

# Energy & Environmental Science

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### Cover

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### Inside cover

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Yang Li et al.,  
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2025, **18**, 3432.

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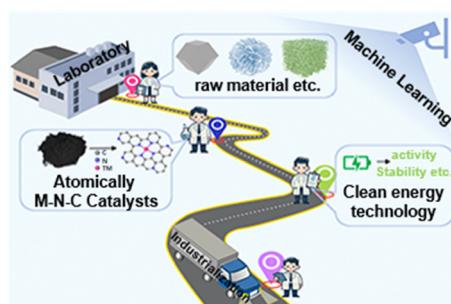
Bo Wang, Chengbing Wang,\* Yang Li,\* Jingjing Jin,  
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### From lab-scale to industrialization: atomically M–N–C catalysts for the oxygen reduction reaction

Tianyou Zhao, Jianjiang Wang, Yanrui Wei,  
Zechao Zhuang, Yuhai Dou, Jiarui Yang,\*  
Wen-Hao Li\* and Dingsheng Wang\*



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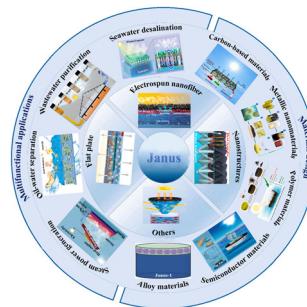
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## REVIEWS

3502

**Janus solar evaporators: a review of innovative technologies and diverse applications**

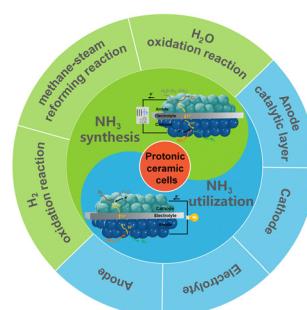
Boli Nie, Yanming Meng, Simeng Niu, Longjie Gong, Yufeng Chen, Liujun Guo, Xiang Li, Yan-Chao Wu, Hui-Jing Li\* and Weiwei Zhang\*



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**Electricity-to-ammonia interconversion in protonic ceramic cells: advances, challenges and perspectives**

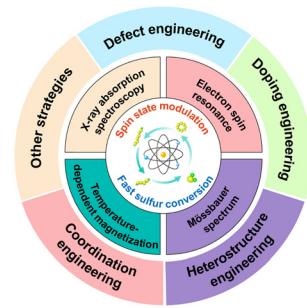
Mingzhuang Liang, Jinwook Kim, Xiaomin Xu, Hainan Sun, Yufei Song, SungHyun Jeon, Tae Ho Shin,\* Zongping Shao\* and WooChul Jung\*



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**Engineering spin states of metal sites toward advanced lithium–sulfur batteries**

Xiaomin Zhang, Xiaoyu Zhang,\* Xingbo Wang, Guoliang Cui, Hongge Pan and Wenping Sun\*



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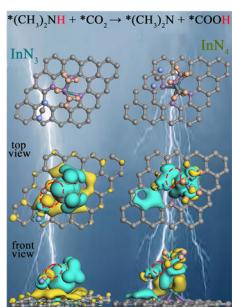
**Eutectic electrolytes: a new platform for high-safety batteries**

Zheng Liu, Fan Feng, Wanchang Feng, Guanwen Wang, Bin Qi, Min Gong, Fan Zhang\* and Huan Pang\*



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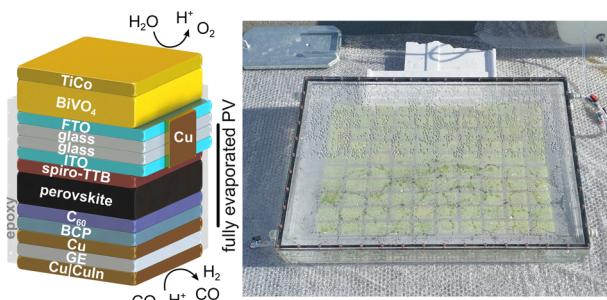
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### Boosting the reduction of $\text{CO}_2$ and dimethylamine for C–N bonding to synthesize DMF via modulating the electronic structures of indium single atoms

Jingui Zheng, Shaohan Xu, Lingzhi Sun, Xun Pan, Qihao Xie and Guohua Zhao\*

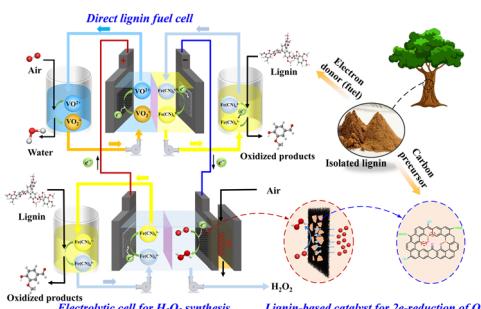
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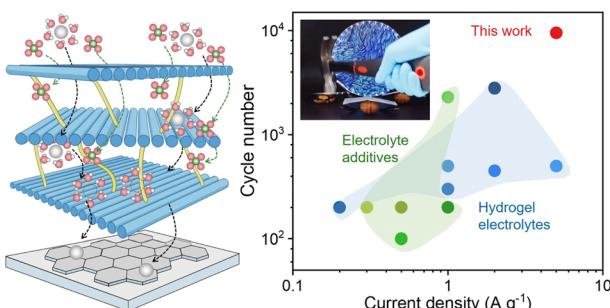
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Yongrong Li, Denghao Ouyang, Xi Liu, Yichen Zhang, Zhiqiang Niu, J. Y. Zhu, Xuejun Pan and Xuebing Zhao\*

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### Multi-stage collaborative design of hierarchical twisted hydrogel electrolytes for aqueous zinc-ion batteries with high capacity, ultralong stability, and mechanical robustness

Weiyan Zhu, Zhouyue Lei\* and Peiyi Wu\*

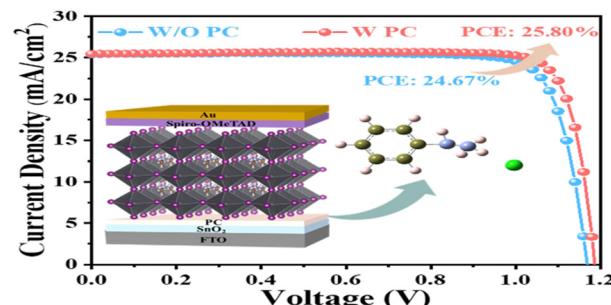


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**Buried interface modification for high performance and stable perovskite solar cells**

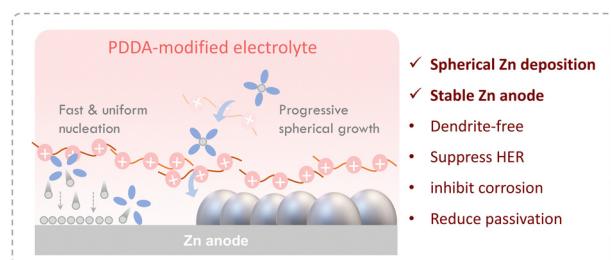
Yang Cao, Li Yang, Nan Yan, Lanxiang Meng, Xin Chen, Jiafan Zhang, Danyang Qi, Jiacheng Pi, Nan Li, Xiaolong Feng, Chuang Ma, Fengwei Xiao, Guangtao Zhao, Shuwen Tan, Xiaoyan Liu, Yucheng Liu, Kui Zhao, Shengzhong (Frank) Liu\* and Jiangshan Feng\*



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**Densely packed spherical zinc deposition by a cation buffer strategy led to high-rate alkaline zinc batteries with lean electrolytes**

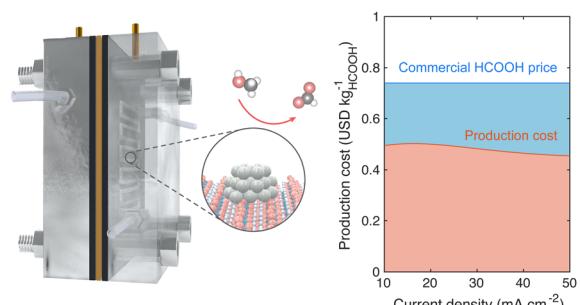
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**Industrially viable formate production with 50% lower CO<sub>2</sub> emissions**

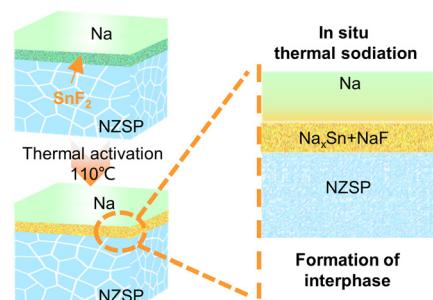
Fanxu Meng, Zihan Shen, Xinlong Lin, Pengfei Song, Tianze Wu, Shibo Xi, Chao Wu, Zhenhui Ma, Daniel Mandler\* and Zhichuan J. Xu\*



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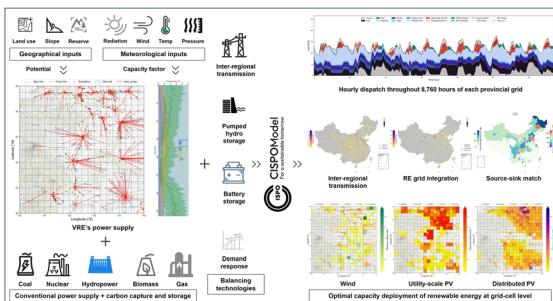
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Gaofeng Du, Shuhao Wang, Zhaoming Tong, Xinyu Ji, Xinqi Wei, Quanbin Zha, Tianyou Zhai and Huiqiao Li\*



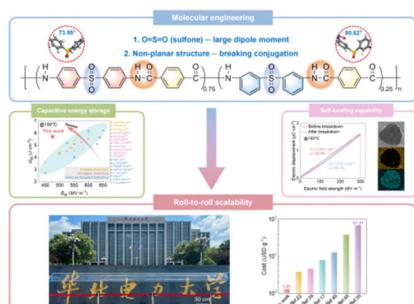
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**Integrated modeling for the transition pathway of China's power system**

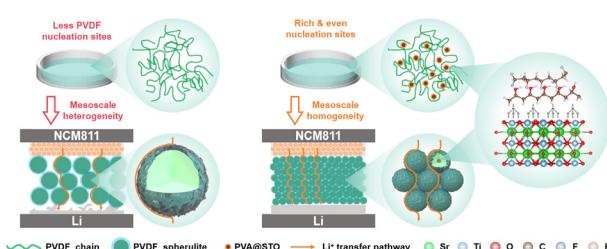
Ziheng Zhu, Da Zhang,\* Xiaoye Zhang\* and Xiliang Zhang\*

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**Aramid dielectric co-polymer: from molecular engineering to roll-to-roll scalability for high-temperature capacitive energy storage**

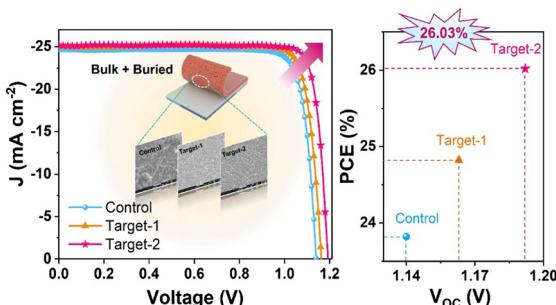
Rui Yang, Ding Ai, Sidi Fan,\* Wenqi Zhang, Xiao Yang, Fangcheng Lv, Yonghong Cheng and Xiang Yu\*

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Zonglong Song, Yu Zou, Yuping Gao, Xingbang Gao, Liu Yang, Hang Liu, Yuting Ma, Rui Wang, Ziyang Hu, Yongsheng Chen, Baomin Xu\* and Yongsheng Liu\*

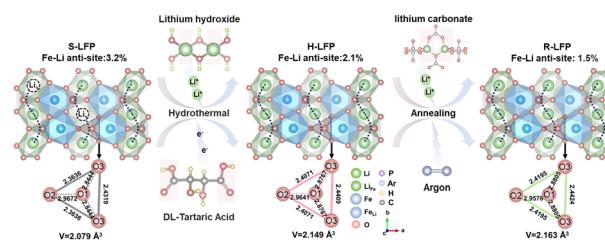


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**Restoration of Li<sup>+</sup> pathways in the [010] direction during direct regeneration for spent LiFePO<sub>4</sub>**

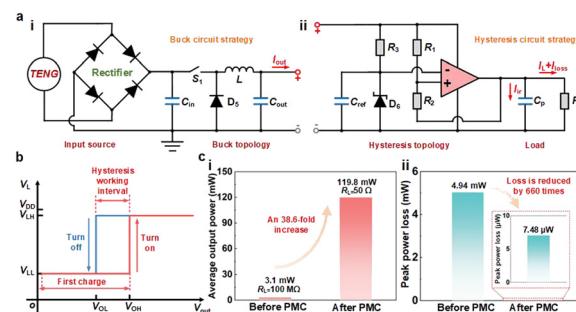
Shuaipeng Hao, Yuelin Lv, Yi Zhang, Shuaiwei Liu, Zhouliang Tan, Wei Liu, Yuanguang Xia, Wen Yin, Yaqi Liao, Haijin Ji, Yuelin Kong, Yudi Shao, Yunhui Huang\* and Lixia Yuan\*



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**A universal self-triggered passive management strategy for enhancing the output power of triboelectric nanogenerators**

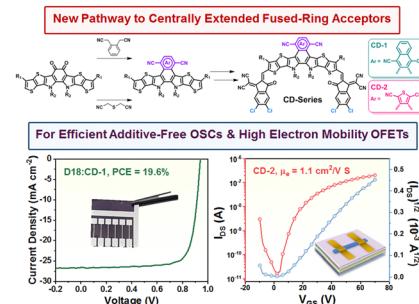
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**"Head surgery" of polycyclic *o*-quinones with cyanated aromatic rings towards high electron mobility acceptors enables 19.6% efficiency in additive-free binary organic solar cells**

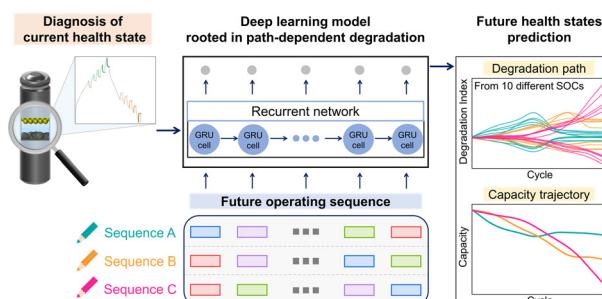
Tainan Duan, Jia Wang, Xiaochan Zuo, Yanyi Zhong, Yuhong Long, Peiran Wang, Kaihuai Tu, Cheng Zhong, Jiangbin Zhang, Oleg A. Rakitin, Zhaoyang Yao, Xiangjian Wan, Yan Zhao,\* Bin Kan\* and Yongsheng Chen\*



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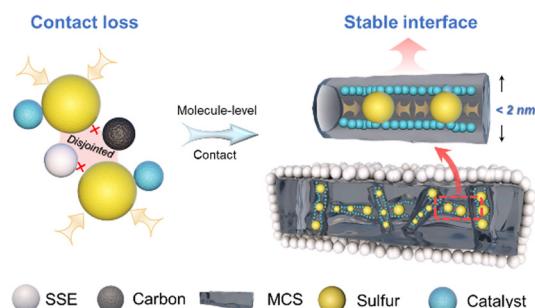
**Degradation path prediction of lithium-ion batteries under dynamic operating sequences**

Inwoo Kim, Hyunjae Kim, Seongha An, Jihoon Oh, Minsoo Kim and Jang Wook Choi\*



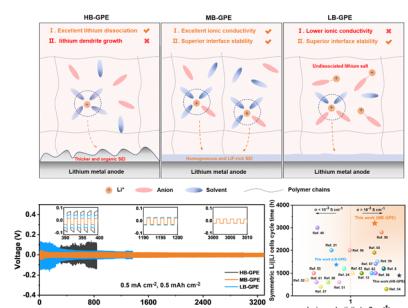
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**Integrating solid interfaces for catalysis in all-solid-state lithium–sulfur batteries**

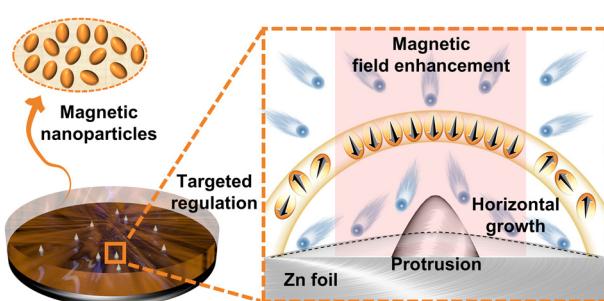
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**Moderate Li<sup>+</sup>-solvent binding for gel polymer electrolytes with stable cycling toward lithium metal batteries**

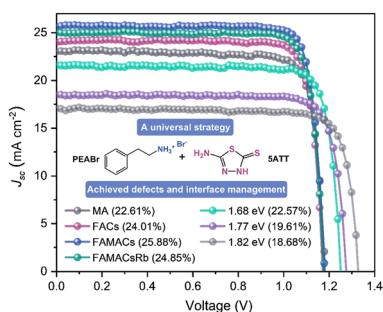
Shaojie Zhang, Zhongpeng Li, Yixin Zhang, Xuanpeng Wang, Peiyang Dong, Saibei Lei, Weihao Zeng,\* Juan Wang, Xiaobin Liao,\* Xingye Chen, Dongqi Li and Shichun Mu\*

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**Targeted deflection of Zn<sup>2+</sup> migration trajectory using the piezomagnetic effect to enable horizontal Zn deposition**

Chenming Zhou, Zhezhong Zhang, Mu Zhang, Xudong Sun,\* Jun Zhang, Gang Huang\* and Zhaolin Na\*

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**A universal strategy for defects and interface management enables highly efficient and stable inverted perovskite solar cells**

Wenwu Zhou, Yunhe Cai, Shuo Wan, Yi Li, Xiaoying Xiong, Fangcong Zhang, Huiting Fu and Qingdong Zheng\*

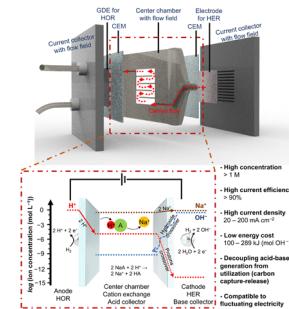


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## Electrochemical acid–base generators for decoupled carbon management

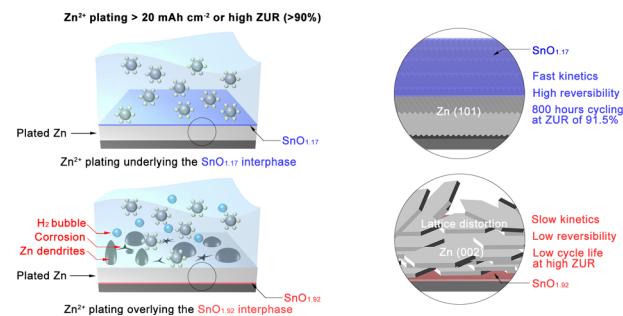
Dawei Xi,\* Zheng Yang, Michael S. Emanuel, Panlin Zhao and Michael J. Aziz\*



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Yuxuan Zhang, Minyoung Kim, Dong Hun Lee, Fei Qin, Han-Wook Song, Chung Soo Kim, Jeongmin Park, Chohee Kim, Fang Lian and Sunghwan Lee\*



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Benjamin K. Sovacool,\* Dylan Furszyfer Del Rio, Kyle Herman, Marfuga Iskandarova, Joao M. Uratani and Steve Griffiths

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## Correction: Janus solar evaporators: a review of innovative technologies and diverse applications

Boli Nie, Yanming Meng, Simeng Niu, Longjie Gong, Yufeng Chen, Liu Jun Guo, Xiang Li, Yan-Chao Wu, Hui-Jing Li\* and Weiwei Zhang\*