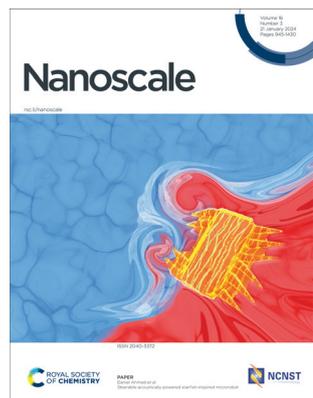


## IN THIS ISSUE

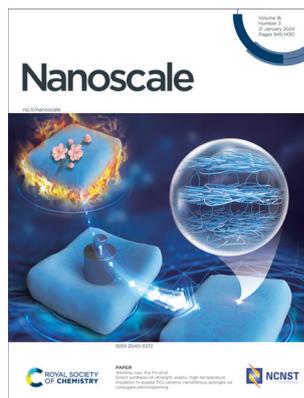
ISSN 2040-3372 CODEN NANOHL 16(3) 945-1430 (2024)



### Cover

See Daniel Ahmed *et al.*, pp. 1125–1134.

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### Inside cover

See Wenling Jiao, Xia Yin *et al.*, pp. 1135–1146.

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## EDITORIAL

959

### Celebrating 25 years of the Key Laboratory for Special Functional Materials at Henan University

Feng Bai,\* Gang Cheng,\* Zuliang Du\* and Guohua Jia\*

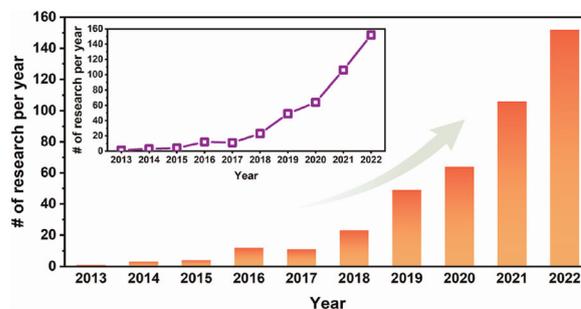


## REVIEWS

961

### Recent advances of pure/independent covalent organic framework membrane materials: preparation, properties and separation applications

Yahui Cai,\* Yang Yu, Jianfei Wu, Jiafu Qu, Jundie Hu,\* Dan Tian\* and Jianzhang Li



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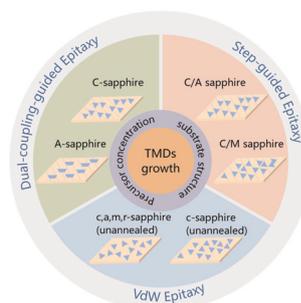


## REVIEWS

978

### Large-area single-crystal TMD growth modulated by sapphire substrates

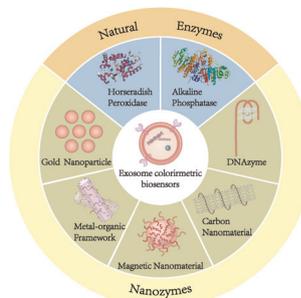
Lina Chen, Zhaofang Cheng, Shaodan He, Xudong Zhang, Kelun Deng, Dehua Zong, Zipeng Wu and Minggang Xia\*



1005

### Advances in colorimetric biosensors of exosomes: novel approaches based on natural enzymes and nanozymes

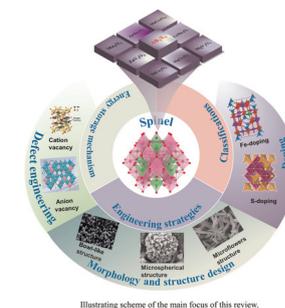
Zhonghao Sun, Binmao Zhang, Hangjia Tu, Chuye Pan, Yujuan Chai\* and Wenwen Chen\*



1025

### Engineering improved strategies for spinel cathodes in high-performing zinc-ion batteries

Jingjing Yuan,\* Yifan Li, Hui Xu, Yifan Qiao, Guangyu He and Haiqun Chen\*



Illustrating scheme of the main focus of this review.

1038

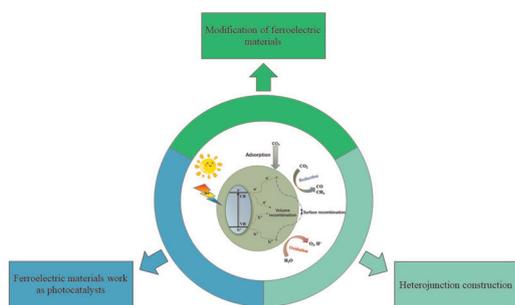
### Recent progress of heterogeneous catalysts for transfer hydrogenation under the background of carbon neutrality

Guangyu Chen, Jun Ma, Wanbing Gong,\* Jiayi Li, Zheyue Li, Ran Long\* and Yujie Xiong\*



## REVIEWS

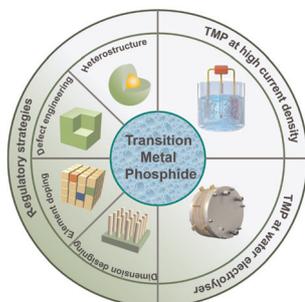
1058



### Research progress on photocatalytic reduction of CO<sub>2</sub> based on ferroelectric materials

Ling-Qi Yu, Rui-Tang Guo,\* Sheng-Hui Guo, Ji-Song Yan, Hao Liu and Wei-Guo Pan

1080

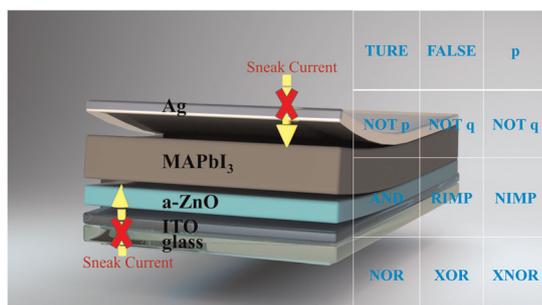


### Design and multilevel regulation of transition metal phosphides for efficient and industrial water electrolysis

Zi-Zhang Liu, Ning Yu, Ruo-Yao Fan, Bin Dong\* and Zi-Feng Yan\*

## COMMUNICATIONS

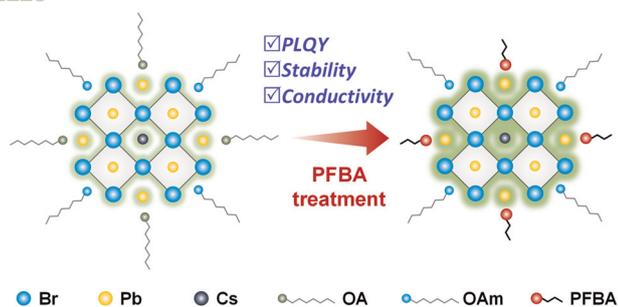
1102



### Attaining inhibition of sneak current and versatile logic operations in a singular halide perovskite memristive device by introducing appropriate interface barriers

Song He, Xingyu Yu, Juanjuan Wang, WenKang Zhong, Baochang Cheng and Jie Zhao\*

1115



### Simultaneously improved photoluminescence, stability, and carrier transport of perovskite nanocrystals by post-synthetic perfluorobutanesulfonic acid treatment

Xiao Huang, Xinli Wang, Jie Gao, Yang Sun, Jun Zhan, Yi Wang,\* Xi-Cheng Ai and Jian-Ping Zhang

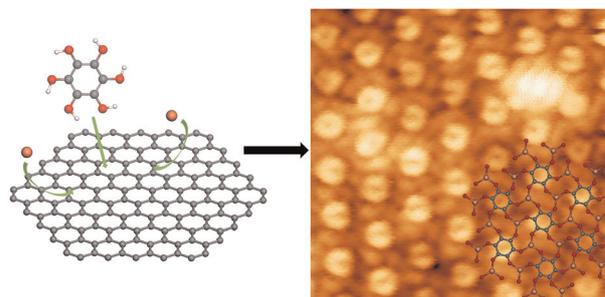


## COMMUNICATIONS

1120

### A $\text{Cu}_2(\text{C}_6\text{O}_6)$ metal–organic framework monolayer assembled on silicon carbide grown graphene exhibiting a metallic band structure

Xiaobo Wang, Tao Lin\* and Nian Lin\*

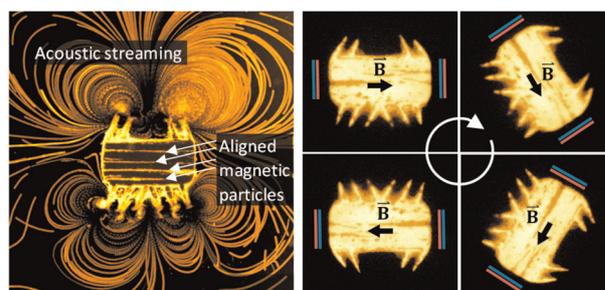


## PAPERS

1125

### Steerable acoustically powered starfish-inspired microrobot

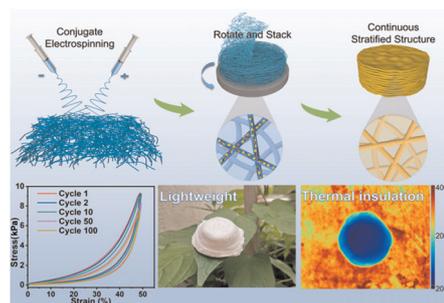
Cornel Dillinger, Justin Knipper, Nitesh Nama and Daniel Ahmed\*



1135

### Direct synthesis of ultralight, elastic, high-temperature insulation N-doped $\text{TiO}_2$ ceramic nanofibrous sponges via conjugate electrospinning

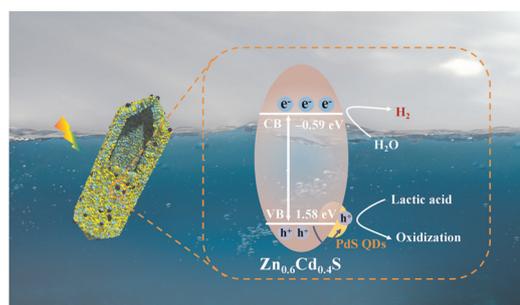
Wei Cheng, Wenling Jiao,\* Yifan Fei, Zaihui Yang, Xiaohua Zhang, Fan Wu, Yitao Liu, Xia Yin\* and Bin Ding



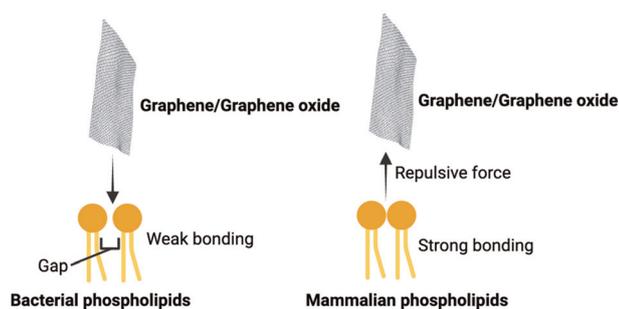
1147

### Interfacial electric field construction of hollow $\text{PdS}$ QDs/ $\text{Zn}_{1-x}\text{Cd}_x\text{S}$ solid solution with enhanced photocatalytic hydrogen evolution

Cheng Guo, Zongyi Huang, Xinrui Long, Yuchen Sun, Pengfei Ma, Quanxing Zheng, Hongliang Lu, Xiaodong Yi and Zhou Chen\*



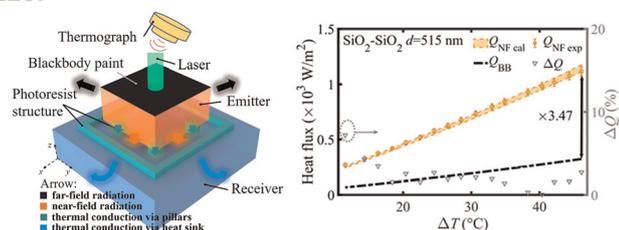
1156



### Differences in interaction of graphene/graphene oxide with bacterial and mammalian cell membranes

Victor Lanai, Yanyan Chen, Elena Naumovska, Santosh Pandit, Elsebeth Schröder, Ivan Mijakovic\* and Shadi Rahimi\*

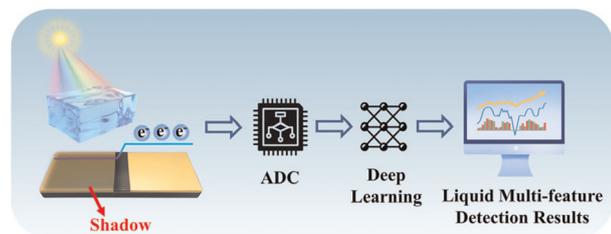
1167



### Transient measurement of near-field thermal radiation between macroscopic objects

Sen Zhang, Yongdi Dang, Xinran Li, Yuxuan Li, Yi Jin, Pankaj K. Choudhury, Jianbing Xu and Yungui Ma\*

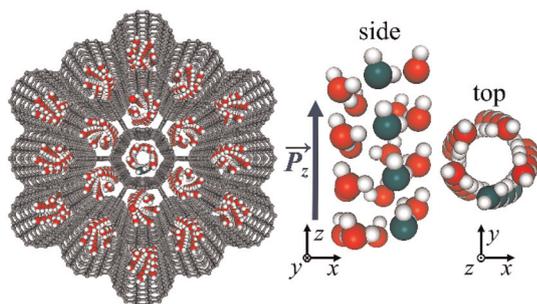
1176



### A shadow enabled non-invasive probe for multi-feature intelligent liquid surveillance system

Lizhen Lian, Qian Zhang,\* Wenbo Li, Bin Wang\* and Qijie Liang\*

1188



### Ferroelectricity of ice nanotube forests grown in three-dimensional graphene: the electric field effect

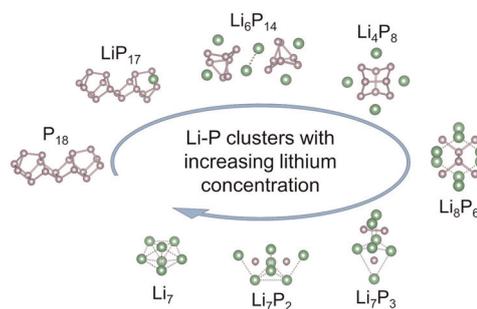
Tengfei Zhang, Yang Han,\* Chuan-fu Luo, Xiaochuang Liu, Xiaowei Zhang, Yuhan Song, Yi-Tung Chen and Shiyu Du



1197

### Lithiation of phosphorus at the nanoscale: a computational study of $\text{Li}_n\text{P}_m$ clusters

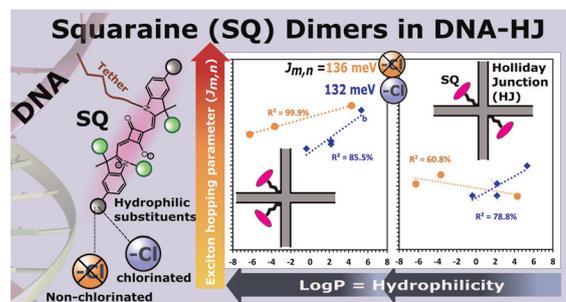
Dmitry V. Rybkovskiy,\* Sergey V. Lepeshkin, Anastasiia A. Mikhailova, Vladimir S. Baturin and Artem R. Oganov



1206

### Effect of hydrophilicity-imparting substituents on exciton delocalization in squaraine dye aggregates covalently templated to DNA Holliday junctions

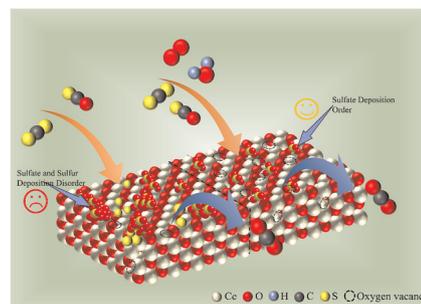
Gissela Pascual, Simon K. Roy, German Barcenas, Christopher K. Wilson, Keitel Cervantes-Salguero, Olena M. Obukhova, Alexander I. Krivoshey, Ewald A. Terpetschnig, Anatoliy L. Tatarskiy, Lan Li, Bernard Yurke, William B. Knowlton, Olga A. Mass, Ryan D. Pensack and Jeunghoon Lee\*



1223

### The influence of $\text{H}_2\text{O}$ or/and $\text{O}_2$ introduction during the low-temperature gas-phase sulfation of organic COS + $\text{CS}_2$ on the conversion and deposition of sulfur-containing species in the sulfated $\text{CeO}_2$ -OS catalyst for $\text{NH}_3$ -SCR

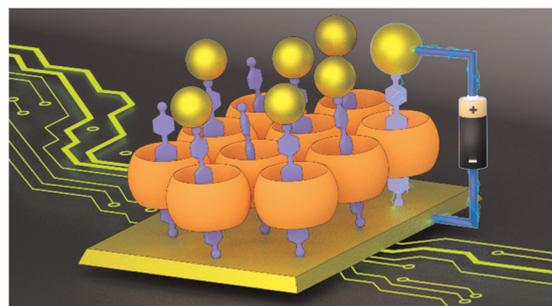
Zhibo Xiong,\* Yafei Zhu, Jiaying Liu, Yanping Du, Fei Zhou, Jing Jin,\* Qiguo Yang\* and Wei Lu



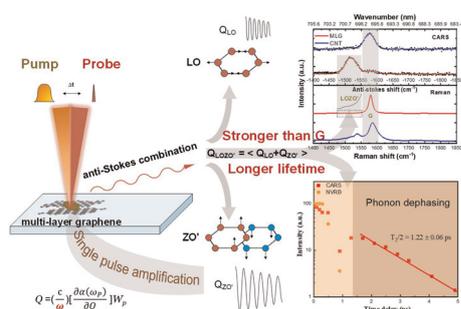
1238

### Large area arrays of discrete single-molecule junctions derived from host-guest complexes

Enrique Escorihuela, Jesús del Barrio, Ross J. Davidson, Andrew Beeby, Paul J. Low, Francesc Prez-Murano, Pilar Cea\* and Santiago Martin\*



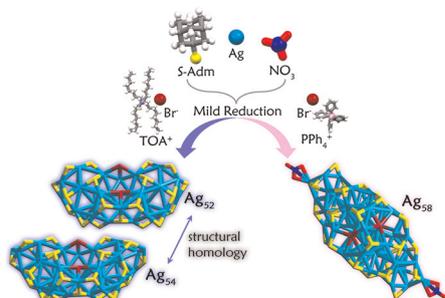
1247



### Enhanced double resonance Raman scattering in multilayer graphene with broadband coherent anti-Stokes Raman spectroscopy

Haolei Dai, Yujin Wang, Jianwei Zhao, Huan Liu, Zibo Liu\* and Dameng Liu\*

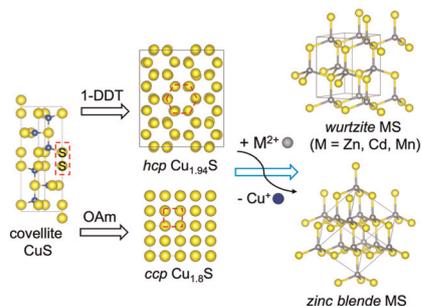
1254



### Effects of bromine-containing counterion salts in directing the structures of medium-sized silver nanoclusters

Haoqi Li, Xiao Wei, Xi Kang\* and Manzhou Zhu

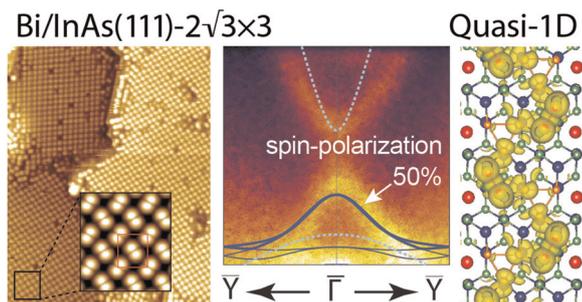
1260



### Pre-phase transition of a $\text{Cu}_{2-x}\text{S}$ template enables polymorph selective synthesis of MS (M = Zn, Cd, Mn) nanocrystals via cation exchange reactions

Yan Zhang, Shaobo He, Qingxia Zhang, Hongtao Zhang, Jinchen Zhou, Xing Yang, Qinhong Wei and Lihui Chen\*

1272



### Emergence of quasi-1D spin-polarized states in ultrathin Bi films on InAs(111)A for spintronics applications

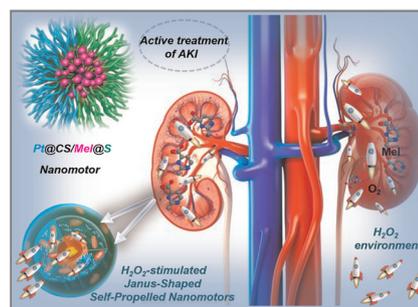
Alexey N. Mihalyuk,\* Leonid V. Bondarenko, Alexandra Y. Tupchaya, Dmitry V. Gruznev, Nadezhda Yu. Solovova, Vladimir A. Golyashov, Oleg E. Tereshchenko, Taichi Okuda, Akio Kimura, Sergey V. Eremeev, Andrey V. Zotov and Alexander A. Saranin



1282

## H<sub>2</sub>O<sub>2</sub>-stimulated Janus-shaped self-propelled nanomotors as an active treatment for acute renal injury

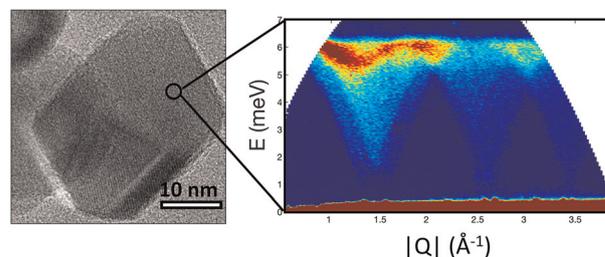
Jun Xu,\* Yali Zhong, Weixin Wang, Rui Gao, Yini Wang, Fei Tong, Jiahui Sun, Miaofang Hong, Lingyan Qiao, Weiwei Qiao, Qibing Mei and Jianming Wu



1291

## Probing spin waves in Co<sub>3</sub>O<sub>4</sub> nanoparticles for magnonics applications

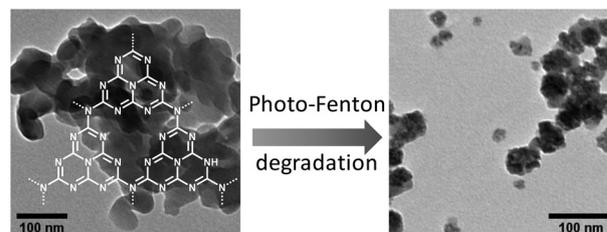
Mikhail Feygenson,\* Zhongyuan Huang, Yinguo Xiao, Xiaowei Teng, Wiebke Lohstroh, Nileena Nandakumaran, Jörg C. Neufeind, Michelle Everett, Andrey A. Podlesnyak, Germán Salazar-Alvarez, Seda Ulusoy, Mario Valvo, Yixi Su, Sascha Ehlert, Asma Qdemat, Marina Ganeva, Lihua Zhang and Meigan C. Aronson



1304

## Electrochemical impedance spectroscopy, another arrow in the arsenal to study the biodegradability of two-dimensional materials

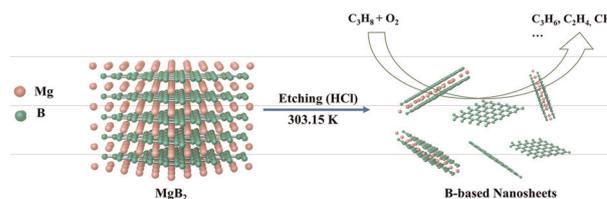
Livia Didonè, Yunseok Shin, Alessandro Silvestri,\* Maurizio Prato, Sungjin Park\* and Alberto Bianco\*



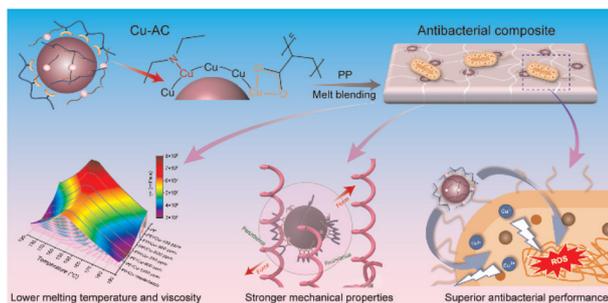
1312

## Chemically exfoliated boron nanosheets for efficient oxidative dehydrogenation of propane

Dake Zhang, Shenghua Wang, Chengcheng Zhang, Le He and Wei Sun\*



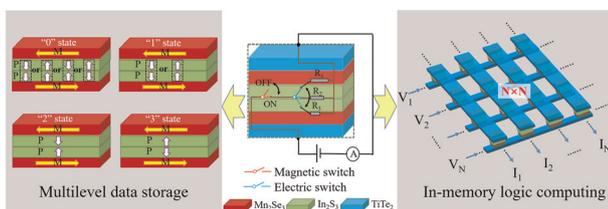
1320



### Dual functionalized copper nanoparticles for thermoplastics with improved processing and mechanical properties and superior antibacterial performance

Lulu Tian, Li Sun, Bo Gao, Fei Li, Chaoran Li, Ruoyu Wang, Yanfang Liu, Xiaohong Li, Liyong Niu\* and Zhijun Zhang\*

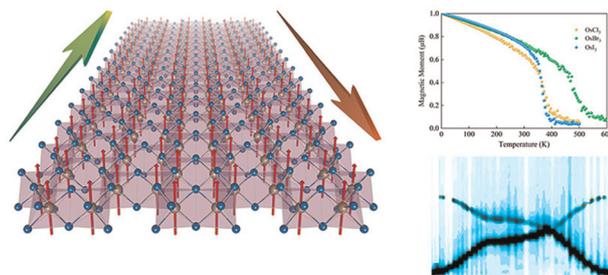
1331



### Magnetic-ferroelectric synergic control of multilevel conducting states in van der Waals multiferroic tunnel junctions towards in-memory computing

Zhou Cui, Baisheng Sa,\* Kan-Hao Xue, Yinggan Zhang, Rui Xiong, Cuilian Wen, Xiangshui Miao and Zhimei Sun\*

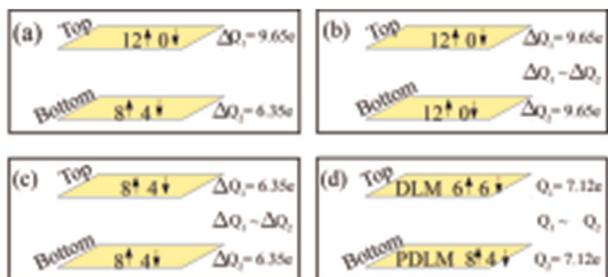
1345



### Stable room-temperature ferromagnetism and gate-tunable quantum anomalous Hall effect of two-dimensional 5d transition-metal trihalide OsX<sub>3</sub> (X = Cl, Br, I) monolayers

Mu Lan,\* Rong Wang, Lezhong Li, Wenning Ren, Xing Zhang, Gangxu Gu, Xi Zhang and Gang Xiang\*

1352



### Manipulation of electrochemical properties of MXene electrodes for supercapacitor applications by chemical and magnetic disorder

Mandira Das, Himanshu Murari, Subhradip Ghosh\* and Biplab Sanyal

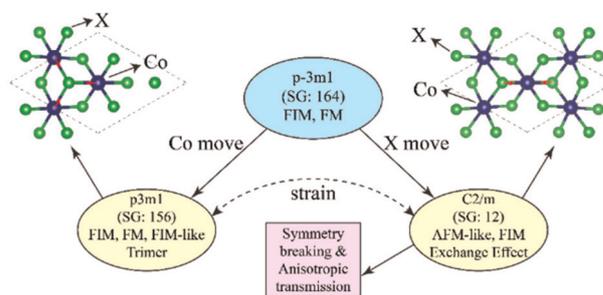


## PAPERS

1362

**Co<sub>3</sub>X<sub>8</sub> (X = Cl and Br): multiple phases and magnetic properties of the Kagome lattice**

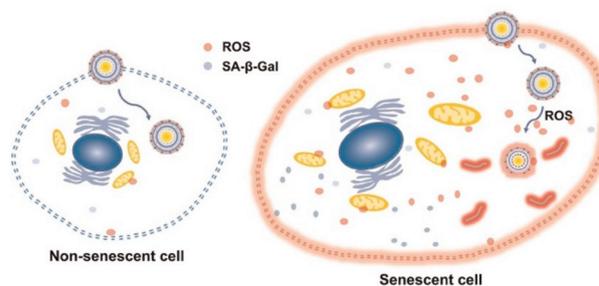
Haoyun Bai, Zhichao Yu, Jinxian Feng, Di Liu, Weiqi Li and Hui Pan\*



1371

**In vivo senescence imaging nanoprobe targets the associated reactive oxygen species**

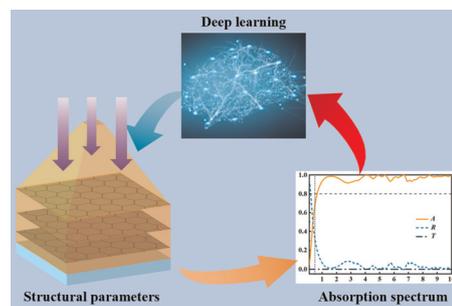
Seung Koo Lee,\* Myung Shin Han and Ching-Hsuan Tung\*



1384

**Metasurface inverse designed by deep learning for quasi-entire terahertz wave absorption**

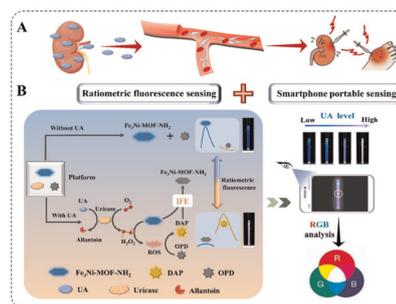
Zhipeng Ding, Wei Su,\* Yinlong Luo, Lipengan Ye, Wenlong Li, Yuanhang Zhou, Jianfei Zou, Bin Tang and Hongbing Yao\*



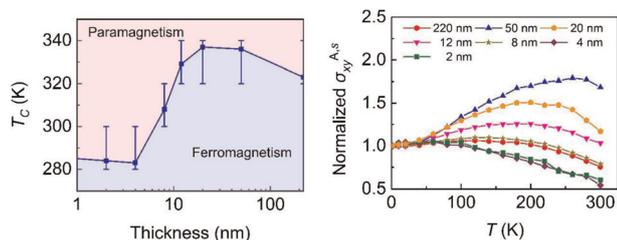
1394

**A facile, low-cost bimetallic iron–nickel MOF nanozyme-propelled ratiometric fluorescent sensor for highly sensitive and selective uric acid detection and its smartphone application**

Jiawen Han, Yuwei Zhang, Xujuan Lv, Daoqing Fan\* and Shaojun Dong



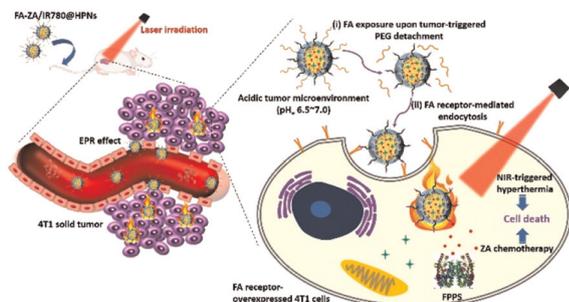
1406



### Near-room temperature ferromagnetism and a tunable anomalous Hall effect in atomically thin $\text{Fe}_4\text{CoGeTe}_2$

Shaohua Yan, Hui-Hui He, Yang Fu, Ning-Ning Zhao, Shangjie Tian, Qiangwei Yin, Fanyu Meng, Xinyu Cao, Le Wang, Shanshan Chen, Ki-Hoon Son, Jun Woo Choi, Hyejin Ryu, Shouguo Wang, Hechang Lei,\* Kai Liu\* and Xiao Zhang\*

1415



### Tumor-activated targetable photothermal chemotherapy using IR780/zoledronic acid-containing hybrid polymeric nanoassemblies with folate modification to treat aggressive breast cancer

Yu-Ling Liu, Tzu-Hao Wang, Nien-Tzu Yeh, Wei-Jen Huang, Bor-Show Tzang, I-Ting Wu, Hao-Yang Chin, Shang-Hsiu Hu, Tsai-Ching Hsu\* and Wen-Hsuan Chiang\*

