

Journal of Materials Chemistry A

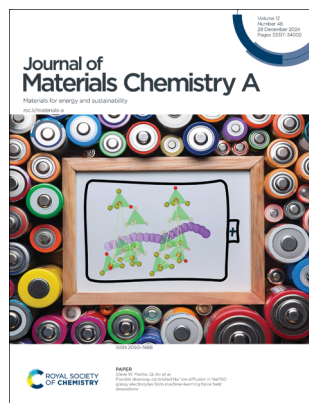
Materials for energy and sustainability

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See Steve W. Martin, Qi An *et al.*, pp. 33518–33525. Image reproduced by permission of Qi An from *J. Mater. Chem. A*, 2024, 12, 33518.



Inside cover

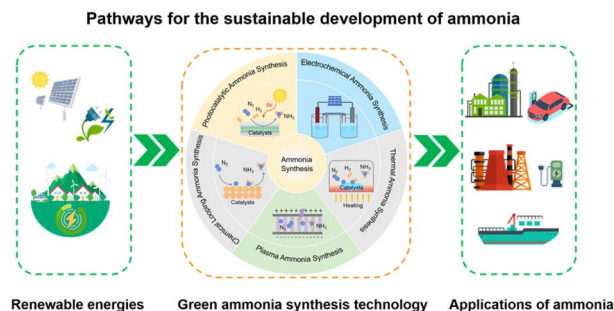
See Gunsu S. Yun, Hyungyu Jin *et al.*, pp. 33526–33536. Image reproduced by permission of Hyungyu Jin and Gunsu S. Yun from *J. Mater. Chem. A*, 2024, 12, 33526.

REVIEWS

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Green ammonia: revolutionizing sustainable energy for a carbon-free future

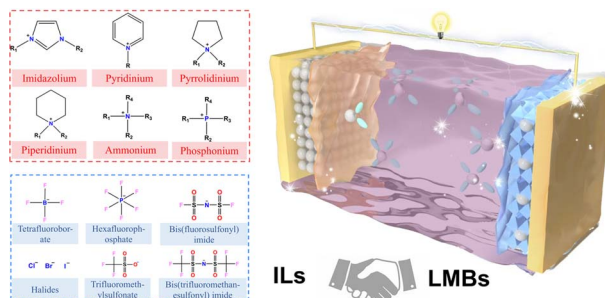
Zihao Zhang, Hangjian Zhang, Hongyu Jiang and Lu Li*



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Solvation and interfacial chemistry in ionic liquid based electrolytes toward rechargeable lithium-metal batteries

Haifeng Tu, Keyang Peng, Jiangyan Xue, Jingjing Xu,* Jiawei Zhao, Yuyue Guo, Suwan Lu, Zhicheng Wang, Liquan Chen, Hong Li and Xiaodong Wu*



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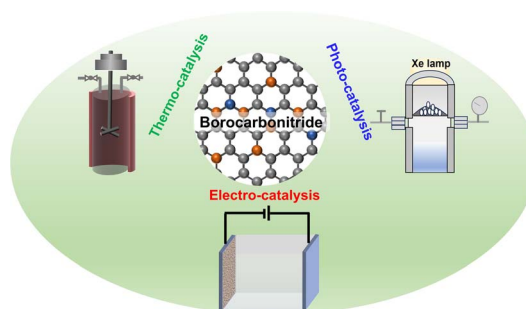
**Fundamental questions
Elemental answers**

REVIEWS

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Borocarbonitride materials as metal-free catalysts for advanced catalysis

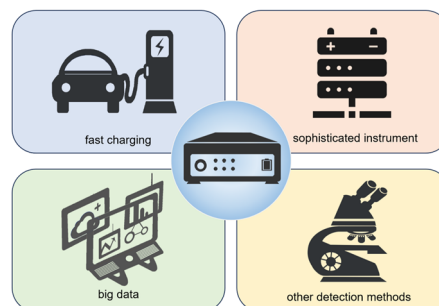
Yan Wan, Chen Fang, Xu Yang, Jinli Liu and Yangming Lin*



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A review of detecting Li plating on graphite anodes based on electrochemical methods

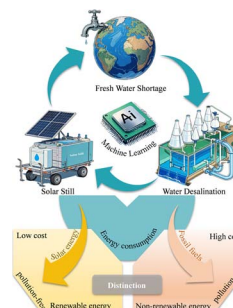
Ruoxuan Chen, Sicheng Miao, Ye Jia, Xuemei Zhang, Jianan Peng, Kailong Zhang, Fanglin Wu, Jiangqi Zhao, Zeheng Li* and Wenlong Cai*



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Solar stills: the future enabled by machine learning

Rui Li, Chaohai Wang,* Chang He, Ho Ngoc Nam, Junning Wang, Yanli Mao, Xinfeng Zhu, Wei Liu,* Minjun Kim* and Yusuke Yamauchi

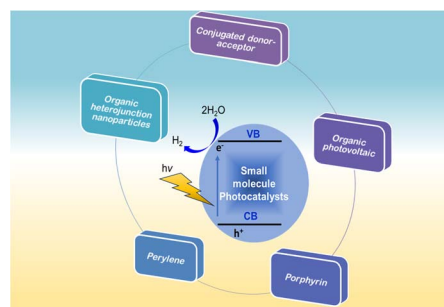


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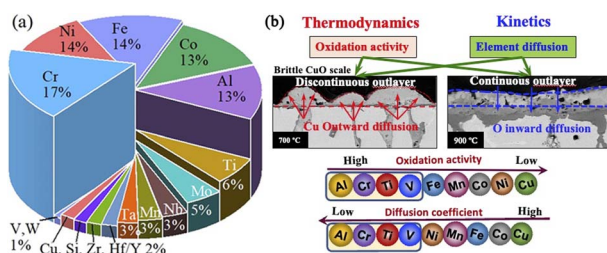
Evolution of small molecules as photocatalysts towards production of green hydrogen

Tumpa Gorai* and Surya Prakash Singh*



REVIEWS

33488

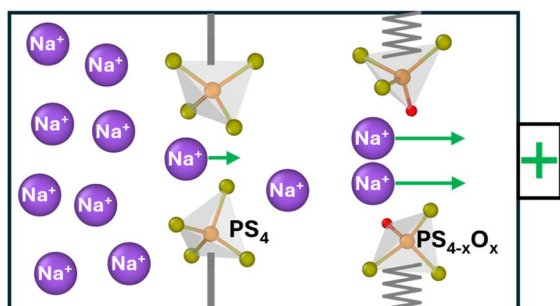


High-temperature oxidation behavior of transition metal complex concentrated alloys (TM-CCAs): a comprehensive review

Haofei Sun, Emily Seto, Meifeng Li* and Jing Liu*

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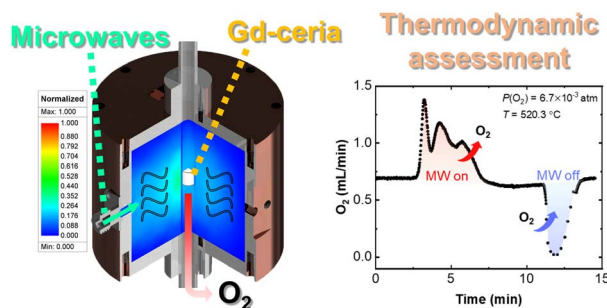
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Flexible doorway controlled Na⁺ ion diffusion in NaPSO glassy electrolytes from machine-learning force field simulations

Kun Luo, Rui Zhou, Steve W. Martin* and Qi An*

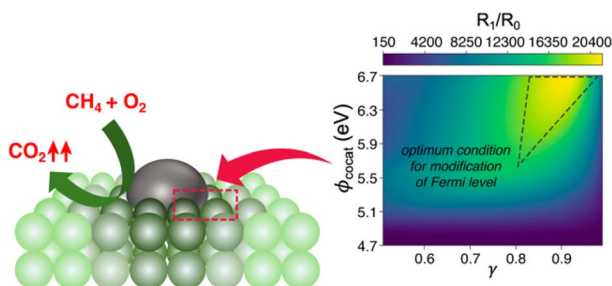
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Thermodynamic assessment of Gd-doped CeO₂ for microwave-assisted thermochemical reduction

Dongkyu Lee, Jaemin Yoo, Gunsu S. Yun* and Hyungyu Jin*

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Overcoming the limitations of atomic-scale simulations on semiconductor catalysis with changing Fermi level and surface treatment

Seulgi Ji, Dong Won Jeon, Junghyun Choi, Haneol Cho, Bo-In Park, Ilpyo Roh, Hyungil Choi, Chansoo Kim, Jung Kyu Kim, Uk Sim, Danlei Li, Hyunseok Ko,* Sung Beom Cho* and Heechae Choi*

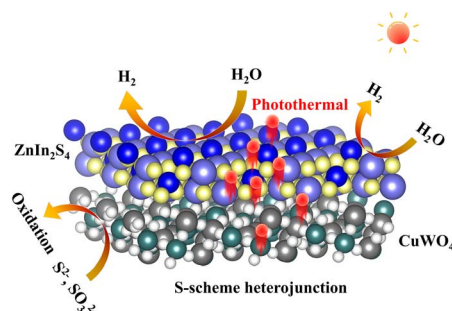


PAPERS

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Synergistic enhancement of photocatalytic hydrogen evolution in $\text{ZnIn}_2\text{S}_4/\text{CuWO}_4$ via an S-scheme heterojunction and the photothermal effect

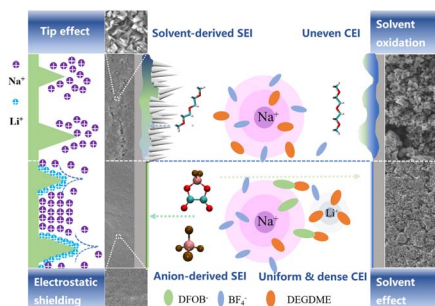
Dafeng Zhang, Dong Zhang, Fuping Zhao, Yutong Zhao, Hengshuai Li,* Junchang Liu,* Xue-Yang Ji, Xipeng Pu and Huayang Zhang*



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Adjusting anion–solvent dipole interactions in ether-based electrolytes for wide temperature range applications of sodium-ion batteries

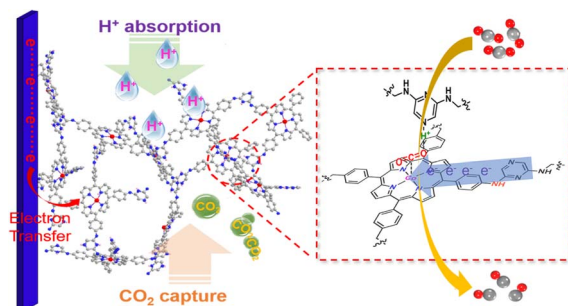
Yixing Shen, Jipeng Xu, Yana Li, Shuzhi Zhao, Haiying Che, Jabeen Maher, Xuan Wang, Yunlong Zhang, Jiafang Wu, Jingkun Li, Cheng Lian and Zi-Feng Ma*



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Promoting CO_2 electroreduction activity of porphyrinic conjugated microporous polyanilines via accelerating proton transfer dynamics

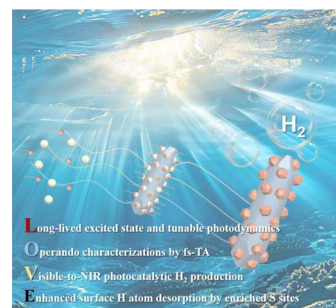
Feng Qiu, Chunyan Li, Xiaodong Xuan, Senhe Huang, Chenbao Lu,* Hualin Lin, Sheng Han,* Xiaodong Zhuang and Wai-Yeung Wong*



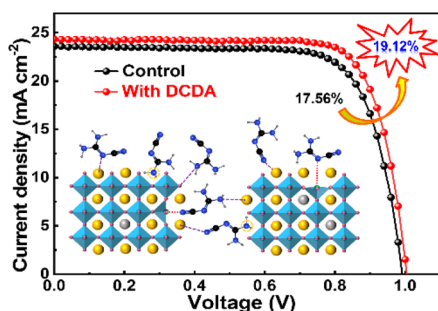
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Enhanced photocatalytic H_2 evolution: optimized atomic hydrogen desorption via free-electron transfer in sulfur-rich MoWS_{2+x} on vacancy-engineered CdS crystals

Ruiding Fei, Jianfeng Zhao, Huinan Wang, Huijuan Lin, Kui Xu, Guang Zeng, Wenchao Wang and Zhiping Yan*



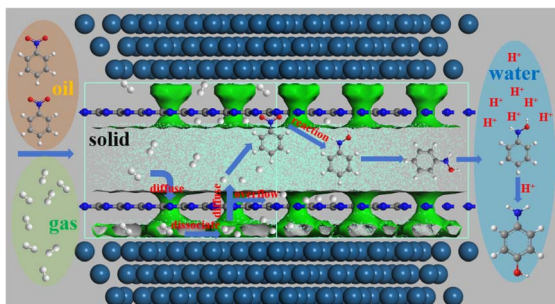
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Defect management and crystallization regulation for high-efficiency carbon-based printable mesoscopic perovskite solar cells *via* a single organic small molecule

Jinjiang Wang, Dongjie Wang, Dang Xu, Yang Zhang, Tianhuan Huang, Doudou Zhang, Zheling Zhang, Jian Xiong, Yu Huang and Jian Zhang*

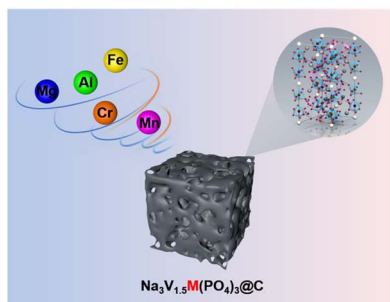
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Gating effect of g-C₃N₄-encapsulated Pt-based catalysts for the hydrogenation and Bamberg rearrangement of nitroaromatics

Chong Yao, Jinjin Shan, Jie Liu, Jie Luo, Limei Pan, Jinghui Lyu, Feng Feng, Lili Lin, Chunshan Lu, Ying Zheng, JianGuo Wang, Qingtao Wang,* Qunfeng Zhang* and Xiaonian Li*

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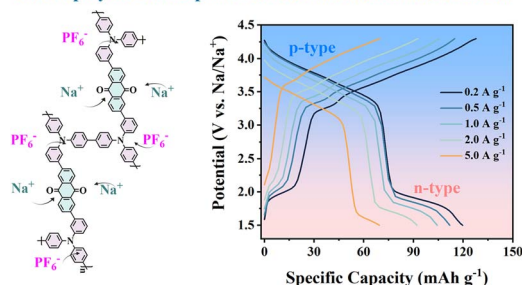


Synergetic effects from a high-entropy NASICON-type cathode for advanced sodium-ion batteries

Shouyue Wang, Taiding Xu, Huitao Leng, Shengyu Liang, Wei Zhang, Yuheng Jin, Jingxia Qiu* and Sheng Li*

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Electropolymerized Bipolar Cathode for Sodium-ion batteries



Electropolymerized organic N/P bipolar cathode toward high energy and high power density sodium dual-ion batteries

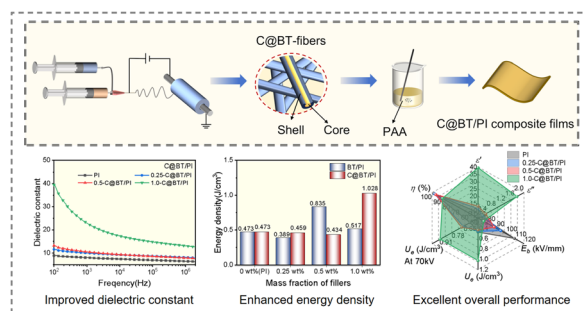
Weisheng Zhang, Chenxing Zhang, Xianhe Chen, Hongju Yin, Wenli Hu, Shilin Mei* and Chang-Jiang Yao*



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Novel nano-C@BaTiO₃ fibers/polar *trans*-cyclohexane modified polyimide composite films with enhanced dielectric properties and energy storage density

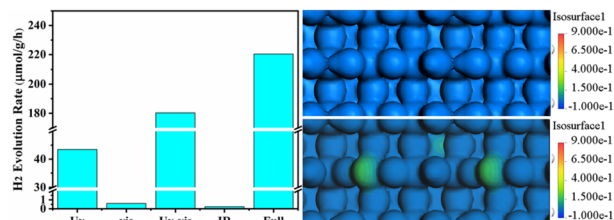
Xingwu Jiang, Xiang Wang,* Peifeng Liu and Jinzheng Huang



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Plasmonic Mo-doped HNb₃O₈ nanosheets with tunable energy band structures for photothermal catalytic H₂ evolution in the full solar spectrum

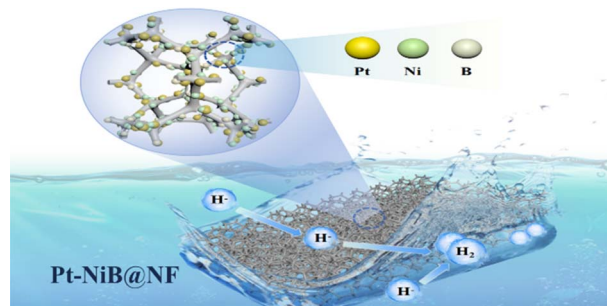
Junli Chen,* Xinyi Jin, Xinli Yang, Lei Deng, Zhiqiang Zhang, Lifeng Han, Feilong Gong and Yonghui Zhang*



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In situ analysis of a boron-based catalytic electrode with trace platinum for efficient hydrogen evolution in a wide pH range

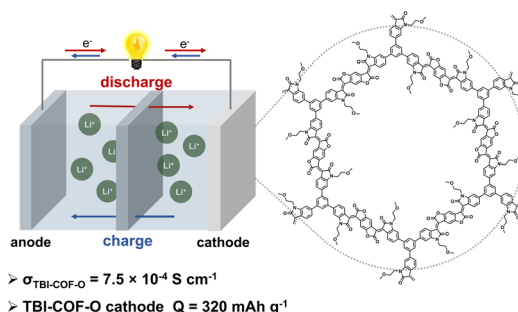
Xunwei Ma, Yifan Zhang, Liugang Wu, Zijun Huang, Jiyuan Yang, Chunguang Chen, Shengwei Deng, Lincai Wang,* Jian Chen* and Weiju Hao*



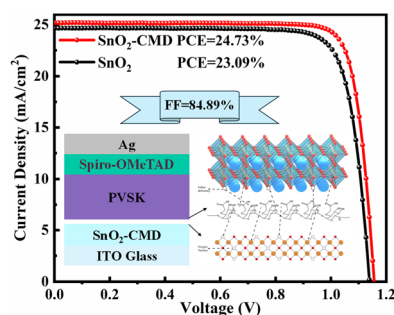
33661

Fully conjugated covalent organic frameworks with high conductivity as superior cathode materials for Li-ion batteries

Xudong Qin, Haoran Tang,* Haiyang Zhao, Lin Shao, Chunchen Liu, Lei Ying and Fei Huang*



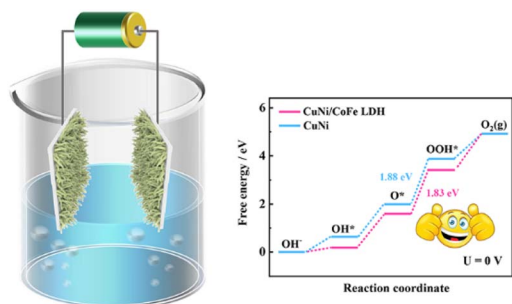
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Carboxymethyldextran sodium-modified SnO₂ enables highly efficient and stable perovskite solar cells with a high fill factor of 84.89%

Qi Luo, Bowen Li, Chenyu Ju, Hongxin Weng, Hong Zhang, Qihao Dai, Pengfei Liu, Hao Xiong, Kunyuan Zheng, Peng Xiang* and Xinyu Tan*

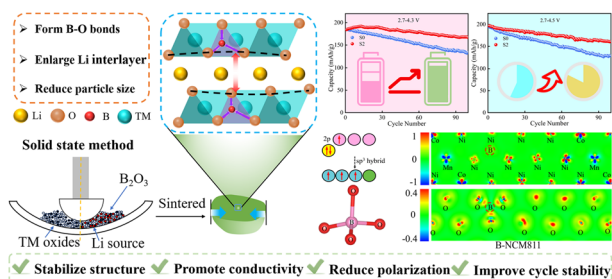
33680



Synergistic coupling of a CuNi alloy with a CoFe LDH heterostructure on nickel foam toward high-efficiency overall water splitting

Dan Wang, Yuan Chu, Youzheng Wu, Mengkang Zhu, Lin Pan, Ruopeng Li, Yukai Chen, Wenchang Wang, Naotoshi Mitsuzaki and Zhidong Chen*

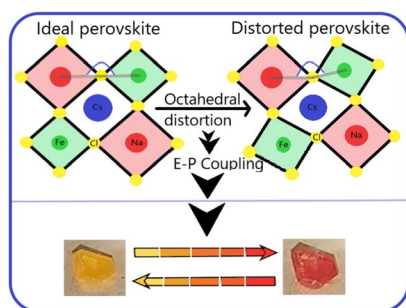
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Enhanced cycling performance of B-doped LiNi_{0.8}Co_{0.1}Mn_{0.1}O₂ cathodes prepared by the solid-state method

Saijing Wang, Maolin Zhang,* Yangxi Yan, Dongyan Zhang, Yuan Wang, Gang Cao, Jianzhang Shi and Xiaofei Sun

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Local structural distortions and thermochromic properties of Cs₂NaFeCl₆ halide double perovskite

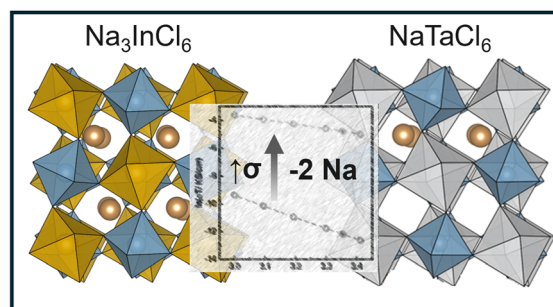
Bikash Ranjan Sahoo, Venkatesha R. Hathwar, U. P. Deshpande and Preeti A. Bhohe*



33707

How crystal structure and microstructure can influence the sodium-ion conductivity in halide perovskites

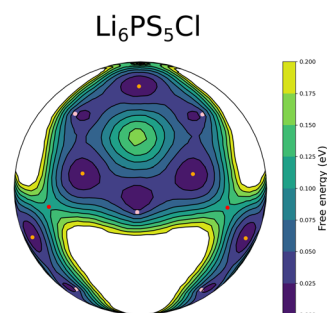
Xabier Martinez de Irujo-Labalde,* Tong Zhao, Bibek Samanta, Tim Bernges, Vasiliki Faka, Alexander N. Sobolev, Oliver Maus, Markus Appel, Marvin A. Kraft, Michael Ryan Hansen and Wolfgang G. Zeier*



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Structural and thermodynamic properties of the $\text{Li}_6\text{PS}_5\text{Cl}$ solid electrolyte using first-principles calculations

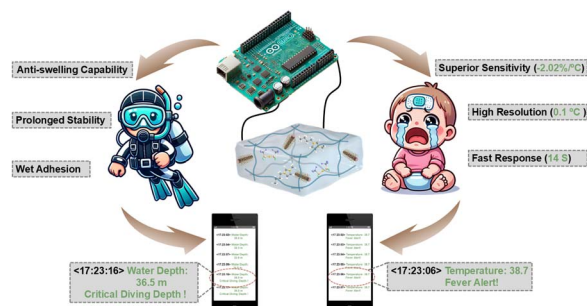
Tarek Ayadi,* Maylise Nastar and Fabien Bruneval



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A robust and adhesive anti-swelling hydrophobic ionogel with prolonged stability for strain and temperature sensors

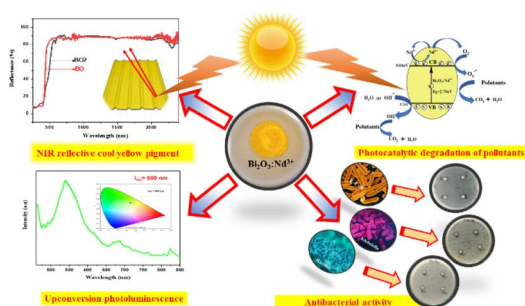
Yu Zhang, Yuanna Sun,* Jiahang Yang, Ruobing Tian, Jiahao Liu, Xueming Tang, Junbo Wang and Qingshan Li*



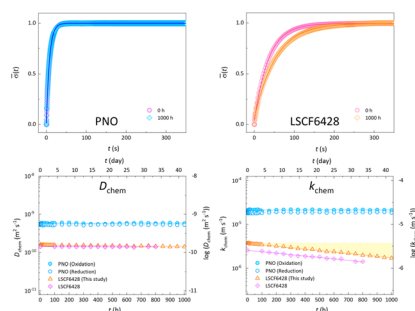
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Synthesis of Nd^{3+} -doped α - γ bismuth oxide homojunction nanoparticles: a smart multifunctional solar photocatalyst

Aji Joseph, Ambili K. S., Anju John, Minjoong Yoon and Jesty Thomas*



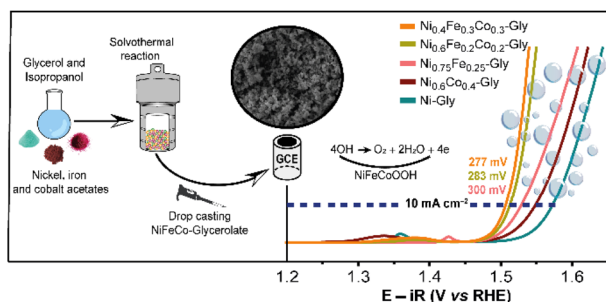
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Enhanced oxygen exchange kinetics and long-term stability of a Ruddlesden–Popper phase $\text{Pr}_4\text{Ni}_3\text{O}_{10+\delta}$ cathode for solid oxide fuel cells

Saim Saher, Affaq Qamar, Chou Yong Tan,* S. Ramesh and Walied Alfraidi

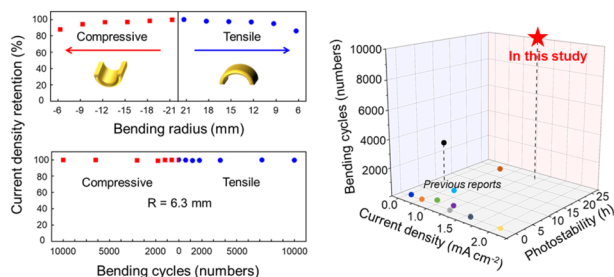
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Ternary NiFeCo-glycerolate catalysts: rational design for improved oxygen evolution reaction efficiency

Irlan S. Lima, Josuê M. Gonçalves* and Lucio Angnes*

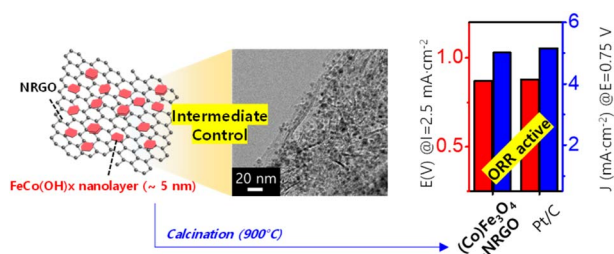
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A highly durable photoelectrode on a bendable yttria-stabilized zirconia substrate for efficient photoelectrochemical water splitting

Jun Beom Hwang, Jeongsu Lee, Gyeong Duk Nam, Soomin Choi, Jiwoong Yang, Yoonsung Jung, Yejoon Kim, Inhyeok Oh, Jong Hoon Joo* and Sanghan Lee*

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Scalable synthesis of N-doped graphene-oxide-supported $\text{FeCo}(\text{OH})_x$ nanosheets for efficient Co-doped Fe_3O_4 nanoparticle-based oxygen reduction reaction electrocatalysis

Sunglun Kwon and Jong Hyeon Lee*

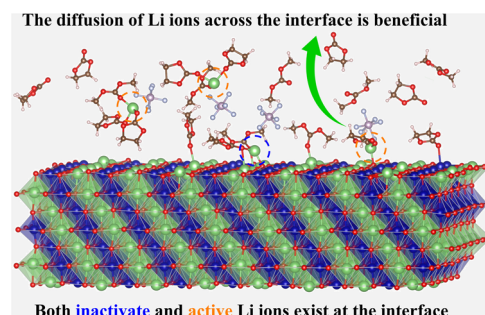


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Diffusion behaviors of lithium ions at the cathode/electrolyte interface from a global neural network potential

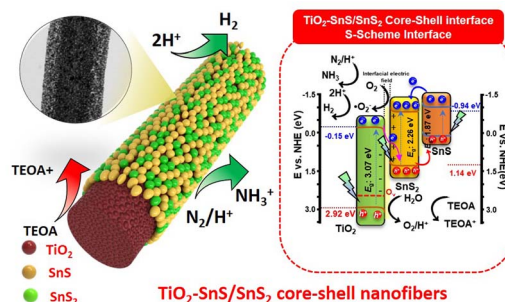
Yufeng Sun, Cheng Shang, Yi-Bin Fang, Zhi-Pan Liu, Xin-Gao Gong and Ji-Hui Yang*



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Defective phase engineering of S-scheme TiO_2 - SnS / SnS_2 core-shell photocatalytic nanofibers for elevated visible light responsive H_2 generation and nitrogen fixation

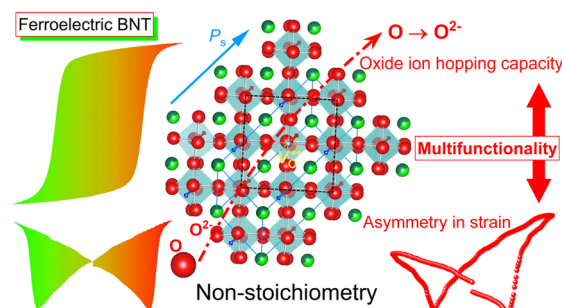
Kugalur Shanmugam Ranjith, Raza Maleki, Seyed Majid Ghoreishian, Ali Mohammadi, Ganji Seeta Rama Raju, Yun Suk Huh* and Young-Kyu Han*



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Structural insight into the multifunctionality of non-stoichiometric BNT ferroelectrics

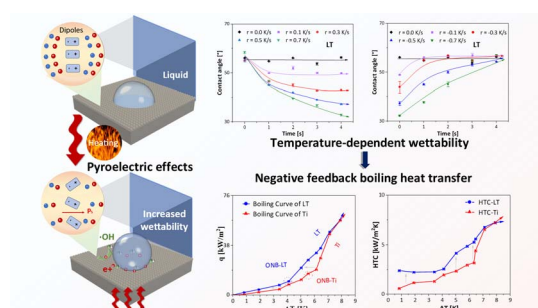
Jing Shi,* Jicong Wang, Fangyuan Zhu,* Wenchao Tian, Weibo Hua, Huiqing Fan, Jing Yang, Laijun Liu and Xiao Liu*



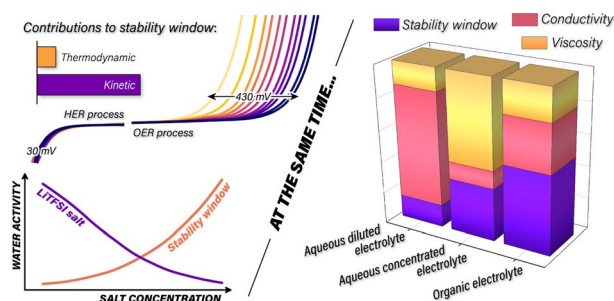
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Pyroelectric effects inducing negative feedback boiling heat transfer

Miaoxin Ma, Hui He,* Xiang Chai, Tengfei Zhang, Jinbiao Xiong and Xiaojing Liu*



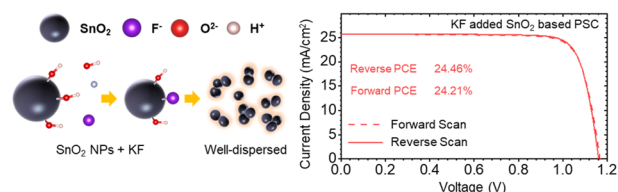
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Water activity: the key to unlocking high-voltage aqueous electrolytes?

Yaroslav Zhigalenok, Saken Abdimomyn, Mikhael Levi, Netanel Shpigel, Margarita Ryabicheva, Maxim Lepikhin, Alina Galeeva and Fyodor Malchik*

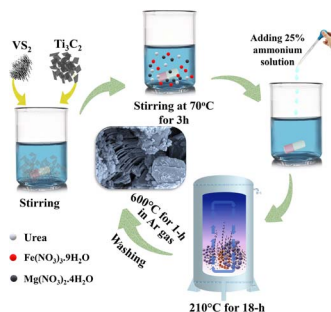
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Additive engineered SnO₂-based electron transport layer for the robust and high-efficiency large-scale perovskite solar cell

Byeong Jo Kim, Gabseok Seo, Sua Park, Donghyeon Lee, Yanqi Luo, Sarah Wieghold, Min-cheol Kim* and Gerrit Boschloo*

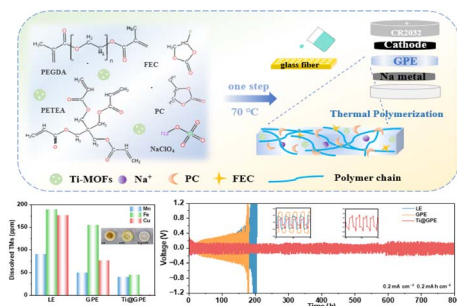
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Enhanced water splitting kinetics using MgFeO₃/MXene/VS₂ hybrid bifunctional catalysts

Sajjad Hussain, Dhanasekaran Vikraman, Zulfqar Ali Sheikh, Sikandar Aftab, Ghazanfar Nazir, Shoyebmohamad F. Shaikh, Deok-Ke Kim, Hyun-Seok Kim* and Jongwan Jung*

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Metal-ion-coordinated cross-linked quasi-solid-state polymer electrolyte for a high energy-density and long-life Prussian blue analogs cathode

Xinyu Wang, Cheng Yang,* Ning Jiang, Yichao Wang, Shouyu Sun and Yu Liu*

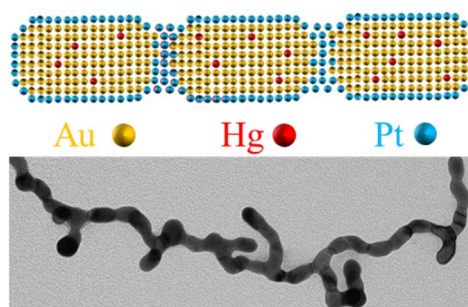


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Amalgamation-based AuHgPt nanochains as electrocatalysts for the hydrogen evolution reaction

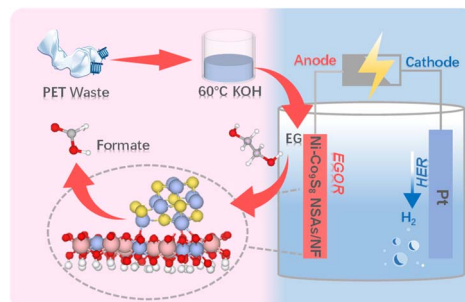
Pengfei Cao, Congcong Xu, Lei Zhang, Jinyuan Li, Shi-Bo Cheng* and Meng Lin*



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Electrochemical PET recycling to formate through ethylene glycol oxidation on Ni–Co–S nanosheet arrays

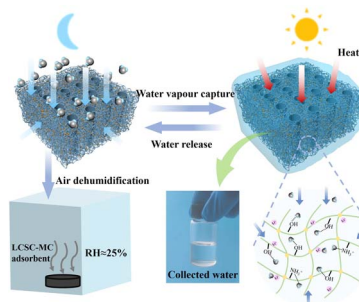
Yi Ma, Luming Li, Jialing Tang, Zongkun Hu, Yong Zhang, Huan Ge, Ning Jian, Jun Zhao, Andreu Cabot* and Junshan Li*



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Vertical macroporous chitosan aerogel adsorbents for simple and efficient enhancement of atmospheric water harvesting and air dehumidification

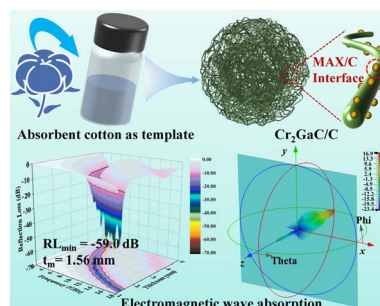
Changhui Fu, Yuxuan He, Anhui Yu, Guangyi Tian, Danyan Zhan, Huimin Zhang and Zhiguang Guo*



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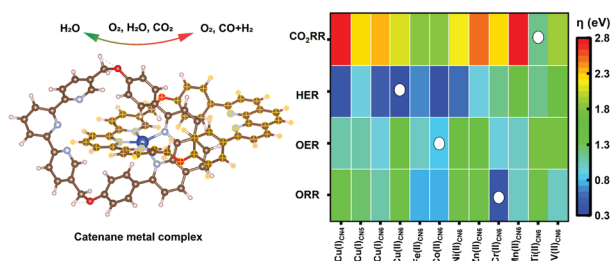
Heterointerface engineering in Cr₂GaC/C hybrids through bottom-up template synthesis for enhanced electromagnetic wave absorption

Feiyue Hu, Shengyu Xie, Fushuo Wu, Jian Liu, Peigen Zhang,* Jianxing Ding, Bingbing Fan, Wei Zheng,* Longzhu Cai and ZhengMing Sun*



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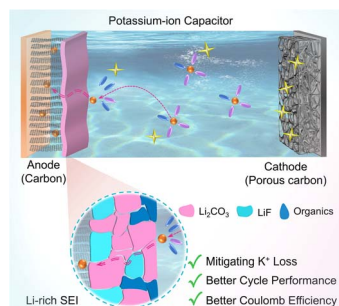
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High-throughput screening of mechanically interlocked Catenane metal complexes for enhanced electrocatalytic activity

Mohsen Tamtaji, William A. Goddard III* and GuanHua Chen*

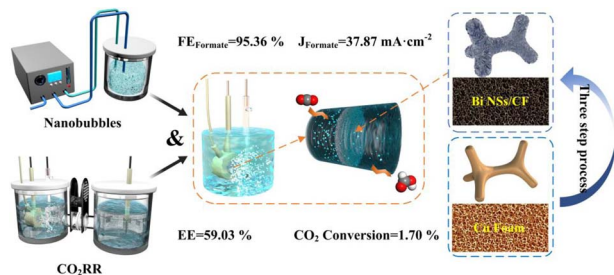
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Pre-lithiation carbon anodes mitigating potassium loss for high-performance potassium-ion energy storage devices

Danni Du, Qingyuan Liu,* Jing Gao, Yuying Qin, Xiaobo Jiang, Yuanchang Shi,* Minghao Hua,* Xiaohang Lin,* Zhiwei Zhang, Chengxiang Wang, Longwei Yin and Rutao Wang*

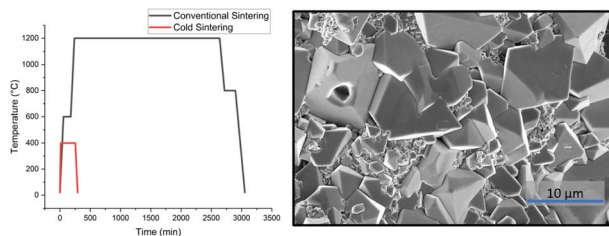
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Formation of bismuth nanosheets on copper foam coupled with nanobubble technology for enhanced electrocatalytic CO₂ reduction

Kai Wu, Pengwei Yang, Shuaijun Fan, Yifan Wu, Jingxiang Ma, Lijuan Yang, Hongtao Zhu, Xiaoying Ma, Heli Gao, Wentong Chen, Jun Jia and Shuangchen Ma*

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Cold sintering of nickel manganese oxide for thermistor fabrication

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Atomic-scale structure and thermoelectric properties in medium-entropy PbSnTeSe alloy

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