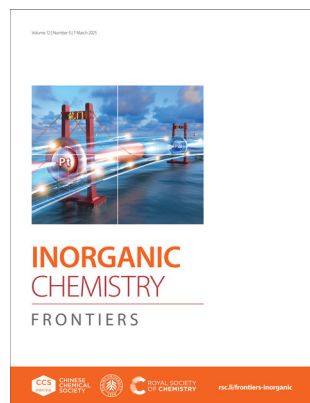


### IN THIS ISSUE

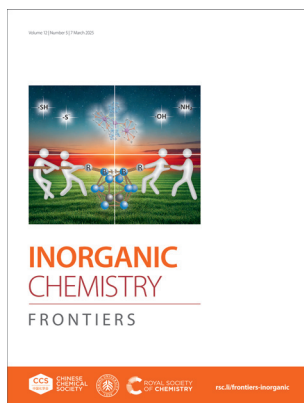
ISSN 2052-1553 CODEN ICFNAW 12(5) 1731–2124 (2025)



#### Cover

See Yuzhen Zhang *et al.*,  
pp. 1812–1821.

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2025, **12**, 1812.



#### Inside cover

See Zsolt Kelemen *et al.*,  
pp. 1822–1830.

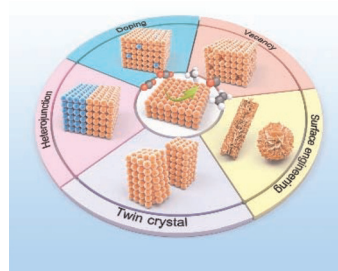
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2025, **12**, 1822.

### REVIEWS

1743

#### Optimization of electronic structure by defect engineering for electrocatalytic carbon dioxide reduction reaction

Jinghan He, Jianxin Qiang, Yang-Fan Xu,\* Zhan Shi, KeKe Huang\* and Xiangdong Yao\*



1773

#### Bi<sub>2</sub>MO<sub>6</sub> (M = Mo, W) Aurivillius oxides for efficient photocatalytic N<sub>2</sub>-to-NH<sub>3</sub> conversion: a perspective review

Xin Huang, Razium Ali Soomro, Huidong Shen, Li Guo,\* Chunming Yang\* and Danjun Wang\*



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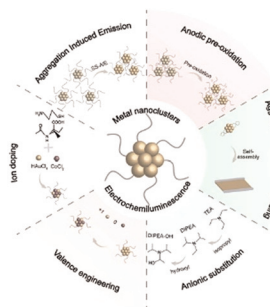
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## REVIEWS

1798

### Design strategies and applications of electrochemiluminescence from metal nanoclusters

Tingting Li, Jiyu Sui, Weinan Dong, Yu Zhang, Ying Zhang,\* Yanan Li,\* Zhennan Wu\* and Xue Bai

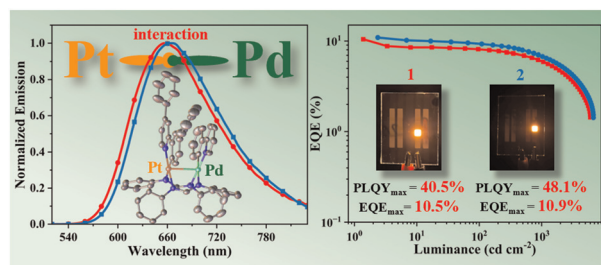


## RESEARCH ARTICLES

1812

### Heteronuclear Pt<sup>II</sup>–Pd<sup>II</sup> dimers formation through ligands subtle tailoring

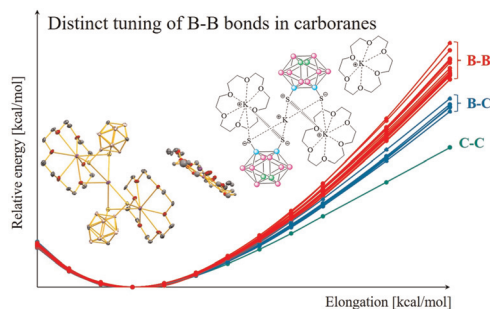
Peng Fan, Lequn Yuan and Yuzhen Zhang\*



1822

### The “chemical tug-of-war” in carborane clusters: distinct tuning on different sides of the cluster

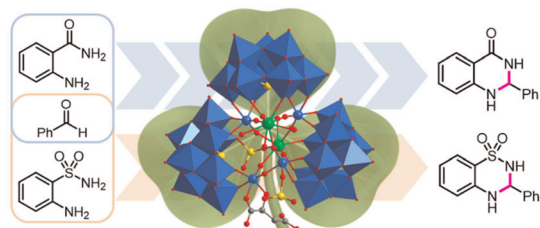
Dániel Buzsáki, Dalma Gál, Balázs Szathmári, Tamás Holczbauer, Antal Udvardy, Júlia Kertész Szilágyiné, Denis Kargin, Clemens Bruhn, Rudolf Pietschnig and Zsolt Kelemen\*



1831

### Praseodymium–selenium connecting selenotungstate containing mixed building blocks for catalytic synthesis of aza-heterocycles

Guoping Yang, Jiawei Cao, Zhoufu Lin, Shixiong Li,\* Yayu Dong\* and Yufeng Liu\*

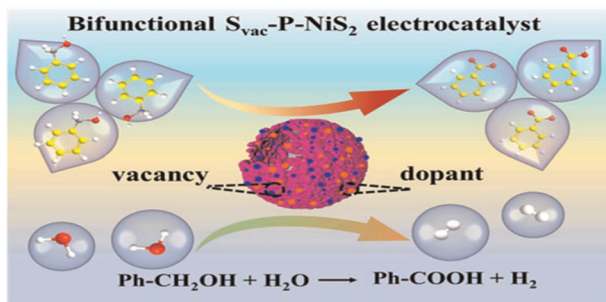


- 🌿 Mixed building block-constructed POMs
 🌿 High catalytic activity
- 🌿 Green solvent
 🌿 Broad substrate scope
 🌿 Valuable aza-heterocycles



## RESEARCH ARTICLES

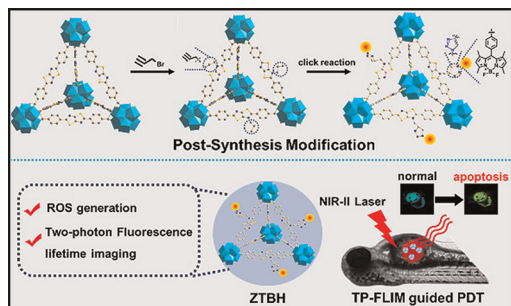
1839



### Vacancy formation mechanism and synergy with doping in $\text{NiS}_2$ -based electrocatalysts for benzyl alcohol oxidation and hydrogen evolution

Fang Li, Haili Lin, Huiqin Yu, Pengfei Du, Yang Wang\* and Jing Cao\*

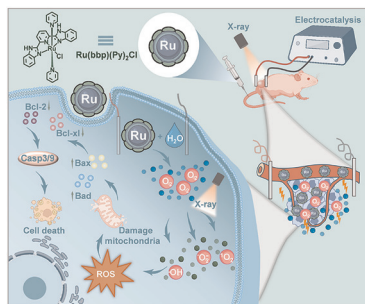
1850



### Fluorescence lifetime imaging-guided photodynamic therapy over two-photon responsive metal–organic frameworks

Bo Li, Xin Lu,\* Xianshun Sun, Hongping Zhou, Yupeng Tian, Zijuan Hai\* and Dandan Li\*

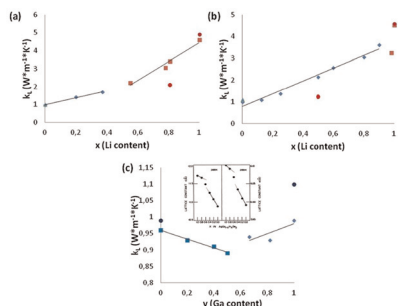
1857



### *In situ* oxygen generation by a low-toxicity ruthenium electrocatalyst for multimodal radiotherapy sensitization

Mingkai Chen, Hanlong He, Jinrong Dong, Peng Xie, Jingyan Chen, Li Ma\* and Tianfeng Chen\*

1867



### Thermal conductivity and balanced performance in infrared nonlinear optical multicomponent chalcogenides $\text{Li}_x\text{Ag}_{1-x}\text{Ga}_y\text{In}_{1-y}\text{Se}_2$

L. I. Isaenko,\* Bohui Xu, K. E. Korzhneva, Pifu Gong, D. A. Samoshkin, A. F. Kurus and Zheshuai Lin\*

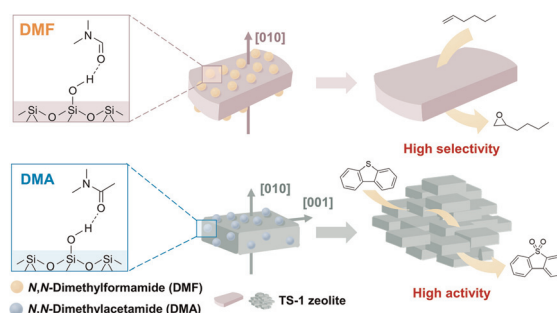


## RESEARCH ARTICLES

1874

### Regulation of TS-1 zeolite morphology by crystallization modifiers to boost the oxidative reactions

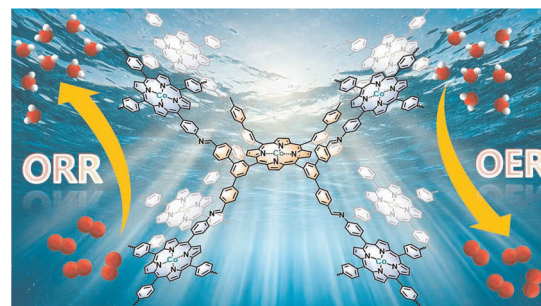
Jiani Zhang, Risheng Bai, Shiyu Zhou and Jiyang Li\*



1881

### Three-dimensional porphyrin-based covalent organic frameworks as bifunctional electrocatalysts for oxygen reduction and evolution reactions

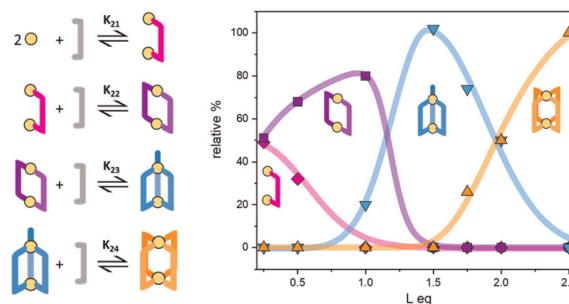
Li Liao, Rui Wang, Zerong Zhang, Jianfeng Zhang, Shibin Huang, Wenhao Xie, Yiji Wang, Ming Xue,\* Qianrong Fang\* and Shilun Qiu\*



1890

### Unravelling the formation pathway and energetic landscape of lanthanide cages based on bis-β-diketonato ligands

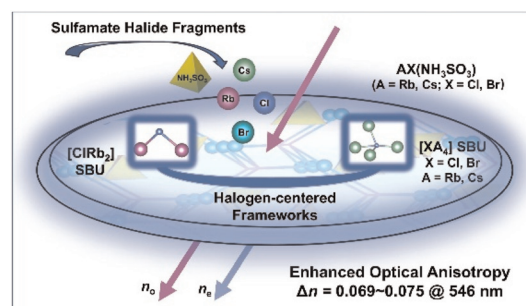
Maria Rando, Alice Carlotto, Silvia Carlotto, Roberta Seraglia, Marzio Rancan\* and Lidia Armelao



1900

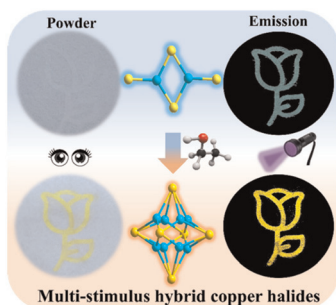
### Deep-ultraviolet sulfamate halides with halogen-centered secondary building units for enhanced optical anisotropy

Xuefei Wang, Qingwen Zhu, Yunseung Kuk, Hongheng Chen, Qi Wu,\* Qun Jing\* and Kang Min Ok\*



## RESEARCH ARTICLES

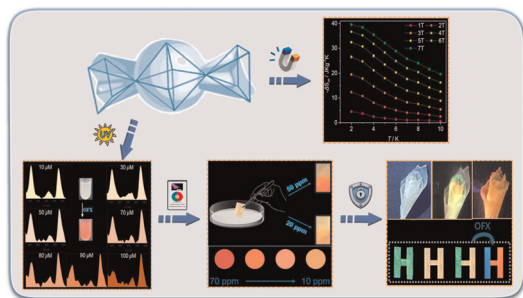
1909



### Multiple stimuli dual-optical mode responsive hybrid copper(I) halides for advanced anti-counterfeiting and information encryption

Yue Guo, Yi-Fan Fu, JiaJing Wu,\* Jing-Li Qi, Yu-Mei Zhang, Qiao-Feng Huang, Wenlong Liu and Sheng-Ping Guo\*

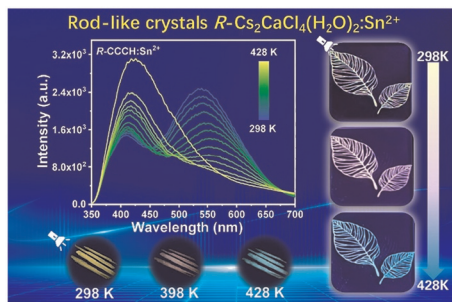
1918



### Tunable luminescent lanthanide cluster-based hydrogel probe for ratiometric detection of ofloxacin, anti-counterfeiting, and magnetocaloric applications

Tian-Tian Wang, Hao Wang and Wen-Bin Sun\*

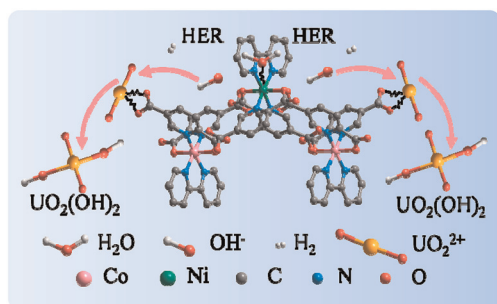
1927



### Dual-band white light emission and temperature-dependent luminescence of $\text{Sn}^{2+}$ in the metastable structure of $\text{Cs}_2\text{CaCl}_4(\text{H}_2\text{O})_2$

Hu Wang, Yuexiao Pan,\* Zhenyu Shi, Yeling Cao, Hongzhou Lian, Jun Lin,\* Qian Miao and Jun Zou\*

1935



### Modulating the electronic structure of a hydrogen-bonded organic framework to enhance uranium removal via the hydrogen evolution reaction

Qingsong Zhang,\* Yuyang Miao, Yang Xiao,\* Jianwei Hu, Haiyi Gong and Qingyi Zeng\*

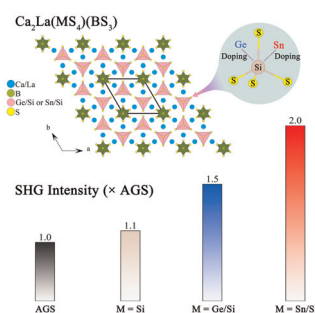


## RESEARCH ARTICLES

1950

**$\text{Ca}_2\text{La}(\text{MS}_4)(\text{BS}_3)$  ( $\text{M} = \text{Ge/Si}$  and  $\text{Sn/Si}$ ):  
high-performance infrared nonlinear optical  
materials designed using an atomic site  
co-occupancy strategy**

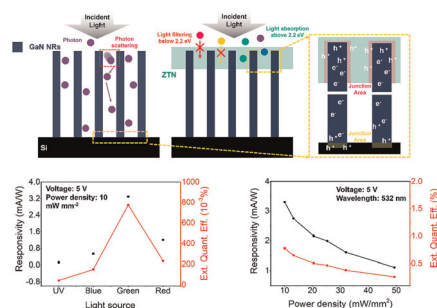
Ya-Xiang Han, Chun-Li Hu and Jiang-Gao Mao\*



1958

**Monolithic green-sensitive photodetectors  
enabled by a  $\text{ZnSnN}_2/\text{GaN}$  nanorods/silicon double  
heterojunction**

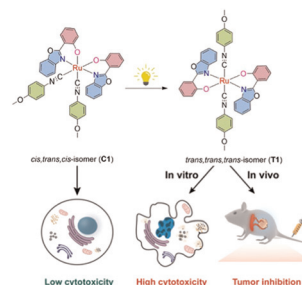
Jeong Hyeon Kim, Juchan Hwang, Soon Joo Yoon, Jongmin Kim, Yoon Kyeong Lee, Kwangwook Park\* and Han Eol Lee\*



1969

**Transformable *cis*–*trans* isomerism of ruthenium(II)  
complexes with photoactivated anticancer activity**

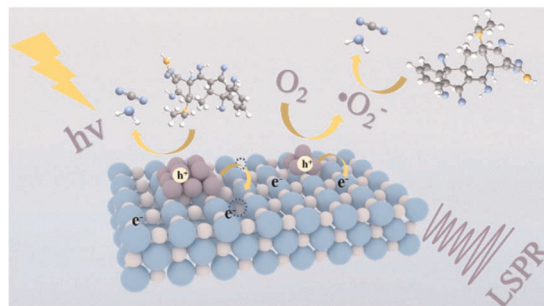
Chen Pan, Pui-Yu Ho, Wan-Qiong Huang, Gui-Feng Huang, Li-Hua Zhang, Daniel Nnaemaka Tritton, Shek-Man Yiu, Wai-Lun Man, Chi-Chiu Ko, Chi-Fai Leung\* and Wen-Xiu Ni\*



1979

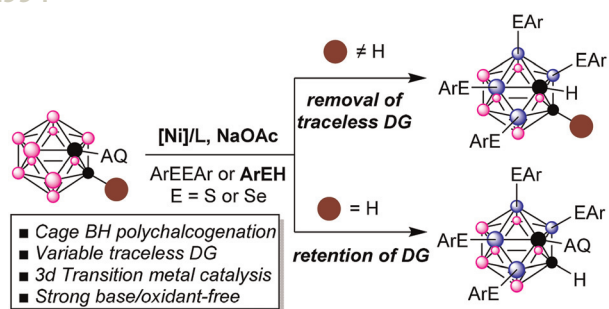
**Synergistic introduction of LSPR effect and  
Schottky junction:  $\text{Cu@TiO}_2$  charge regulation  
achieved efficient, stable photocatalytic removal**

Shuzhe Zhang, Xiumei Li, Ruyan Xie, Xiaozhen Zhang, He Wang, Yanhua Song and Haifeng Zou\*



## RESEARCH ARTICLES

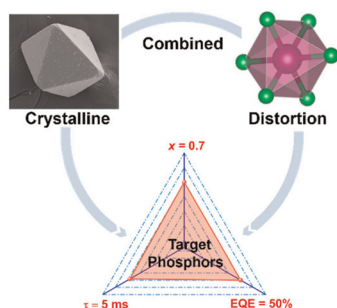
1994



### A variable bidentate traceless directing group for nickel-catalyzed regioselective B–H poly-chalcogenation of o-carboranes

Ping Li, Zihuan Qiu, Jian Lu\* and Ju-You Lu\*

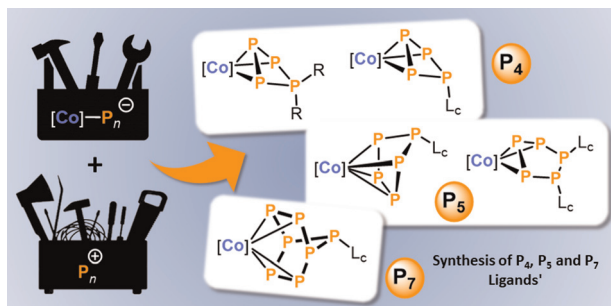
2003



### Photoluminescence enhancement of Mn<sup>4+</sup>-doped Rb<sub>2</sub>NaAlF<sub>6</sub> single-crystal phosphors via heterovalent co-doping for wide gamut displays

Zhen Chen, Chuang Zhang, Yuanjing Wang,\*  
Hong Ming, Yayun Zhou, Enhai Song\* and  
Qinyuan Zhang\*

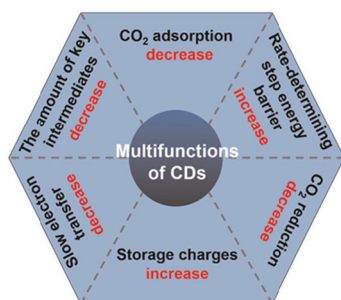
2013



### Phosphorus ring expansion at cobalt: targeted synthesis of P<sub>4</sub>, P<sub>5</sub>, and P<sub>7</sub> ligands

Karolina Trabitsch, Sebastian Hauer, Kai Schwedtmann,  
Philipp Royla, Jan J. Weigand\* and Robert Wolf\*

2024



### Multifunctions of carbon dots in the CeO<sub>2</sub>/Cu<sub>2</sub>O complex catalyst for the regulation of carbon dioxide reduction

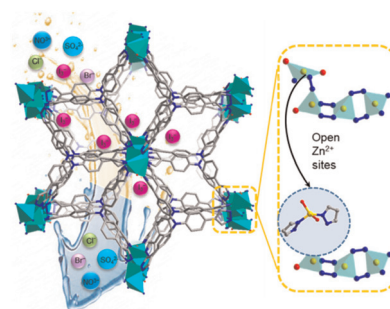
Xiong Yan, Jiacheng Li, Honglin Si, Haojie Xu,  
Hui Huang,\* Yang Liu\* and Zhenhui Kang\*

## RESEARCH ARTICLES

2036

**Pyrazolate-based MOFs with open  $\text{Zn}^{2+}$  sites for highly effective and rapid adsorption of iodine in water**

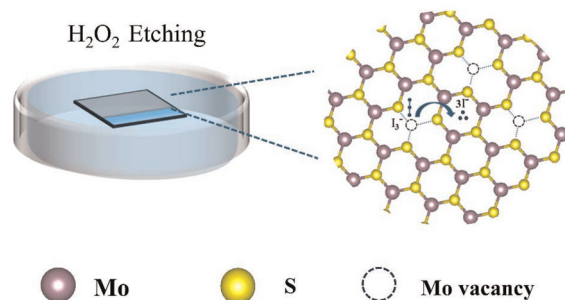
Xin-Dan Zhang, Yong-Zheng Zhang,\* Tingting Li, Yu-Xiang Zuo, Xiao-Nan Li, Da-Shuai Zhang, Longlong Geng, Bin Wang,\* Hongliang Huang\* and Xiuling Zhang\*



2047

**Strategic design of vacancies and phase in flexible  $\text{MoS}_2$  for boosting triiodide reduction performance**

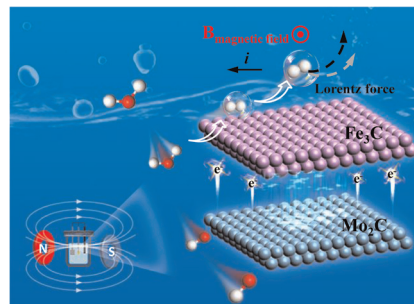
Xu Cai, Xuan Wang, Bixue Sun, Chenzhao Yang, Mingzhu Chen, Shuang Lu,\* Yinglin Wang and Xintong Zhang



2058

**Magnetic-field enhanced interfacial electron redistribution to promote magnetoelectrocatalytic hydrogen evolution**

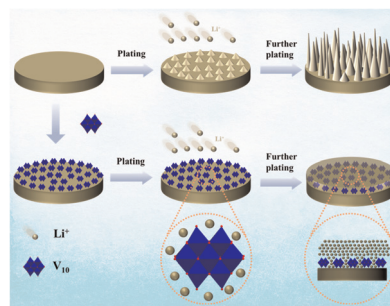
Chong Liu, Lianqing Yu,\* Nannan Chen, Gege Tian and Haifeng Zhu\*



2070

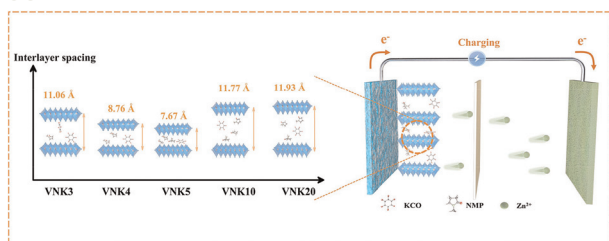
**Utilizing decavanadate as an artificial solid electrolyte interface to effectively suppress dendrite formation on a lithium metal anode**

Jian Song, Yuanyuan Jiang, Yizhong Lu,\* Changhao Zhao, Yundong Cao, Linlin Fan,\* Hong Liu and Guanggang Gao\*



## RESEARCH ARTICLES

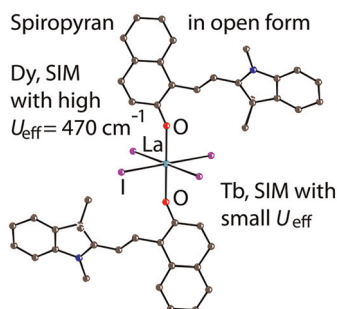
2081



### Layered vanadium oxide with tunable layer spacing via dual organic molecule co-insertion for advanced aqueous zinc-ion batteries

Hong Ding, Tiantian Li, Chengyu Liu, Jiali Wang, Tengfei Zhang, Long Chen, Haijiao Xie, Gang Wang\* and Tiantian Gu\*

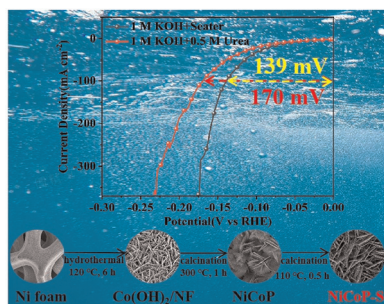
2092



### Complexes (TBA<sup>+</sup>){(TMI-NPS)<sub>2</sub>Ln<sup>III</sup>I<sub>4</sub>}<sup>-</sup> (Ln = Dy, Tb) with two axial photochromic spiropyran ligands: photoswitching and zero-field SIM behaviour with a high magnetization blocking barrier for the Dy complex

Nikita G. Osipov, Maxim A. Faraonov, Aleksey V. Kuzmin, Salavat S. Khasanov, Alexey A. Dmitriev, Nina P. Gritsan,\* Nikolay N. Denisov, Akihiro Otsuka, Hiroshi Kitagawa and Dmitri V. Konarev\*

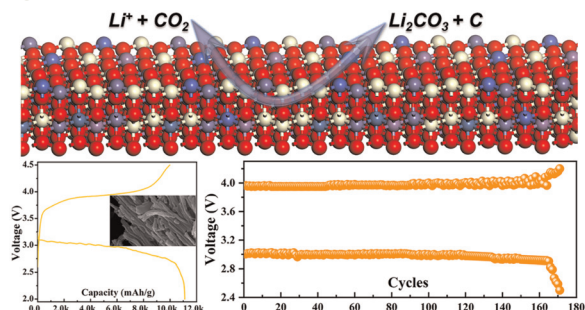
2103



### Synthesis of anion M-doped NiCoP (M = S, Se and N) as bifunctional catalysts for alkaline seawater and urea splitting

Han Zhao, Min Liu, Xiaoqiang Du\* and Xiaoshuang Zhang

2113



### Robust fluorite-structured high-entropy oxides with integrated multi-active site construction for catalytic cathodes of Li-CO<sub>2</sub> batteries

Qinghua Deng,\* Dan Chen, Shi Zhang, Yuan Chen, Hanbo Zeng, Xuguang Li, Sike Zhang and Tianyu Wang\*

