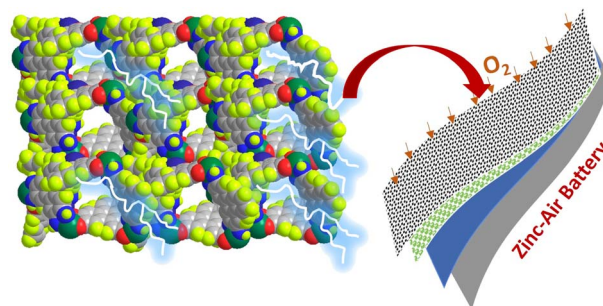
Weizhen Meng, Jianhua Wang, Xiaotian Wang,\*  
Wenhong Wang, Xiaoming Zhang,\* Yoshio Bando  
and Zhenxiang Cheng\*



2605

### Conductive metal–organic frameworks for zinc–air battery application: design principles, recent trends and prospects

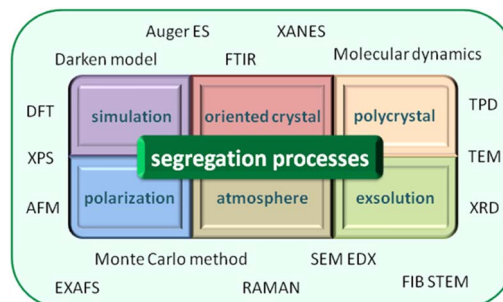
Bandhana Devi\* and Sreekumar Kurungot\*



2620

### Segregation and interdiffusion processes in perovskites: a review of recent advances

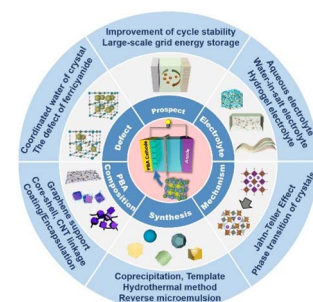
Natalia Porotnikova\* and Denis Osinkin



2647

### Research progress of Prussian blue and its analogues for cathodes of aqueous zinc ion batteries

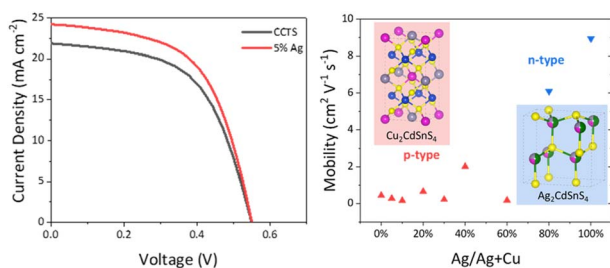
Jiayi Liu, Zhongrong Shen and Can-Zhong Lu\*





## COMMUNICATIONS

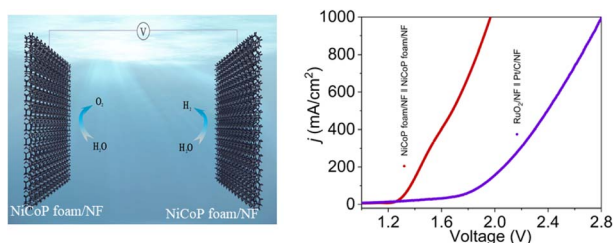
2673



### Efficiency enhancement and doping type inversion in $\text{Cu}_2\text{CdSnS}_4$ solar cells by Ag substitution

Ahmad Ibrahim, Stener Lie, Joel Ming Rui Tan, Ryan Swope, Axel Gon Medaille, Shreyash Hadke, Edgardo Saucedo, Rakesh Agrawal and Lydia Helena Wong\*

2680

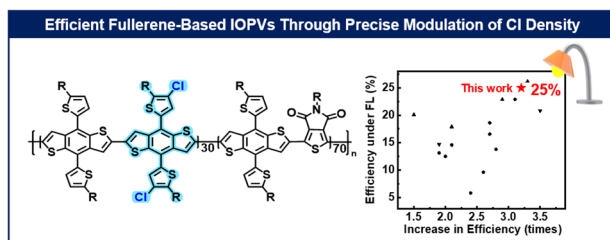


### Three-dimensional porous NiCoP foam enabled high-performance overall seawater splitting at high current density

Li He, Zhengwei Cai, Dongdong Zheng, Ling Ouyang, Xun He, Jie Chen, Ye Li, Xiankun Guo, Qian Liu, Luming Li, Wei Chu, Shuyun Zhu,\* Xuping Sun\* and Bo Tang\*

## PAPERS

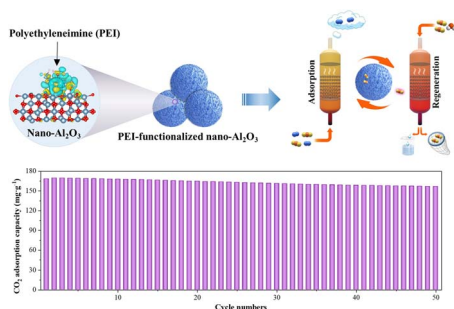
2685



### Enhancing the performance of indoor organic photovoltaics through precise modulation of chlorine density in wide bandgap random copolymers

Soyoung Kim, Seon Joong Kim, Gayoung Ham, Ji-Eun Jeong, Donghwa Lee, Eunho Lee, Hyungju Ahn, Hyojung Cha,\* Jae Won Shim\* and Wonho Lee\*

2697



### Efficient and stable $\text{CO}_2$ capture using a scalable and spontaneous cross-linking amine-functionalized nano- $\text{Al}_2\text{O}_3$ adsorbent

Xuehua Shen, Feng Yan,\* Zhenzhong Zeng,\* Pengju Wang, Feng Xie, Xin Sun, Heijing Chen and Zuotai Zhang\*

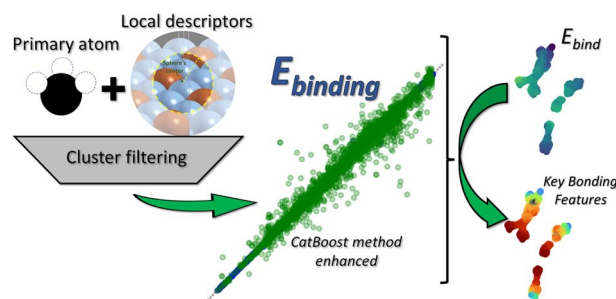


## PAPERS

2708

# Local descriptors-based machine learning model refined by cluster analysis for accurately predicting adsorption energies on bimetallic alloys

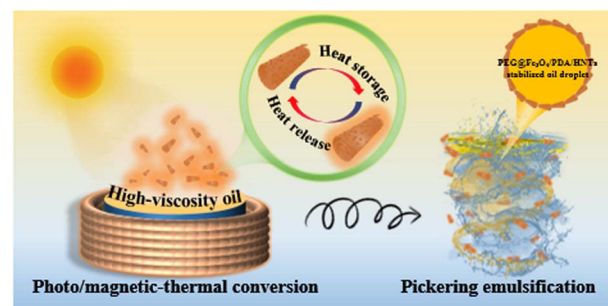
A. F. Usuga, C. S. Praveen and A. Comas-Vives\*



2722

# Integration of phase change materials with multi-responsive halloysite nanotubes for efficient Pickering emulsification of high-viscosity oil

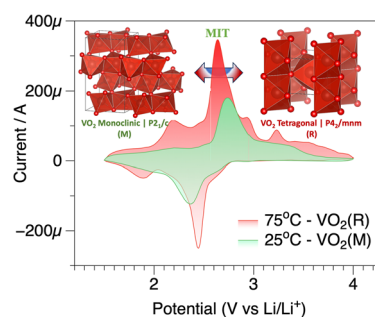
Limei Dong, Dan Zhang, Junfeng Li, Shichong Guo, Ying Xue, Zhining Wang and Yiming Li\*



2738

# VO<sub>2</sub> phase change electrodes in Li-ion batteries

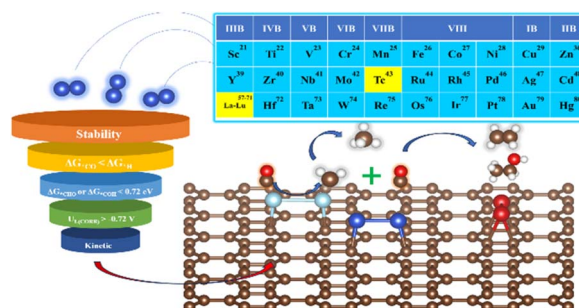
Samuel Castro-Pardo, Anand B. Puthirath,\* Shaoxun Fan, Sreehari Saju, Guang Yang, Jagjit Nanda, Robert Vajtai, Ming Tang and Pulickel M. Ajayan\*



2748






# Selecting dual atomic clusters supported on two-dimensional biphenylene with significantly optimized capability to reduce carbon monoxide

Zhongwei Wang, Zhili Yin, Yan Gao,\* Haifeng Wang,\* Junfeng Gao\* and Jijun Zhao

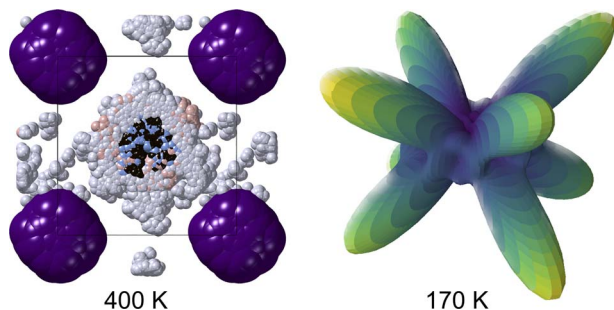




Binchao Shi, Yue Wang, Ertai Liu, Shilin Mei\*  
and Chang-Jiang Yao\*

-   $\text{Li}^+$
-  O atom
-   $\text{TFSI}^-$
-  1T MoS
-   $\text{Li}_2\text{S}_n$

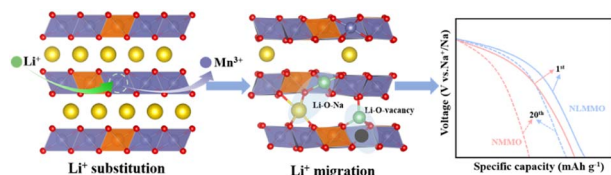
2771



# **Orientational order/disorder and network flexibility in deuterated methylammonium lead iodide perovskite by neutron total scattering**

Jiaxun Liu, Juan Du, Peter B. Wyatt, David A. Keen,  
Anthony E. Phillips and Martin T. Dove\*

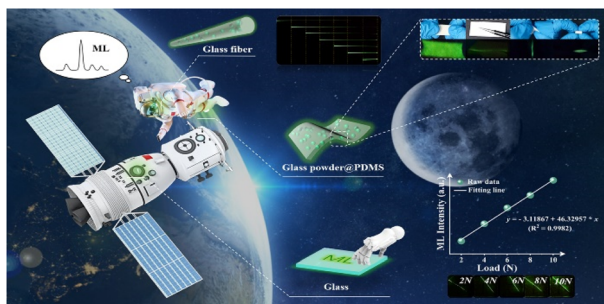
2786



## Enhancement of the reversible capacity and cycling stability of sodium cathode materials by Li<sup>+</sup> reversible migration

Xingyu Li, Ruguang Ma, Yang Gan, Yi Li, Wujie Qiu,\*  
Jifen Wang\* and Jianjun Liu\*

2796



## Multi-mode mechanoluminescence of fluoride glass ceramics from rigid to flexible media toward multi-scene mechanical sensors

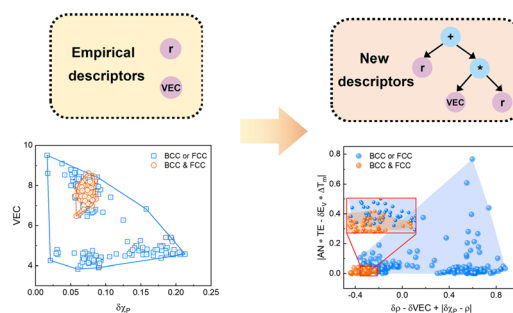
Yingdan Song, Jianqiang Xiao, Lei Zhao,\* Zhichao Liu,  
Yami Ling, Yingjuan Yan, Yixuan Xu,  
Alexey Nikolaevich Yakovlev, Tingting Hu, Tatiana  
Grigorievna Cherkasova, Qiang Xu,\* Canjun Wang\*  
and Xuhui Xu\*

## PAPERS

2807

**Descriptors for phase prediction of high entropy alloys using interpretable machine learning**

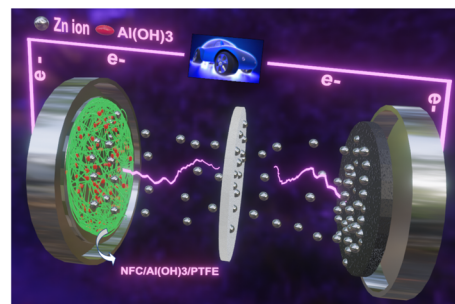
Shang Zhao, Ruihao Yuan,\* Weijie Liao, Yatong Zhao, Jun Wang, Jinshan Li\* and Turab Lookman\*



2820

**A nanofibrillated cellulose/Al(OH)<sub>3</sub>/polytetrafluoroethylene hybrid protective layer enabling dendrite free Zn anodes for rechargeable aqueous batteries**

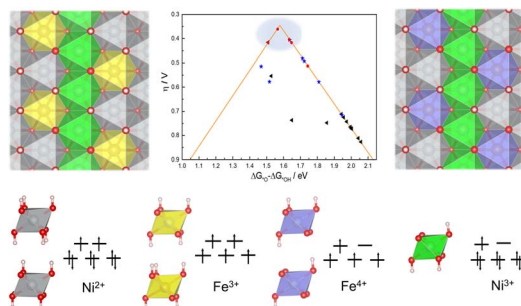
Mohammad Shayan, Ragab Abouzeid, Wangwang Xu,\* Tongyao Wu and Qinglin Wu\*



2830

**Distribution of high valence Fe sites in nickel–iron hydroxide catalysts for water oxidation**

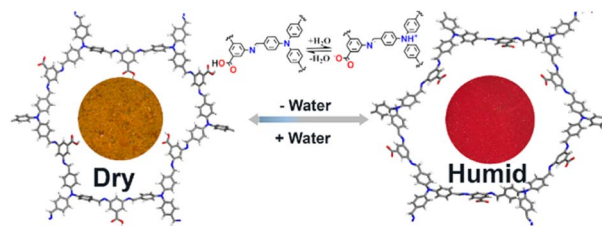
Peijia Ding, Qi Hu,\* Ziwei Chai, Hong-Bo Zhou, Guang-Hong Lu, Gilberto Teobaldi, Annabella Selloni\* and Li-Min Liu\*



2839

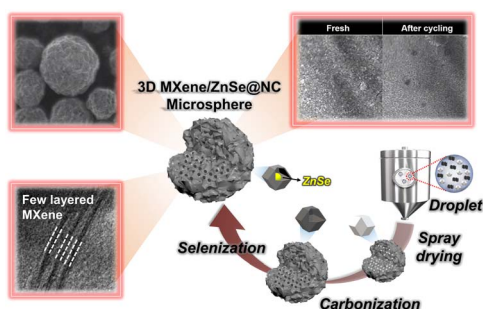
**An intrinsically zwitter-ionic COF: a carboxylic acid and pseudo-tetrahedral sp<sup>3</sup> nitrogen functionalized covalent organic framework with potential for humidity sensing**

Shyamapada Nandi,\* Himan Dev Singh, Pragalb Shekhar, Debanjan Chakraborty, Rinku Kushwaha and Ramanathan Vaidhyanathan\*





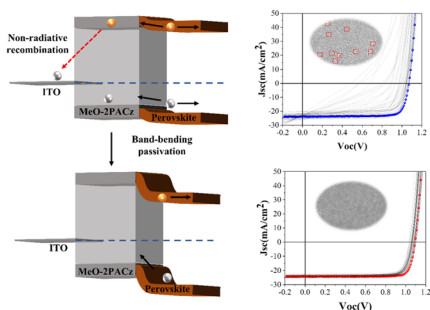
2848



### Designing a 3D MXene microsphere encapsulating MOF-derived ZnSe nanoparticles as an anode for highly stable potassium-ion batteries

Jeong Ho Na, Hong Geun Oh, Seunghwa Lee\* and Seung-Keun Park\*

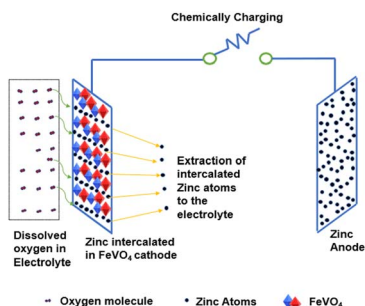
2856



### Highly reproducible self-assembled monolayer based perovskite solar cells via amphiphilic polyelectrolyte

Shi-Chun Liu, Heng-Yi Lin, Shih-En Hsu, Dong-Tai Wu, Sanjayan Sathasivam, Matyas Daboczi, Hsing-Jung Hsieh, Chin-Sian Zeng, Ting-Ge Hsu, Salvador Eslava, Thomas J. Macdonald\* and Chieh-Ting Lin\*

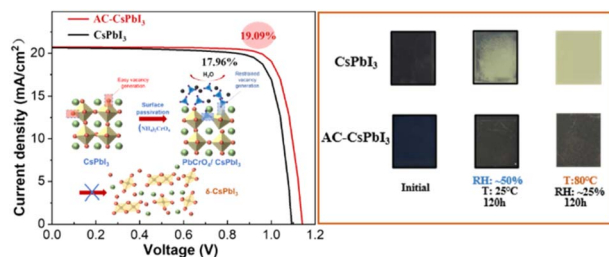
2867



### A novel aqueous zinc-ion battery capable of self-charging at low temperature

Shelton Kuchena, Abhishek Paudel, Qinglin Wu and Ying Wang\*

2877



### In situ formation of an inorganic lead oxysalt surface passivation layer for highly efficient and stable CsPbI<sub>3</sub> perovskite solar cells

Yao Fu, Huifang Han, Huijing Liu, Jia Xu, Yang Liu, Ruifeng Shi and Jianxi Yao\*

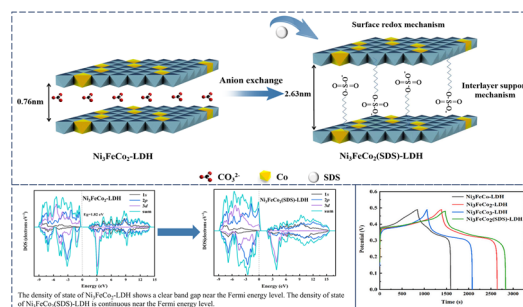




2887

## High-performance ternary NiFeCo-LDH nanosheets for supercapacitors by cation modulation and sodium dodecyl sulfonate intercalation

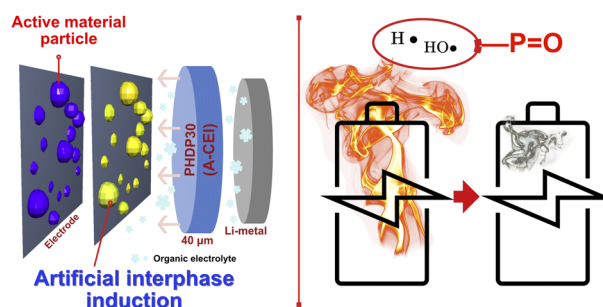
Xiaoming Li, Juan Yang, Junfeng Chen,<sup>\*</sup> Junwei Sun, Junpeng Liu, Xiping Cui and Linchi Zou<sup>\*</sup>



2902

## An artificial cathode-electrolyte interphase with flame retardant capability enabled by an organophosphorus compound for lithium metal batteries

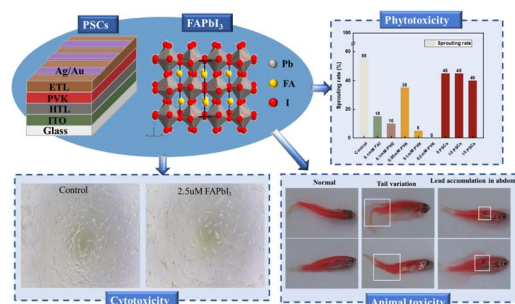
Taehoon Kim<sup>\*</sup>



2916

## Systematic evaluation of the biotoxicity of Pb-based perovskite materials and perovskite solar cells

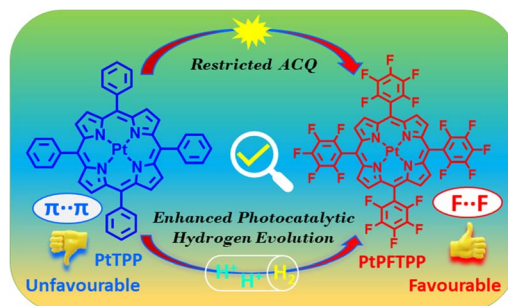
Yue Zhu, Yingying Kang, He Huang,<sup>\*</sup> Dicai Zhuang, Mohan Li, Zihao Ling, Ke Peng,<sup>\*</sup> Lanlan Zhai and Chao Zou<sup>\*</sup>



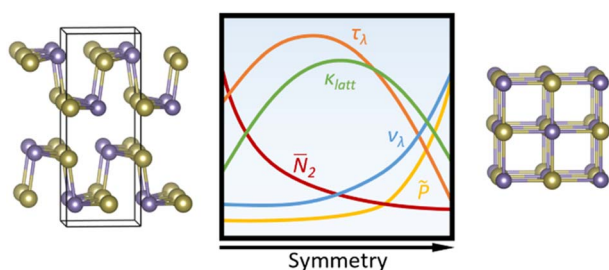
2924

## Self-assembly of Pt(II)-tetrakis(pentafluorophenyl) porphyrin via F...F interaction for efficient cocatalyst-free photocatalytic hydrogen evolution

Govardhana Babu Bodedla,<sup>\*</sup> Venkatesh Piradi, Waygen Thor, Ka-Leung Wong, Xunjin Zhu<sup>\*</sup> and Wai-yeung Wong<sup>\*</sup>



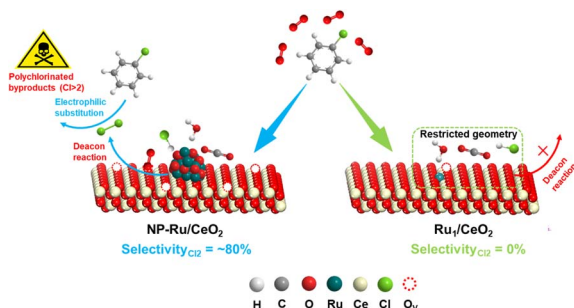
2932



### Impact of crystal structure on the lattice thermal conductivity of the IV–VI chalcogenides

Sophie K. Guillemot, Ady Suwardi, Nikolas Kaltsoyannis and Jonathan M. Skelton\*

2949



### Significant inhibition of secondary pollution in the catalytic oxidation of chloroaromatics over a bifunctional Ru<sub>1</sub>/CeO<sub>2</sub> single-atom catalyst

Yu Wang, Zhang Liu, Yao Wei, Yiming Hu, Yi Chen, Bin Shan\* and Bo Wu\*

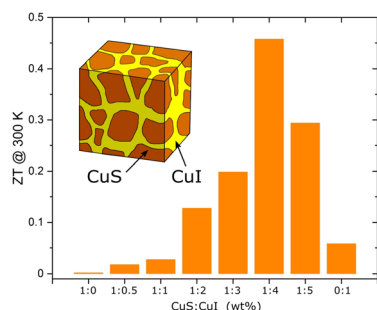
2959



### Preparation of lignin-based imine vitrimers and their potential application as repairable, self-cleaning, removable and degradable coatings

Jian Liu and Katrien V. Bernaerts\*

2974



### High performance thermoelectrics from low-cost and abundant CuS/CuI composites

Rafiq Mulla,\* Aleksandar Živković,\* Michael E. A. Warwick, Nora H. de Leeuw, Charles W. Dunnill and Andrew R. Barron\*

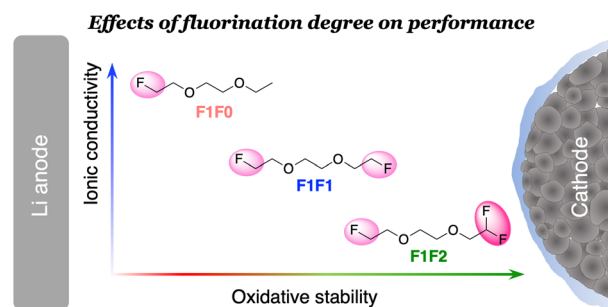


## PAPERS

2986

## Impact of the fluorination degree of ether-based electrolyte solvents on Li-metal battery performance

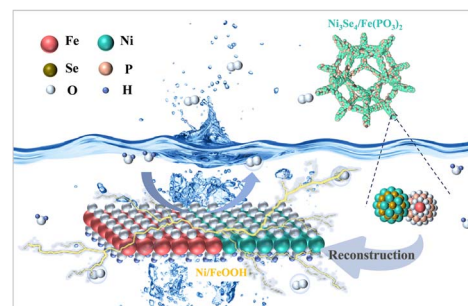
Yangju Lin, Zhiao Yu, Weilai Yu, Sheng-Lun Liao, Elizabeth Zhang, Xuelin Guo, Zhuojun Huang, Yuelang Chen, Jian Qin,\* Yi Cui\* and Zhenan Bao\*



2994

Ni<sub>3</sub>Se<sub>4</sub>/Fe(PO<sub>3</sub>)<sub>2</sub>/NF composites as high-efficiency electrocatalysts with a low overpotential for the oxygen evolution reaction

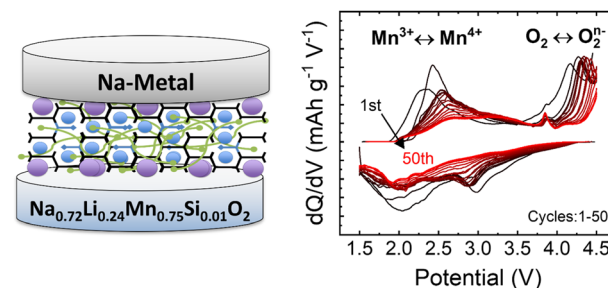
Ting-Yu Shuai, Qi-Ni Zhan, Hui-Min Xu, Chen-Jin Huang, Zhi-Jie Zhang, Hong-Rui Zhu and Gao-Ren Li\*



3006

## Solid-state sodium batteries with P2-type Mn-based layered oxides by utilizing anionic redox

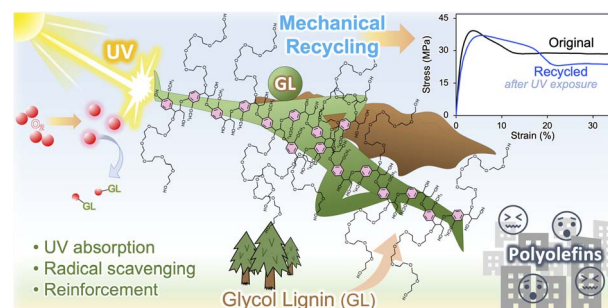
Steven Kmieć, Panawan Vanaphuti and Arumugam Manthiram\*



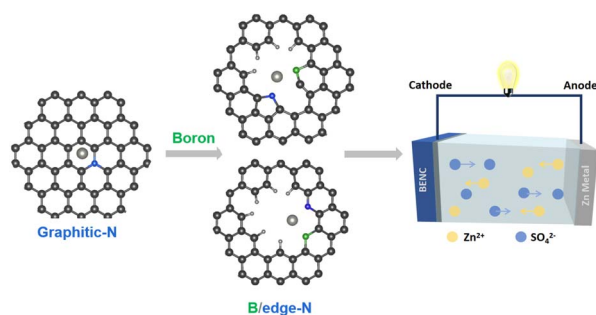
3014

## Durable and recyclable biomimetic glycol lignin/polyolefin compounds for a circular economy

Jonathon Tanks,\* Kenji Tamura, Kimiyoshi Naito, Thi Thi Nge and Tatsuhiko Yamada



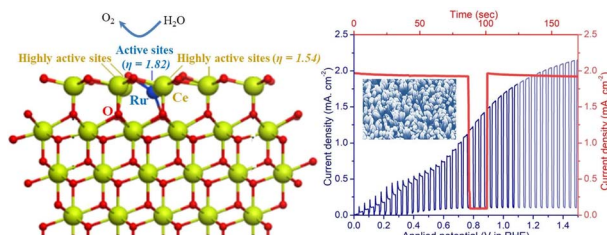
3026



### Tuning nitrogen species in 3D porous carbon via boron doping for boosted Zn-ion storage capability

Zhiran Zhang, Dandan Ouyang, Dongxu Chen, Liuqian Yang, Hui Zhu\* and Jiao Yin\*

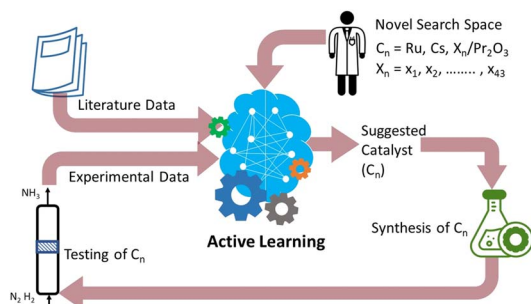
3034



### Single-atomic ruthenium dispersion promoting photoelectrochemical water oxidation activity of $\text{CeO}_x$ catalysts on doped $\text{TiO}_2$ nanorod photoanodes

Debashish Pal, Debayan Mondal, Dipanjan Maity, Debasis De, Mukhesh K. Ganesha, Ashutosh K. Singh and Gobinda Gopal Khan\*

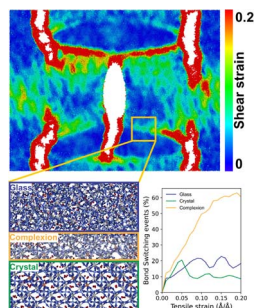
3046



### Experimental discovery of novel ammonia synthesis catalysts via active learning

Rasika Jayarathna, Thossaporn Onsree, Samuel Drummond, Jennifer Naglic and Jochen Lauterbach\*

3061



### Enhanced bond switching at complexation layer facilitates high fracture energy of LATP solid-state electrolytes

Zhimin Chen, Tao Du, N. M. Anoop Krishnan and Morten M. Smedskjaer\*



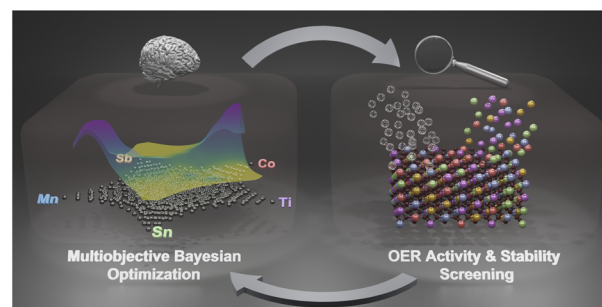


## PAPERS

3072

### Navigating the unknown with AI: multiobjective Bayesian optimization of non-noble acidic OER catalysts

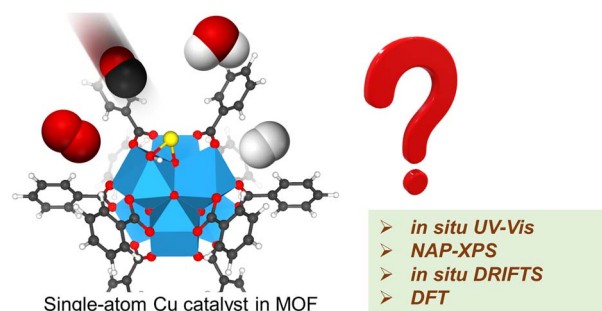
Ken J. Jenewein,<sup>\*</sup> Luca Torresi, Navid Haghmoradi, Attila Kormányos, Pascal Friederich and Serhiy Cherevko<sup>\*</sup>



3084

### Mechanism and selectivity of MOF-supported Cu single-atom catalysts for preferential CO oxidation

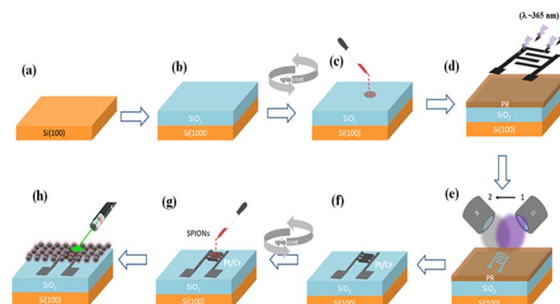
Sarawoot Impeng, Evaristo Salaya-Gerónimo, Benny Kunkel, Stephan Bartling, Kajornsak Faungnawakij, Bunyarat Rungtaweevoranit and Ali M. Abdel-Mageed<sup>\*</sup>



3096

### Multifunctional fluorescent SPIONs display exceptional optical/magnetic contrast and enhanced photoconductivity in interdigitated electrode based photoresponsive devices

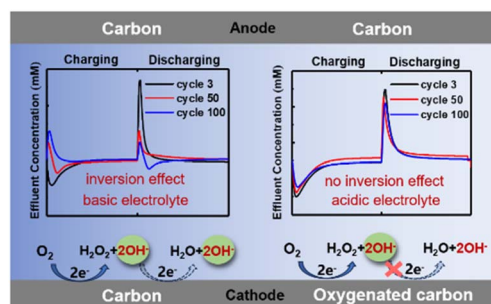
Ashish Tiwari,<sup>\*</sup> Ayan Debnath, Mohamad G. Moinuddin, Aamir Mushtaq, Anup Singh, Satinder K. Sharma and Jaspreet K. Randhawa<sup>\*</sup>



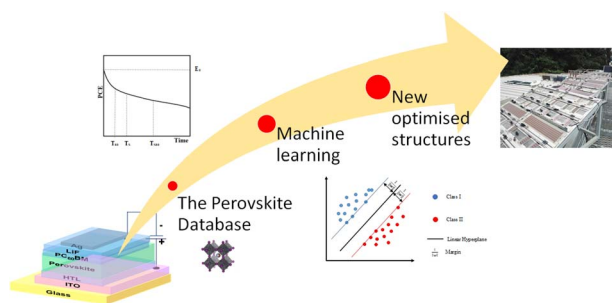
3111

### Stability improvement of carbon-based electrodes in aqueous electrocapacitive devices

Jiayuan Li, Ao Wang, Chang Tan, Dichao Wu, Mengmeng Fan, Kang Sun, Jianchun Jiang, Steven Boles, Bei Li<sup>\*</sup> and Junli Liu<sup>\*</sup>



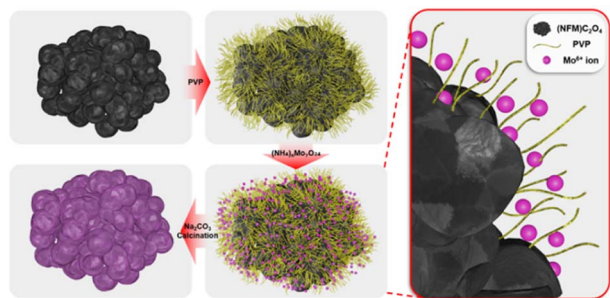
3122



### Application of large datasets to assess trends in the stability of perovskite photovoltaics through machine learning

Bashayer Nafe N. Alsulami, Tudur Wyn David, A. Essien, Samrana Kazim, Shahzada Ahmad, T. Jesper Jacobsson, Andrew Feeney and Jeff Kettle\*

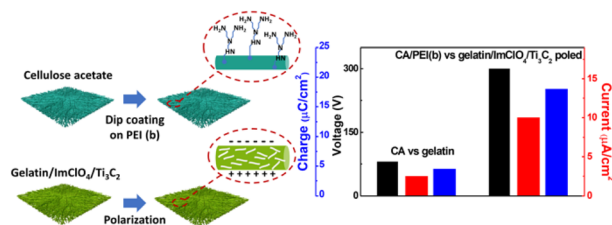
3133



### Boosting the electrochemical performance and moisture stability of O3-type $\text{NaNi}_{1/3}\text{Fe}_{1/3}\text{Mn}_{1/3}\text{O}_2$ cathodes using novel $\text{Na}_2\text{MoO}_4$ coatings prepared via a polyvinylpyrrolidone-anchored complex coating process

Minjun Kim, Minsu Choi and Wonchang Choi\*

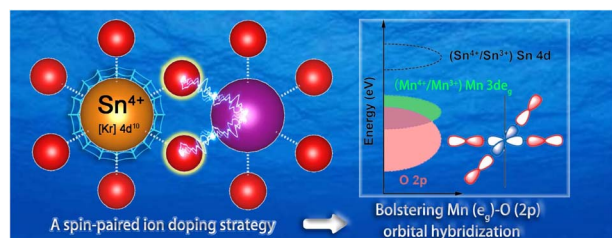
3142



### A triboelectric nanogenerator using degradable surface-modified cellulose acetate and ferroelectric gelatin composite nanofibers

Viet Anh Cao, Minje Kim, Phuoc Cao Van, Jong-Ryul Jeong, Soo Young Kim\* and Junghyo Nah\*

3151



### Enhanced sodium ion storage in $\text{MnO}_2$ through asymmetric orbital hybridization induced by spin-paired ion doping

Jinrui Wang, Xia Liu, Zishan Hou, Shiyu Wang, Shuyun Yao, Xueying Gao, Yuanming Liu, Kaiqi Nie, Jiangzhou Xie,\* Zhiyu Yang\* and Yi-Ming Yan\*



## CORRECTION

3159

**Correction: Recent progress in eutectic gallium indium (EGaIn): surface modification and applications**

Wensong Ge, Rui Wang, Xiaoyang Zhu,\* Houchao Zhang, Luanfa Sun, Fei Wang, Hongke Li, Zhenghao Li, Xinyi Du, Huangyu Chen, Fan Zhang, Huifa Shi, Huiqiang Hu, Yongming Xi, Jiankang He, Liang Hu\* and Hongbo Lan\*

