

# Energy & Environmental Science

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ISSN 1754-5706 CODEN EESNBY 18(23) 9983-10252 (2025)



### Cover

See Weijie Li *et al.*, pp. 10048–10060. Image reproduced by permission of Weijie Li from *Energy Environ. Sci.*, 2025, 18, 10048.



### Inside cover

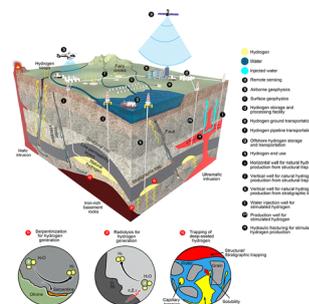
See Antoni Forner-Cuenca *et al.*, pp. 10061–10077. Image reproduced by permission of Antoni Forner-Cuenca from *Energy Environ. Sci.*, 2025, 18, 10061.

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### Geologic hydrogen: a review of resource potential, subsurface dynamics, exploration, production, transportation, and research opportunities

Shaowen Mao,\* Siqin Yu,\* Jianping Xu,\* Hang Chen,\* Wen Zhao, Martin J. Blunt, Qinjun Kang, Michael Gross, Bailian Chen, Jolante Van Wijk, Qingwang Yuan, Kai Gao, Saif R. Kazi and Mohamed Mehana

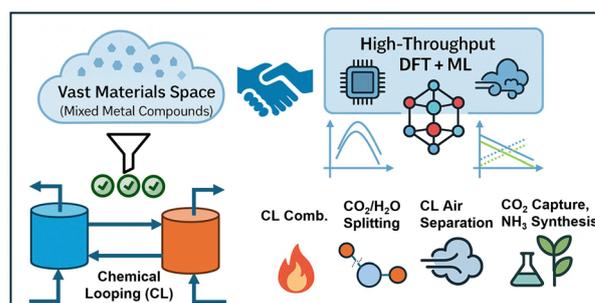


## PERSPECTIVE

10036

### Computationally accelerated discovery of mixed metal compounds for chemical looping combustion and beyond

Kunran Yang and Fanxing Li\*



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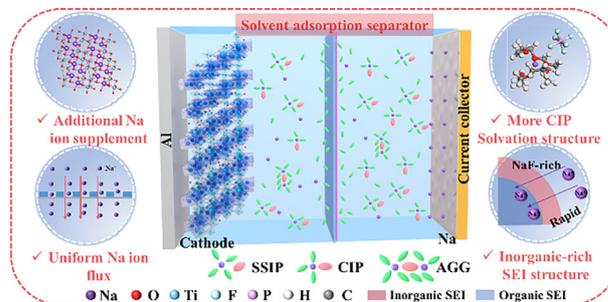
Fundamental questions  
Elemental answers



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## Enhancing low-temperature durability and sodium-ion transport of anode-free sodium metal batteries through utilization of a solvent adsorption separator

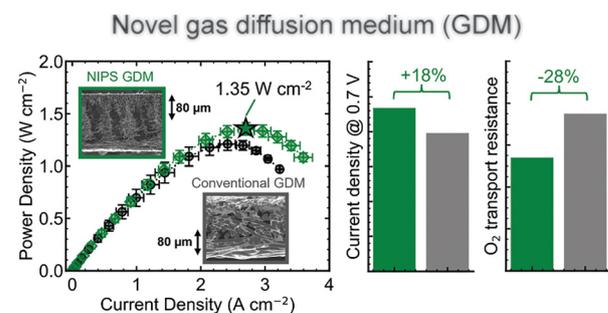
Zewei Hu, Liyang Liu, Xin Wang, Qingqing Zheng, Haiying Lu, Zhenwei Tang, Chao Han and Weijie Li\*



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## Designer diffusion media microstructures enhance polymer electrolyte fuel cell performance

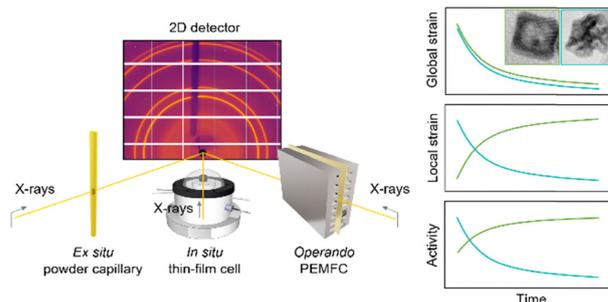
Rens J. Horst, Ralph van der Linde, Rémy R. Jacquemond, Baichen Liu and Antoni Forner-Cuenca\*



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## Primacy of lattice distortion over strain in platinum fuel cell nanoalloy catalysts

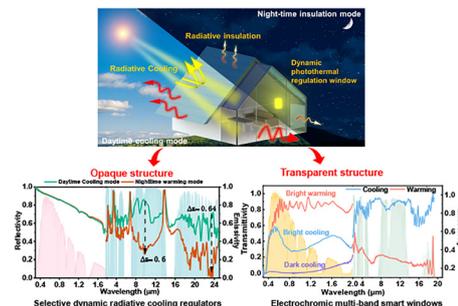
Amir Gasmi,\* Meryem Ennaji, Carlos A. Campos-Roldán, Ashwin T. Shekhar, Rémi Bacabe, Morgane Stodel, Frédéric Lecoeur, Marc Dupont, Valentin Vinci, Marta Miroló, Camille Roiron, Jakub Drnec, Deborah Jones and Raphaël Chattot\*



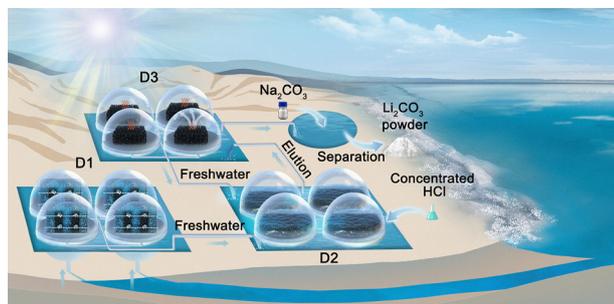
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## Intelligent electrochromic photothermal regulation for integrated building energy saving

Yilin Ding, Zheyue Mei, Wenjing Zhang, Xueke Wu, Yaqi Zhang, Di Gao, Fan Lan, Run Li, Xungang Diao and Rufan Zhang\*



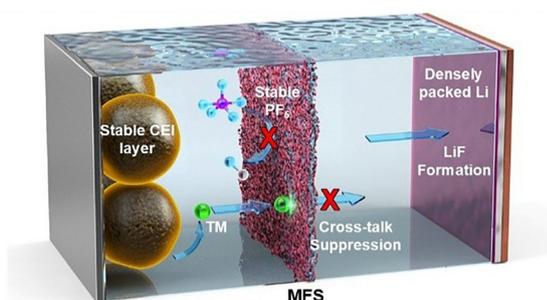
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### Interfacial solar evaporation-driven lithium extraction from salt-lake brines for battery-grade $\text{Li}_2\text{CO}_3$ production

Wenqian Xing, Deyu Wang, Kai Feng, Shihao Ding, Xinle Zhang, Haolan Xu,\* Jiang Gong,\* Jinping Qu and Ran Niu\*

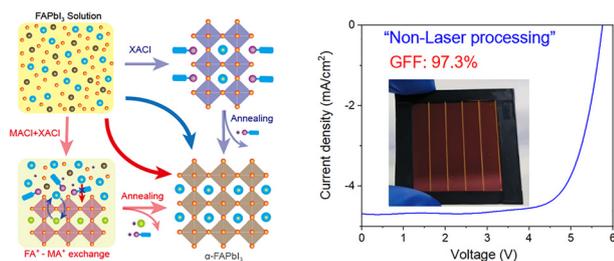
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### Molecularly engineered membrane-driven interphase stabilization of electrodes for Li||NCM811 cells under practical operating conditions

Dong-Yeob Han, Jiyeon Lee, Youmin Bang, Sangwon Lee, Hyeongseok Shim, Yubhin Cho, Gyujiin Song,\* Tae Kyung Lee\* and Soojin Park\*

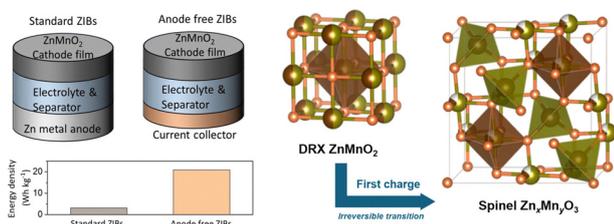
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### Regulating solution spreading and intermediate phase evolution for large-area perovskite films and solar modules

Chuantian Zuo, Feng Hao, Hua Dong, Jingjing Chang, Keyou Yan, Yong Ding, Zuo Xiao\* and Liming Ding\*

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### Cation-disordered rocksalt cathode for anode-free zinc-ion batteries

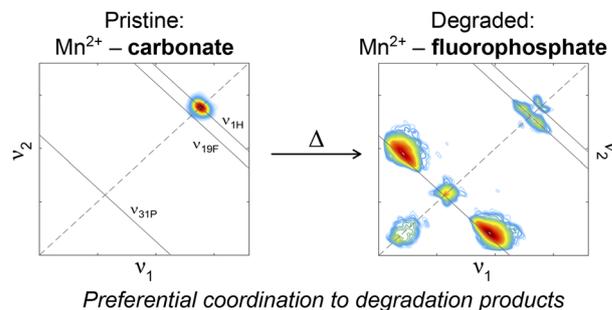
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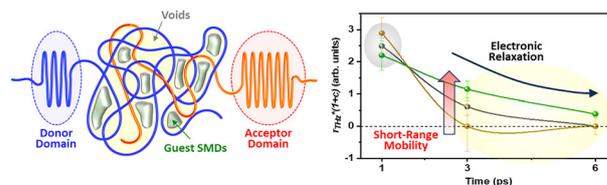
Jennifer P. Allen, Conrad Szczuka, Erlendur Jónsson, Rüdiger-A. Eichel, Josef Granwehr and Clare P. Grey\*



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### Tailoring short-range mobility at donor–acceptor heterointerfaces through small molecules promotes efficient organic solar cells

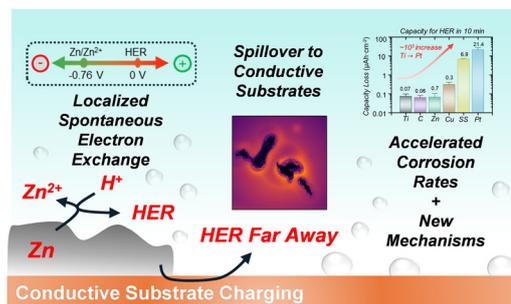
Top Archie Dela Peña, Yongmin Luo, Yulong Hai, Ruijie Ma,\* Andrew Dolan, Sepideh Khanmohammadi, Jessica M. de la Perrelle, Yuanzhi Zheng, Qi Wei, Yao Li, Longfei Jia, Sheena Anne Garcia, King Lun Yeung, Kateryna Kushnir Friedman, Lyubov V. Titova, Tao Jia, He Yan, Tak W. Kee, Wenchao Zhao, Wei Gao,\* Mingjie Li\* and Jiaying Wu\*



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### Resting but not idle: unveiling the mechanistic origin of resting losses for zinc anodes

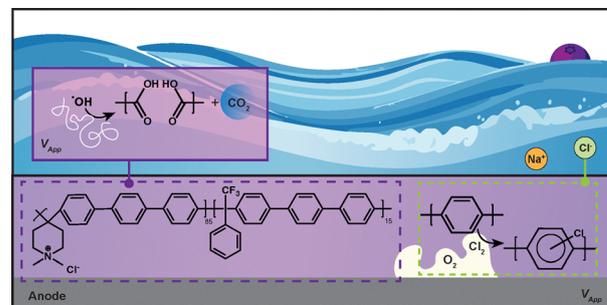
John F. Koons, Ashutosh Rana, Md. Arif Faisal, James H. Nguyen, Saptarshi Paul, Jeremy H. Lawrence and Jeffrey E. Dick\*



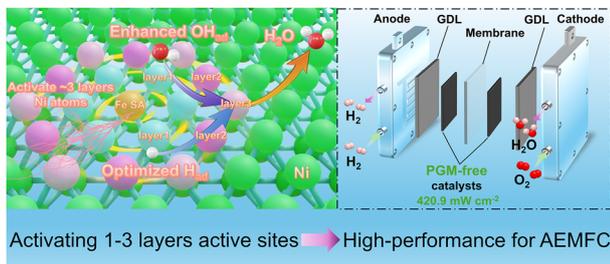
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### Diagnosing mechanisms to mitigate anion exchange ionomer degradation during impure water electrolysis

Isabela Rios Amador, Ryan T. Hannagan, Allen Qiang, Sang-Won Lee, Nhi Thi Thu Tran, Kyra M. K. Yap, Ashton M. Aleman, Daniela H. Marin, Milenia Rojas Mendoza, Michaela Burke Stevens, Thomas F. Jaramillo\* and Adam C. Nielander\*



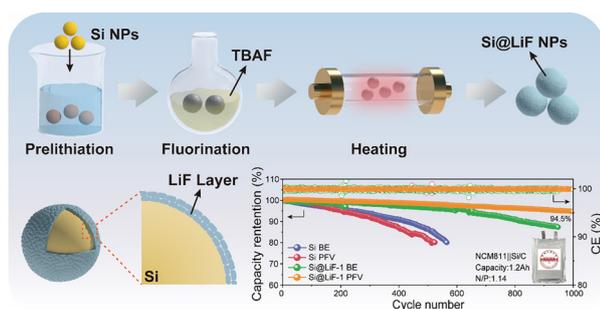
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### Activating Ni atoms up to the third nearest neighbor around single-atom Fe into highly active sites for PGM-free anion-exchange membrane fuel cells

Hongda Shi, Changlai Wang, Yang Yang, Mushrifa S. Zahan, Xi Lin, Dingge Fan, Peichen Wang, Pin Meng, Jiahe Yang, Yunlong Zhang, Siyan Chen, Xingyan Chen, Dongdong Wang, Dario R. Dekel\* and Qianwang Chen\*

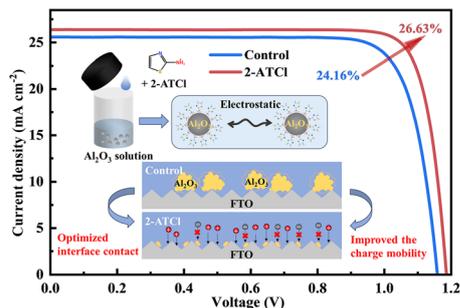
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### In situ homogenized fluorination strategy via active prelithiation enabling LiF solid electrolyte interphases for stable silicon anodes

Yang Liu, Yi Sun,\* Shang Jiang, Shuo Li, Changming Qu, Daolin Deng, Bangkun Zou, Qian Hou, Xuyong Feng, Jiawei Wang\* and Hongfa Xiang\*

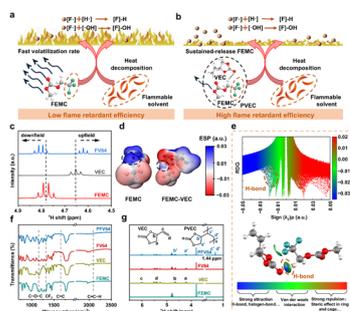
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### Molecularly guided buried-interface regulation for efficient and stable inverted perovskite solar cells

Quanzhou Li, Min Wang\* and Liang Li\*

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### A sustained-release strategy of fluorinated solvents enables highly safe lithium metal batteries

Zhimeng Sheng, Xiaoyu Guo, Rong Gu, Shengtao Xu, Yizheng Ma, Jiayao Shan, Zhangyue Wei, Hongyu Shi, Shuaiqi Gong,\* Jinting Xu,\* Yan Zhang,\* Sheng Zhu, Guodong Qi and Yulin Min\*

