

Journal of Materials Chemistry A

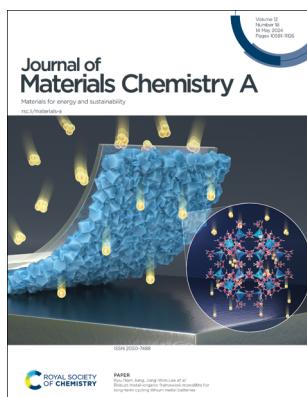
Materials for energy and sustainability

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Cover

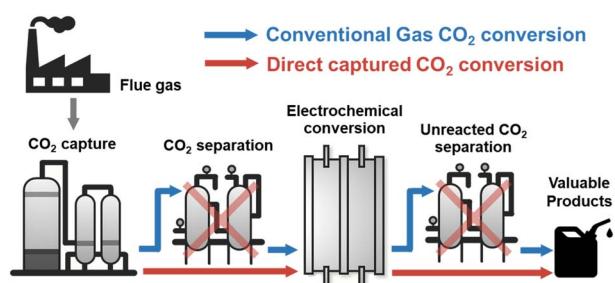
See Kyu-Nam Jung,
Jong-Won Lee et al.,
pp. 10686–10694. Image
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REVIEWS

10597

Advances in the direct electro-conversion of captured CO₂ into valuable products

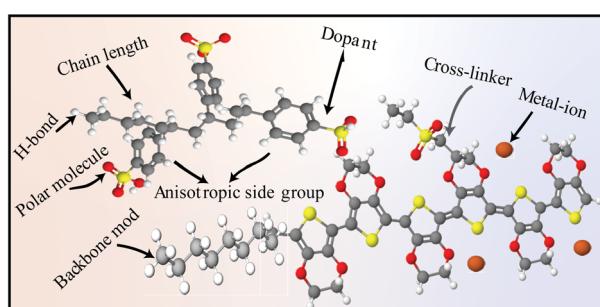
Kezia Langie, Gwangsu Bak, Ung Lee, Dong Ki Lee, Chan Woo Lee, Yun Jeong Hwang* and Da Hye Won*



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Molecular perspective and engineering of thermal transport and thermoelectricity in polymers

Sai C. Yelishala, Connor Murphy and Longji Cui*





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Fundamental questions
Elemental answers

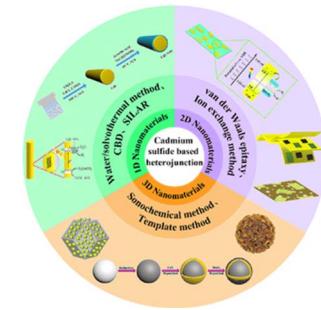
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REVIEWS

10659

Recent advances in CdS heterojunctions: morphology, synthesis, performances and prospects

Wenchao Wang, Jing Xue* and Jixian Liu*

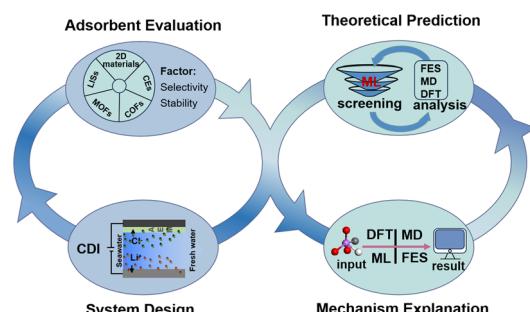


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Insights into adsorbent materials for lithium extraction by capacitive deionization: reconceptualizing the role of materials informatics

Liang Bai, Ruibo Xu, Wenjie Wu,* Chenchen Ma, Sheng Li, Huimin Gao, Dan Luo, Botong Liu, Saad Melhi, Yadong Zhao, Zhong Liu,* Yusuke Yamauchi* and Xingtao Xu*

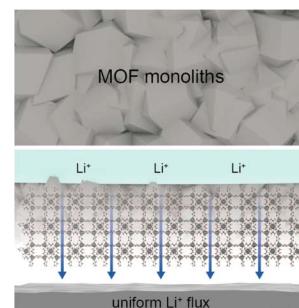


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Robust metal–organic framework monoliths for long-term cycling lithium metal batteries

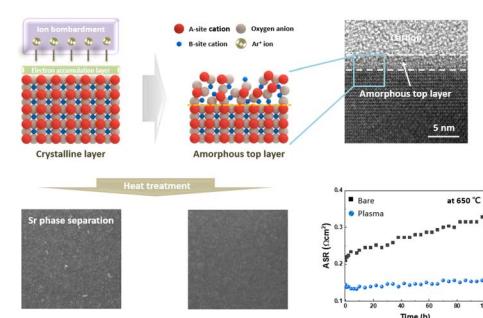
Chaejeong Kim, Wooyoung Jeong, Hong Rim Shin, Kyu-Nam Jung* and Jong-Won Lee*



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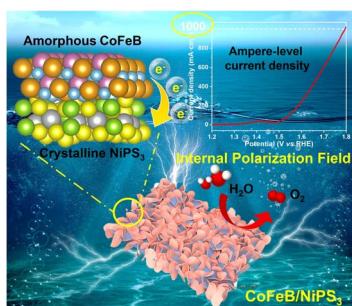
Enhanced catalytic activity and stability of SOFC electrodes through plasma-driven surface modification

Hyunduck Shin, Jongsu Seo, SungHyun Jeon, Seung Jin Jeong, Jinwook Kim, Siwon Lee, Jeong Jin Lee and WooChul Jung*



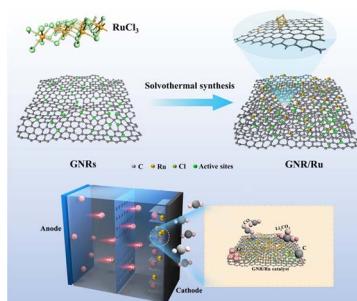
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Amorphous–crystalline CoFeB/NiPS₃ vertical heterostructure with a built-in electric field for robust ampere-level water oxidation

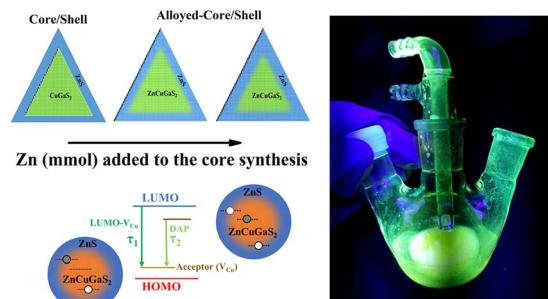
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Graphene nanoribbons/Ru as efficient cathodic catalysts for high-performance rechargeable Li–CO₂ batteries

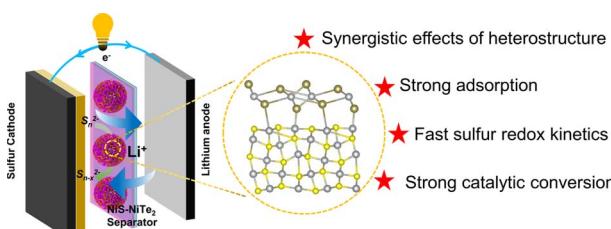
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Zn alloying strategy to improve the photoluminescence of CuGaS₂/ZnS core/shell quantum dots

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Promoting overall sulfur redox kinetics for Li–S batteries *via* interfacial synergy in a NiS–NiTe₂ heterostructure-modified separator

Jie Xie, Feng Cheng, Ruoyu Chen,* Zhong Jin* and Lin Sun*

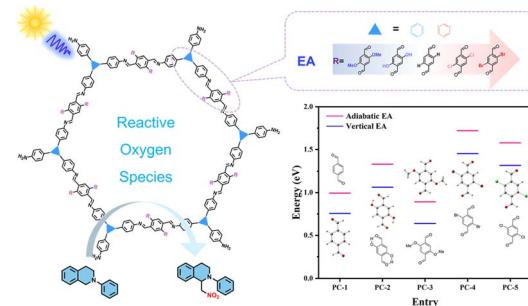


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Functional group substitution strongly influences the performances of covalent organic frameworks in the photocatalytic metal-free oxidase reaction

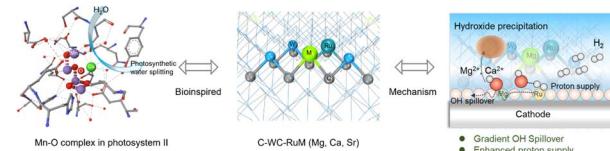
Huiying Chen, Qinghai Zhou, Jinyang Hai, Mingxiang Zhu* and Fang Zhang*



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Alkaline-earth-metal regulated metal carbides with bioinspired gradient OH spillover for efficient and long-lasting direct seawater electrolysis

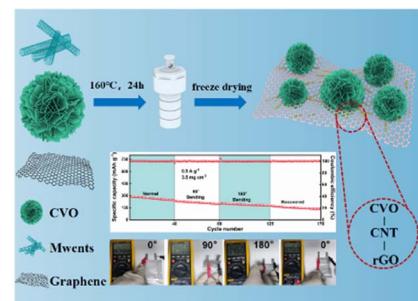
Huijuan Wu, Zhenyang Zhao, Mao Wang,* Weiqiong Zheng, Yiming Zhang, Yinghan Wang, Tian Ma, Zhiyuan Zeng, Chong Cheng* and Shuang Li*



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Foldable chromium vanadate cathodes for high-performance aqueous zinc ion batteries

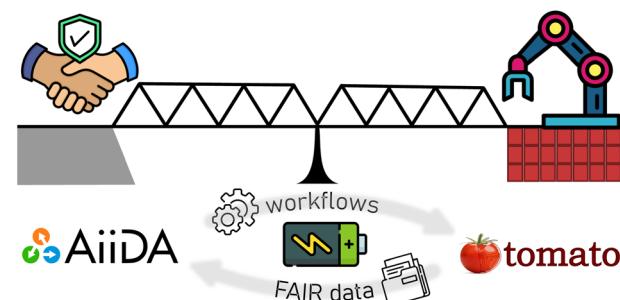
Peiqi Shi, Meng Huang, Lianmeng Cui, Bomian Zhang, Lei Zhang, Qinyou An* and Liqiang Mai*



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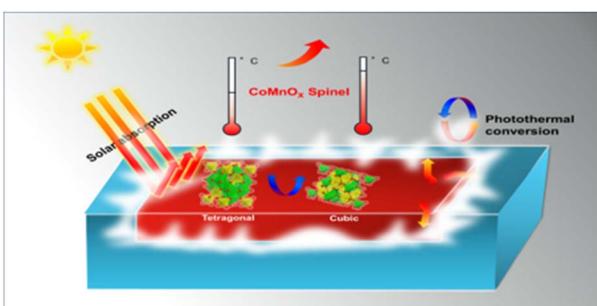
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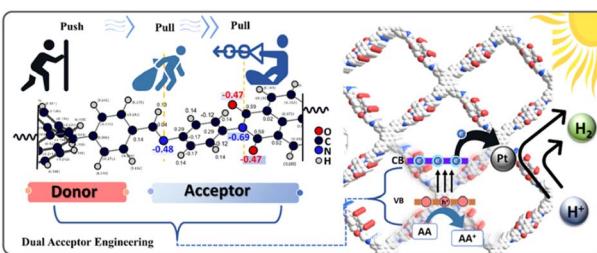
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Crystal phase-dependent optical properties of CoMn-based spinel oxides for solar thermal conversion

Huilan Ma, Shengyang Wang, Qi Ye, Longfei Guo, Entao Wang, Jun Li and Can Li*

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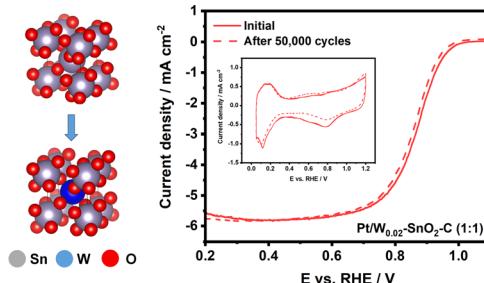


Push–pull–pull interactions of 2D imide–imine-based covalent organic framework to promote charge separation in photocatalytic hydrogen production

Islam M. A. Mekhemer, Mohamed M. Elsenety, Ahmed M. Elewa, Khanh Do Gia Huynh, Maha Mohamed Samy, Mohamed Gamal Mohamed, Dalia M. Dorrah, Dung Chau Kim Hoang, Ahmed Fouad Musa, Shiao-Wei Kuo and Ho-Hsiu Chou*

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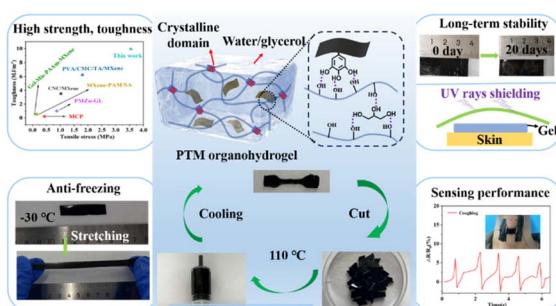
W doped SnO₂ – High stability and water retention support for ORR catalyst



Significantly improved stability and water retention for Pt supported on W-doped SnO₂ to catalyse the oxygen reduction reaction in proton exchange membrane fuel cells

Wei Cao, Yiyang Mao, Bin Hu, Yongqing Yang, Wei Zhou* and Zongping Shao*

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High-strength, ultra-tough and recyclable MXene-composited organohydrogels with integrated multiple functions for wearable sensors

Zhihui Qin,* Yunfeng Li, Xiaoming Wang, Ying Liu, Na Li, Qili Xu, Lei Ye and Tifeng Jiao*

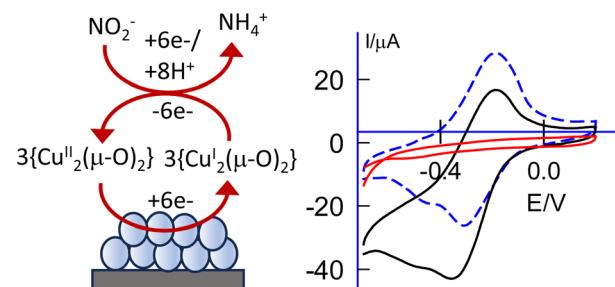


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A (μ -oxo) dicopper complex anchoring graphitized mesoporous carbon surface prepared by an *in situ* electrochemical method for bioinspired electrocatalytic reduction of nitrite to ammonia and sensing

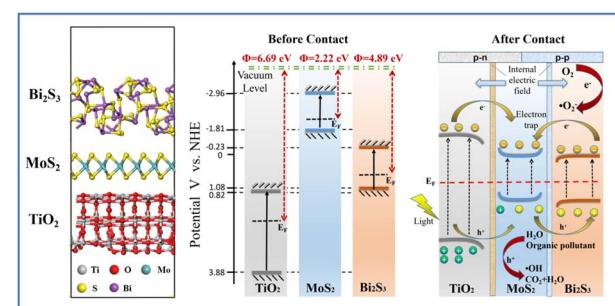
Sairaman Saikrithika, Natarajan Saravanan, M. Gabriela Almeida and Annamalai Senthil Kumar*



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Improving built-in electric fields for effective photocatalytic activity in the rationally designed electron transfer pathway of TiO₂@MoS₂/Bi₂S₃

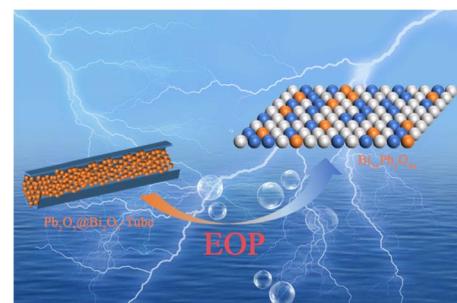
Jianyu Gong,* Yihang Zhang, Ting Yue and Yao Lu



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Regulation of the microenvironment of Pb₂O₃@Bi₂O₃-tube by structural reconstruction for boosting the electrochemical ozone production performance

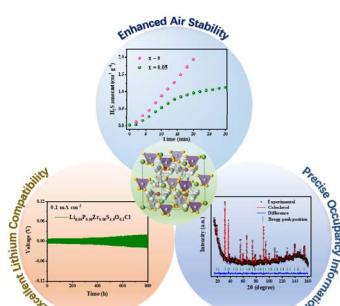
Huajie Shi, Xiaosa Wang, Xiaoge Peng, Mingzhe Xue, Yufeng Xue, Fengying Gao, Xing Zhong* and Jianguo Wang*



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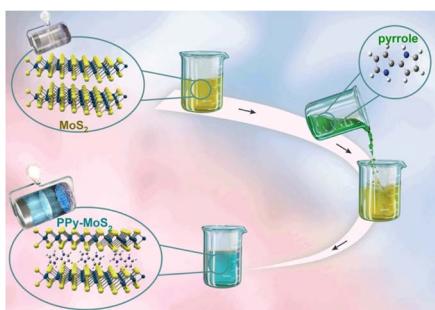
Li-argyrodite solid-state electrolytes with lithium compatibility and air stability for all-solid-state batteries

Daoxi Wang, Haiting Shi, Wenhui Cui, Hao Li, Jiarong Niu, Shuo Wang and Zhiwei Xu*



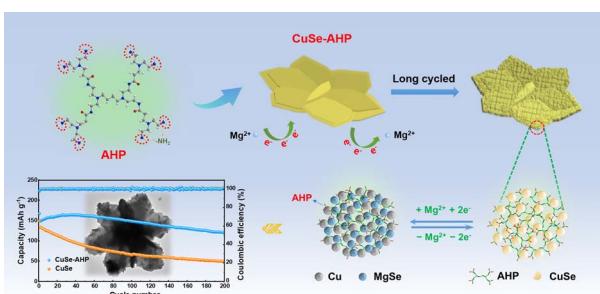
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Enhancing the performance and cyclability of MoS₂ cathodes with interspace layer engineering using polypyrrole

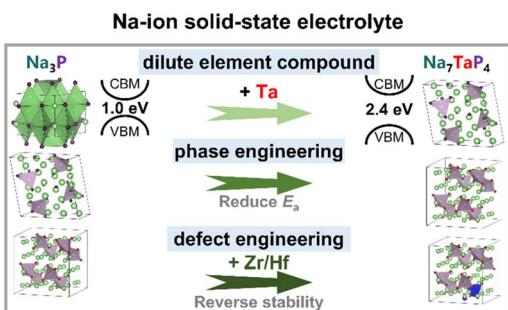
Nima Mikaeili Chahartagh, Ali Molaei Aghdam,* Shahriar Namvar and Mehryar Jafari

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Copper selenide/amino hyperbranched polymer as an organic/inorganic hybrid composite cathode for rechargeable magnesium batteries

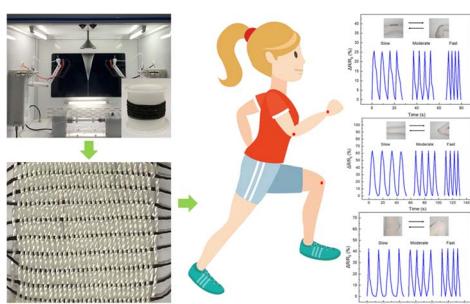
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Highly stretchable GR/TPU strain sensor based on one-step electrospun fibrous yarns for wearable devices

Lei Xing, Linze Li, Yu Liu, Junyi Ren, Guilei Guo, Yifan Chen, Yu Zheng* and Bin Sun*

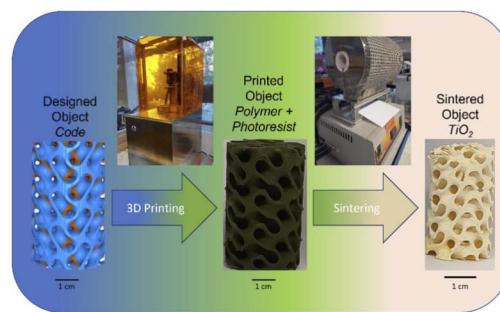


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Mixed-phase titania foams via 3D-printing for pharmaceutical degradation

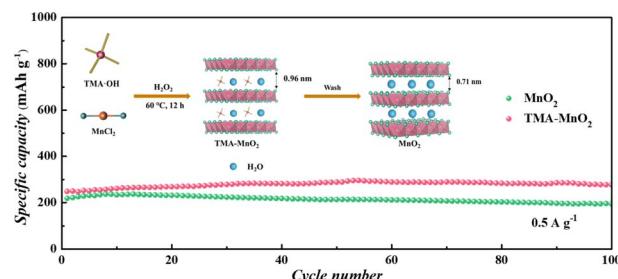
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Ultra-low diffusion barrier tetramethyl ammonium cation-intercalated layered MnO_2 for high-performance aqueous zinc-ion batteries

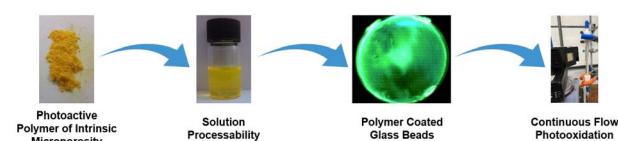
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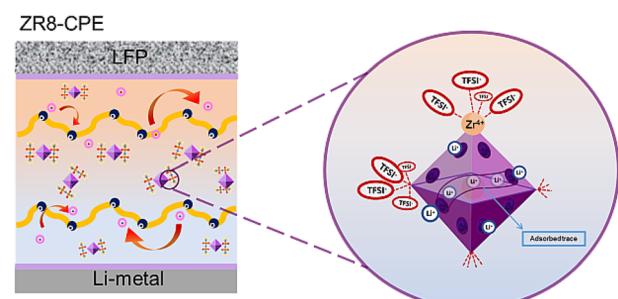
Dominic Taylor, John M. Tobin, Leonardo Amicosante, Andrew W. Prentice, Martin J. Paterson, Scott J. Dalgarno,* Neil B. McKeown* and Filipe Vilela*



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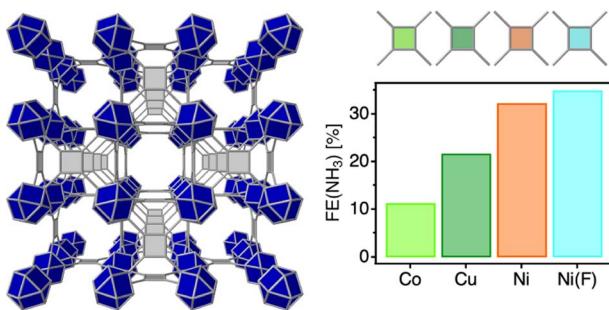
Achieving high durability in all-solid-state lithium metal batteries using metal–organic framework solid polymer electrolytes

Suin Kim, Hasan Jamal, Firoz Khan, Amir Al-Ahmed, Mahmoud M. Abdelnaby, Atif Al-Zahrani, Sang-Eun Chun* and Jae Hyun Kim*



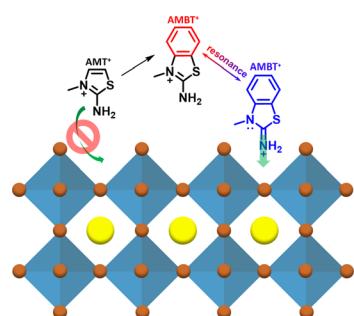
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**Tailoring the efficiency of porphyrin molecular frameworks for the electroactivation of molecular N₂**

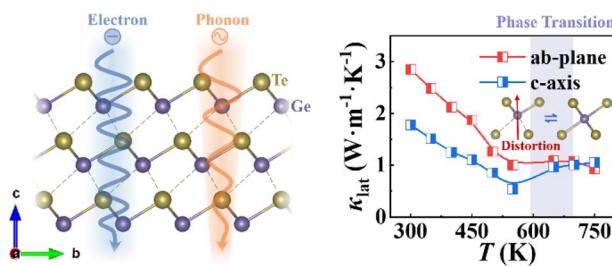
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**A resonance spacer cation-based heterostructure enables efficient and stable perovskite solar cells**

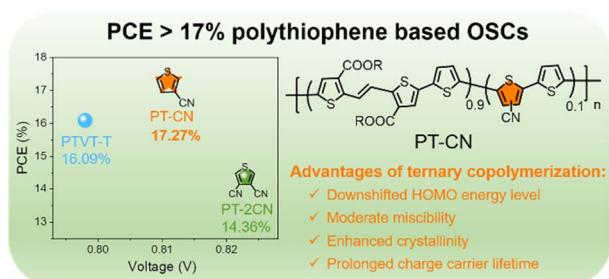
Zijian Deng, Xichuan Yang,* Qingning Hou, Miao Jiang, Huhu Liang, Shukang Li, Mengde Zhai, Haoxin Wang, Ming Cheng,* Li Zhang and Licheng Sun

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**Anisotropic thermoelectric properties of GeTe single crystals**

Hanbing Chen, Qingfeng Song,* Ziming Zhang, Shun Wan, Lidong Chen and Shengqiang Bai*

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**Ternary polythiophene enables over 17% efficiency organic solar cells**

Qi Ai, Zhihui Lin, Xiangxi Wu, Yufan Zhu, Ke Wang, Xiaojun Li, Jianqi Zhang, Dan He, Yongfang Li and Fuwen Zhao*

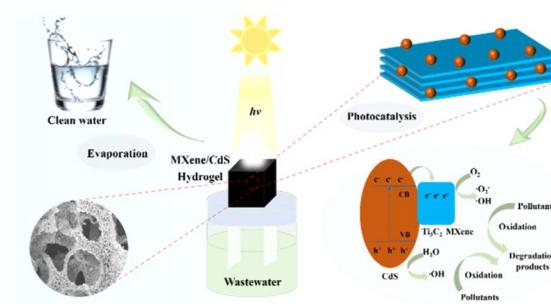


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MXene/CdS photothermal–photocatalytic hydrogels for efficient solar water evaporation and synergistic degradation of VOC

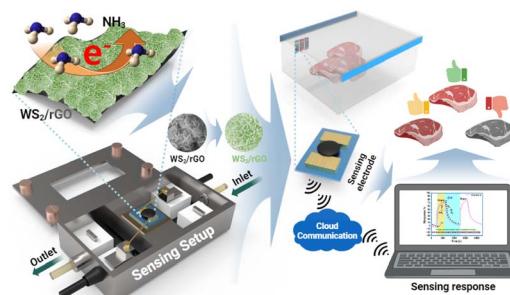
Zhen-Yu Wang, Lei Xu, Cai-Hua Liu, Sheng-Jie Han, Ming-Lai Fu* and Baoling Yuan*



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Live-tracking of beef freshness by sub-ppb level ammonia detection using WS₂/rGO nanoflakes incorporating edge site-enriched acidic sulfur

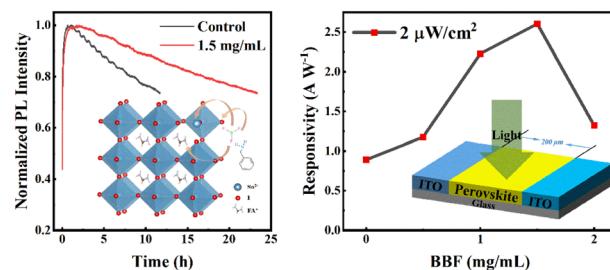
Sonam Sonwal, Kugalur Shanmugam Ranjith, Soobin Han, Young-Kyu Han,* Mi-Hwa Oh* and Yun Suk Huh*



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Photoelectric performance enhancement of Sn-based perovskites by benzylamine boron trifluoride passivation

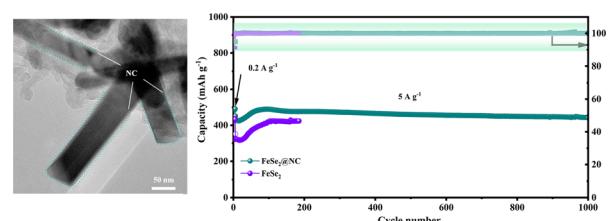
Wenhai Zheng, Xiao Peng, Wenjing Zhai, Lin Huang, Peizhuo Chen, Penghui Shi, Xiaohui Zhou, Jianguo Wan, Zhibo Yan* and J.-M. Liu



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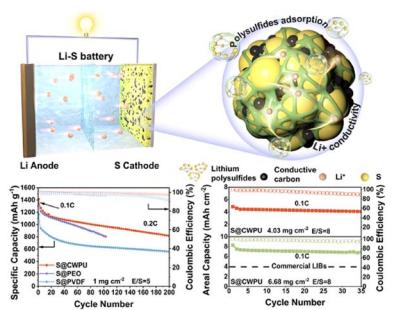
FeSe₂ micro-nanorods confined in N-doped carbon as an advanced anode for fast sodium ion storage

Shilin Zhou, Rui Jiang, Shige Wang, Lu Yu, Xiaoyan Shi, Lianyi Shao,* Zhipeng Sun* and Lifeng Hang*



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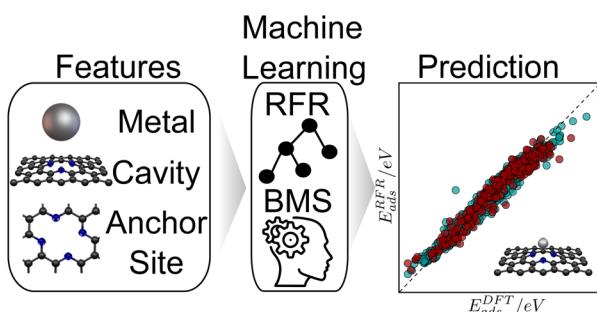
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An interweaving 3D ion-conductive network binder for high-loading and lean-electrolyte lithium–sulfur batteries

Jing Chen, Xin Geng, Chenyang Wang, Xu Hou, Hailong Wang, Qinlang Rong, Nuo Sun, Wei Liu, Linyu Hu, Xiaowei Fu, Jingxin Lei, Zhimeng Liu* and Xin He*

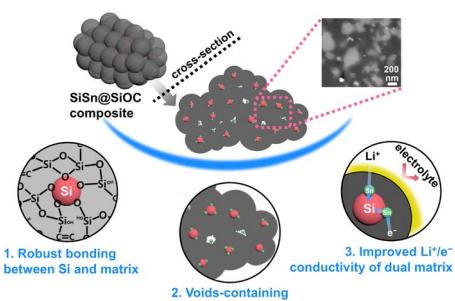
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A generalized model for estimating adsorption energies of single atoms on doped carbon materials

Maria G. Minotaki, Julian Geiger, Andrea Ruiz-Ferrando, Albert Sabadell-Rendón* and Núria López*

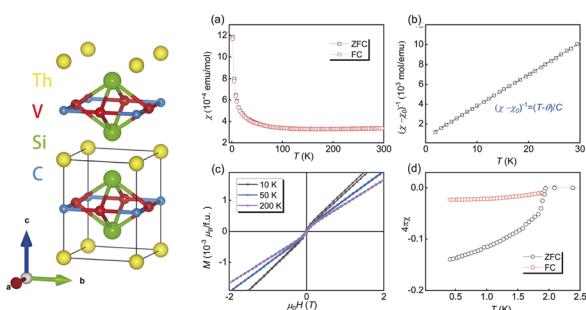
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Covalent-assisted seeding of Si nanoparticles into a dual-matrix design toward advanced Si-based Li-ion batteries

Kwanghyun Do, Changyong Park, Jeonguk Hwang, Sucheol Kim, Yeju Jung, Se Hun Lee, Hee-Dae Lim* and Heejoon Ahn*

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Synthesis, crystal structure and physical properties of ThV₂Si₂C containing V₂C square lattices

Yusen Xiao, Yongliang Chen,* Yong Li, Zhiwei Wen, Yajing Cui, Tao Jia, Shulong Li, Baizhuo Li, Kaixin Wu, Qingchen Duan, Hao Ni, Shaohua Liu, Cao Wang and Yong Zhao*

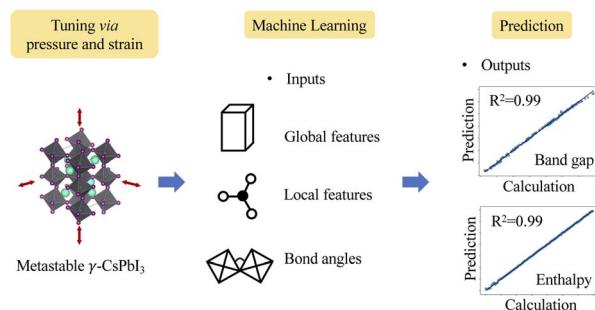


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Machine learning-empowered study of metastable $\gamma\text{-CsPbI}_3$ under pressure and strain

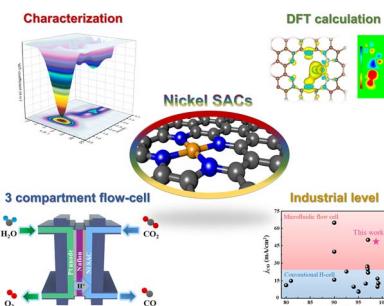
Minkyung Han,* Cheng Peng, Ruyi Song, Feng Ke, Youssef S. G. Nashed, Wendy L. Mao, Chunjing Jia* and Yu Lin*



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A MOF-derived pyrrolic N-stabilized Ni single atom catalyst for selective electrochemical reduction of CO_2 to CO at high current density

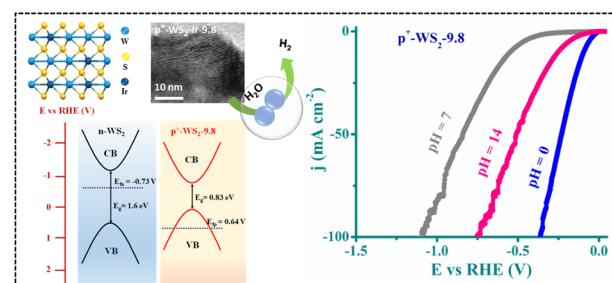
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Efficient hydrogen evolution from degenerate-doped p-type WS_2 electrocatalysts over a wide pH range

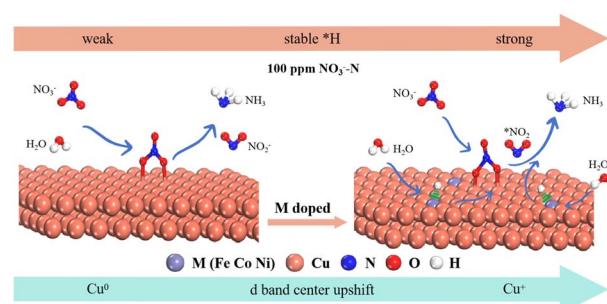
Pamula Siva and Kuraganti Vasu*



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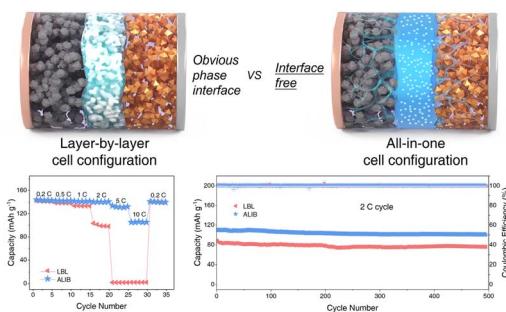
Structure identification and mechanism exploration of ultralow-content of metal doped Cu for efficient electrochemical production of ammonia in dilute nitrate concentrations

Jiayu Zhan, Lu-Hua Zhang, Yaohua Hong and Fengshou Yu*



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A new paradigm for battery structural design towards interface-free, all-in-one cell configuration

Weixing Xiong, Xueying Zheng, Yuchen Li, Zhang Cao, Jiayang Sun, Yan Wang, Linze Lv, Qunting Qu, Wei Luo* and Honghe Zheng*

