

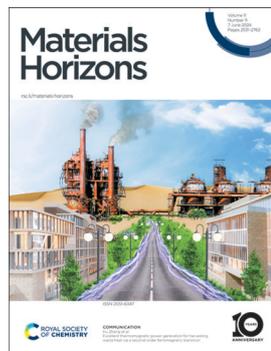
# Materials Horizons

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## IN THIS ISSUE

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### Cover

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2024, **11**, 2603.

## EDITORIAL

2539

**Materials Horizons Emerging Investigator Series:**  
**Professor Jingjing Duan, Nanjing University of  
Science and Technology, China**

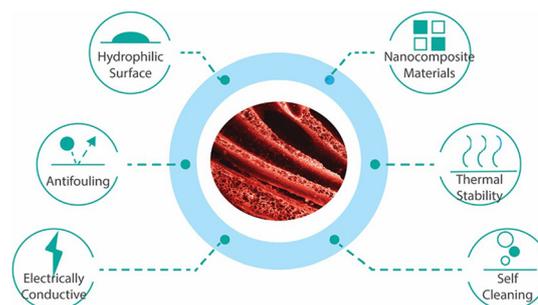


## COMMENTARY

2540

**A reflection on 'Highly dispersible polypyrrole  
nanospheres for advanced nanocomposite  
ultrafiltration membranes'**

Cheng-Wei Lin and Richard B. Kaner\*



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Elemental answers

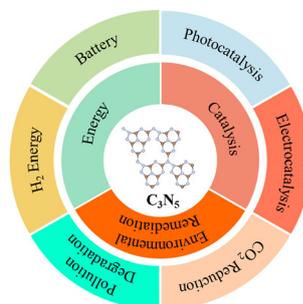


## REVIEWS

2545

### C<sub>3</sub>N<sub>5</sub>-based nanomaterials and their applications in heterogeneous catalysts, energy harvesting, and environmental remediation

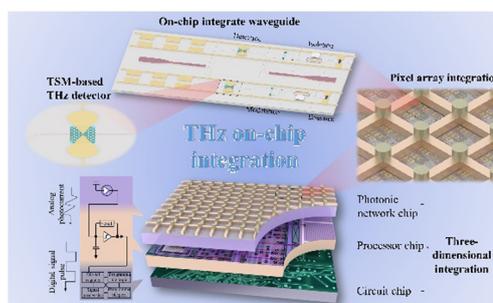
Linfeng Xiao, Sanshuang Gao, Runhua Liao,\*  
Yingtang Zhou,\* Qingquan Kong and Guangzhi Hu\*



2572

### Two-dimensional topological semimetals: an emerging candidate for terahertz detectors and on-chip integration

Yun Li, Wenzhi Yu, Kai Zhang, Nan Cui, Tinghe Yun,  
Xue Xia, Yan Jiang, Guangyu Zhang, Haoran Mu\* and  
Shenghuang Lin\*

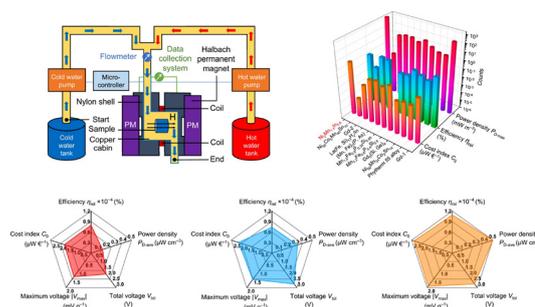


## COMMUNICATIONS

2603

### Excellent thermomagnetic power generation for harvesting waste heat via a second-order ferromagnetic transition

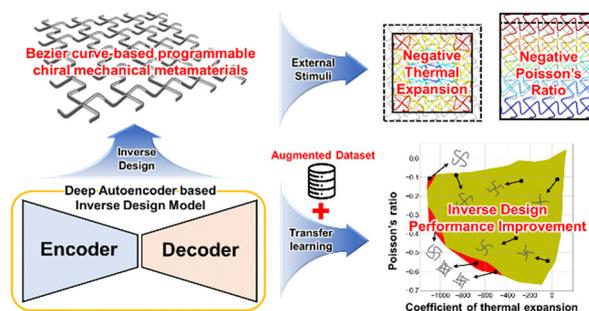
Haodong Chen, Xianliang Liu, Yao Liu, Longlong Xie,  
Ziyuan Yu, Kaiming Qiao, Mingze Liu, Fengxia Hu,  
Baogen Shen, R. V. Ramanujan, Ke Chu and Hu Zhang\*



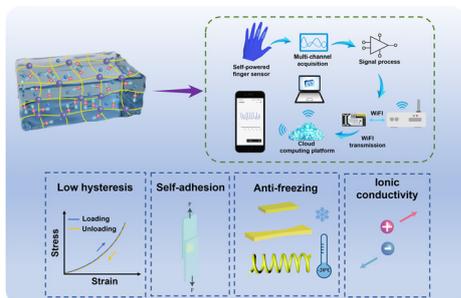
2615

### Inverse design of Bézier curve-based mechanical metamaterials with programmable negative thermal expansion and negative Poisson's ratio via a data augmented deep autoencoder

Min Woo Cho, Keon Ko, Majid Mohammadhosseinzadeh,  
Ji Hoon Kim, Dong Yong Park, Da Seul Shin\* and  
Sang Min Park\*



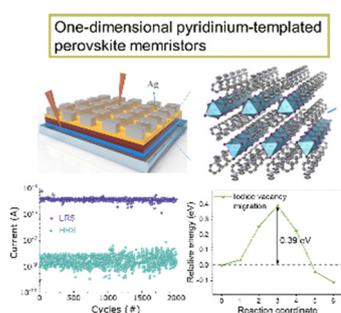
2628



### Low hysteresis zwitterionic supramolecular polymer ion-conductive elastomers with anti-freezing properties, high stretchability, and self-adhesion for flexible electronic devices

Hongying Wang, Baocheng Liu, Danyang Chen, Zhuoya Wang, Haolun Wang, Siyu Bao, Ping Zhang,\* Jianhai Yang\* and Wenguang Liu

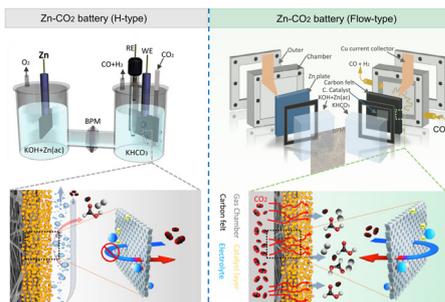
2643



### High-performance one-dimensional halide perovskite crossbar memristors and synapses for neuromorphic computing

Sujaya Kumar Vishwanath,\* Benny Febriansyah, Si En Ng, Tisita Das, Jyotibdha Acharya, Rohit Abraham John, Divyam Sharma, Putu Andhita Dananjaya, Metikoti Jagadeeswararao, Naveen Tiwari, Mohit Ramesh Chandra Kulkarni, Wen Siang Lew, Sudip Chakraborty,\* Arindam Basu and Nripan Mathews\*

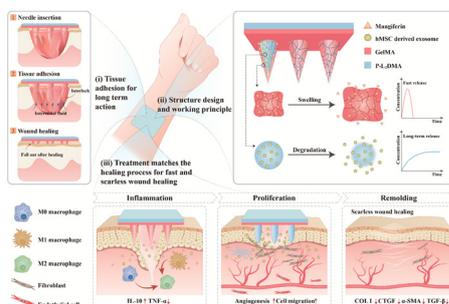
2657



### Unlock flow-type reversible aqueous Zn-CO<sub>2</sub> batteries

Muhammad Kashif Aslam, Herui Wang, Zhihao Nie, Sheng Chen, Qiang Li\* and Jingjing Duan\*

2667



### A differential-targeting core-shell microneedle patch with coordinated and prolonged release of mangiferin and MSC-derived exosomes for scarless skin regeneration

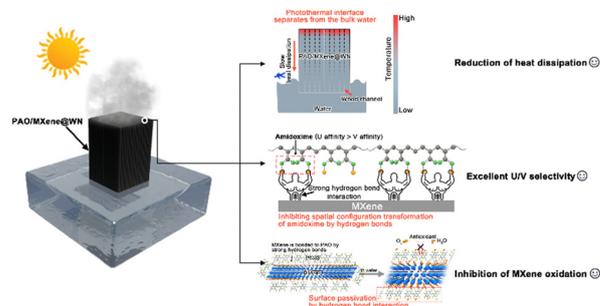
Shang Lyu, Qi Liu, Ho-Yin Yuen, Huizhi Xie, Yuhe Yang, Kelvin Wai-Kwok Yeung, Chak-yin Tang, Shuqi Wang, Yaxiong Liu, Bin Li,\* Yong He\* and Xin Zhao\*



2685

### Achieving ultrahigh uranium/vanadium selectivity of poly(amidoxime) via coupling MXene-enabled strong intermolecular interaction and separated photothermal interface

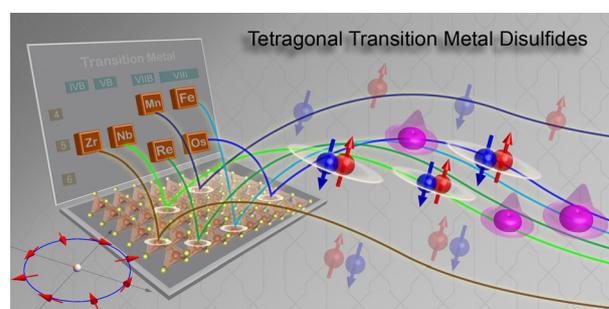
Hao Ye, Ming-Bang Wu,\* Qi-Hui Ye, Rou-Ming Wen, Zhang-Ting Hu, Juming Yao\* and Chao Zhang\*



2694

### Prediction of superconductivity in a series of tetragonal transition metal dichalcogenides

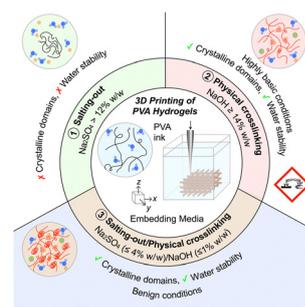
Jiale Liu, Huidong Wang, Xiaojun Shi and Xiaoming Zhang\*



2701

### 3D printing of polyvinyl alcohol hydrogels enabled by aqueous two-phase system

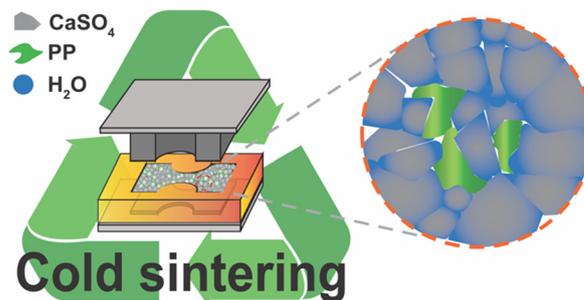
Rahul Karyappa, Nidhi Nagaraju, Kento Yamagishi, Xue Qi Koh, Qiang Zhu and Michinao Hashimoto\*



2718

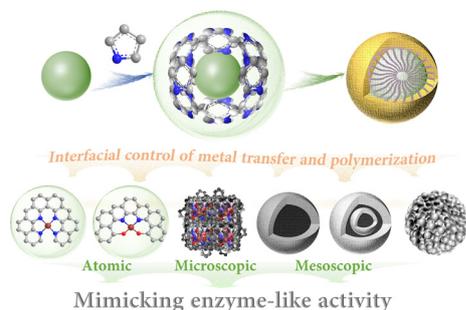
### Upcycling plastic waste into fully recyclable composites through cold sintering

Po-Hao Lai, Shelby L. Hall, Yi-Chen Lan, Jia-Ruey Ai, Arian Jaber, Amir Sheikhi, Rui Shi, Bryan D. Vogt\* and Enrique D. Gomez\*



## COMMUNICATIONS

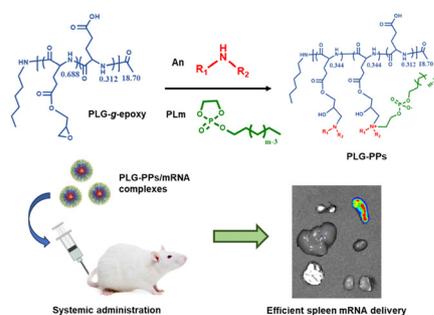
2729



### Linking atomic to mesoscopic scales in multilevel structural tailoring of single-atom catalysts for peroxide activation

Li Yu,\* Shaosong Xin, Yuchan Li and Hsien-Yi Hsu

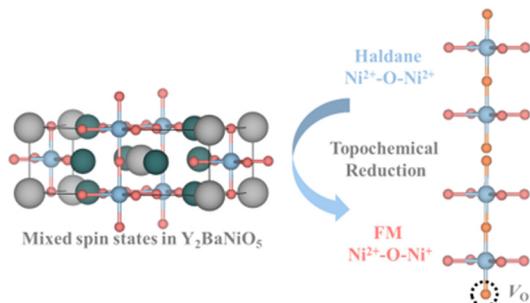
2739



### A polyamino acid-based phosphatidyl polymer library for *in vivo* mRNA delivery with spleen targeting ability

Hanqin Zhao, Sheng Ma, Yibo Qi, Yuxi Gao, Yuyan Zhang, Minhui Li, Jie Chen, Wantong Song\* and Xuesi Chen\*

2749



### Spin-degree manipulation for one-dimensional room-temperature ferromagnetism in a haldane system

Pengfei Tan, Chuanhui Zhu, Xiaosheng Ni, Han-Qing Wu, Shuang Zhao, Tao Xia, Jinjin Yang, Tao Han, Mei-Huan Zhao, Yifeng Han, Yuanhua Xia, Zheng Deng, Muwei Wu, Dao-Xin Yao\* and Man-Rong Li\*

## CORRECTION

2759

### Correction: A differential-targeting core-shell microneedle patch with coordinated and prolonged release of mangiferin and MSC-derived exosomes for scarless skin regeneration

Shang Lyu, Qi Liu, Ho-Yin Yuen, Huizhi Xie, Yuhe Yang, Kelvin Wai-Kwok Yeung, Chak-yin Tang, Shuqi Wang, Yaxiong Liu, Bin Li,\* Yong He\* and Xin Zhao\*

