

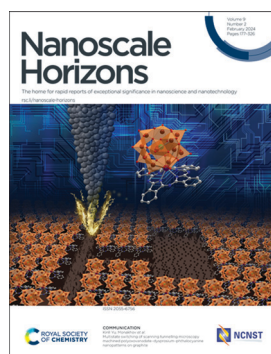
# Nanoscale Horizons

The home for rapid reports of exceptional significance in nanoscience and nanotechnology  
[rsc.li/nanoscale-horizons](https://rsc.li/nanoscale-horizons)

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 2055-6756 CODEN NHAOAW 9(2) 177-326 (2024)



### Cover

See Kirill Yu. Monakhov  
*et al.*, pp. 233–237.  
Image reproduced  
by permission of  
Kirill Monakhov from  
*Nanoscale Horiz.*,  
2024, 9, 233.

## EDITORIAL

184

**Nanoscale Horizons Emerging Investigator Series:**  
Dr Shalini Singh, University of Limerick, Ireland

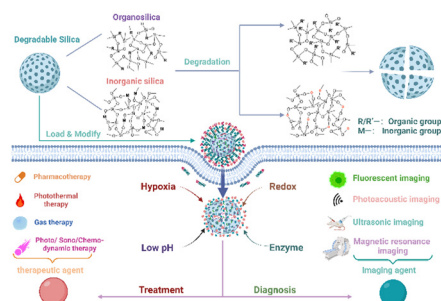


## REVIEW

186

**Tumor microenvironment-responsive degradable silica nanoparticles: design principles and precision theranostic applications**

Junjie Zhang,\* Kaiyuan Tang, Zilu Liu, Zhijing Zhang,  
Shufan Duan, Hui Wang, Hui Yang, Dongliang Yang\* and  
Wenpei Fan\*



# Environmental Science: Atmospheres

GOLD  
OPEN  
ACCESS

## Connecting communities and inspiring new ideas

[rsc.li/submittoEA](https://rsc.li/submittoEA)

Fundamental questions  
Elemental answers

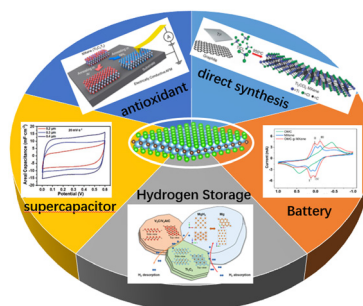


## MINIREVIEW

215

**Recent progress of MXene as an energy storage material**

Yuqiang Wu and Mengtao Sun\*

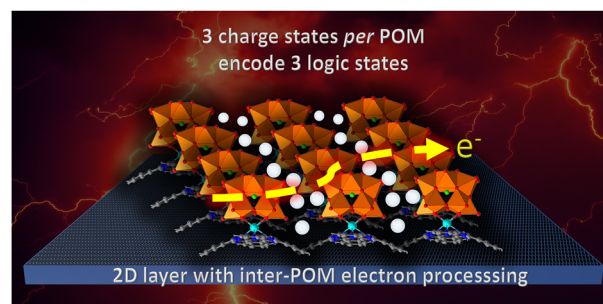


## COMMUNICATIONS

233

**Multistate switching of scanning tunnelling microscopy machined polyoxovanadate–dysprosium–phthalocyanine nanopatterns on graphite**

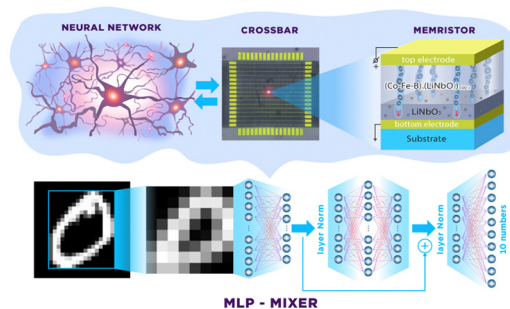
Marco Moors, Irina Werner, Jens Bauer, Jonas Lorenz and Kirill Yu. Monakhov\*



238

**Adapted MLP-Mixer network based on crossbar arrays of fast and multilevel switching  $(\text{Co-Fe-B})_x(\text{LiNbO}_3)_{100-x}$  nanocomposite memristors**

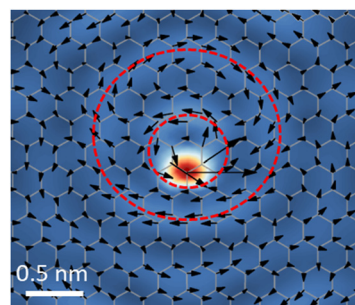
Aleksandr I. Iliasov, Anna N. Matsukatova, Andrey V. Emelyanov,\* Pavel S. Slepov, Kristina E. Nikiryu and Vladimir V. Rylkov



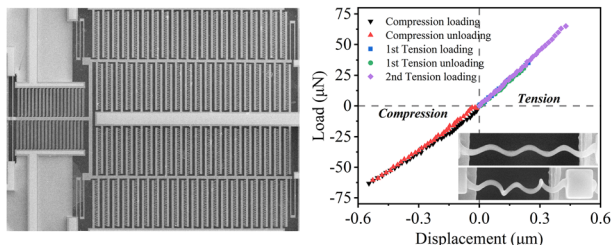
248

**Phonon vortices at heavy impurities in two-dimensional materials**

De-Liang Bao, Mingquan Xu, Ao-Wen Li, Gang Su, Wu Zhou and Sokrates T. Pantelides\*



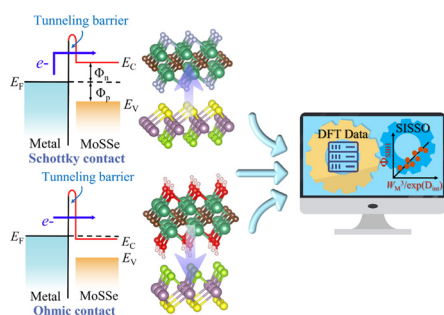
254



### Microelectromechanical system for *in situ* quantitative testing of tension–compression asymmetry in nanostructures

Yuheng Huang, Kuibo Yin,\* Binghui Li, Anqi Zheng, Bozhi Wu, Litao Sun and Meng Nie\*

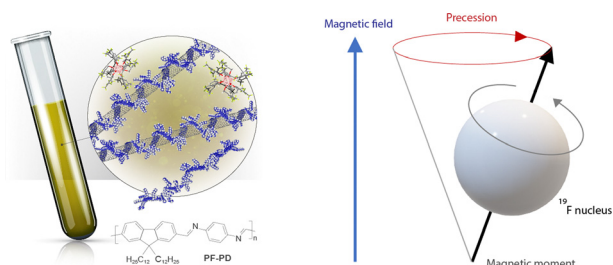
264



### Contact engineering for 2D Janus MoSSe/metal junctions

Yu Shu, Ting Li, Naihua Miao, Jian Gou, Xiaochun Huang,\* Zhou Cui, Rui Xiong, Cuilian Wen, Jian Zhou, Baisheng Sa\* and Zhimei Sun\*

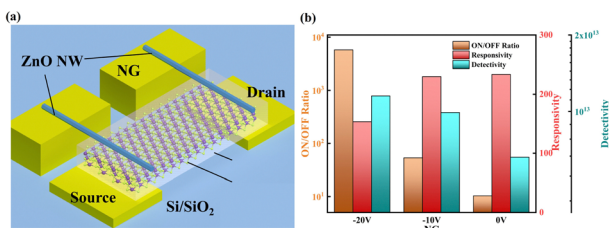
278



### Carrier density and delocalization signatures in doped carbon nanotubes from quantitative magnetic resonance

M. Alejandra Hermosilla-Palacios, Marissa Martinez, Evan A. Doud, Tobias Hertel, Alexander M. Spokoyny, Sofie Cambré, Wim Wenseleers, Yong-Hyun Kim, Andrew J. Ferguson and Jeffrey L. Blackburn\*

285



### Local modulation of Au/MoS<sub>2</sub> Schottky barriers using a top ZnO nanowire gate for high-performance photodetection

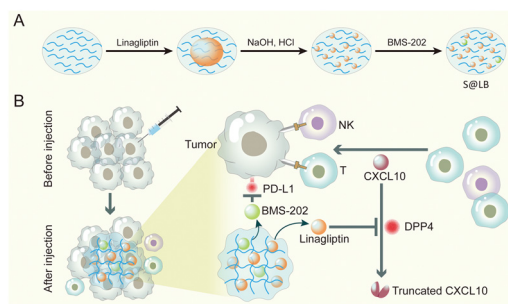
Yu Xiao, Guisheng Zou, Jinpeng Huo, Tianming Sun, Jin Peng, Zehua Li, Daozhi Shen and Lei Liu\*



295

### Hydrogel-mediated tumor T cell infiltration and immune evasion to reinforce cancer immunotherapy

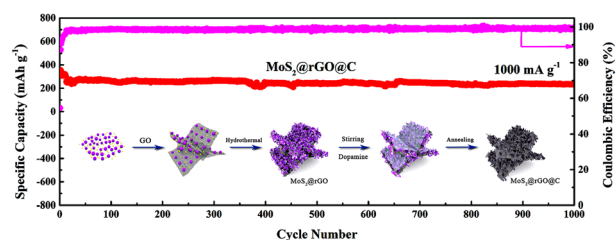
Guixiang Xu, Kai Liu, Xiangwu Chen, Yang Lin, Cancan Yu, Xinxin Nie, Wenxiu He,\* Nathan Karin and Yuxia Luan\*



305

### Dual carbon engineering enabling 1T/2H MoS<sub>2</sub> with ultrastable potassium ion storage performance

Rong Hu, Yanqi Tong, Jinling Yin, Junxiong Wu,\* Jing Zhao, Dianxue Cao, Guiling Wang\* and Kai Zhu\*



317

### Magnetic field-responsive graphene oxide photonic liquids

Yi-Tao Xu, Amanda J. Ackroyd, Arash Momeni, Mohamed Oudah and Mark J. MacLachlan\*

