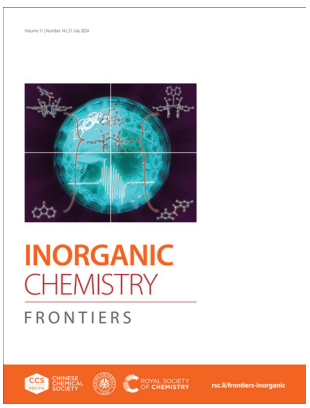
INORGANIC CHEMISTRY
FRONTIERS

rsc.li/frontiers-inorganic

Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

IN THIS ISSUE

ISSN 2052-1553 CODEN ICFNAW 11(14) 4037–4470 (2024)



Cover
See Laurent Maron, Stephan Hohloch *et al.*, pp. 4158–4166.

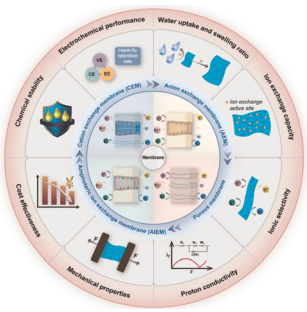
Image reproduced by permission of Stephan Hohloch from *Inorg. Chem. Front.*, 2024, **11**, 4158.

REVIEWS

4049

Research progress on optimized membranes for vanadium redox flow batteries

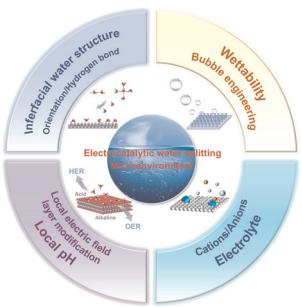
Yang Yang, Quge Wang, Shizhao Xiong* and Zhongxiao Song*



4080

Rational design of local microenvironment for electrocatalytic water splitting

Xiang Li, Wangchuan Zhu, Yanqun Zhang, Yueyue Zhao, Danjun Wang, Yanzhong Zhen, Feng Fu and Chunming Yang*



View Article Online

ROYAL SOCIETY OF CHEMISTRY

NEW JOURNAL

RSC Applied Interfaces

GOLD OPEN ACCESS

Interfacial and surface research with an applied focus

Interdisciplinary and open access

rsc.li/RSCApplInter

Fundamental questions
Elemental answers

Registered charity number: 207890

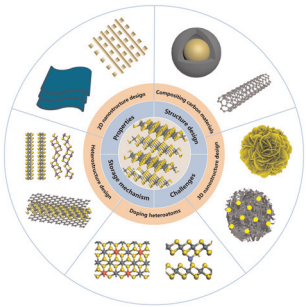
Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

REVIEWS

4107

Recent advances in SnS_2-based nanomaterials as high-performance anodes for sodium ion batteries

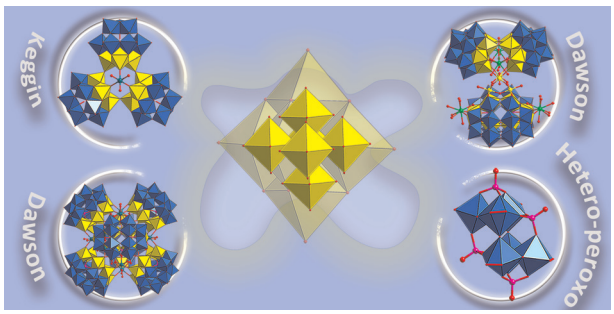
Mingjun Xiao,* Dongming Qi, Huizhen Sun, Yanshuang Meng and Fuliang Zhu



4141

Recent studies on the reaction of $[X_6O_{19}]^{8-}$ (X = Nb, Ta) polyanions under acidic conditions

Haiying Wang, Zhijie Liang, Dongdi Zhang* and Jingyang Niu*

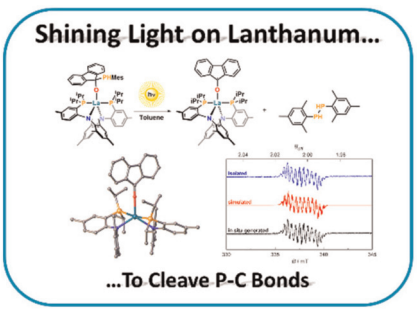


RESEARCH ARTICLES

4158

Light-induced splitting of P–C bonds in a lanthanum(III) hemiphosphinal complex

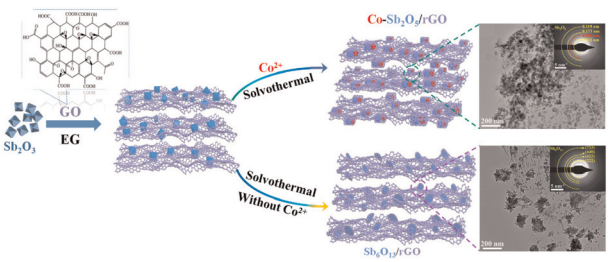
Benjamin Wittwer, Karl N. McCabe, Daniel Leitner, Michael Seidl, Laurent Maron* and Stephan Hohloch*



4167

Uniformly anchoring Sb_2O_5 nanoparticles on graphene sheets *via* Co^{2+}-induced deposition for enhanced lithium/sodium-ion storage

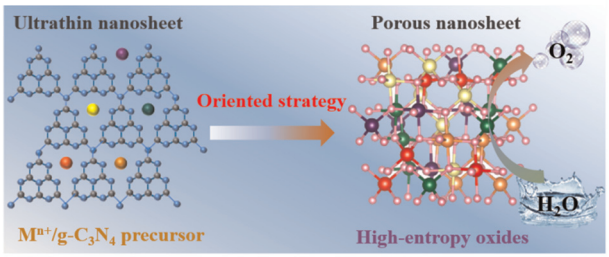
Xiaozhong Zhou,* Aixia Wang, Xiaoyan Zheng, Dongfei Sun and Yaoxia Yang



Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

RESEARCH ARTICLES

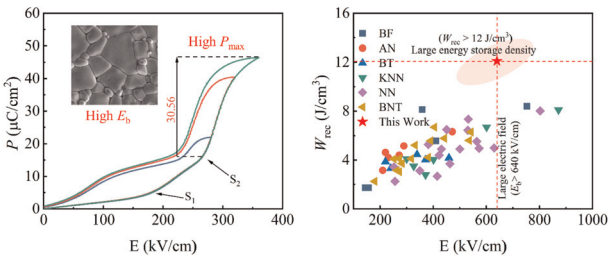
4179



Porous high-entropy oxide nanosheets as highly-efficient electrocatalysts for water oxidation

Ting Huang, Cui Gao, Yun Tong* and Xiuli Lu*

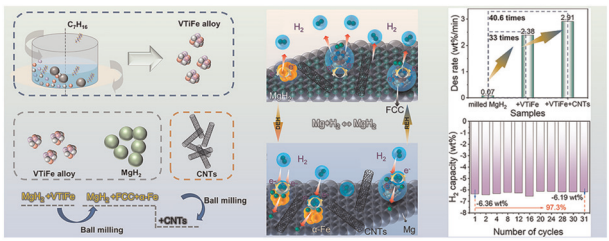
4187



Enhanced energy storage capabilities in $PbHfO_3$-based antiferroelectric ceramics through delayed phase switching and induced multiphase transitions

Jiawen Hu, Zhongbin Pan,* Ling Lv, Zhixin Zhou, Xiqi Chen, Hongzhen Xie,* Jinjun Liu, Peng Li and Jiwei Zhai*

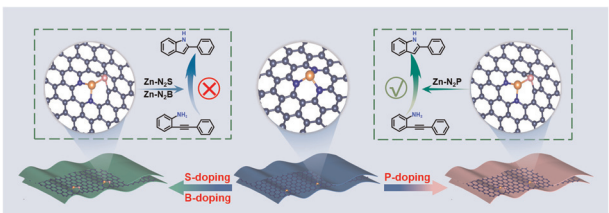
4197



FCC/α-Fe biphasic nano-sites synergize with CNTs to enhance reversible hydrogen storage of MgH_2

Haiyi Wan, Junqi Qiu, Haotian Guan, Zhao Ding,* Yangfan Lu, Yu'an Chen,* Jingfeng Wang and Fusheng Pan

4207



Regulating the coordination microenvironment of zinc single-atom catalysts to enhance intramolecular hydroamination performance

Li Wang, Chao Lv, Kecan Dou, Deqiong Xie, Yanghe Fu, Fumin Zhang,* De-Li Chen* and Weidong Zhu*

This journal is © the Partner Organisations 2024

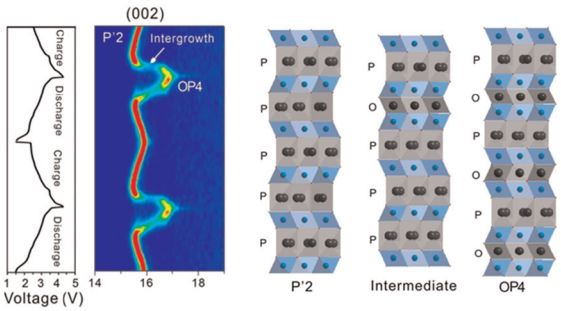
Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

RESEARCH ARTICLES

4219

Using a dual-site substitution strategy to inhibit staircase-like electrochemical profiles for high-performance Na-ion battery cathodes

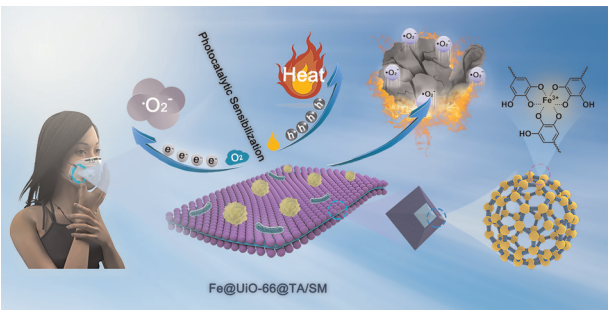
Kun Luo,* Wenhui Li, Yang Jiang and Houze Song



4229

A sunlight sensitive metal–organic framework film for the environment-friendly self-sterilization application

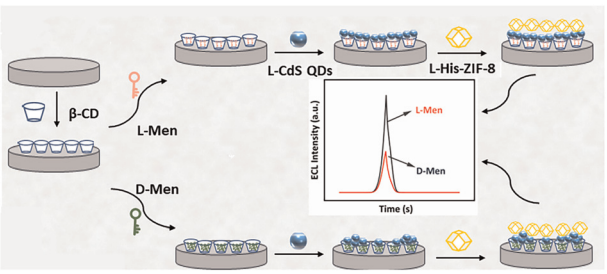
Lingwan Hao, Jie Gao, Xiaoli Han, Zexiang Li, Yanhong Dong,* Liwei Sun, Lu Zhou, Zhaocai Ning, Jie Zhao and Rujian Jiang*



4241

The potential of an MOF accelerator in an electrochemiluminescence system for sensitive detection of menthol enantiomers

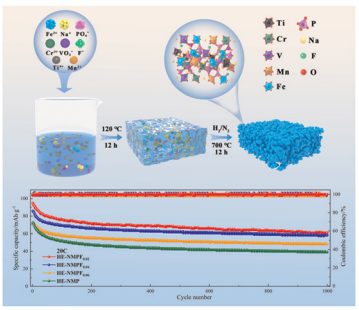
Xuan Kuang,* Yeqian Ruan, Jianping Xin and Lin Lan*



4249

Design of fluorine-substituted high-entropy phosphates as cathode materials towards high-performance Na-ion batteries

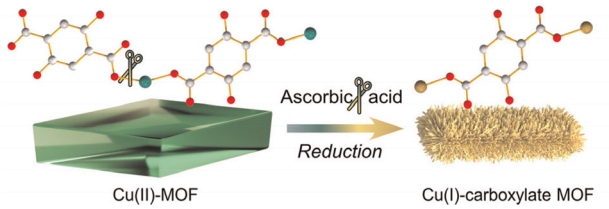
Qi Wang, Man Zhao, Hai-tao Yu, Ying Xie* and Ting-Feng Yi*



Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

RESEARCH ARTICLES

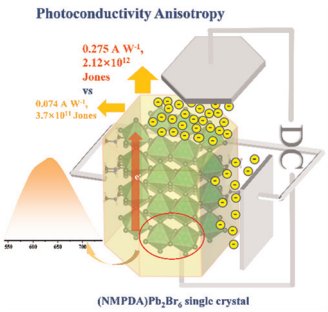
4263



Fabrication of a Cu(I)-carboxylate metal–organic framework by reduction of metal nodes for an azide–alkyne "click" reaction

Xiaojiao Hou, Wenxiu He, Xu Zhai, Bingbing Chen, Yuanlin Fu, Liying Zhang, Junyi Chen* and Yu Fu*

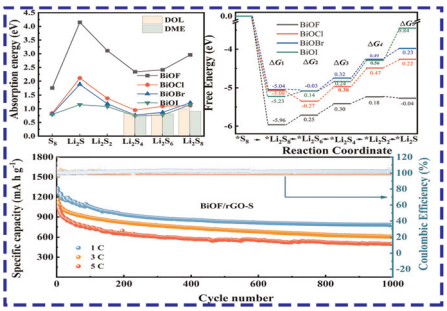
4270



Methylated diammonium spacer modulated three-dimensional lead bromide perovskitoid hybrids with distinct photoconductivity anisotropy

Sheng Cao, Kuan Kuang, Biqi He, Junjie Tang, Zixian Yu, Mingkai Li,* Yunbin He* and Junnian Chen*

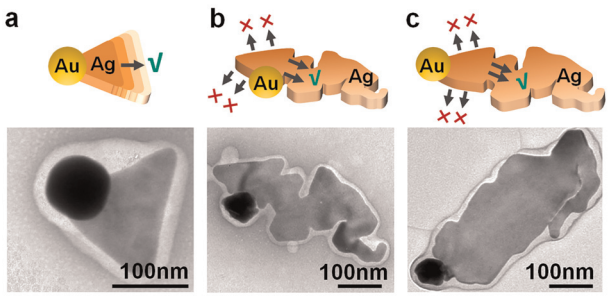
4277



Boosting the electrocatalytic activity of 2D ultrathin BiOX/rGO (X = F, Cl, Br, and I) nanosheets as sulfur hosts: insight into the electronegativity effect of halogenated elements on the electrochemical performances of lithium–sulfur batteries

Meili Wang, Yumiao Han, Huaiqi Peng, Ziqian Jin, Hui Guan, Shiyu Ma,* Xin Li, Yunlai Ren, Lixia Xie, Xianfu Zheng, Jianmin Zhang* and Yutao Dong*

4288



Two-dimensional active surface growth of Ag nanoplates

Jin Ji, Zijie Chen, Tingting Jiang, Yuhua Feng* and Hongyu Chen*

This journal is © the Partner Organisations 2024

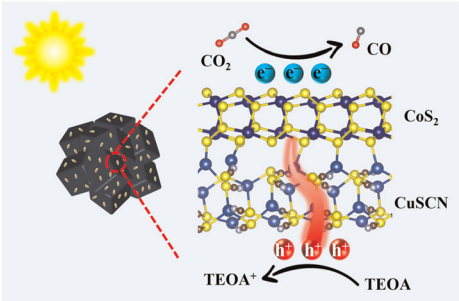
Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

RESEARCH ARTICLES

4297

One-pot molten-salt construction of channels for hole transport and mass transfer over CoS_2 nanocubes for visible-light-driven CO_2 reduction

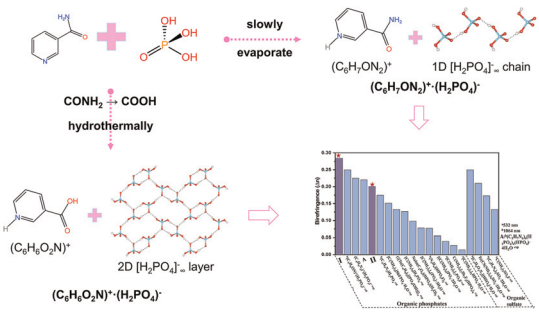
Fulin Wang, Man Zhou, Weiya Huang, Kangqiang Lu, Shaobo Ouyang, Wentao Xiang, Chensheng Zhou, Changlin Yu* and Kai Yang*



4307

Designing promising ultraviolet (UV) birefringent crystals with different hydrogen-bonded phosphate frameworks

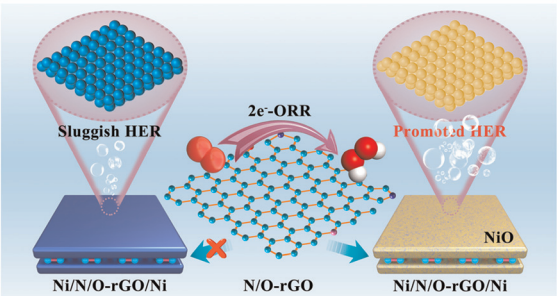
Miao-Bin Xu, Jin Chen,* Huai-Yu Wu, Jia-Jia Li, Ning Yu, Mo-Fan Zhuo, Fei-Fei Mao* and Ke-Zhao Du



4318

Enhancing acidic hydrogen evolution through pyrrolic nitrogen-doped reduced graphene oxide triggering two-electron oxygen reduction

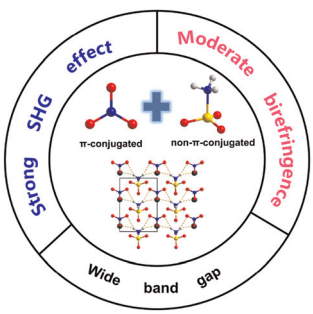
Zhiqiang Hou, Hui Jiang, Yanru Guo, Kejing Huang,* Fei Zhao, Yongyan Xu, Peng Peng, Shiyu Zou,* Jianjun Yan and Junjun Zhang*



4329

Synergistic combination of different types of functional motif in $Rb(NO_3)(SO_3NH_3)$ for realizing excellent ultraviolet optical nonlinearity

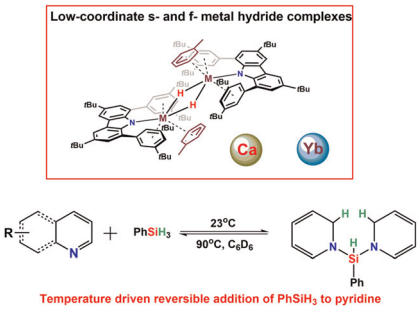
Yunxia Song, Chensheng Lin, Xin Zhao, Tao Yan, Ning Ye, Haotian Tian* and Min Luo*



Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

RESEARCH ARTICLES

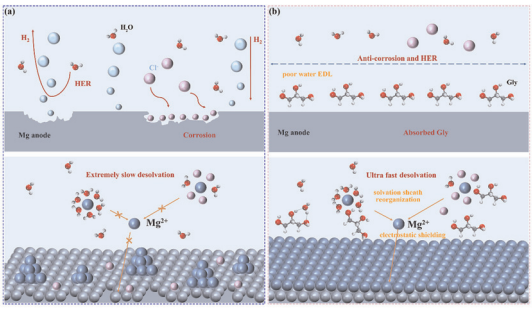
4336



Reversible hydrosilane addition to pyridines enabled by low-coordinate Ca(II) and Yb(II) hydrides

Alexander N. Selikhov, Mikhail A. Bogachev, Yulia V. Nelyubina, Grigory Yu. Zhigulin, Sergey Yu. Ketkov and Alexander A. Trifonov*

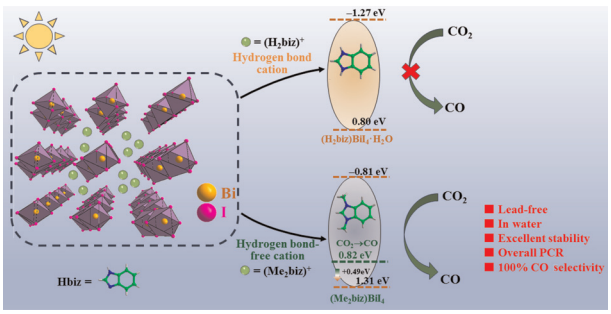
4347



Utilizing an electrolyte additive to modulate interfaces and enhance anode discharge performance in aqueous magnesium–air batteries

Sha Jianchun, Li Xue, Liu Zhoulin, Bao Jiaxin, Li Lianhui, Tian Jie, Yang Yiqiang, Chen Weilong, Liu Wenhong and Zhang Zhiqiang*

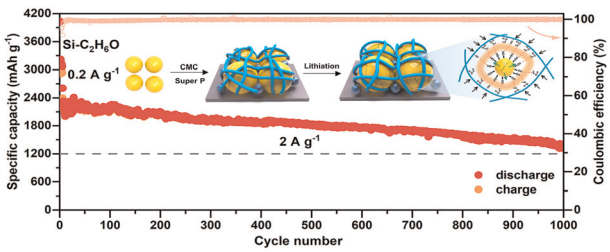
4364



Band edge modulation *via* a hydrogen-bond-free cation in hybrid bismuth iodine for overall photocatalytic CO_2 reduction

Guang-Ning Liu,* Cheng-Cheng Gao, Fangzheng Qi, Wen-Tong Chen, Ning-Ning Zhang, Yiqiang Sun,* Huaiqing Zhao, Guozhu Chen and Cuncheng Li*

4374



Dynamic mechanical equilibrium of silicon anodes for lithium-ion batteries enabled by surface hydroxyl-rich bonding

Fangfang Zhao, Bowen Tao, Liming Yu, Cong Pan,* Lei Ma, Liangming Wei,* Gen Tang, Yue Wang and Xiang Guo*

This journal is © the Partner Organisations 2024

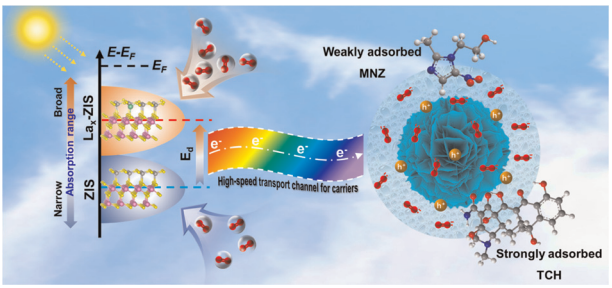
Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

RESEARCH ARTICLES

4387

Tailoring the d-band center enables La doped $ZnIn_2S_4$ to be active for boosting photocatalytic activation of oxygen and degradation of antibiotics in wastewater

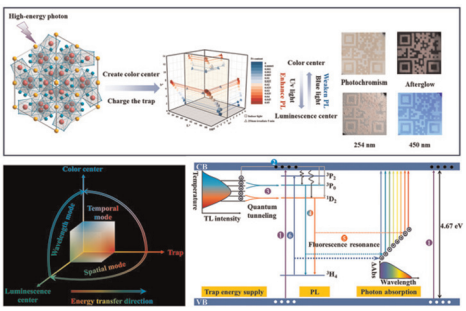
Yiwen Hu, Xiao Ma, Guoli Fan,* Lan Yang and Feng Li*



4401

Manipulating photon absorption and trap energy supply for multimode dynamic anti-counterfeiting

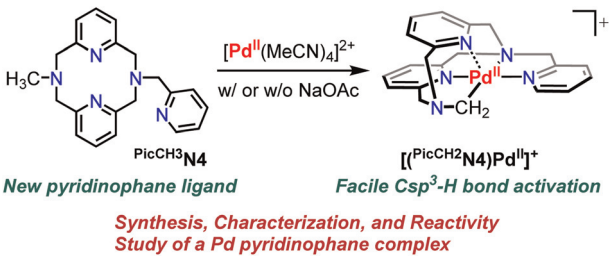
Zhihao Zhang, Huimin Li,* Ran Pang, Da Li, Lihong Jiang, Su Zhang* and Hongjie Zhang



4415

Csp^3–H bond activation mediated by a Pd(II) complex under mild conditions

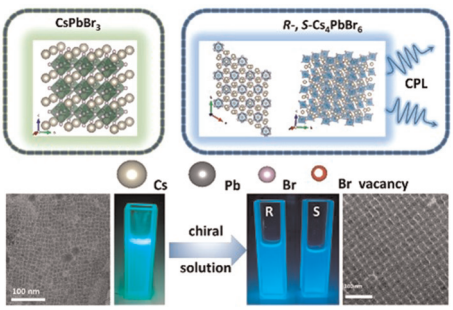
Hanah Na, Andrew J. Wessel, Seoung-Tae Kim, Mu-Hyun Baik* and Liviu M. Mirica*



4424

Chiral defect-induced blue photoluminescence and circularly polarized luminescence of zero-dimensional Cs_4PbBr_6 perovskite nanocrystals

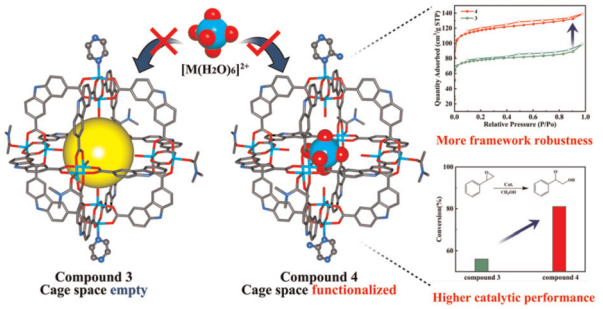
Jiaqi Zhao, Yuan Wang, Tinglei Wang and Yu Wang*



Open Access Article. Published on 09 July 2024. Downloaded on 3/22/2026 8:07:59 AM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

RESEARCH ARTICLES

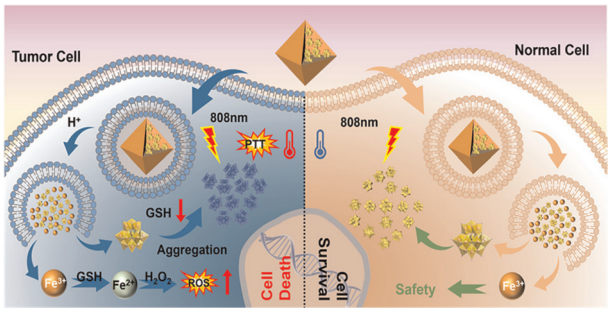
4432



Metal ion attachment in cavities of metal organic polyhedra to enhance framework robustness and catalytic performance

Mengyu Zhu, Hang Chen, Hairong Li, Hao Zhang, Lizhen Liu, Qichen Hong, Zizhu Yao,* Lihua Wang* and Zhangjing Zhang*

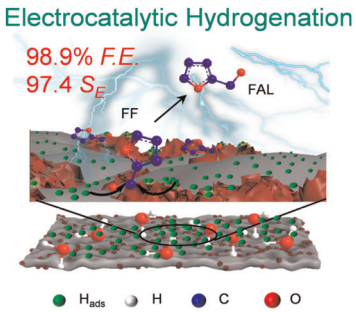
4439



GSH/pH dual-activated POM@MOF for tumor cell-specific synergistic photothermal and chemodynamic therapy

Bole Li, Zhujun Wu, Xiaotong Xu, Yanfei Lv, Yunfei Guo, Siyu Liang, Zhimin Wang,* Lei He* and Yu-Fei Song*

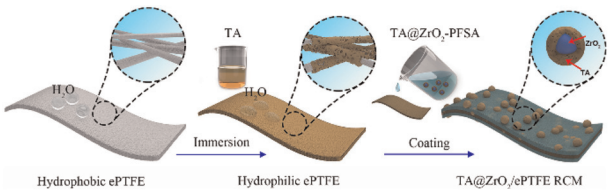
4449



Electrochemical hydrogenation of furfural under alkaline conditions with enhanced furfuryl alcohol selectivity by self-grown Cu on a Ag electrode

Huiming Wen, Ziyi Fan, Shuo Dou, Jason Chun-Ho Lam, Wenjun Zhang* and Zupeng Chen*

4459



A composite proton exchange membrane with a three-dimensionally-reinforced hydrogen bonding network for durable hydrogen fuel cells

Yunfa Dong, Chao Feng, Haodong Xie, Yuhui He, Carlos M. Costa, Senentxu Lanceros-Méndez, Jiecai Han and Weidong He*

This journal is © the Partner Organisations 2024