

Journal of Materials Chemistry A

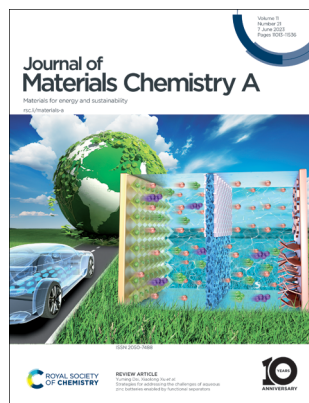
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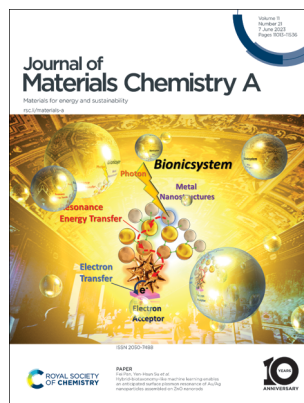
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See Yuming Dai, Xiaolong Xu *et al.*, pp. 11031–11047. Image reproduced by permission of Yuming Dai from *J. Mater. Chem. A*, 2023, **11**, 11031.



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See Fei Pan, Yen-Hsun Su *et al.*, pp. 11187–11201. Image reproduced by permission of Fei Pan from *J. Mater. Chem. A*, 2023, **11**, 11187.

EDITORIAL

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Introduction to the honorary themed collection for Thomas P. Russell

Ilja Gunkel, Xiaodan Gu, Jodie Lutkenhaus, Du Yeol Ryu, Jiun-Tai Chen and Zhiqun Lin

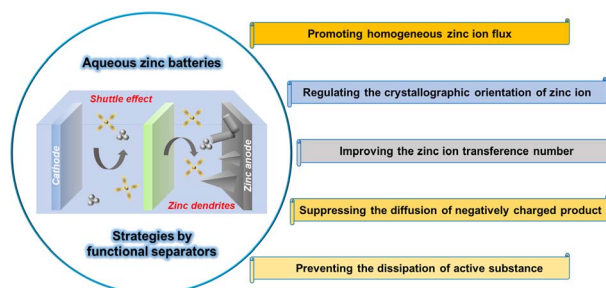


REVIEWS

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Strategies for addressing the challenges of aqueous zinc batteries enabled by functional separators

Zhendong Hao, Yuming Dai,* Xiaolong Xu,* Xiuxiu Zhao, Yuan Cong, Xiaoming Wu and Weiqiang Zhou



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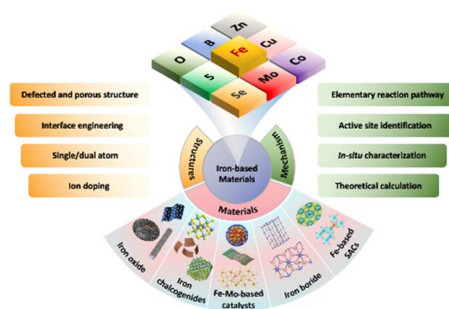


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The journey of iron-based electrocatalytic materials for nitrogen reduction reaction: from current status to future prospects

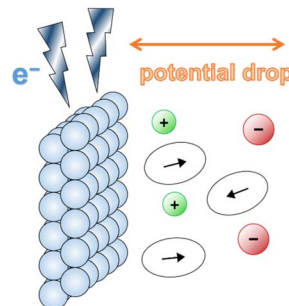
Yi-Han Wang, Ji-Hong Dong, Zhenquan Tan, Xiao-Feng Wang and Xue-Zhi Song*



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Constant-potential molecular dynamics simulation and its application in rechargeable batteries

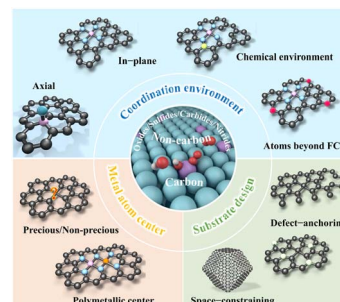
Legeng Yu, Xiang Chen,* Nan Yao, Yu-Chen Gao and Qiang Zhang



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Kuang Sheng, Guang Li, Jiayu Hao, Yanqiu Wang, Kaili Shi, Yang Liu, Ning Zhang, Xiaoqing Qiu, Min Liu, Wenzhang Li* and Jie Li*

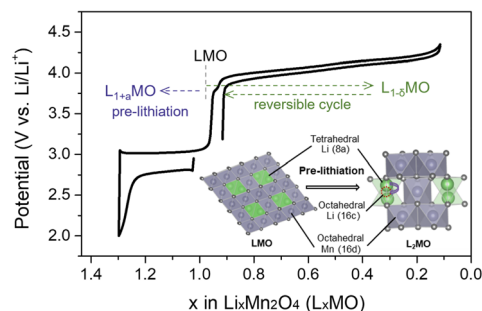


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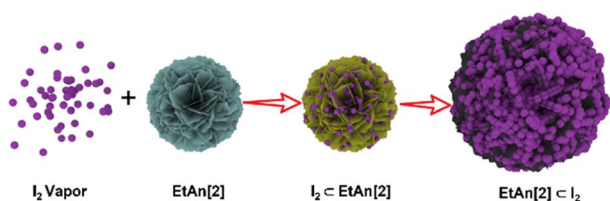
Enhancing the cycle-life of initial-anode-free lithium-metal batteries by pre-lithiation in Mn-based Li-rich spinel cathodes

Leiyu Chen, Chao-Lung Chiang, Guifan Zeng, Yonglin Tang, Xiaohong Wu, Shiyuan Zhou, Baodan Zhang, Haitang Zhang, Yawen Yan, Tingting Liu, Hong-Gang Liao, Chuanwei Wang,* Xiaoxiao Kuai,* Yan-Gu Lin,* Yu Qiao* and Shi-Gang Sun



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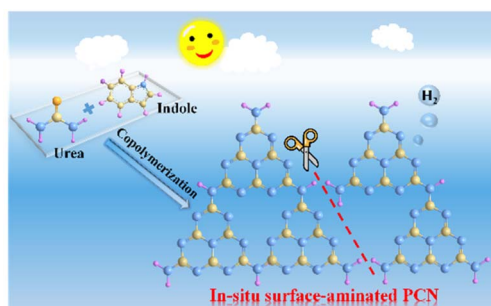


Remarkable iodine uptake by aniline-based macrocyclic arenes through a reverse dissolution mechanism

Pengyue Jin, Wenting Liang, Yanqin Rong, Wuanhua Wu,*
Min Gou,* Yueqin Tang and Cheng Yang*

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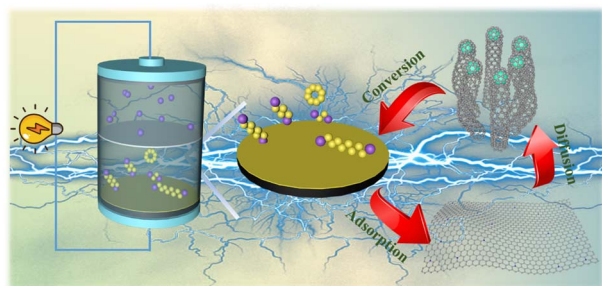
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Copolymerization synthesis of highly hydrophilic carbon nitride for efficient solar hydrogen production

Yaping Jian, Yuanyong Huang, Baodong Mao, Di Li,
Bifu Luo, Min Chen, Dongbo Xu* and Weidong Shi*

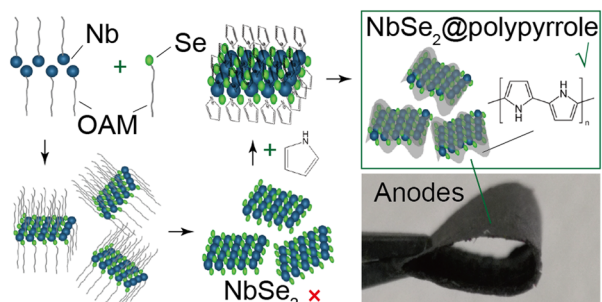
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Efficient immobilization and bidirectional catalysis of polysulfide conversion by FeCoP quantum dots for lithium-sulfur batteries

Minhui Li, Xiao Xu, Hui Wang,* Xuyun Wang, Xianguo Ma,
Jianwei Ren* and Rongfang Wang*

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NbSe₂@PPy nanosheets as anode materials for flexible all-solid-state asymmetric supercapacitors

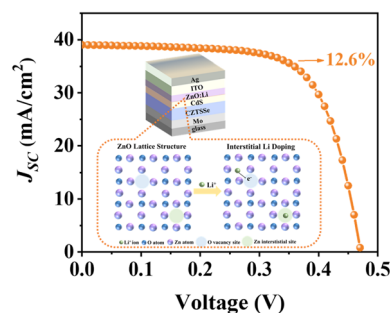
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Mengzhao Yang, SangWook Park, Tao Zhang,
Mingchao Wang, Huanhuan Shi, Qinglei Liu,* Jiajun Gu*
and Xinliang Feng



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Defect engineering of solution-processed ZnO:Li window layers towards high-efficiency and low-cost kesterite photovoltaics

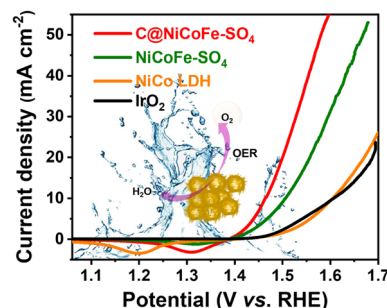
Qian Xiao, Dongxing Kou,* Wenhui Zhou, Zhengji Zhou, Shengjie Yuan, Yafang Qi, Yuena Meng, Litao Han, Zhi Zheng and Sixin Wu*



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Partial carbonization and etching of ZIF-9 to construct SO_4^{2-} -decorated C@NiCoFe LDH ultrathin nanosheets for efficient oxygen evolution reaction

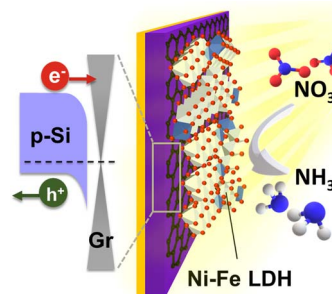
Weibin Chen, Chao Chen, Lei Li* and Zhan Lin*



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Efficient ammonia photosynthesis from nitrate by graphene/Si Schottky junction integrated with Ni-Fe LDH catalyst

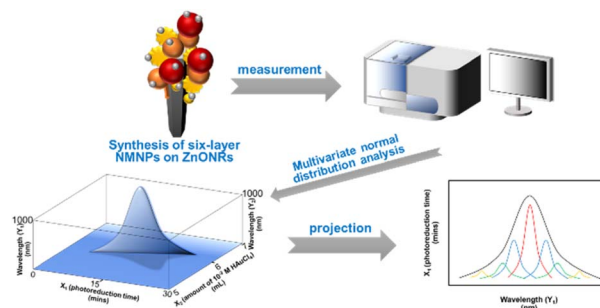
Chun-Hao Chiang, Yu-Ting Kao, Po-Hsien Wu, Ting-Ran Liu, Jia-Wei Lin, Po-Tuan Chen, Jr-Wen Lin, Shan-Chiao Yang, Hsuen-Li Chen, Shivaraj B. Patil, Di-Yan Wang* and Chun-Wei Chen*



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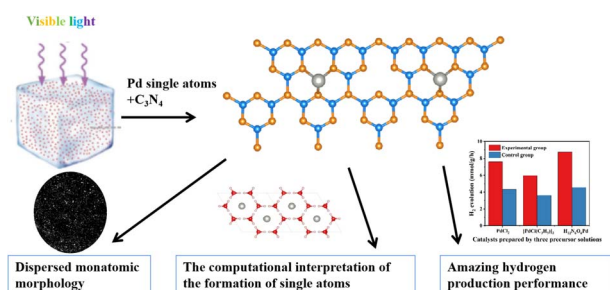
Hybrid-biotaxonomy-like machine learning enables an anticipated surface plasmon resonance of Au/Ag nanoparticles assembled on ZnO nanorods

Yu-Kai Liao, Yi-Sheng Lai, Fei Pan* and Yen-Hsun Su*



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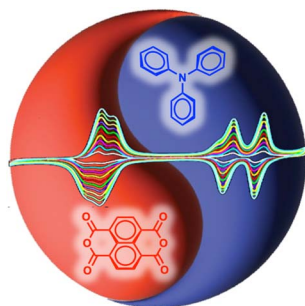
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Preparation of single-atom palladium catalysts with high photocatalytic hydrogen production performance by means of photochemical reactions conducted with frozen precursor solutions

Ruiyao Xu, Beibei Xu, Xiaomeng You, Danni Shao, Guoliang Gao, Fangfang Li, Xue-Lu Wang* and Ye-Feng Yao*

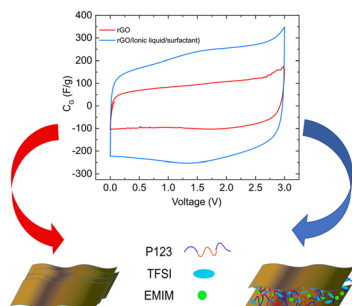
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Redox-active polynaphthalimides as versatile electrode materials for high-voltage, high-rate and long-cycle-life organic Li-ion batteries

Febri Baskoro, Andre Lammiduk Lubis, Hui Qi Wong, Guey-Sheng Liou* and Hung-Ju Yen*

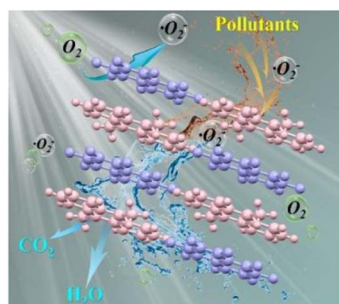
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Electrolyte-mediated assembly of graphene-based supercapacitors using adsorbed ionic liquid/non-ionic surfactant complexes

Sima Lashkari, Manila Ozhukil Valappil, Rajinder Pal and Michael A. Pope*

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Arene-perfluoroarene interactions in molecular cocrystals for enhanced photocatalytic activity

Lingsong Wang, Jingheng Deng, Mengjia Jiang, Chun Zhen, Fei Li, Shuyu Li, Shuming Bai,* Xiaotao Zhang* and Weigang Zhu*

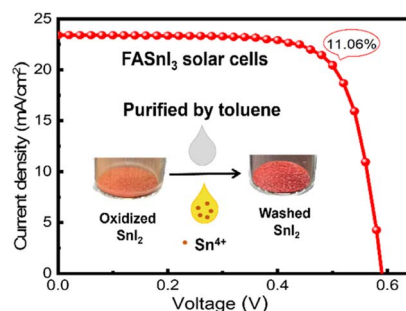


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Enhancing the performance of tin-based perovskite solar cells through solvent purification of tin iodide

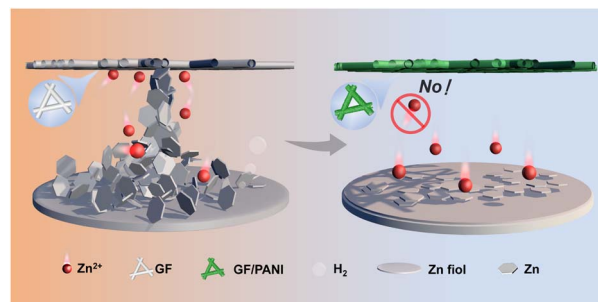
Guojun Zeng, Dexin Pu, Lishuai Huang, Hongling Guan, Shun Zhou, Jin Zhou, Weicheng Shen, Guang Li, Guojia Fang* and Weijun Ke*



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Regulating zinc deposition behaviors by using a functional PANI modification layer on a separator for high performance aqueous zinc-ion batteries

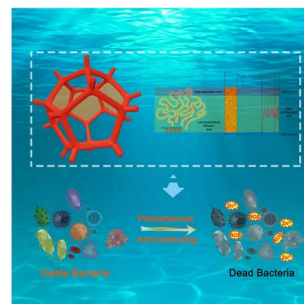
Fangfang Wu, Fukai Du, Pengchao Ruan, Gangfeng Cai, Ye Chen, Xinyu Yin, Lu Ma, Ruilian Yin, Wenhui Shi, Wenxian Liu, Jiang Zhou and Xiehong Cao*



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Biomimetic porous cellular foam with space thermal domains for efficient uranium extraction from seawater

Yachao Xu, Jiahui Zhu,* Hongsen Zhang, Qi Liu, Jingyuan Liu, Rongrong Chen, Jing Yu and Jun Wang*



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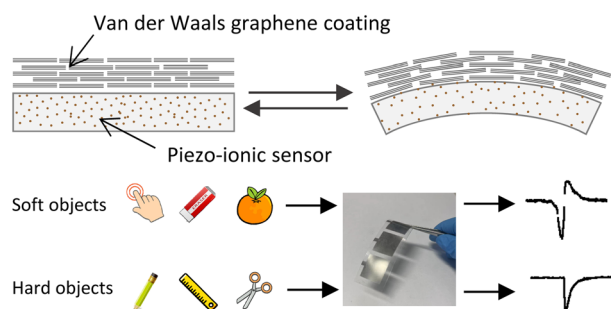
Li-ion and Na-ion intercalation in layered MnO₂ cathodes enabled by using bismuth as a cation pillar

Matthew A. Kim, Eric K. Zimmerer, Zachary T. Piontkowski, Mark A. Rodriguez, Noah B. Schorr, Bryan R. Wygant, John S. Okasinski, Andrew C. Chuang, Timothy N. Lambert and Joshua W. Gallaway*



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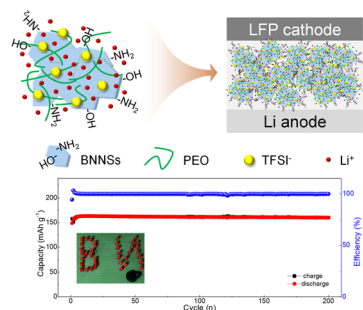
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A conformal van der Waals graphene coating enabled high-performance piezo-ionic sensor for spatial, gesture, and object recognition

Ziqi Li, Andrew Balilonda, Wen Mei, Wenbo Li and Wei Chen*

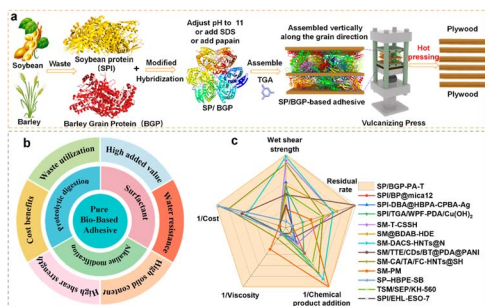
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Highly dispersed and functionalized boron nitride nanosheets contribute to ultra-stable long-life all-solid-state batteries

Jiawei Ji, Hongliang Duan, Zheng Zhou, Chaoze Liu, Dong Wang, Song Yan, Shaobo Yang, Wenjuan Bai, Yanming Xue* and Chengchun Tang*

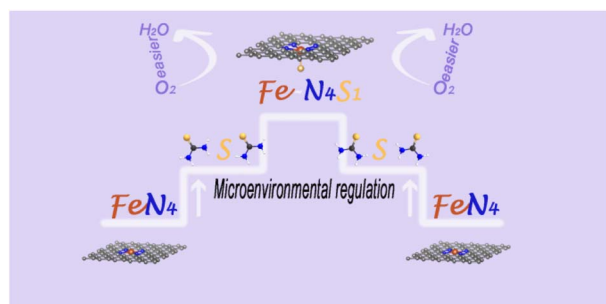
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Barley – a yet un-tapped feedstock for improved vegetable protein-based wood adhesives

Guodong Zeng, Feng Zhu, John Tosin Aladejana, Ying Zhou, Kuang Li, Jing Luo, Xiaona Li, Youming Dong, Kaili Wang and Jianzhang Li*

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Axial modulation of Fe sites realizing high-performance oxygen reduction reaction of FeN₄ catalysts

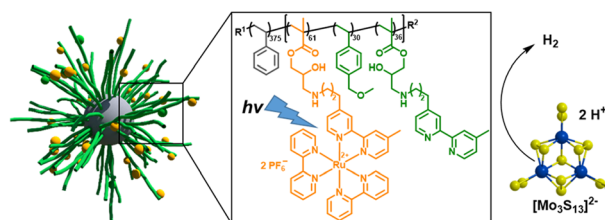
Yu Zhang, Caixia Li,* Jin Li, Xiaoni Liu, Guangjiu Li, Bin Li and Lei Wang*



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Block copolymer micelles as efficient colloidal photosensitizers in the light-driven hydrogen evolution reaction

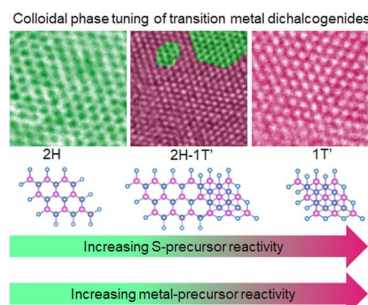
Jonas Eichhorn, Patricia Hofmann, Benedikt Bagemihl, Carsten Streb, Sven Rau and Felix H. Schacher*



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Engineering polymorphs in colloidal metal dichalcogenides: precursor-mediated phase control, molecular insights into crystallisation kinetics and promising electrochemical activity

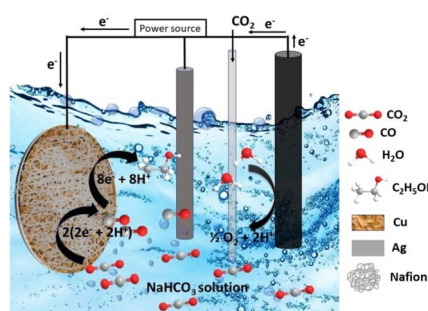
Nilotpal Kapuria, Niraj Nitish Patil, Abinaya Sankaran, Fathima Laffir, Hugh Geaney, Edmond Magner, Micheal Scanlon, Kevin M. Ryan and Shalini Singh*



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Membrane-controlled CO₂ electrocatalysts with switchable C2 product selectivity and high faradaic efficiency for ethanol

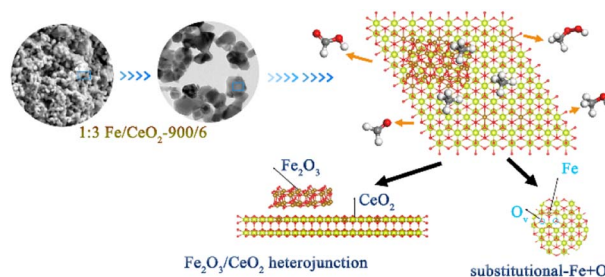
Tania Akter and Christopher J. Barile*



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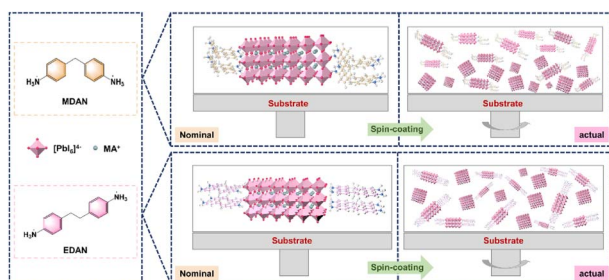
Synergistic effects of Fe-substitutional-doping and a surface close-contact Fe₂O₃/CeO₂ heterojunction in Fe/CeO₂ for enhanced CH₄ photocatalytic conversion

Hailong Tang, Meiling Wang,* Yongqing Ma, Xiao Sun, Min Wang* and Ganhong Zheng



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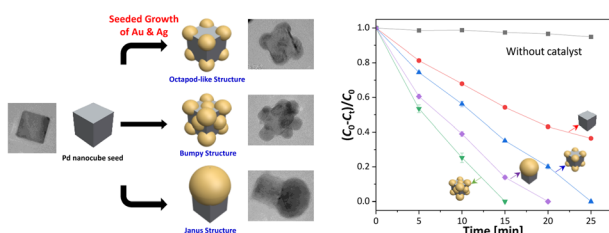
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Favorable morphology and compositional distribution enable efficient and stable quasi-2D Dion–Jacobson perovskite solar cells

Chao Zhou, Yonglei Han, Lei Cheng, Ruijie Ma,^{*} Fei Wang, Shuchen Weng, Guicheng Yu, Fang Lin, Kang Zhou, Hanlin Hu, Xiao Liang, Yongfei Wang,^{*} Haoran Lin^{*} and Gang Li^{*}

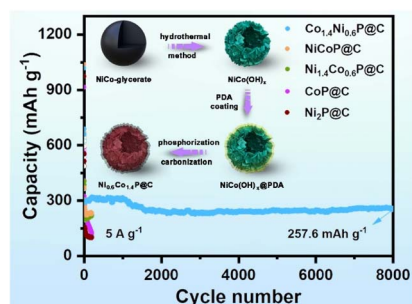
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Synthesis of Pd–AuAg trimetal nanohybrids with controlled heterostructures and their application in the continuous flow catalytic reduction of Cr(VI)

Astrini Pradysti, Hyeon Jin Kim, Woo Jin Hyun and Mun Ho Kim^{*}

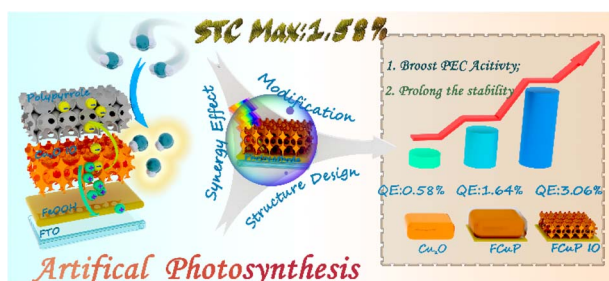
11401



Hierarchical Co_{1.4}Ni_{0.6}P@C hollow nanoflowers assembled from ultrathin nanosheets as an anode material for high-performance lithium-ion batteries

Jinghua Kong, Zhe Cui, Qian Liu,^{*} Mengluan Gao, Wenqing Wang and Rujia Zou^{*}

11411



An effective integrated Cu₂O photocathode to boost photoelectrocatalytic CO₂ conversion

Yongjian Jia,^{*} Zenghua Tian and Jingyu Gao



A three-in-one C₆₀-integrated PEO-based solid polymer electrolyte enables superior all-solid-state lithium–sulfur batteries

**From atomic modification to structure engineering:
layered NiCo–MnO₂ with ultrafast kinetics and
optimized stress distribution for aqueous zinc ion
storage**

In-Bi bimetallic nanofibers with controllable crystal facets for high-rate electrochemical reduction of CO₂ to formate

Maximized InBi (2 0 0) facet

FE_{HCOOH} 96.89%

CO₂ reduction cycle:

- CO₂ + 2H⁺ + 2e⁻ → HCOOH
- HCOOH → CO₂ + 2H⁺ + 2e⁻

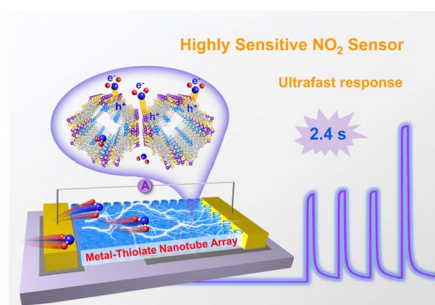
Reaction conditions:

- CO₂ + H⁺ + e⁻ → *CO₂ + H⁺ + e⁻
- *CO₂ + H⁺ + e⁻ → *OCHO + H⁺ + e⁻
- *OCHO + H⁺ + e⁻ → *HCOOH + H⁺ + e⁻
- *HCOOH → CO₂ + H⁺ + e⁻

Regulating charge carrier recombination in $\text{Cu}_2\text{ZnSn}(\text{S},\text{Se})_4$ solar cells *via* cesium treatment: bulk and interface effects

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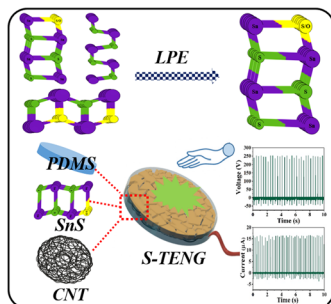
11463



Secondary interaction-manipulated metal–organic crystalline nanotube array for gas sensing

Jieying Hu, Jian-Ze Xiao, Wei-Ming Liao,* Shoujie Liu, Jianming Li, Yonghe He, Lin Yu, Qiaohong Li, Gang Xu* and Jun He*

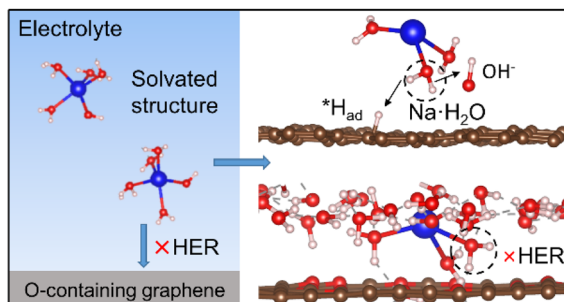
11471



Fabrication of a single-crystalline SnS-based piezo-assisted efficient single-electrode triboelectric nanogenerator for energy harvesting and sensing applications

Wonjae Shin, Sarbaranjan Paria, Subhadip Mondal, Gi-Bbeum Lee, Haeran Kim, Changsin Park and Changwoon Nah*

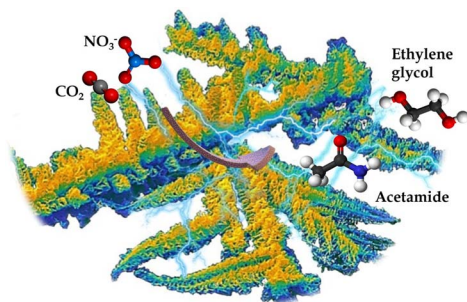
11485



Understanding the origin of the wide voltage window of microporous carbon electrodes with oxygen-containing defects by modulating surface chemistry

Yifeng Zhang, Hui Huang, Jie Tian, Xiaowei Ning, Chengwei Li, Zeng Fan* and Lujun Pan*

11495



Porifera-like nickel nanodendrite for the efficient electrosynthesis of C–N compounds from carbon dioxide and nitrate anions

Shivaraj B. Patil, Chang-Ru Lee, Swathi M. Gowdru, Chun-Chih Chang,* Shu-Ting Chang, Yi-Chia Chen, Kuan-Chang Wu, Chia-Che Chang, Shu-Chih Haw and Di-Yan Wang*

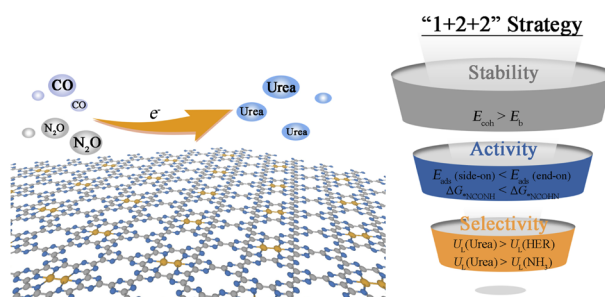


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11507

Efficient urea formation from N_2O + CO on dual-atom catalysts $\text{TM}_2/\text{g-CN}$

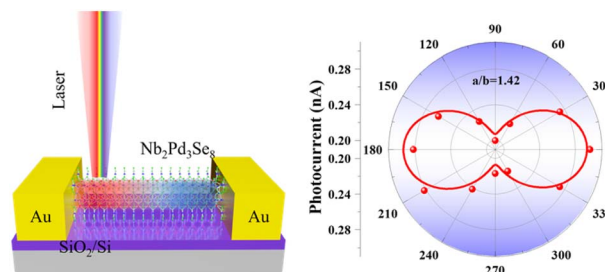
Zebin Ren, Xinxin Wang, Shuhua Wang, Haona Zhang, Baibiao Huang, Ying Dai* and Wei Wei*



11517

Self-powered, ultra-broadband, and polarization-sensitive photodetectors based on 1D van der Waals layered material $\text{Nb}_2\text{Pd}_3\text{Se}_8$

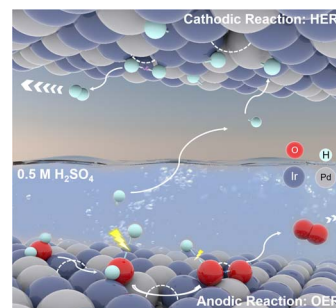
Qinggang Qin, Wenshuai Gao,* Hanlin Zhang, Jiawang Chen, Yong Yan, Kejia Zhu, Mingsheng Long, Gang Li, Shiqi Yin, Yuchen Du, Hui Zhang, Qilong Wang, Zihan Wang, Ying Li, Shaotian Wang and Liang Li*



11526

Nanoporous PdIr alloy for high-efficiency and durable water splitting in acidic media

Jinyue Shi, Cheng-wei Kao, Jiao Lan, Kang Jiang, Ming Peng, Min Luo,* Ying-Rui Lu,* Shiguo Zhang* and Yongwen Tan*



CORRECTION

11534

Correction: Ultrahigh thermal conductive polymer composites by the 3D printing induced vertical alignment of carbon fiber

Zhenbang Zhang, Maohua Li, Yandong Wang, Wen Dai, Linhong Li, Yapeng Chen, Xiangdong Kong, Kang Xu, Rongjie Yang, Ping Gong, Jianxiang Zhang, Tao Cai, Cheng-Te Lin, Kazuhito Nishimura, Hao Nan Li,* Nan Jiang* and Jinhong Yu*

