

# Energy & Environmental Science

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### Cover

See Lei Bi *et al.*, pp. 8130–8141. Image reproduced by permission of Lei Bi from *Energy Environ. Sci.*, 2025, 18, 8130.



### Inside cover

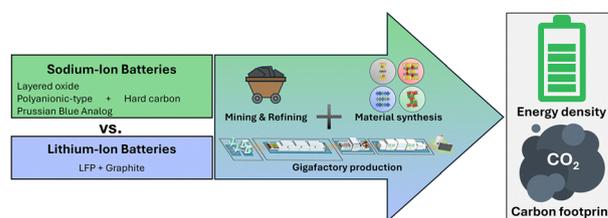
See Li Zhang *et al.*, pp. 8142–8160. Image reproduced by permission of Li Zhang from *Energy Environ. Sci.*, 2025, 18, 8142.

## ANALYSIS

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### Benchmarking state-of-the-art sodium-ion battery cells – modeling energy density and carbon footprint at the gigafactory-scale

Philipp Voß, Benedikt Gruber, Miriam Mitterfellner, Jan-Darius Plöpst, Florian Degen, Richard Schmuch and Simon Lux\*

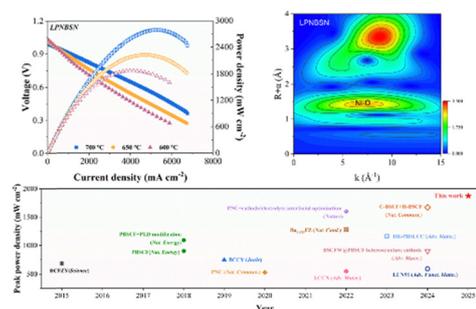


## PAPERS

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### Breaking the limits of Ruddlesden–Popper cathodes to achieve a game-changer for proton-conducting solid oxide fuel cells

Yanru Yin, Hongfang Huang, Samir Boulfrad, Hailu Dai, Yueyuan Gu, Shoufu Yu and Lei Bi\*



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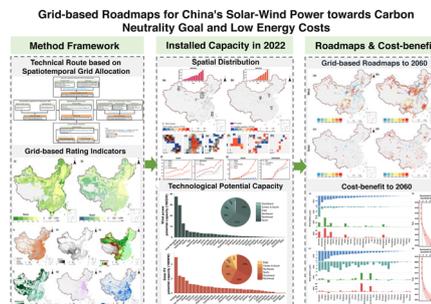
Fundamental questions  
Elemental answers



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## Fine-grained prediction of solar-wind deployment unlocks China's 2060 pathways to carbon neutrality and lower energy costs

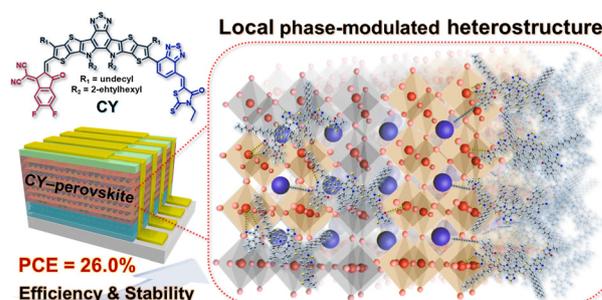
Jing Guo, Ruomei Wang, Li Zhang,\* Siqin Wang, Linyan Li, Mengbing Du,\* Fangyuan Zhong, Chuan Zhang, Yafei Li, Yixuan Zheng, Xiaoya Liu, Xi Lu and Jinnan Wang



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## Local phase-modulated heterostructures for perovskite solar cells with high-efficiency and ultra-stability

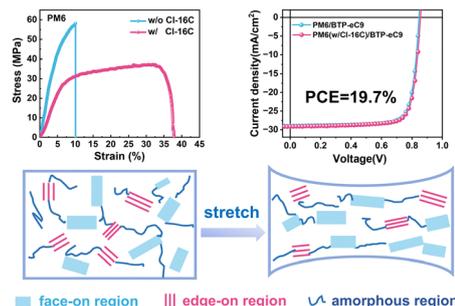
Yongjoon Cho, Donghwan Koo, Hak-Won Nho, Jeewon Park, Sangjin Yang, Ye-Jin Kim, Seonghun Jeong, Zhe Sun, Gyujeong Jeong, Eunbin Son, Oh-Hoon Kwon,\* Hyesung Park\* and Changduk Yang\*



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## Stress-dissipative strong bimodal molecular packing towards efficient and highly stretchable organic photovoltaics

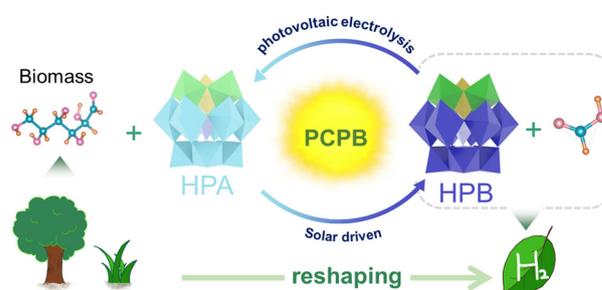
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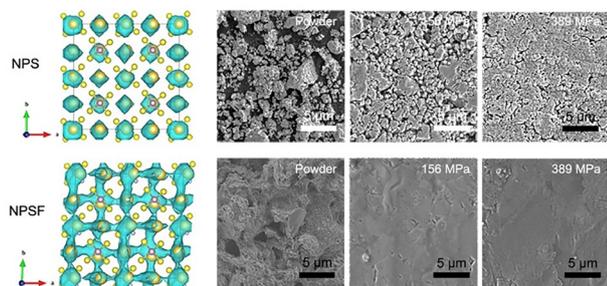
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## Photon-coupled-proton buffers: reshaping solar-driven hydrogen and formic acid production with biomass

Lei Gan, Yuyang Liu, Shiqi Huang, Yang Liu, Wei Liu, Kuang Sheng, Chenyu Zhang, Mingjun Han, Wenhao He, Jie Li,\* Xiong Li\* and Tao Jiang\*



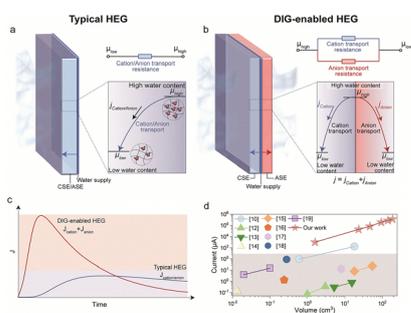
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### A compactable $\text{Na}_{2.5}\text{PS}_{3.5}\text{F}_{0.5}$ electrolyte for solid-state sodium batteries

Xianguang Miao, Yifan Wu, Huirong Jing, Yuchuang Cao, Yichao Wang, Junyeob Moon and Xin Li\*

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### Dual-interfacial gating unlocks bidirectional ionic flux for high-efficiency hydrovoltaic energy harvesting

Lin Li,\* Yongfang Yang, Nan He, Xinyi Xu, Bingsen Wang, Jie Miao, Shengli Xu, Haonan Wang\* and Dawei Tang

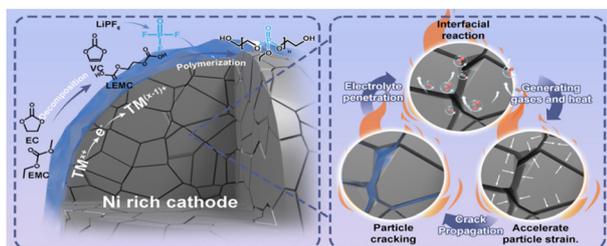
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### A 3D-printed hierarchical chimney for high-yield solar evaporation

Yu Tang, Chenyi Fang, Xin Xu, Feng Li, Lei Fan, Di Zhu, Jun Ding, Joseph Imbrogno, Sui Zhang\* and Wentao Yan\*

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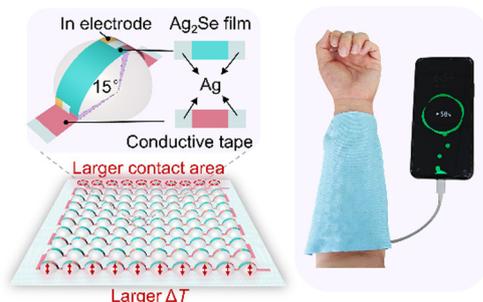
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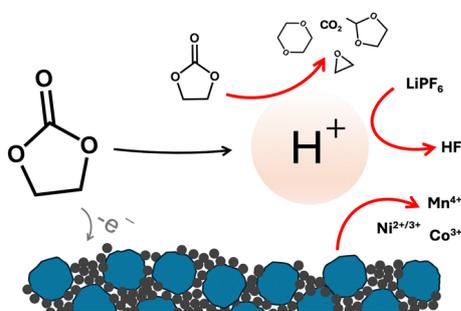
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### Ultra-high-performance Ag<sub>2</sub>Se-based flexible thermoelectric generator

Lin Zhang, Hongjing Shang,\* Hao Dong, Hongwei Gu\* and Fazhu Ding\*

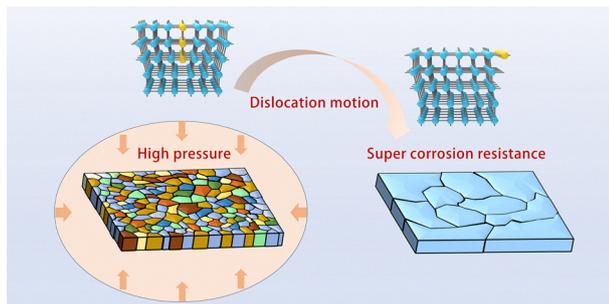
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### An unwanted guest in the electrochemical oxidation of high-voltage Li-ion battery electrolytes: the life of highly reactive protons

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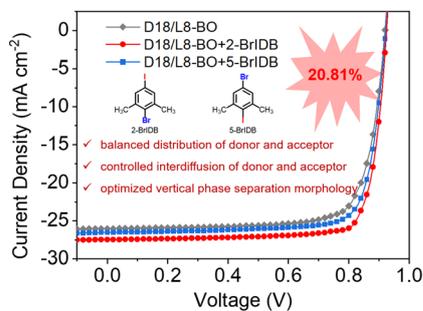
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### Crystallization control and defect reduction for superior corrosion resistance of zinc anodes in aqueous zinc-ion batteries

Jingjing Jiang, Sanlue Hu, Tianshuo Guo, Xiangyong Zhang, Hua Wei, Baohui Ren, Ruijia Liu, Guangming Chen, Zhuoxin Liu\* and Cuiping Han\*

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### Balanced distribution of donors and acceptors enabled by volatile isomerization additives for 20.81% efficiency layer-by-layer polymer solar cells

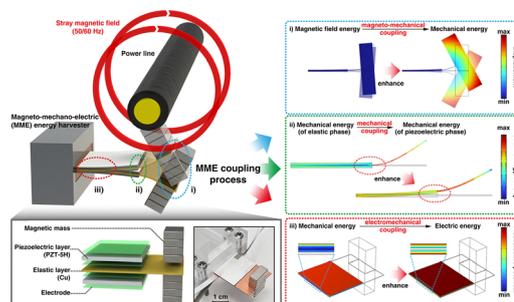
Haonan Chen, Min Deng,\* Changjiang Li, Yuwei Duan, Chentong Liao, Zeqin Chen and Qiang Peng\*



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## Multiple-coupling optimization strategy for significantly enhancing the output power density of a compact magneto-mechano-electric energy harvester

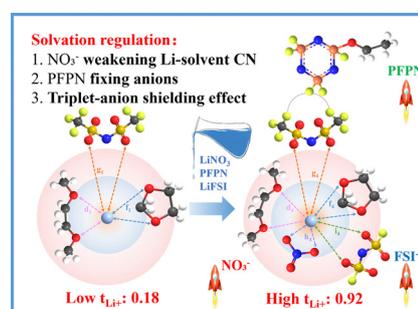
Yiwei Xu, Xin He, Xianfeng Liang, Heng Huang, Jingen Wu,\* Dengfeng Ju, Jinghong Guo, Shuxiang Dong, Zhongqiang Hu\* and Ming Liu\*



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## Dense Li deposition enabled by weakly coordinated Li and fast Li transport in a single-ion conducting gel-polymer electrolyte

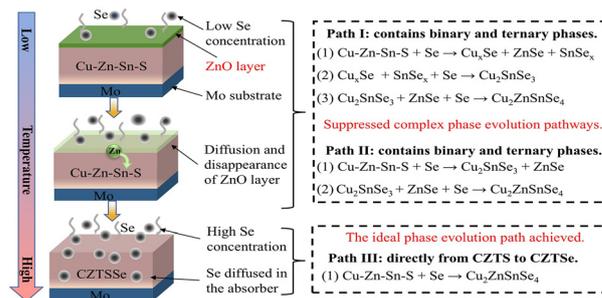
Yutong Zhai, Yimu Zhang, Ning Wang, Minghui Li, Mingjia Shen, Pingbo Xu, Maoyu Sun, Feilong Dong, Tianzong Ma, Jun Ming, Lina Cong, Haiming Xie\* and Yulong Liu\*



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## Phase evolution regulation of CZTSSe absorbers via a ZnO blocking layer enables 14.45% efficient kesterite solar cells with low $V_{OC}$ deficit

JinJin Chi, Hao Wei, Liangli Chu, Litao Han,\* Tong Liu, Xinyi Zhong, Dongxing Kou, Wenhui Zhou, Zhengji Zhou, Shengjie Yuan, Yuena Meng, Yafang Qi, Zhipeng Shao,\* Guanglei Cui\* and Sixin Wu\*



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## Breathing air into water: dual-pathway $H_2O_2$ synthesis via aerating amphiphilic supramolecular films

Bo Yu, Shuya Liu,\* Xinyu Lin, Zhi Zhu, Yongsheng Yan, Yanjun Gong, Yanke Che, Yan Yan\* and Weidong Shi\*

