

# Journal of Materials Chemistry A

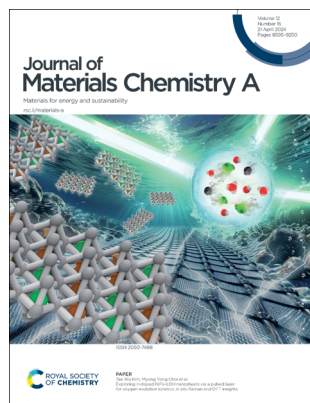
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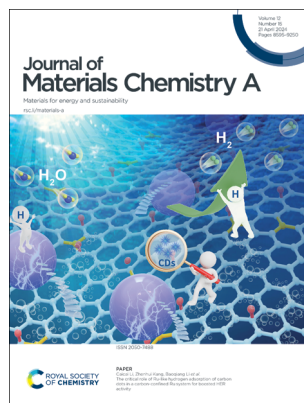
## IN THIS ISSUE

ISSN 2050-7488 CODEN JMCAET 12(15) 8595–9250 (2024)



### Cover

See Tae Wu Kim, Myong Yong Choi *et al.*, pp. 8694–8706. Image reproduced by permission of Myong Yong Choi from *J. Mater. Chem. A*, 2024, 12, 8694.



### Inside cover

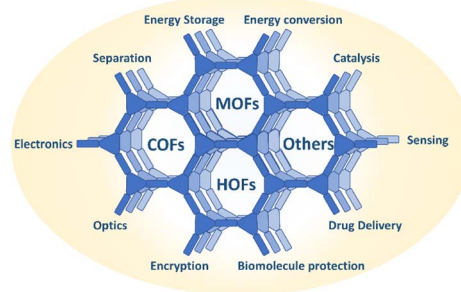
See Caicai Li, Zhenhui Kang, Baoqiang Li *et al.*, pp. 8707–8717. Image reproduced by permission of Baoqiang Li from *J. Mater. Chem. A*, 2024, 12, 8707.

## EDITORIAL

8613

### Introduction to functional framework materials

Paolo Falcaro,\* Patricia Horcajada and Dan Li

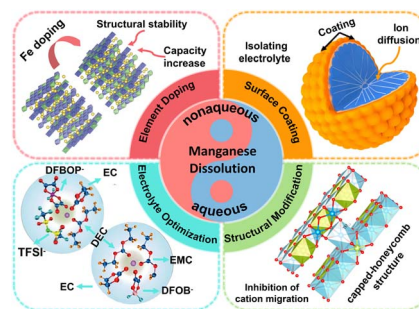


## REVIEWS

8617

### Rejuvenating manganese-based rechargeable batteries: fundamentals, status and promise

Weizhai Bao,\* Hao Shen, Yangyang Zhang, Chengfei Qian, Dingyu Cui, Jingjie Xia, He Liu, Cong Guo, Feng Yu, Jingfa Li\* and Kaiwen Sun\*



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Elemental answers

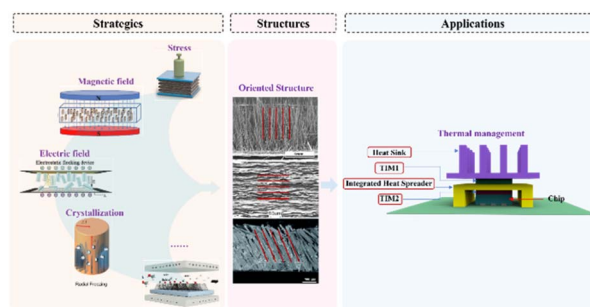


## REVIEWS

8640

**Enhanced thermal management in electronic devices through control-oriented structures**

Shujian Cheng, Xiaoxiao Guo, Weiwei Cai,\* Yufeng Zhang\* and Xue-ao Zhang\*



8663

**Research progress of biomass materials in the application of organic phase change energy storage materials**

Bowen Liu, Guocheng Lv,\* Tianming Liu, Meng Liu, Jianhua Bian, Qinda Sun and Libing Liao\*

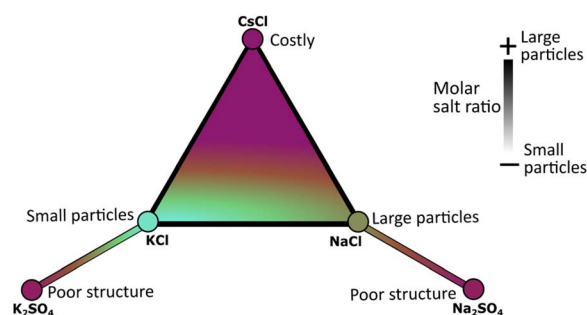


## COMMUNICATIONS

8683

**Effect of salt selection and molar ratio in molten salt synthesis of single-crystalline LiNiO<sub>2</sub>**

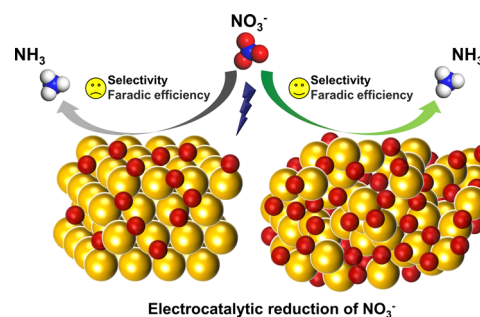
Wessel van den Bergh,\* Rui Yao, Ruizhuo Zhang, Aleksandr Kondrakov, Jürgen Janek and Torsten Brezesinski\*



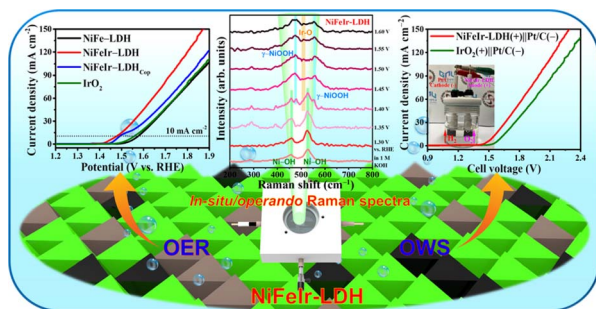
8689

**Electrochemical nitrate reduction for ammonia production: amorphous or crystalline oxidized copper catalyst?**

Quanxiao Peng, Dandan Xing, Liuqi Dong, Yuhan Fu, Jixue Lu, Xiaoyu Wang,\* Changhong Wang\* and Chunxian Guo\*



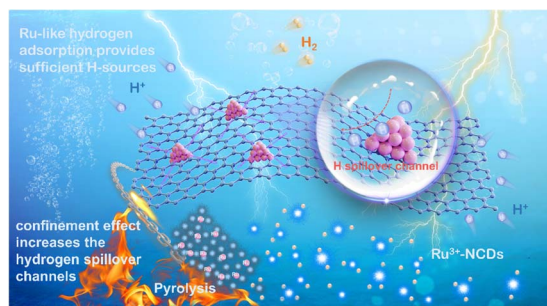
8694



### Exploring Ir-doped NiFe-LDH nanosheets via a pulsed laser for oxygen evolution kinetics: *in situ* Raman and DFT insights

Sieon Jung, Raja Arumugam Senthil, Ahreum Min, Anuj Kumar, Cheol Joo Moon, Gyeong Hwa Jeong, Tae Wu Kim\* and Myong Yong Choi\*

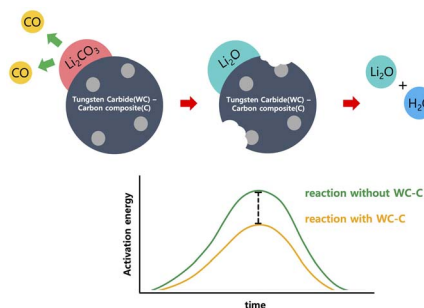
8707



### The critical role of Ru-like hydrogen adsorption of carbon dots in a carbon-confined Ru system for boosted HER activity

Zonglin Liu, Honglei Zhang, Dongyue Liu, Yujie Feng, Dechang Jia, Caicai Li,\* Qingfeng Sun, Yu Zhou, Zhenhui Kang\* and Baoqiang Li\*

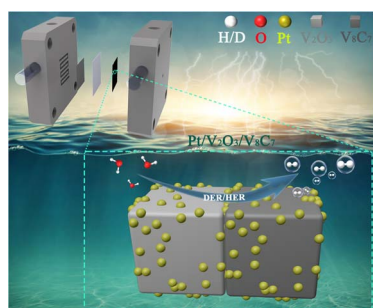
8718



### Carbon-metal complex as a functional material that governs the efficient conversion of $\text{Li}_2\text{CO}_3$ to $\text{LiOH} \cdot \text{H}_2\text{O}$

Sehwa Hong, Si-Wan Kim, Songeui Bae, Minsun Kim and Jun Kang\*

8724



### Synergistic electronic structure modulation of Pt using $\text{V}_2\text{O}_3$ and $\text{V}_8\text{C}_7$ for enhanced deuterium evolution performance

Yanfeng Li, Yuan Sheng, Liangbin Shao, Yuanan Li, Weiwei Xu, Shijie Zhang, Fangjun Shao\* and Jianguo Wang\*

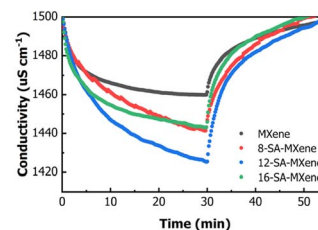
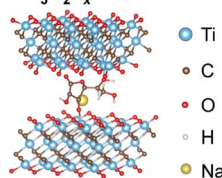


8734

### A "two-birds-one-stone" strategy to enhance capacitive deionization performance of flexible $\text{Ti}_3\text{C}_2\text{T}_x$ MXene film electrodes by surface modification

Chuhan Huang, Tianqin Huang, Xue Liang Li,\* Wei Zhou and Meng Ding\*

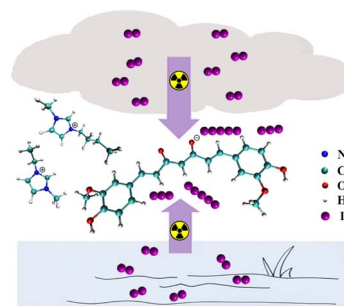
#### Sodium Ascorbate-modified $\text{Ti}_3\text{C}_2\text{T}_x$ MXene



8747

### Enhanced iodine capture by the hydrogen bond reconstruction strategy

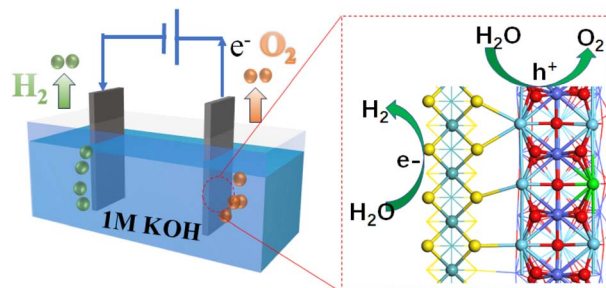
Ling-Qiong Gou, Yuan-Hao Wang, Shuang-Long Wang, Jia-Ying Liu, Xin Xin, Xin-Hong Xu, Song Qin, Ling He\* and Guo-Hong Tao\*



8757

### An interface engineering strategy of $\text{MoS}_2$ /perovskite oxide as a bifunctional catalyst to boost overall water splitting

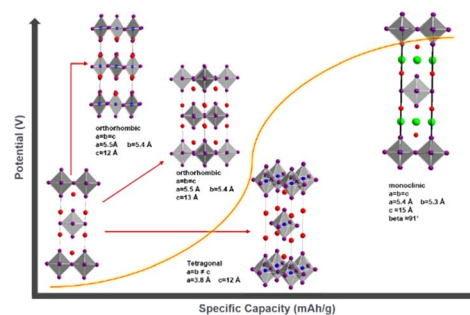
Ya-Nan Zhao, Ning Sun, Siqi Xu, Shengkang Min, Huilong Dong,\* Jun Li, Changhai Liu\* and Zhidong Chen\*



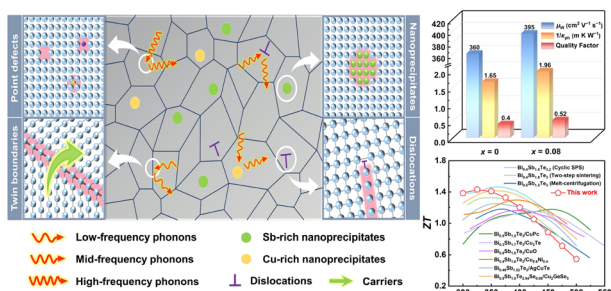
8769

### Insights into the first multi-transition-metal containing Ruddlesden–Popper-type cathode for all-solid-state fluoride ion batteries

Vanita Vanita, Aamir Iqbal Waidha, Sami Vasala, Pascal Puphal, Roland Schoch, Pieter Glatzel, Matthias Bauer and Oliver Clemens\*



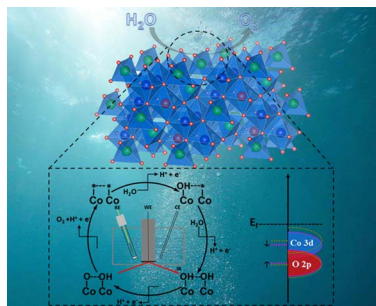
8785



## Leveraging the $\text{Cu}_2\text{SnTe}_3$ additive for an improved thermoelectric figure of merit and module efficiency in $\text{Bi}_{0.5}\text{Sb}_{1.5}\text{Te}_3$ -based composites

Qiaoyan Pan, Kaikai Pang, Qiang Zhang,\* Yan Liu, Huilie Shi, Jingsong Li, Wenjie Zhou, Qianqian Sun, Yuyou Zhang, Xiaojian Tan, Peng Sun, Jiehua Wu,\* Guo-Qiang Liu and Jun Jiang\*

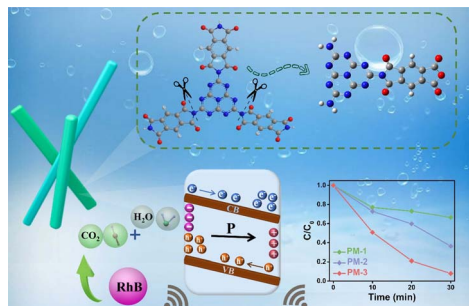
8796



## Constructing oxygen vacancies by doping Mo into spinel $\text{Co}_3\text{O}_4$ to trigger a fast oxide path mechanism for acidic oxygen evolution reaction

Lang Sun, Min Feng, Yang Peng, Xu Zhao, Yiqun Shao, Xin Yue\* and Shaoming Huang\*

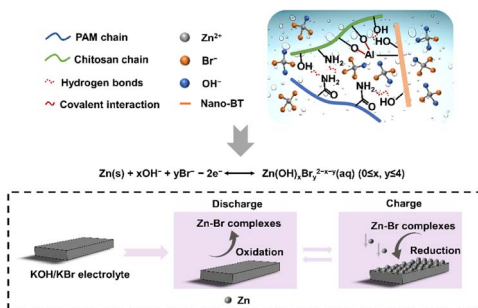
8805



## Organic piezocatalyst polyimide: molecular structure tailoring and robust built-in electric field

Yan Zhang, Jingang Liu,\* Cheng Hu, Xinxin Zhi, Zhen Pan, Hongjian Yu,\* Jie Han and Hongwei Huang\*

8815



## Enhanced zinc reversibility enabled by zinc-bromide complexation of a quasi-solid electrolyte for high-performance flexible zinc-air batteries

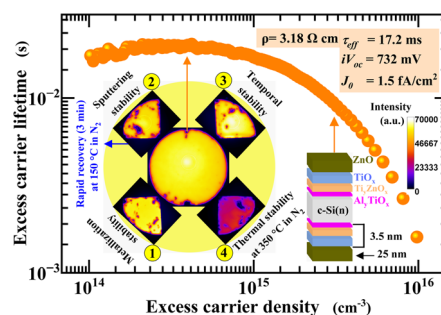
Zunhong Chen, Junhong Jin, Shenglin Yang, Guang Li\* and Jingjing Zhang\*



8826

## Addressing the stability challenges of TiO<sub>x</sub>-based passivating contacts for high-efficiency c-Si solar cells

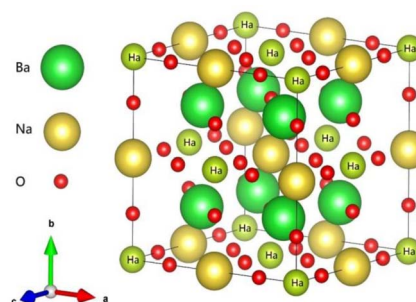
Mohamed M. Shehata,<sup>\*</sup> Thien N. Truong, Gabriel Bartholazzi, Daniel H. Macdonald and Lachlan E. Black<sup>\*</sup>



8846

## First-principles investigation of the structural stability, electronic, and thermodynamic properties of Ba<sub>2</sub>NaHaO<sub>6</sub> (Ha = Cl, Br, I) periodate double perovskites

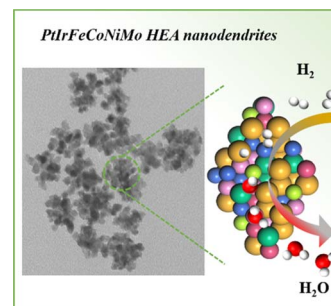
Zia Ur Rehman<sup>\*</sup> and Zijiang Lin<sup>\*</sup>



8862

## PtIrFeCoNiMo high-entropy alloy nanodendrites for boosting the alkaline hydrogen oxidation performance

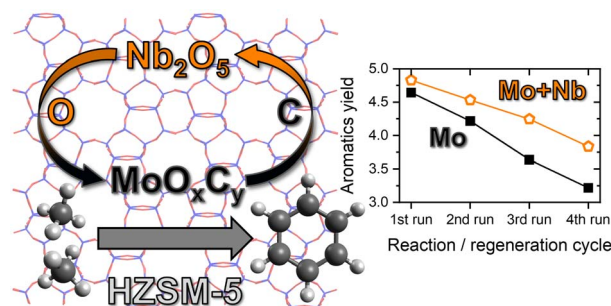
Xiaolong Ma, Shuang Zhang, Yaojiang Zhou, Wenli Lei, Yueming Zhai, Yuanmeng Zhao<sup>\*</sup> and Changsheng Shan<sup>\*</sup>



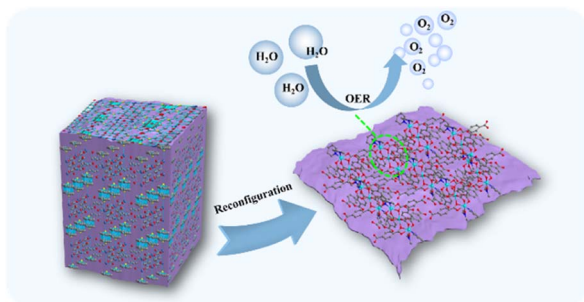
8869

## Stabilization of intermediate Mo oxidation states by Nb doping enhancing methane aromatization on Mo/HZSM-5 catalysts

Stefan Peters, Stephan Bartling, Magdalena Parlinska-Wojtan, Alexander Wotzka, Ana Guilherme Buzanich, Sebastian Wohlrab and Ali M. Abdel-Mageed<sup>\*</sup>



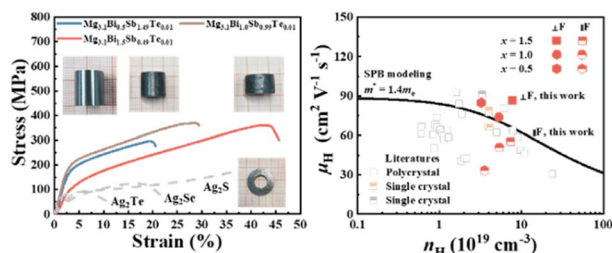
8885



### Pyridine-induced caused structural reconfiguration forming ultrathin 2D metal–organic frameworks for the oxygen evolution reaction

Yang Liu,\* Shuwei Deng, Shihui Fu, Xiaoteng Wang, Gang Liu and Haidong Yang\*

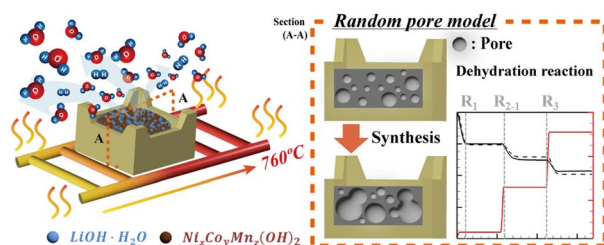
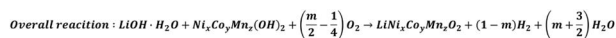
8893



### Plastic $Mg_3(Sb,Bi)_2$ -based thermoelectric compounds with enhanced texture *via* cold-deformation

Ziming Zhang, Zhiqiang Gao, Tingting Deng, Qingfeng Song,\* Lidong Chen and Shengqiang Bai\*

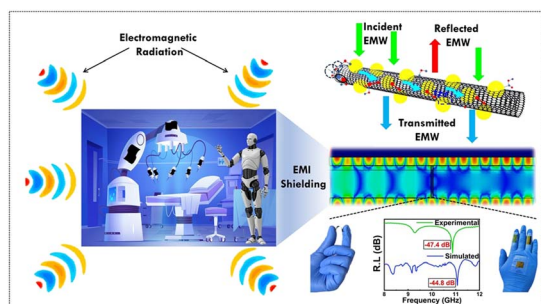
8900



### Dehydration kinetics of the synthesis of high-nickel cathode materials used in lithium ion batteries

Jaeyoung Jeon, Minuk Kim, Min Young Hwang, Choongmo Yang and Jongsup Hong\*

8914



### Flexible and rigid spinel ferrite carboneous composite as a future of tunable absorption dominant cmWave shielding materials

Vaishnavi Khade, Avanish Babu Thirumalasetty, Asmita Ajay Rathod, Yogesh Kumar Chaoukiker and Madhuri Wuppulluri\*



8927

## Interfacial engineering design induces enriched-defects expediting catalytic conversion kinetics of polysulfides

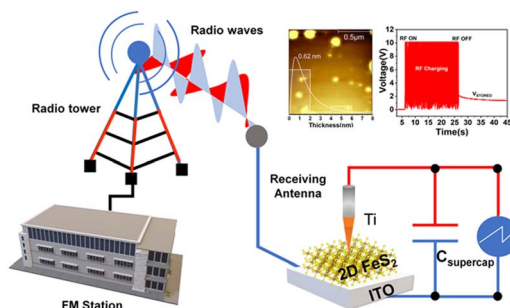
Guixin Zhang, Xiaorong Chen, Xinmeng Yu, Qingyu Li, Hongqiang Wang, Sijiang Hu, Juantao Jiang, Youguo Huang\* and Zhaoling Ma\*



8940

## Giant Stark effect assisted radio frequency energy harvesting using atomically thin earth-abundant iron sulphide (FeS<sub>2</sub>)

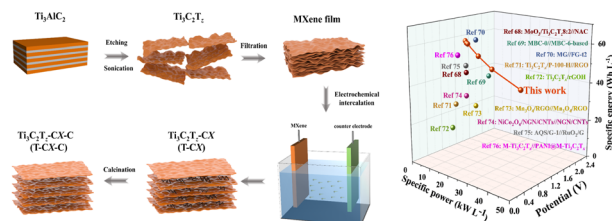
Karthik R., Appu Kumar Singh, Shreyasi Das, Suman Sarkar, Tarun Kumar Kundu, Swastik Kar, P. R. Sreeram\* and Chandra Sekhar Tiwary\*



8952

## Enhancing ion storage and transport in Ti<sub>3</sub>C<sub>2</sub>T<sub>z</sub> MXene via a "sacrificial cations" strategy

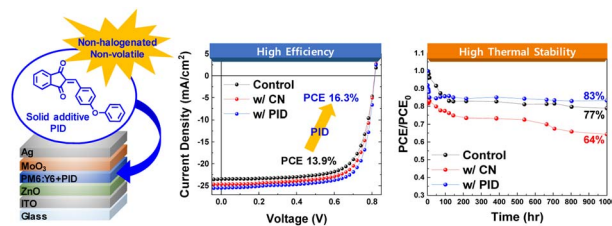
Xiaodan Yin, Wei Zheng,\* Haifeng Tang, Li Yang, Peigen Zhang\* and ZhengMing Sun\*



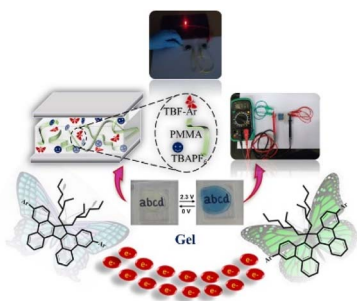
8963

## Non-halogenated and non-volatile solid additive for improving the efficiency and stability of organic solar cells

Mi Choi, Hyeon-Seok Jeong, Jinho Lee, Yeonsu Choi, In-Bok Kim, Dong-Yu Kim, Hongkyu Kang\* and Soo-Young Jang\*



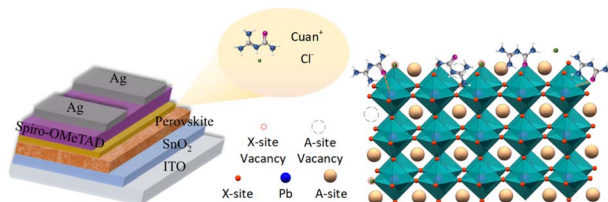
8972



### Energy-efficient UV-to-NIR active smart electrochromic tetrabenzofluorene molecules

Panichiyil V. Navya and Srinivasan Sampath\*

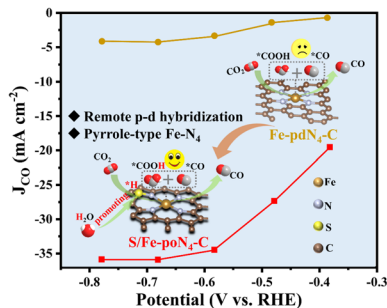
8982



### Molecular engineering with CuanCl for effective optimization of a defective interface for wide-bandgap perovskite solar cells

Maoxia Xu, Rui Liu, Haoran Ye, Haorong Ren, Jinyu Li, Chen Deng, Zetan Zhang, Chengbin Yang, Kexin Hu, Xiaoran Sun\* and Hua Yu\*

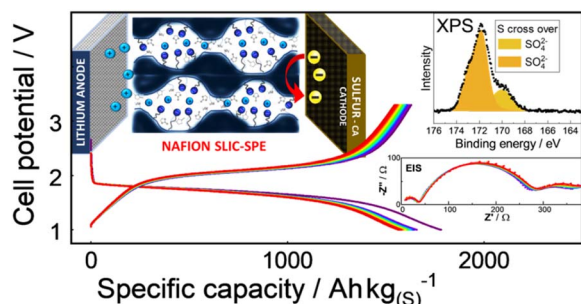
8991



### Remote p-d orbital hybridization via first/second-layer coordination of Fe single atoms with heteroatoms for enhanced electrochemical CO<sub>2</sub>-to-CO reduction

Ying Yang, Lizhen Chen, Zhenyan Guo, Shengqi Liu, Pei-dong Wu, Zhen Fang,\* Kai Zhang and Hu Li\*

9002



### Carbonate swollen lithiated Nafion electrolyte for quasi-solid-state lithium-sulfur batteries

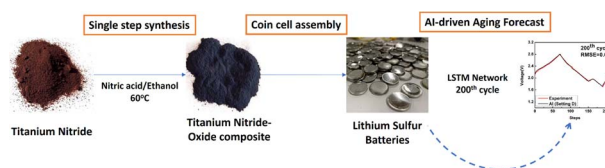
Brigitta Sievert,\* Ernestino Lufrano, Martina Gerle, Mariarosaria Tuccillo, Indro Biswas, Cataldo Simari, Sergio Brutti, Maryam Nojabaei, Isabella Nicotera\* and K. Andreas Friedrich



9017

### Single-step synthesis of titanium nitride-oxide composite and Al-driven aging forecast for lithium-sulfur batteries

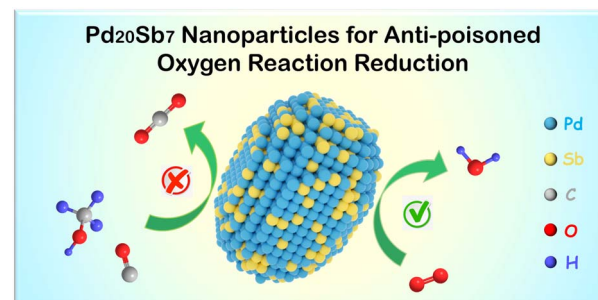
Ka Chun Li, Xuanming Chen, Aghil Sabbaghi, Chi Ho Wong,\* Chak-yin Tang,\* Frank Leung-Yuk Lam\* and Xijun Hu\*



9031

### Anti-poisoned oxygen reduction reaction by rice-like Pd-Sb nanoparticles

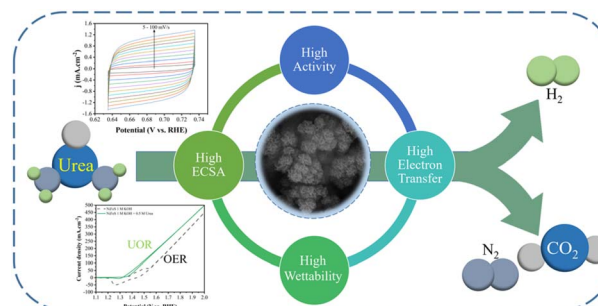
Hui Fu, Yao Chen, Shuanglong Lu, Zhe Zhang, Ting Zhu, Hanjun Li, Feili Lai,\* Nan Zhang\* and Tianxi Liu\*



9038

### Modulation of active surface sites on Ni-Fe-S by the dynamic hydrogen bubble template method for energy-saving hydrogen production

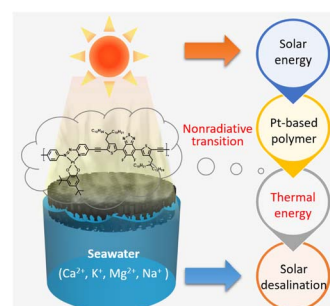
Amirreza Fathollahi, Taghi Shahrabi\* and Ghasem Barati Darband\*



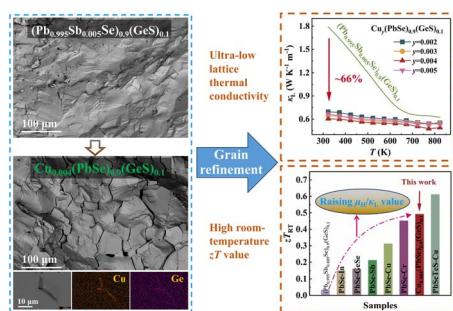
9055

### A platinum-based photothermal polymer with intermolecular/ligand-to-ligand charge transfer for efficient and sustainable solar-powered desalination

Miao Zhang,\* Md. Nahian Al Subri Ivan, Yingjie Sun, Zikang Li, Shuvra Saha, Safayet Ahmed, Huiying Liu, Yidi Wang, Yuen Hong Tsang\* and Wai-Yeung Wong\*



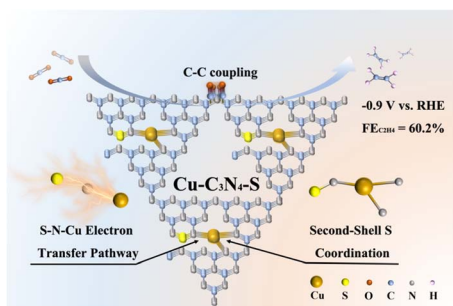
9066



### Doping-induced grain refinement contributes to enhanced thermoelectric performance of n-type PbSe at room temperature

Canyang Zhao, Qian Deng, Wei Yuan, Xiang An, Wenjun Su, Zhengmin He, Yin Xie, Zhilong Zhao and Ran Ang\*

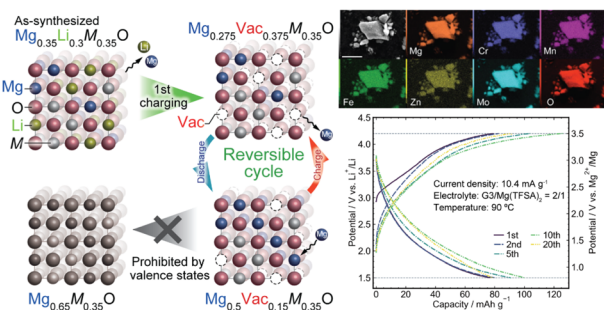
9075



### Enhanced electrochemical CO<sub>2</sub>-to-ethylene conversion through second-shell coordination on a Cu single-atom catalyst

Yi Shen,\* Yongliang Pan, Huanyong Xiao, Haizhong Zhang, Chao Zhu,\* Qile Fang, Yungui Li, Lun Lu, Liqun Ye and Shuang Song

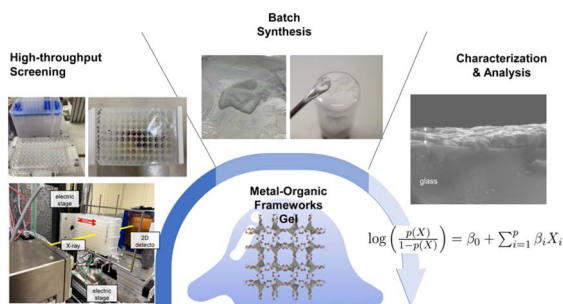
9088



### Securing cation vacancies to enable reversible Mg insertion/extraction in rocksalt oxides

Tomoya Kawaguchi,\* Masaya Yasuda, Natsumi Nemoto, Kohei Shimokawa, Hongyi Li, Norihiko L. Okamoto and Tetsu Ichitsubo

9102



### High-throughput screening and characterization of novel zeolitic imidazolate framework gels

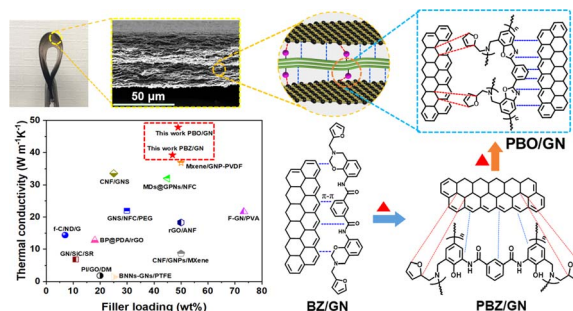
Izuru Miyazaki, Yumi Masuoka, Keiichiro Oh-Ishi, Norihiko Setoyama and Mitsutaro Umehara\*



9113

### Construction of brick/mortar-like graphene/thermoset composites with highly anisotropic thermal conductivity and strong electromagnetic interference shielding performance

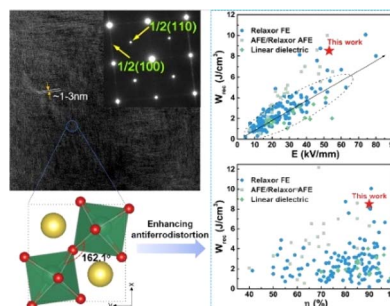
Zhenhao Yao, Jianan Song,\* Yin Lu, Rui Yang, Yuan Zhang and Kan Zhang\*



9124

### Collaboratively improved energy density and efficiency in NaNbO<sub>3</sub>-based lead-free relaxor ferroelectrics via enhancing antiferrodistortion

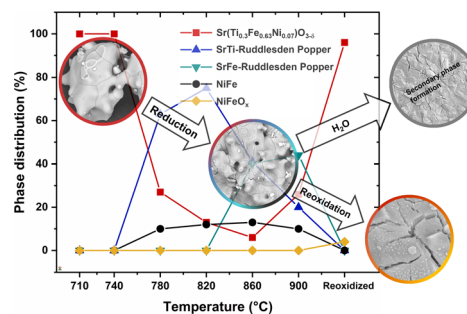
Aiwen Xie, Junwei Lei, Yi Zhang, Attaur Rahman, Xuewen Jiang, Tianyu Li, Xinchun Xie, Liqiang Liu, Cong Zhou, Shuang Yin, Haiqiang Ma, Xia Fang and Ruzhong Zuo\*



9132

### Phase stability, redox-behavior and carbon-tolerance of Sr<sub>1-x</sub>(Ti<sub>0.3</sub>Fe<sub>0.7-y</sub>Ni<sub>y</sub>)O<sub>3-δ</sub> with exsolved nanoparticles

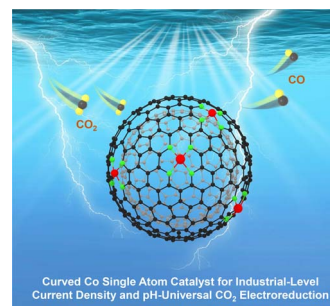
Alexander Schwiers,\* Daniel Röhrer,\* Christian Lenser, Benjamin Steinrücken, Doris Sebold, Hartmut Spliethoff, Olivier Guillon and Norbert H. Menzler



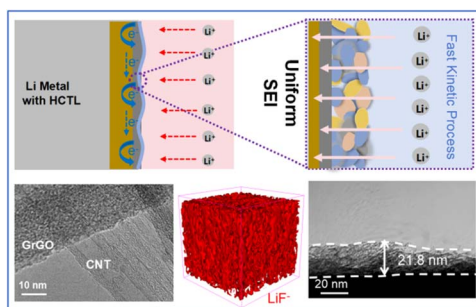
9147

### Isolated cobalt-nitrogen sites on high-curvature carbon achieving industrial-level current density and pH-universal CO<sub>2</sub> electroreduction

Jun Wang, Xifan Chen, Zhengkun Yang, Juan-Ding Xiao, Chenchen Qin, Zhenhua Yan, Zhiyuan Wang, Jia Yang\* and Junzhong Wang\*



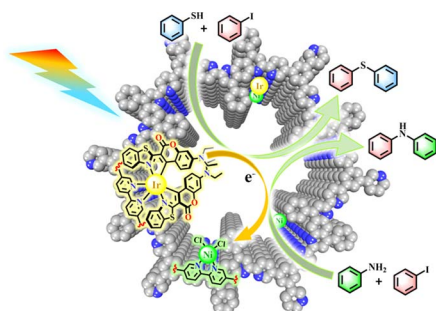
9155



### High-flux charge transfer layer confers a solid electrolyte interphase with uniform and rich LiF for stable lithium metal batteries

Haijie Zhao, Yumeng Peng, Xianbin Liu,\* Shibo Du, Yiyao Yu, Ting Liu, Yanhong Yin, Sayed Y. Attia, Yesheng Li and Ziping Wu\*

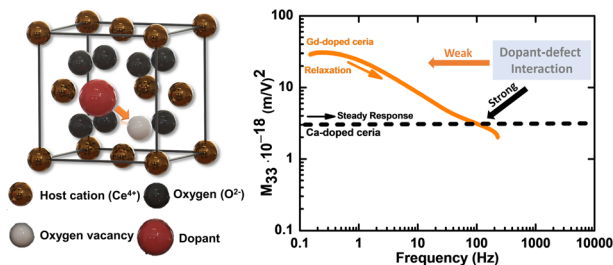
9164



### Incorporation of Ir(C^N)<sub>2</sub>(N^N)-NiCl<sub>2</sub> in a (N^N)-covalent organic framework for transcendent dual catalysis in photochemical cross-coupling synthesis

Yan-Lin Li, Fuke Wang, Jagadese J. Vittal, Peng Jin, Sheng-Li Huang\* and Guo-Yu Yang\*

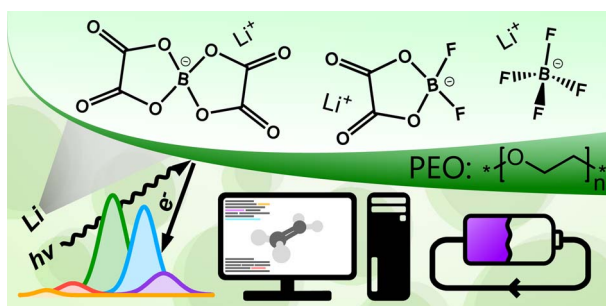
9173



### Non-classical electrostriction in calcium-doped cerium oxide ceramics

Ahsanul Kabir, Victor Buratto Tinti, Simone Santucci, Maxim Varenik, Samuel Griffiths, Sebastian Molin, Igor Lubomirsky and Vincenzo Esposito

9184



### Initial SEI formation in LiBOB-, LiDFOB- and LiBF<sub>4</sub>-containing PEO electrolytes

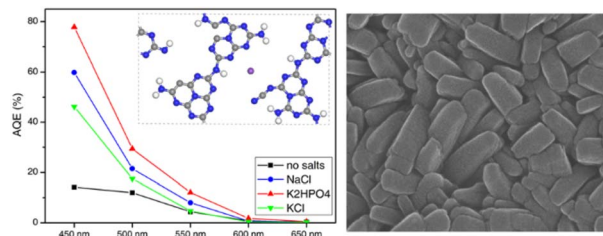
Edvin K. W. Andersson, Liang-Ting Wu, Luca Bertoli, Yi-Chen Weng, Daniel Friesen, Kenza Elbouazzaoui, Sophia Bloch, Ruslan Ovsyannikov, Erika Giangrisostomi, Daniel Brandell, Jonas Mindemark, Jyh-Chiang Jiang and Maria Hahlin\*



9200

### Molecular engineering of polymeric carbon nitride for photocatalytic hydrogen production with ultrahigh apparent quantum efficiency

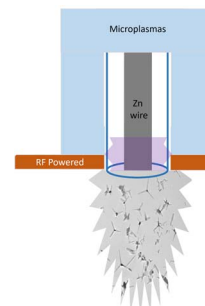
Haiyang Liu, Xiaolu Liu, Chengqun Xu,\* Dongyu Wang, Dezhi Li, Jingyao Huang, Shengquan Wu, Zhichun Wang and Hui Pan\*



9212

### Non-equilibrium defect chemistry in oxygen-rich zinc oxide nano-tetrapods synthesized using atmospheric pressure microplasma

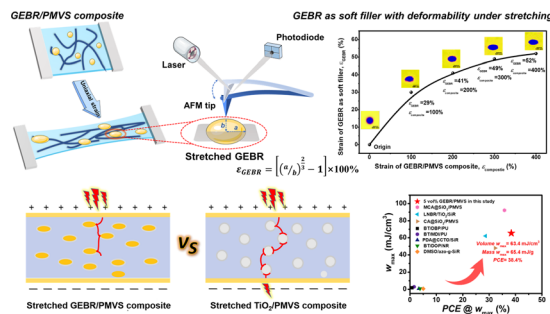
Dilli babu Padmanaban, Paul Maguire and Davide Mariotti\*



9232

### Largely enhanced energy harvesting performances of DEGs by constructing all-organic dielectric composites with a soft and deformable filler

Xueying Liu, Weibo Li, Yingjie Jiang, Nanying Ning\* and Ming Tian\*



## CORRECTIONS

9241

### Correction: Superhydrophobic and mechanical properties enhanced the electrospinning film with a multiscale micro-nano structure for high-efficiency radiation cooling

Lijing Kong, Puqing Sun, Jincheng Liu, Yongxing Lin, Chao Xiao, Chao Bao, Kang Zheng, Meng Xue, Xian Zhang, Xianglan Liu\* and Xingyou Tian\*



## CORRECTIONS

9242

**Correction: Super-adsorbent hydrogel for removal of methylene blue dye from aqueous solution**

Xiao-Sai Hu, Rui Liang and Guoxing Sun\*

## RETRACTION

9247

**Retraction: Nickel nanoparticles immobilized on three-dimensional nitrogen-doped graphene as a superb catalyst for the generation of hydrogen from the hydrolysis of ammonia borane**

Mojtaba Mahyari and Ahmad Shaabani\*

