

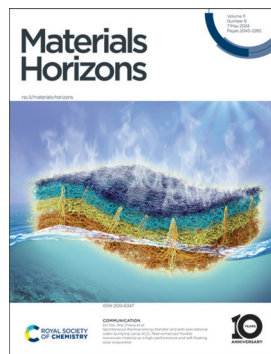
# Materials Horizons

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## IN THIS ISSUE

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### Cover

See Du Nie, Wei Zhang *et al.*, pp. 2095–2105. Image reproduced by permission of Wei Zhang from *Mater. Horiz.*, 2024, 11, 2095.



### Inside cover

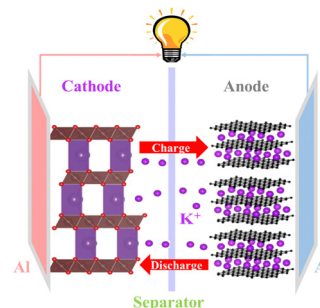
See Xiaomin Cheng, Xiangshui Miao *et al.*, pp. 2106–2114. Image reproduced by permission of Xiaomin Cheng from *Mater. Horiz.*, 2024, 11, 2106.

## REVIEWS

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### Strategies for developing layered oxide cathodes, carbon-based anodes, and electrolytes for potassium ion batteries

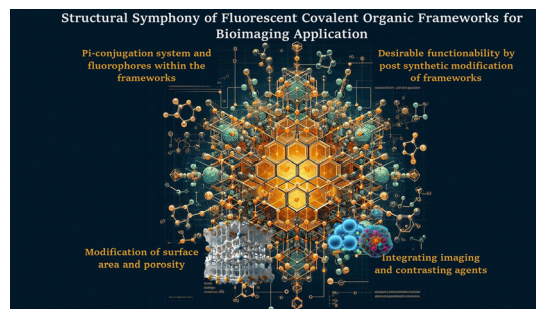
Yicheng Lin, Shaohua Luo,\* Jun Cong, Pengwei Li, Xueqian Yuan and Shengxue Yan



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### Fluorescent covalent organic frameworks – promising bioimaging materials

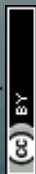
Chimatahalli Santhakumar Karthik, Tina Skorjanc and Dinesh Shetty\*



# Environmental Science: Atmospheres

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Fundamental questions  
Elemental answers

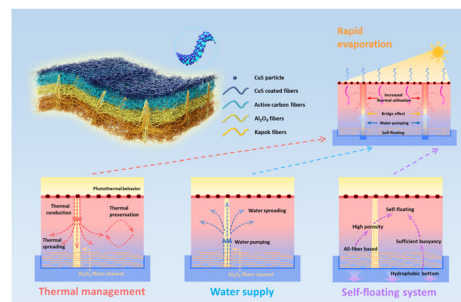




2095

### Spontaneous thermal energy transfer and anti-gravitational water pumping using $\text{Al}_2\text{O}_3$ fiber-enhanced flexible nonwoven material as a high-performance and self-floating solar evaporator

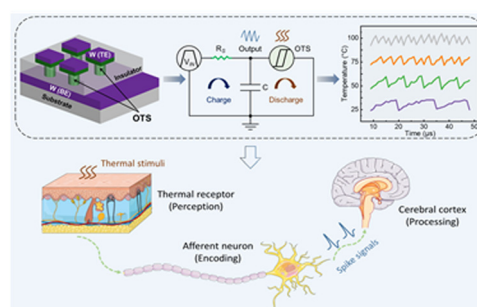
Jiamu Dai, Hang Wang, Xiaochuan Yang, Liujia Lan, Suying Li, Guangyu Zhang, Ruiqing Li, Du Nie\* and Wei Zhang\*



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### Ovonic threshold switching-based artificial afferent neurons for thermal in-sensor computing

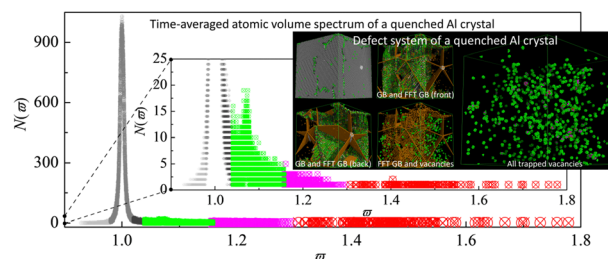
Kai Li, Jiaping Yao, Peng Zhao, Yunhao Luo, Xiang Ge, Rui Yang, Xiaomin Cheng\* and Xiangshui Miao\*



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### Time-averaged atomic volume spectrum: locating and identifying vacancies

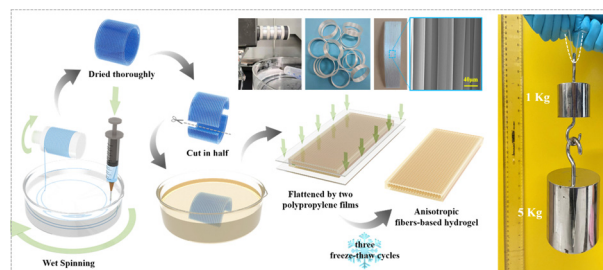
YongQuan Wu,\* Hao Wang, JiaHao Fu, BoYang Zhang, Xu Zhao and Kai Zhang



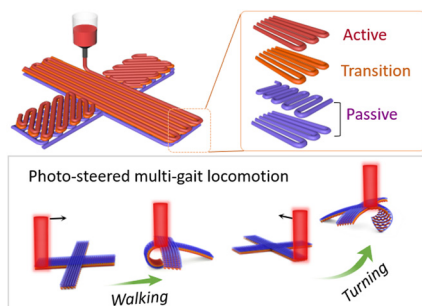
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### Strong, tough and anisotropic bioinspired hydrogels

Shu Wang, Ling Lei, Yuanhao Tian, Huiming Ning,\* Ning Hu,\* Peiyi Wu, Hanqing Jiang, Lidan Zhang, Xiaolin Luo, Feng Liu, Rui Zou, Jie Wen, Xiaopeng Wu, Chenxing Xiang and Jie Liu\*



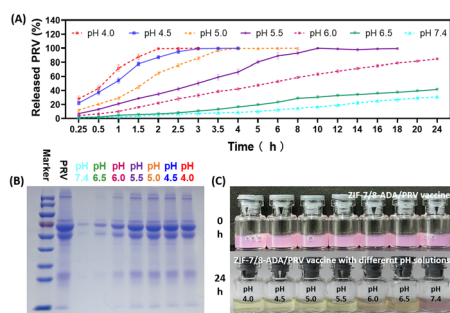
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### Photo-steered rapid and multimodal locomotion of 3D-printed tough hydrogel robots

Min Dong, Weixuan Liu, Chen Fei Dai, Dejin Jiao, Qing Li Zhu, Wei Hong, Jun Yin, Qiang Zheng and Zi Liang Wu\*

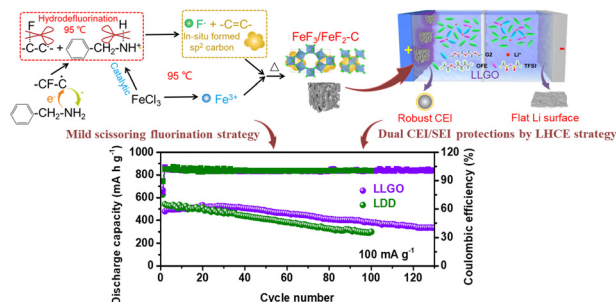
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### Alginate di-aldehyde-modified metal-organic framework nanocarriers as delivery platform and adjuvant in inactivated pseudorabies vaccination

Wenzhu Yin, Zeyu Xu, Chen Chang, Yanhong Zhao, Haiyan Wang, Jinqiu Zhang, Fang Ma, Xiaoxin Zuo, Bo Tang\* and Yu Lu\*

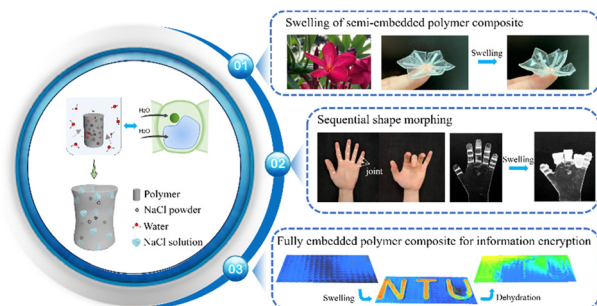
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### Dual strategies of mild C-F scissoring fluorination and local high-concentration electrolyte to enable reversible Li-Fe-F conversion batteries

Yifan Yu, Chuankong Lai, Meng Lei, Keyi Chen and Chilin Li\*

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### Bio-inspired facile strategy for programmable osmosis-driven shape-morphing elastomer composite structures

Yuanhang Yang, Yueying Wang, Marcus Lin, Mingchao Liu\* and Changjin Huang\*

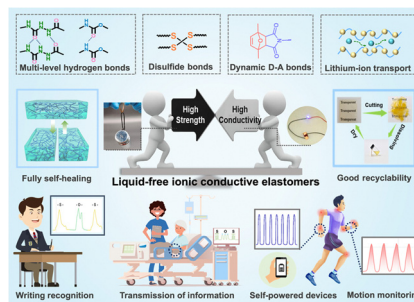


## COMMUNICATIONS

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### Liquid-free ionic conductive elastomers with high mechanical properties and ionic conductivity for multifunctional sensors and triboelectric nanogenerators

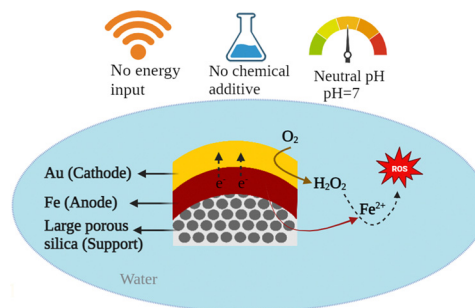
Fangyan Ou, Ting Xie, Xinze Li, Zhichao Zhang, Chuang Ning, Liang Tuo, Wenyu Pan, Changsheng Wang, Xueying Duan, Qihua Liang, Wei Gao, Zequan Li\* and Shuangliang Zhao



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### Fe/Au galvanic nanocells to generate self-sustained Fenton reactions without additives at neutral pH

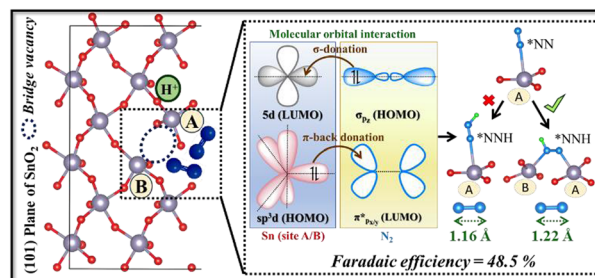
Gubakhanim Shahnazarova, Nour Al Hoda Al Bast, Jessica C. Ramirez, Josep Nogues, Jaume Esteve, Jordi Fraxedas, Albert Serra, Maria J. Esplandiú\* and Borja Sepulveda\*



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### Deciphering the bridge oxygen vacancy-induced cascading charge effect for electrochemical ammonia synthesis

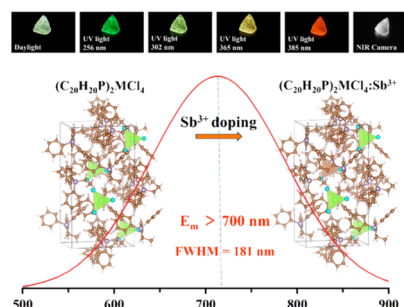
Ashmita Biswas, Narad Barman, Avinash Nambron, Ranjit Thapa, Kathi Sudarshan and Ramendra Sundar Dey\*



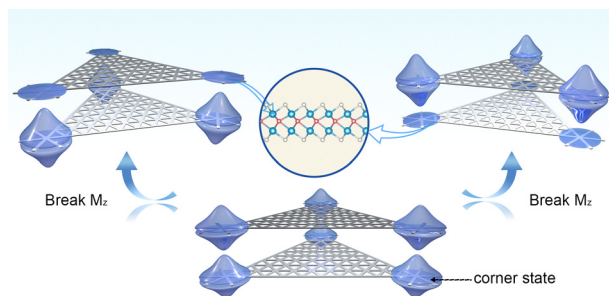
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### Realizing efficient broadband near-infrared emission and multimode photoluminescence switching via coordination structure modulation in Sb<sup>3+</sup>-doped 0D organic metal chlorides

Shuiyue Yu, Hui Peng,\* Qilin Wei, Tongzhou Li, Weiguo Huang, Xuefei He, Zhentao Du, Jialong Zhao and Bingsuo Zou\*



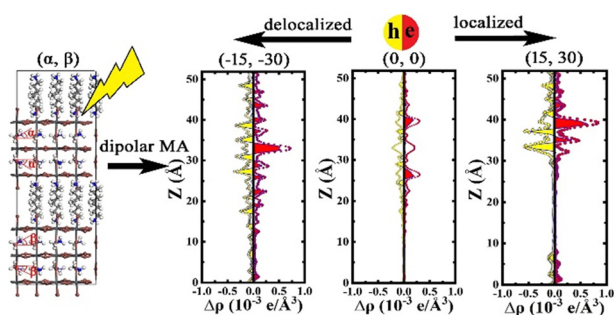
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### Layer-coupled corner states in two-dimensional topological multiferroics

Runhan Li, Xiaorong Zou, Yingxi Bai, Zhiqi Chen, Baibiao Huang, Ying Dai\* and Chengwang Niu\*

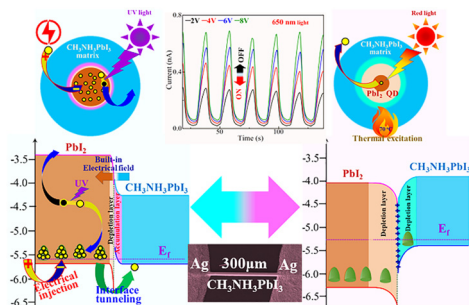
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### Organic cations promote exciton dissociation in Ruddlesden–Popper lead iodide perovskites: a theoretical study

Xiaohua Tan, Qingjie Feng and Guangjun Nan\*

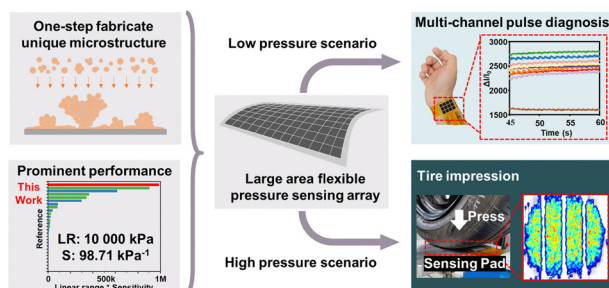
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### Control of positive and negative photo- and thermal-responses in a single $\text{PbI}_2@\text{CH}_3\text{NH}_3\text{PbI}_3$ micro/nanowire-based device for real-time sensing, nonvolatile memory, and logic operation

Runna Gou, Shuanfu Zhou, Cencen Shi, Qinghua Sun, Zhikang Huang, Jie Zhao,\* Yanhe Xiao, Shuijin Lei and Baochang Cheng\*

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Zonglin Li, Kun Li, Weiwei Wang, Tong Zhang\* and Xiaoni Yang\*

