

Journal of Materials Chemistry A

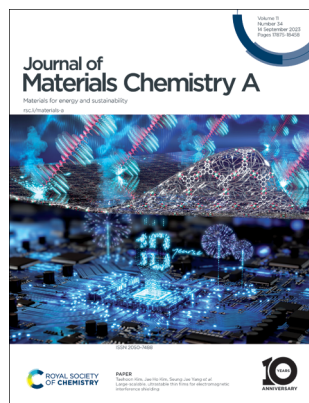
Materials for energy and sustainability

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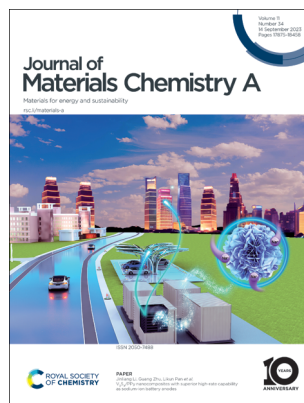
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ISSN 2050-7488 CODEN JMCAET 11(34) 17875–18458 (2023)



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See Taehoon Kim, Jae Ho Kim, Seung Jae Yang *et al.*, pp. 18188–18194. Image reproduced by permission of Seung Jae Yang from *J. Mater. Chem. A*, 2023, **11**, 18188.



Inside cover

See Jinliang Li, Guang Zhu, Likun Pan *et al.*, pp. 18089–18096. Image reproduced by permission of Jinliang Li from *J. Mater. Chem. A*, 2023, **11**, 18089.

EDITORIAL

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Introduction to 1D/2D materials for energy, medicine and devices

Yu Chen, Gemma-Louise Davies,* Anders Hagfeldt and Nicholas Kotov

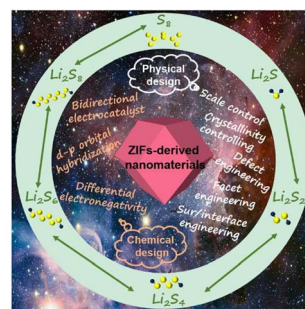


REVIEWS

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Recent progress in zeolitic imidazolate frameworks (ZIFs)-derived nanomaterials for effective lithium polysulfide management in lithium–sulfur batteries

Mengjie Zhang, Hanshu Mao, Yeru Liang and Xiaoyuan Yu*



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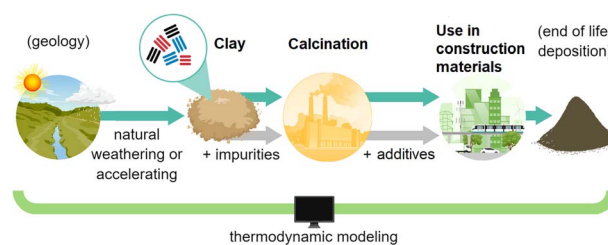


REVIEWS

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Thermodynamics of calcined clays used in cementitious binders: origin to service life considerations

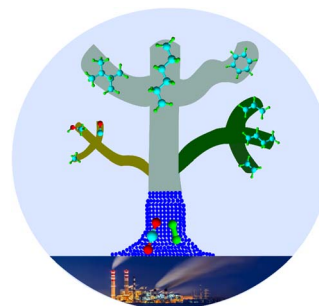
Theodore Hanein,* Hoang Nguyen, John L. Provis, Claire Utton and Wolfgang Kunther



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Selective CO₂ hydrogenation over zeolite-based catalysts for targeted high-value products

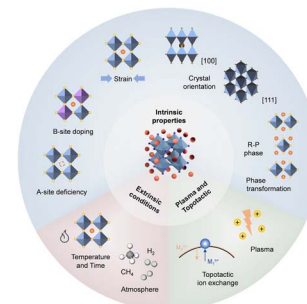
Penghui Yan, Hong Peng,* John Vogrin, Hesamoddin Rabiee and Zhonghua Zhu*



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Recent advances in exsolved perovskite oxide construction: exsolution theory, modulation, challenges, and prospects

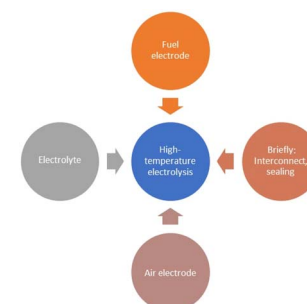
Zhao Sun, Chencun Hao, Sam Toan, Rongjun Zhang, Hongwei Li, Yu Wu, Hanzi Liu and Zhiqiang Sun*



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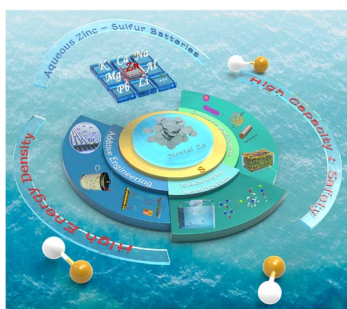
Solid oxide electrolysis cells – current material development and industrial application

Stephanie E. Wolf, Franziska E. Winterhalder, Vaibhav Vibhu, L. G. J. (Bert) de Haart, Olivier Guillon, Rüdiger-A. Eichel and Norbert H. Menzler*



REVIEWS

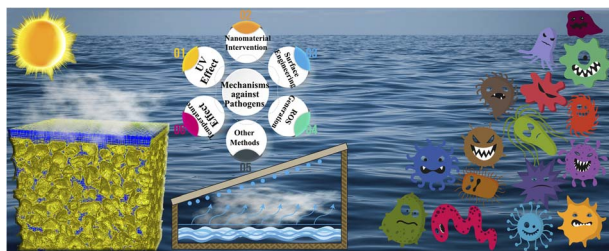
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Recent advances in aqueous zinc–sulfur batteries: overcoming challenges for sustainable energy storage

Chenlong Feng, Xinyuan Jiang, Qiuping Zhou, Tongsuo Li, Yufei Zhao, Zhaojian Niu, Yuchao Wu, He Zhou, Mengyao Wang, Xuecheng Zhang, Ming Chen, Lubin Ni,* Guowang Diao* and Yongge Wei*

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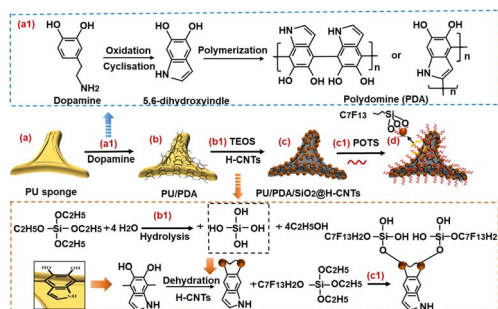


Advanced nanostructured materials in solar interfacial steam generation and desalination against pathogens: combatting microbial-contaminants in water – a critical review

Seyed Masoud Parsa,* Fatemeh Norozpour, Saba Momeni, Shahin Shoeibi, Xiangkang Zeng, Zafar Said, Wenshan Guo, Huu Hao Ngo and Bing-Jie Ni

COMMUNICATION

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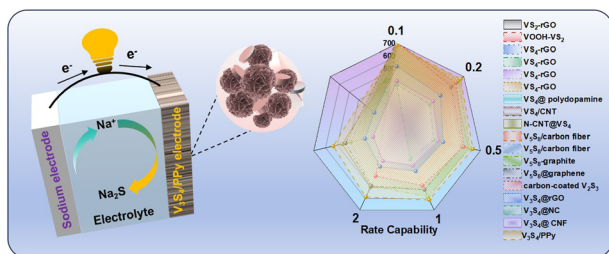


Interfacial assembly of a durable superhydrophobic polyurethane sponge with "scalelike" structures for efficient oily emulsion separation

Zhanjian Liu,* Jinyue Yang, Jing Jing, Xiguang Zhang, Yuxin Fu, Meiling Li, Ruixia Yuan and Huaiyuan Wang

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V₃S₄/PPy nanocomposites with superior high-rate capability as sodium-ion battery anodes

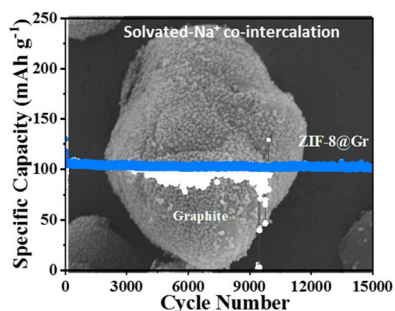
Yajuan Zhang, Yue Li, Guangzhen Zhao, Lu Han, Ting Lu, Jinliang Li,* Guang Zhu* and Likun Pan*



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ZIF-8 coating on graphite: a high-rate and long-term cycling anode for sodium-ion capacitors

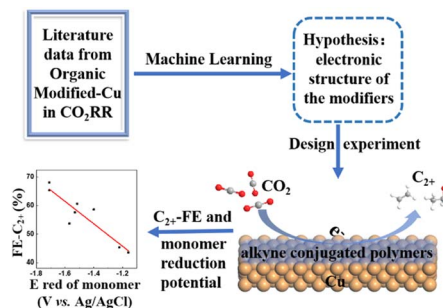
Xueying Liang, Zhifei Mao, Xiaojun Shi, Taoqiu Zhang, Zhi Zheng, Jun Jin, Beibei He, Rui Wang, Yansheng Gong and Huanwen Wang*



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Uncovering the influence of the modifier redox potential on CO₂ reduction through combined data-driven machine learning and hypothesis-driven experimentation

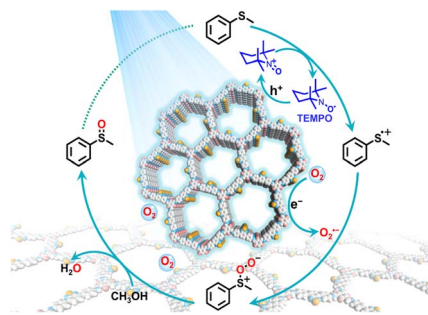
Xinru He, Yuming Su, Jieyu Zhu, Nan Fang, YangTao Chen, Huichong Liu, Da Zhou* and Cheng Wang*



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The synergy between a benzoselenadiazole covalent organic framework and TEMPO for selective photocatalytic aerobic oxidation of organic sulfides

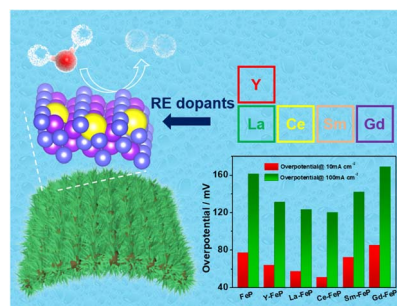
Hongxiang Zhao, Fulin Zhang, Xiaoyun Dong and Xianjun Lang*



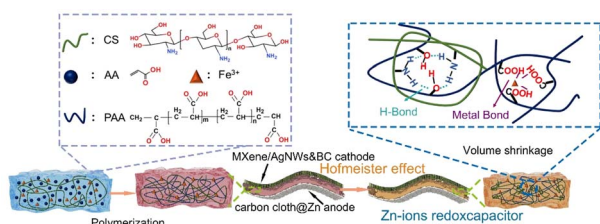
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Engineering the electronic structure of FeP with rare earth elements to enhance the electrocatalytic hydrogen evolution performance

Wei Gao, Yujie Wu, Xinhao Wan, Jie Gao and Dan Wen*



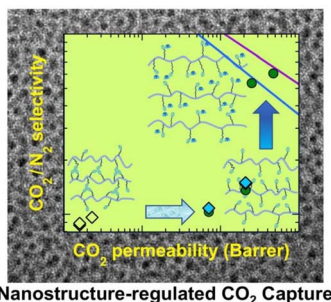
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A Hofmeister effect induced hydrogel electrolyte–electrode interfacial adhesion enhancement strategy for energy-efficient and mechanically robust redoxcapacitors

Yuehui Du, Funian Mo,* Chengbing Qin, Derek Ho and Haibo Hu*

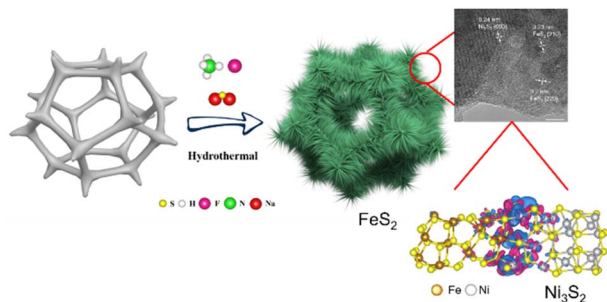
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High-performance carbon-capture membranes developed by (non)solvent-induced nanostructural rearrangement in Nafion

Jing Wei, Jing Deng, Yulei Ma, Zikang Qin, Bangda Wang, Liyuan Deng,* Richard J. Spontak and Zhongde Dai*

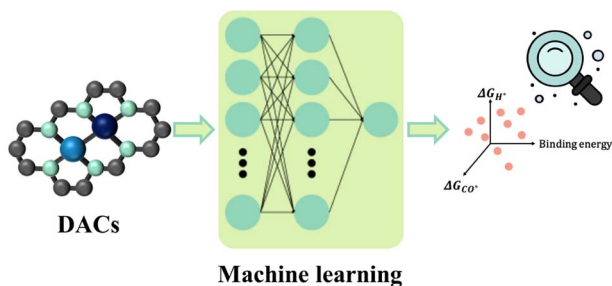
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A highly efficient heterostructure nanorod bifunctional electrocatalyst for realizing enhanced overall water splitting at a large current density

Derun Li, Shixin Wu, Tao Jiang, Shuangshuang Huang, Zhaowu Wang,* Hengyi Wu, Guangxu Cai and Feng Ren*

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Data-driven design of double-atom catalysts with high H₂ evolution activity/CO₂ reduction selectivity based on simple features

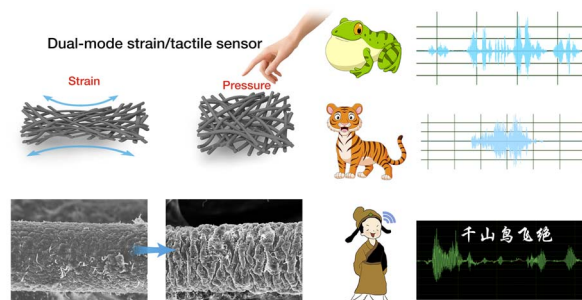
Chenyang Wei, Dingyi Shi, Zhaohui Yang, Zhimin Xue,* Shuzi Liu, Ruiqi Li* and Tiancheng Mu*



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Presenting the shape of sound through a dual-mode strain/tactile sensor

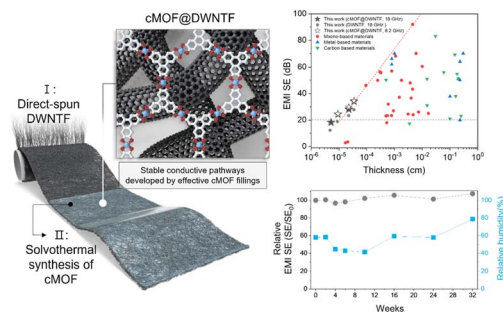
Kangqi Chang, Jiancheng Dong, Yanheng Mao, Yidong Peng, Lei Pu, Jian Meng, Minhao Guo, Piming Ma, Yunpeng Huang* and Tianxi Liu*



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Large-scalable, ultrastable thin films for electromagnetic interference shielding

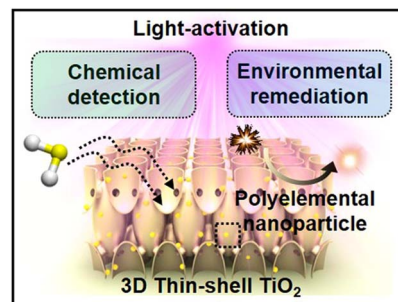
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Atomically mixed catalysts on a 3D thin-shell TiO₂ for dual-modal chemical detection and neutralization

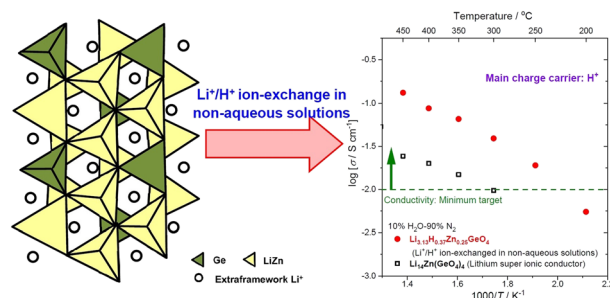
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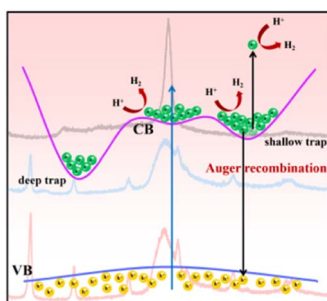
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Intermediate-temperature proton conductivity of Li⁺/H⁺ ion-exchanged material (Li,H)_{3.5}Zn_{0.25}GeO₄

Toshiaki Matsui,* Takashi Ozeki, Kazunari Miyazaki, Sadahiro Nagasaka, Hiroki Muroyama, Kenichi Imagawa, Yoshimi Okada and Koichi Eguchi



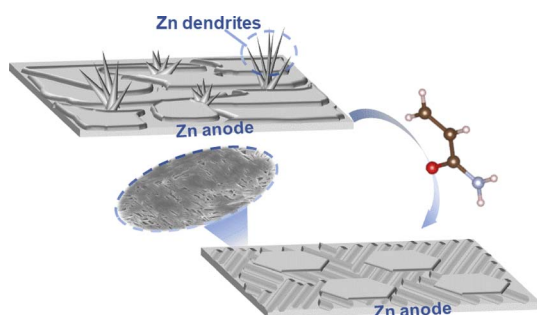
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Sodium ion doped graphitic carbon nitride with high crystallinity for superior photocatalytic hydrogen evolution efficiency

Xue Han, Yuna Kang, Shuang Song, Rong Lu* and Anchi Yu*

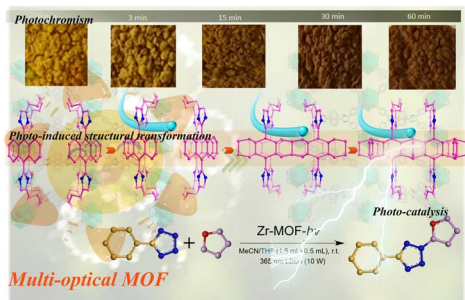
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Achieving a dendrite-free Zn anode at high current densities *via in situ* polymeric interface design

Zhipei Zhong, Wenhao Ren and Suqing Wang*

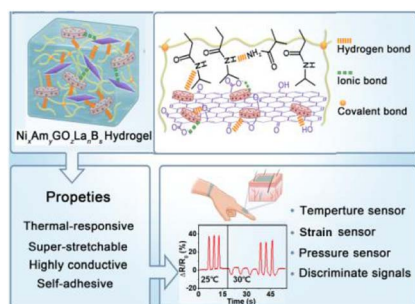
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Enhancing energy transfer through visible-light-driven polymerization in a metal–organic framework

Yuan Chen, Ao-Gang Liu, Peng-Da Liu, Zi-Tong Chen, Shi-Yu Liu and Bao Li*

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Thermosensitive hydrogel-based, high performance flexible sensors for multi-functional e-skins

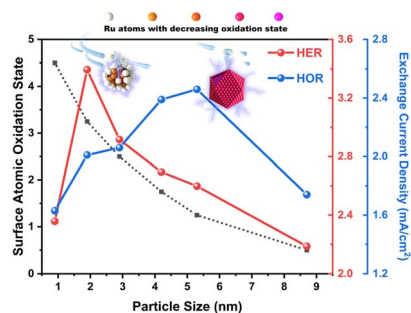
Dongdong Lu, Mingning Zhu, Xiaoyuan Li, Zilong Zhu, Xin Lin, Chuan Fei Guo* and Xiaodong Xiang*



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Fine-tuning surface oxidation states of ruthenium nanoparticles to enhance hydrogen electrode reactions

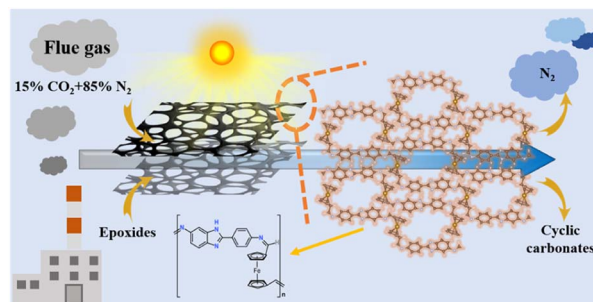
Hao Zhao, Jiejie Li, Jian Zou, Yangchun Tan, Chi Chen, Bo Yang, Qingqing Cheng* and Hui Yang*



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A CO₂-philic ferrocene-based porous organic polymer for solar-driven CO₂ conversion from flue gas

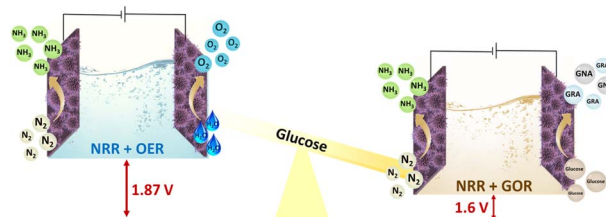
Zhou Fang, Yuqi Wang, Yue Hu, Bing Yao, Zhizhen Ye and Xinsheng Peng*



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Glucose oxidation assisted ammonia production via electrochemical dinitrogen reduction over CoWO₄

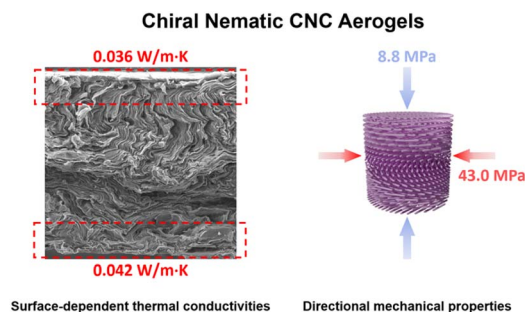
Akansha Chaturvedi, Divyani Gupta, Sukhjit Kaur, Kalpana Garg and Tharamani C. Nagaiah*



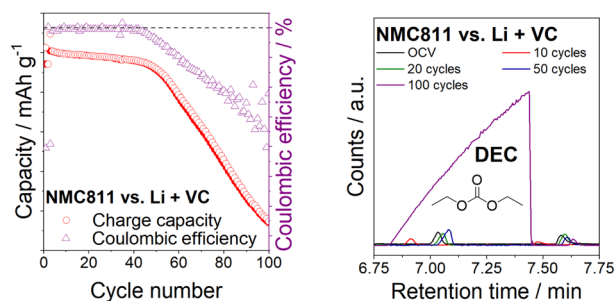
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Exploring the anisotropic properties of chiral nematic cellulose nanocrystal aerogels: outstanding directional mechanical strength and unexpected surface-dependent thermal conductivity

Zongzhe Li, Karl Tsang, Yi-Tao Xu, James G. Drummond, D. Mark Martinez and Mark J. MacLachlan*



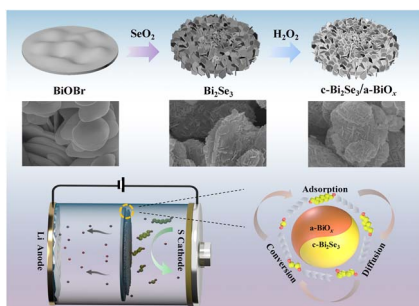
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Understanding the limits of Li-NMC811 half-cells

Rory C. McNulty, Elizabeth Hampson, Lewis N. Cutler, Clare P. Grey, Wesley M. Dose and Lee R. Johnson*

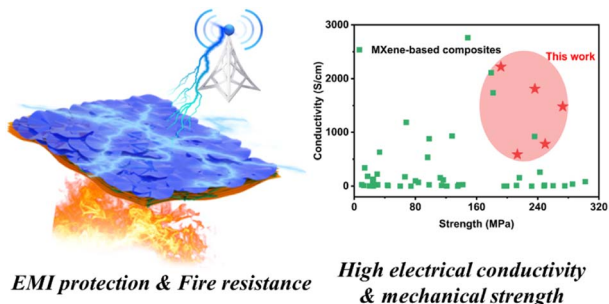
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Amorphous/crystalline heterostructure design enables highly efficient adsorption–diffusion–conversion of polysulfides for lithium–sulfur batteries

Xiangpeng Wu, Zewei Shen, Daoping Cai,* Ban Fei, Mincai Zhao, Junjie Fu, Qidi Chen and Hongbing Zhan*

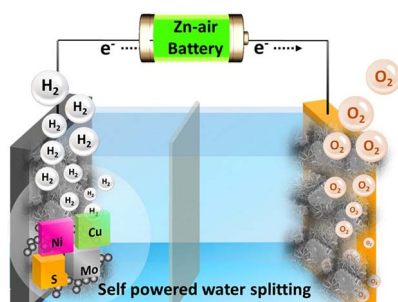
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Fireproof ultrastrong all-natural cellulose nanofiber/montmorillonite-supported MXene nanocomposites with electromagnetic interference shielding and thermal management multifunctional applications

Rui Cheng, Ying Wu, Bin Wang,* Jinsong Zeng, Jinpeng Li,* Jun Xu, Wenhua Gao and Kefu Chen

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A NiCu–MoS₂ electrocatalyst for pH-universal hydrogen evolution reaction and Zn–air batteries driven self-power water splitting

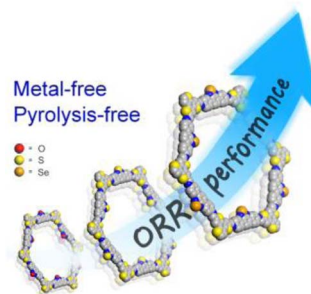
Mukesh Kumar and Tharamani C. Nagaiah*



18349

Metal-free covalent organic frameworks containing precise heteroatoms for electrocatalytic oxygen reduction reaction

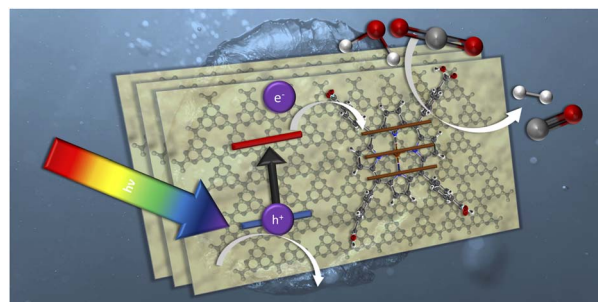
Jiali Li, Ji Jia, Jinqun Suo, Cuiyan Li, Zhiwei Wang, Hui Li,*
Valentin Valtchev, Shilun Qiu, Xiaoming Liu*
and Qianrong Fang*



18356

Band structure engineering of carbon nitride hybrid photocatalysts for CO₂ reduction in aqueous solutions

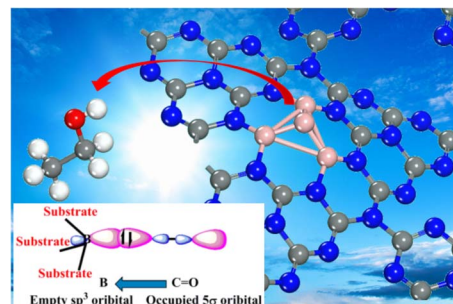
Verity L. Piercy, Gaia Neri, Troy D. Manning,
Andrea Pugliese, Frédéric Blanc, Robert G. Palgrave,
Alexander J. Cowan and Matthew J. Rosseinsky*



18365

Metal-free B₄@g-C₃N₄: a potential electrocatalyst for highly selective and efficient conversion of CO to ethanol

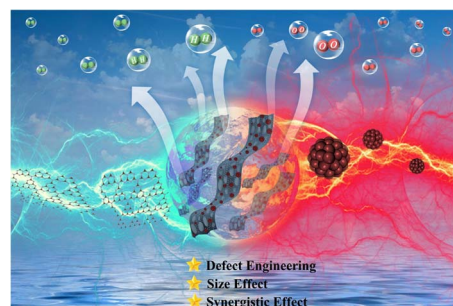
Zhichao Hao, Li-Juan Ma,* Jianfeng Jia and Hai-Shun Wu



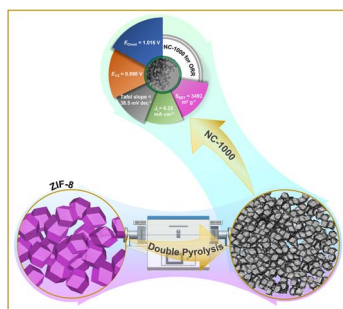
18375

Anchoring Ru nanoclusters to defect-rich polymeric carbon nitride as a bifunctional electrocatalyst for highly efficient overall water splitting

Jiayang Zhao, Haoran Guo, Yanyan Li, Lirong Zheng,
Hao Ren, Liyun Zhao and Rui Song*



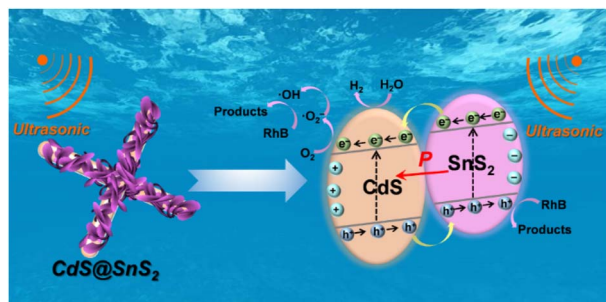
18387



Boosting the oxygen reduction reaction using high surface area graphitic-N dominant nitrogen doped carbon

Rizwan Haider, Shengqi Ding, Wenrui Wei, Yi Wan, Yu Huang, Renhuan Li,^{*} Liang Wu, Ayaz Muzammil, Yi Fan and Xianxia Yuan^{*}

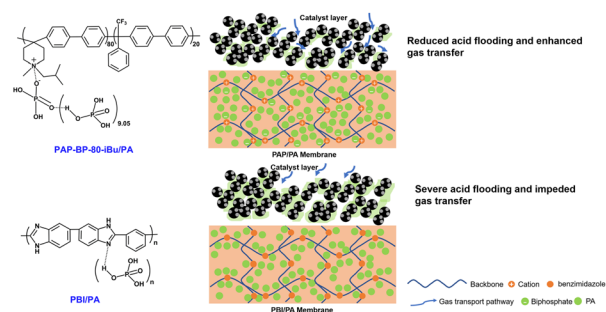
18398



A novel 1D/2D core/shell CdS@SnS₂ heterostructure for efficient piezocatalytic hydrogen evolution and pollutant degradation

Renzhi Xiong, Yanjie Song, Kunjiao Li, Yanhe Xiao, Baochang Cheng and Shuijin Lei^{*}

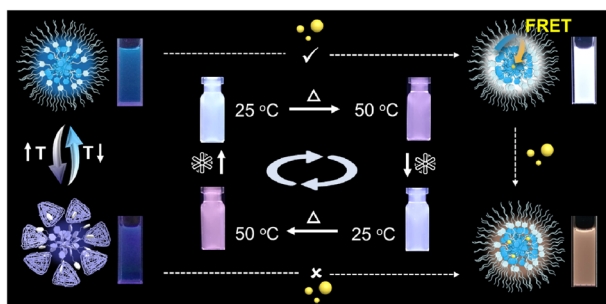
18409



Alkyl-substituted poly(arylene piperidinium) membranes enhancing the performance of high-temperature polymer electrolyte membrane fuel cells

Jinyuan Li, Congrong Yang, Xiaoming Zhang, Zhangxun Xia, Suli Wang,^{*} Shansheng Yu and Gongquan Sun^{*}

18419



A temperature-responsive artificial light-harvesting system in water with tunable white-light emission

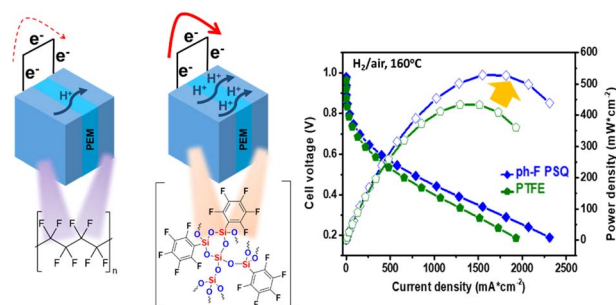
Tangxin Xiao,^{*} Dongxing Ren, Lu Tang, Zhiying Wu, Qi Wang, Zheng-Yi Li and Xiao-Qiang Sun



18426

Mitigating phosphoric acid migration in high temperature polymer electrolyte membrane fuel cells with hydrophobic polysilsesquioxane-based binders

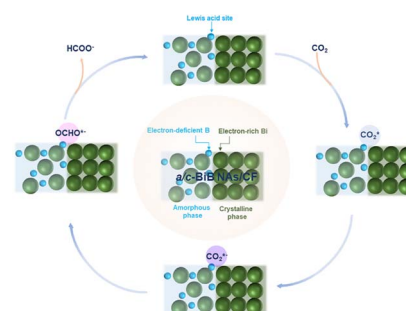
Dong-Yeop Yoo, Jiyeon Jung, Young Sang Park, Gwan Hyun Choi, Ho Gyu Yoon, Seung Sang Hwang and Albert S. Lee*



18434

Controlled boron incorporation tuned two-phase interfaces and Lewis acid sites in bismuth nanosheets for driving CO₂ electroreduction to formate

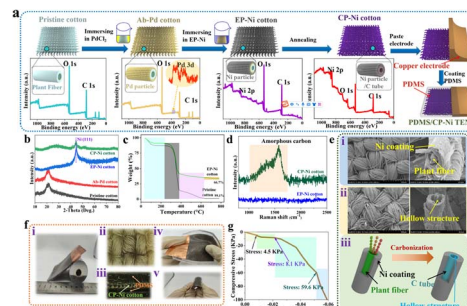
You Xu, Yiyi Guo, Youwei Sheng, Qingsong Zhou, Hongjie Yu, Kai Deng, Ziqiang Wang, Hongjing Wang* and Liang Wang*



18441

Fabrication of triboelectric nanogenerators with multiple strain mechanisms for high-accuracy material and gesture recognition

Junjun Huang, Wenqing Zhang, Xin Chen, Sanlong Wang, Zhenming Chen, Peng Li,* Honglin Li* and Chengmei Gui*



18454

Correction: Large-scalable, ultrastable thin films for electromagnetic interference shielding

Jae Seo Park, Ji Yong Park, Kyunbae Lee, Young Shik Cho, Hyunji Shin, Yeonsu Jung, Chong Rae Park, Taehoon Kim,* Jae Ho Kim* and Seung Jae Yang*



CORRECTIONS

18455

Correction: Constructing a rhenium complex supported on g-C₃N₄ for efficient visible-light-driven photoreduction of CO₂ to CO via a novel Z-scheme heterojunction

Phuong Ngoc Nguyen, Trang Thanh Tran, Quynh Anh Thi Nguyen, Yoshiyuki Kawazoe, S. V. Prabhakar Vattikuti, Long V. Le, Viet Quoc Bui,* Tuan Manh Nguyen* and Nam Nguyen Dang

