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IN THIS ISSUE

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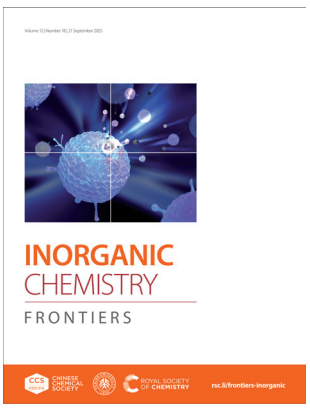

Cover
See Bingjie Han *et al.*, pp. 5289–5302.

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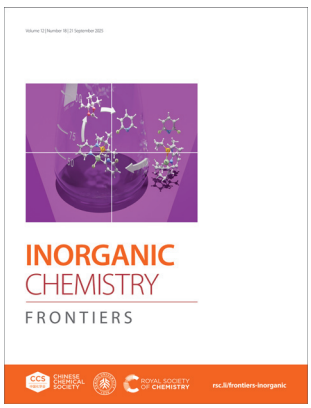

Inside cover
See Rebeca Arevalo *et al.*, pp. 5303–5314.

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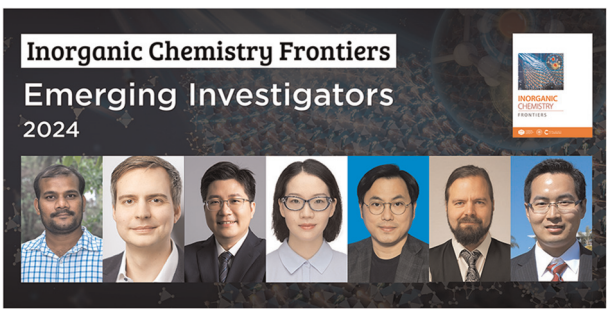
PROFILE

5219

Contributors to the *Inorganic Chemistry Frontiers* Emerging Investigator series 2024

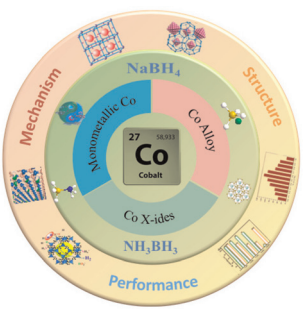


REVIEWS

5222

Dehydrogenation of sodium borohydride and ammonia borane over cobalt-based catalysts: advances and prospects

Xiugang Li, Longhua Yao, Qilu Yao, Jianhui Xia and Zhang-Hui Lu*



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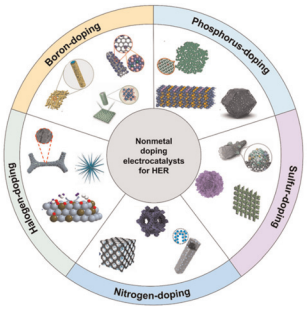
REVIEWS

5258

Role and advances in nonmetal doping of electrocatalysts for the hydrogen evolution reaction: a review

Shenyue Xu, Chenxi Liu, Zefeng Teng, Fahao Sun, Jingqi Chi,* Xiaobin Liu, Jianping Lai, Fusheng Liu* and Lei Wang*

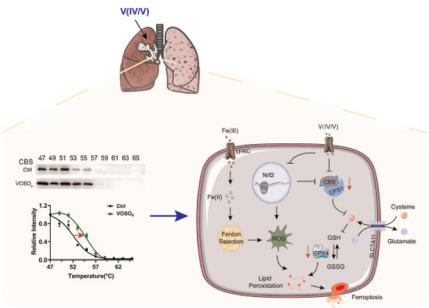


RESEARCH ARTICLES

5289

Vanadates inhibit non-small cell lung cancer through modulation of ferroptosis mediated by the CBS-CPS1 axis

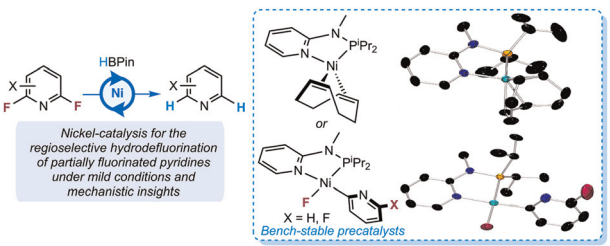
Tianxiang Su, Xiaofen Zhang, Yuanyuan Sun, Xing Chen, Meiling Tian, Dan Yan, Yi Zhao and Bingjie Han*



5303

Nickel-catalysed sequential hydrodefluorination of pyridines: mechanistic insights led to the discovery of bench-stable precatalysts

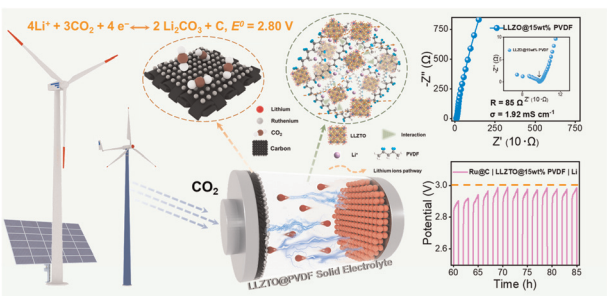
Victor Duran Arroyo, Roger Nuñez and Rebeca Arevalo*



5315

A three-in-one strategy enables improved kinetics in an LLZTO solid electrolyte for Li-CO_2 batteries with high energy efficiency

Zesen Gao, Shijie Yang, Yan Yang, Futing Sun, Tianshuo Zhang, Yunluo Wang, Tianrui Zhou, Lang Tao, Hucheng Song* and Haijie Chen*



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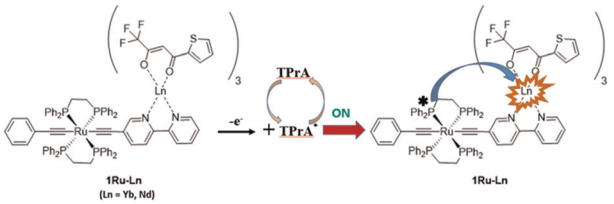
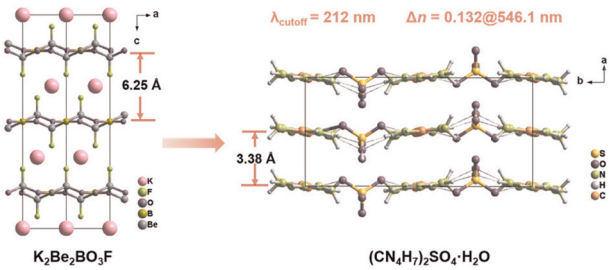


Strong NIR electrochemiluminescence from lanthanide ions sensitized with a carbon-rich ruthenium chelate

Jing Yu, Miaoxia Liu, Tuan-Anh Phan, Laurent Bouffier, Lucie Norel, Stephane Rigaut* and Neso Sojic*

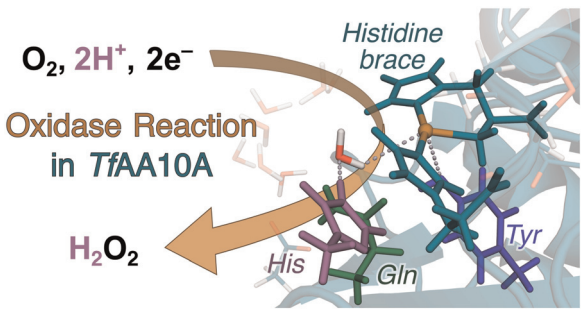
5335



$(CN_4H_7)_2SO_4{\cdot}H_2O$: high-performance metal-free ultraviolet birefringent crystal with KBBF-like configuration

Xia Hao,* Sijing Xie, Ruijie Wang, Chensheng Lin, Lingli Wu, Guang Peng, Tao Yan, Ning Ye and Min Luo*

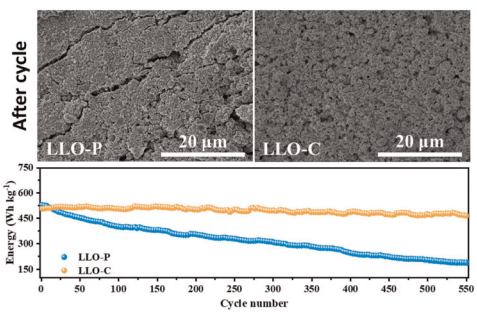
5344



The mechanism behind the oxidase activity of cellulose-active AA10 lytic polysaccharide monooxygenases

Erna K. Wieduwilt,* Marlisa M. Hagemann, Ulf Ryde and Erik D. Hedegård*

5360



A Janus binder favors interfacial protection and mechanical stabilization for Li-rich layered oxide cathodes

Wenhua Cheng, Qingcui Liu, Huan Zhou, Fengjuan Chen, Yudai Huang* and Anqiang Pan*

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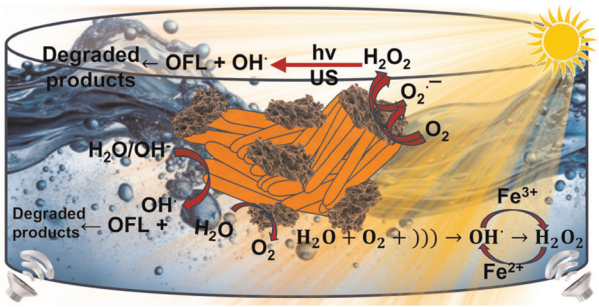
Synergistic interplay between oxygen-vacancy and S-scheme charge transfer dynamics in an $LaFeO_3$/FeOOH heterojunction towards sono-assisted photo-Fenton antibiotic degradation and water splitting

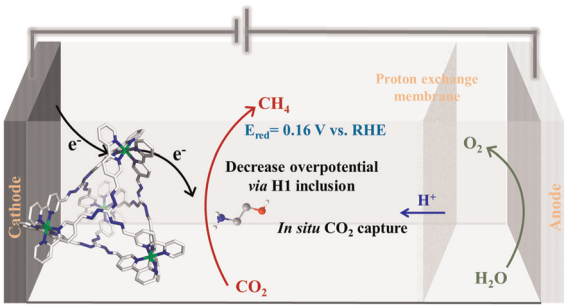
Anshumika Mishra, Newmoon Priyadarshini and Kulamani Parida*



5389

Selective electrocatalytic reduction of carbon dioxide to methane using a guanidine-based metal–organic cage

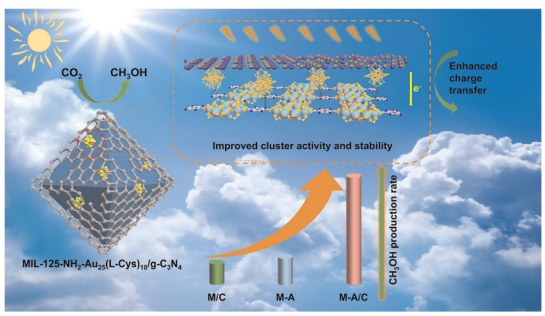
Ziang Zhang, Yang Yang, Jinfeng Wang, Xu Jing* and Chunying Duan



5397

Atomically precise metal nanocluster sandwich heterojunction for robust and efficient photocatalytic CO_2 reduction to methanol

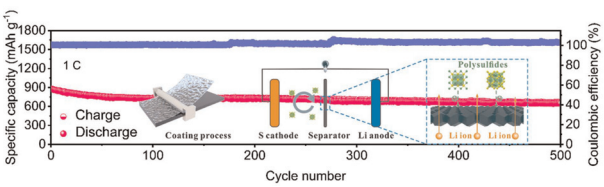
Rui Lu, Aimin Yao, Yali Dai, Haijiao Yin, Chengqi Li, Yuanxin Du* and Manzhou Zhu*



5406

High-efficiency metal selenide as an electrocatalyst in a separator for lithium–sulfur batteries

Yujuan Hu, Bo Jin* and Hui Liu



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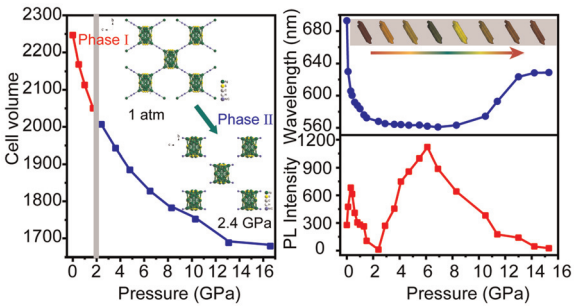
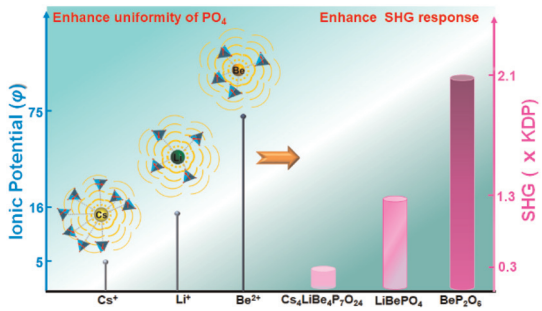


Pressure-induced blue-shift emission and its influence on the band gap in an emerging 3D semiconductor

Xia-Ying Zhao, Lei Yue, Meng-Yu Xu, Gui-Fang Zhang, Xi-Yan Dong, Yong-Li Wei* and Quan-Jun Li*

5430



Deep-ultraviolet nonlinear-optical crystals $LiBePO_4$ and BeP_2O_6 synthesized by ionic potential modulation towards uniform arrangement of PO_4 groups

Xia Zhang, Jian-Qiang Shen, Hong-Xiao Lv, Peng-Hui Guo, Yi-Gang Chen,* Chun-Li Hu* and Xian-Ming Zhang*

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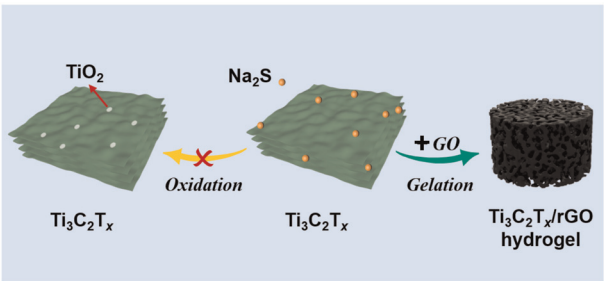

A bifunctional antioxidant for concurrent enhancement of stability and zinc-ion storage properties of $Ti_3C_2T_x$

Jie Wang, Guohao Li, Hailiang He, Xiaohui Li, Jiale Fan, Yingxinjie Wang, Xiuqiang Xie* and Nan Zhang*

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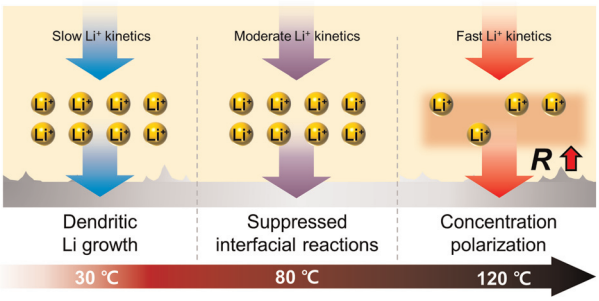

Temperature-dependent interfacial reactions between a sulfide argyrodite solid electrolyte and a lithium metal anode

Ye-Eun Park, SeoungJae Kang, Taehyun Kim, Huijeong Oh, Kyungsu Kim, Woosuk Cho and Sangryun Kim*

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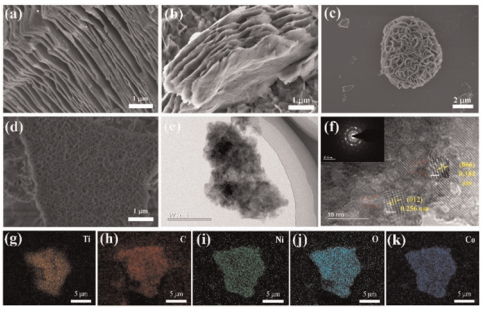
Interfacial synergistic regulation of MXene-composited nickel–cobalt double hydroxide for high-performance supercapacitors

Sheng Wan, Hanbo Wang, Yan Wang, Rui Wang, Dongyu Pei, Ziming Wang, Yumei Tian, Zhan Shi, Kechang Li* and Haiyan Lu*



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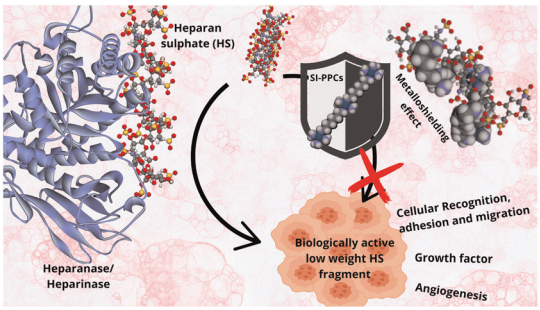
SI-PPC-induced modulation of heparin/heparanase binding affinity: a steered molecular dynamics approach

Frederico Henrique do Carmo Ferreira, Nicholas P. Farrell and Luiz Antônio Sodré Costa*



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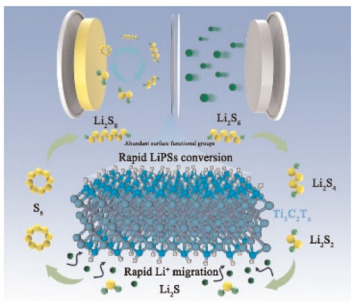
Structural engineering of MXene frameworks with abundant surface functionalities for enhanced lithium–sulfur battery electrochemistry

Yongjie Ye, Sisi Liu, Yongqian He, Wanqi Zhang, Ying Chen, Mengqing Wang, Xuewen Peng, Caixiang Wang, Qin Tang, Yan Luo, Bing Wu,* Hongbo Shu, Ruizhi Yu* and Manfang Chen*



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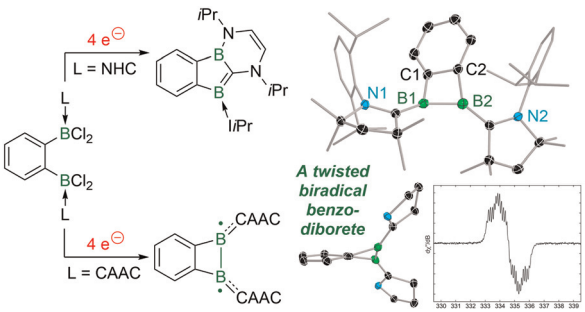
Synthesis and reactivity of a benzo-fused 1,2-diborete biradicaloid

Alena Häfner, Lukas Endres, Merle Arrowsmith, Cornelius Mimh, Sonja Fuchs, Samuel Nees, Krzystof Radacki, Ivo Krummenacher, Rüdiger Bertermann, Felipe Fantuzzi and Holger Braunschweig*



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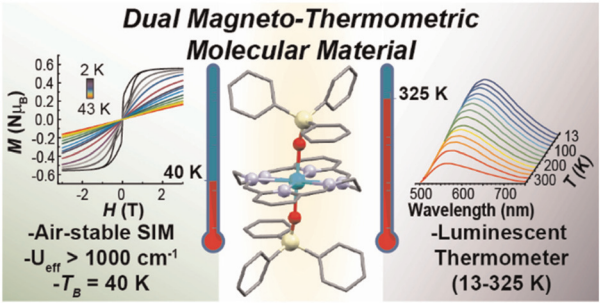

An air-stable high-performance single-molecule magnet operating as a luminescent thermometer below its blocking temperature

Julio Corredoira-Vázquez, Cristina González-Barreira, Matilde Fondo,* Ana M. García-Deibe, Jesús Sanmartín-Matalobos, Silvia Gómez-Coca, Eliseo Ruiz, Carlos D. S. Brites and Luís D. Carlos*

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