

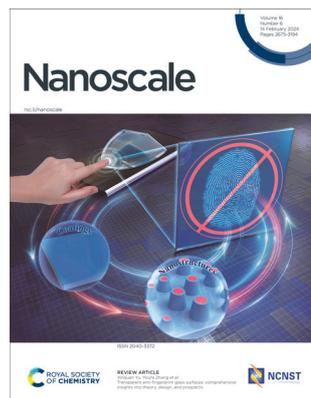
# Nanoscale

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## IN THIS ISSUE

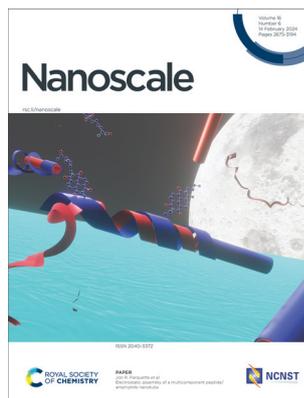
ISSN 2040-3372 CODEN NANOHL 16(6) 2675–3194 (2024)



### Cover

See Xinquan Yu, Youfa Zhang *et al.*, pp. 2695–2712.

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### Inside cover

See Jon R. Parquette *et al.*, pp. 2894–2903.

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## EDITORIAL

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### Celebrating the 20th anniversary of the National Center for Nanoscience and Technology, China (NCNST)

Xinfeng Liu,\* Qing Dai,\* Zhixiang Wei,\* Chunying Chen\* and Yuliang Zhao\*



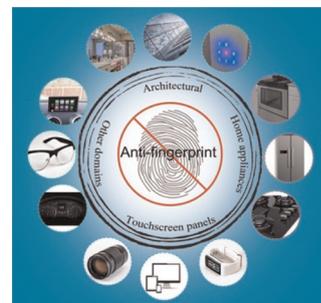
国家纳米科学中心二十周年庆  
National Center for Nanoscience and Technology  
20<sup>th</sup> Anniversary

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### Transparent anti-fingerprint glass surfaces: comprehensive insights into theory, design, and prospects

Wei Wang, Weilin Deng, Wancheng Gu, Xinquan Yu\* and Youfa Zhang\*



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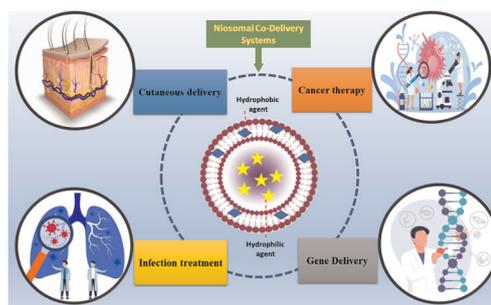
Fundamental questions  
Elemental answers

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### Composition, preparation methods, and applications of nanoniosomes as codelivery systems: a review of emerging therapies with emphasis on cancer

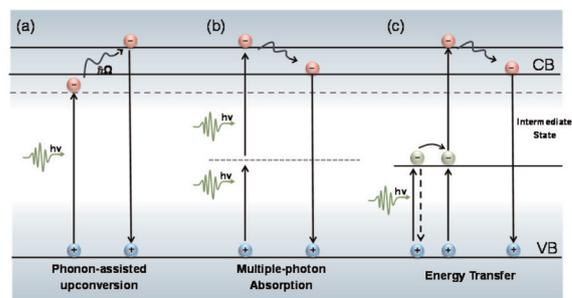
Maryam Roostaei, Atefeh Derakhshani, Hadiseh Mirhosseini, Elmira Banaei Mofakham, Sonia Fathi-Karkan, Shekoufeh Mirinejad, Saman Sargazi\* and Mahmood Barani\*



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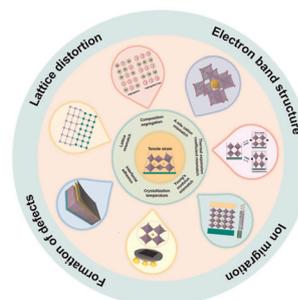
Yutong Zhang, Wenna Du\* and Xinfeng Liu\*



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Yixiao Lei, Wenwu Liu,\* Caixia Li, Shiji Da, Yawen Zheng, Youzhi Wu and Fen Ran\*

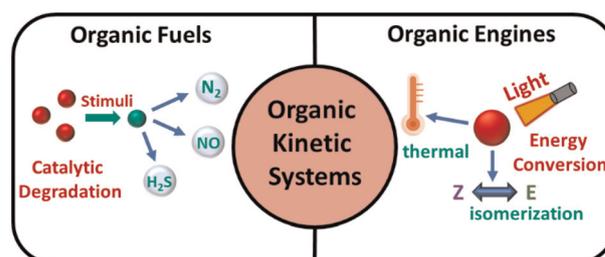


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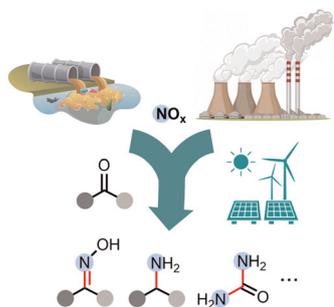
### Organic nanomotors: emerging versatile nanobots

Jingjun Jin, Yan Li, Shuai Wang,\* Jianchun Xie\* and Xibo Yan\*



## MINIREVIEWS

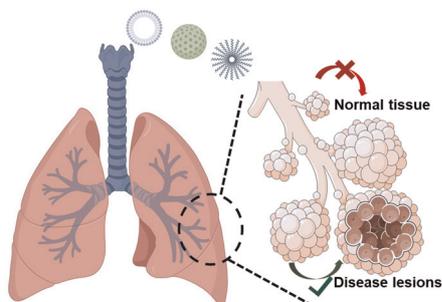
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### Recent research progress on building C–N bonds via electrochemical NO<sub>x</sub> reduction

Shaktiswaran R. Udayasurian and Tengfei Li\*

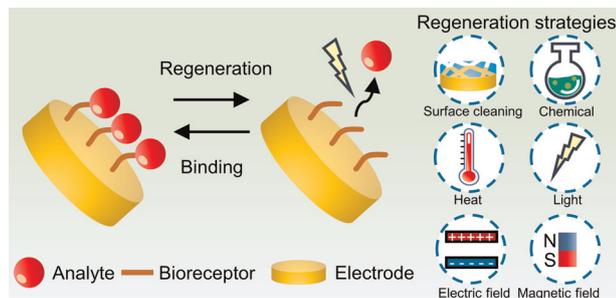
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### Nanomedicines for targeted pulmonary delivery: receptor-mediated strategy and alternatives

Wenhao Wang, Ziqiao Zhong, Zhengwei Huang,\*  
Tze Ning Hiew, Ying Huang, Chuanbin Wu\* and  
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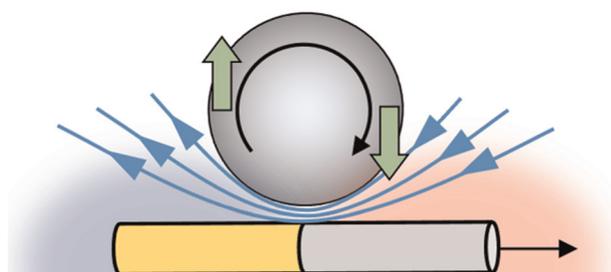


### Recent progress in biosensor regeneration techniques

Yizhen Jia, Shulin Chen, Qi Wang and Jinghua Li\*

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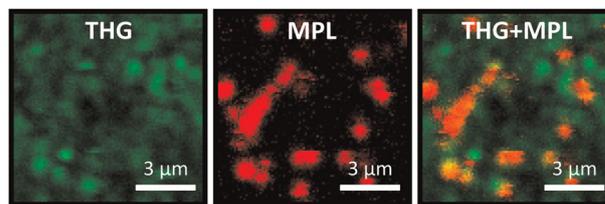
Donghao Cui, Zuyao Yan, Xiaowen Chen, Jiayu Liu and  
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### Probing compositional engineering effects on lead-free perovskite-inspired nanocrystal thin films using correlative nonlinear optical microscopy

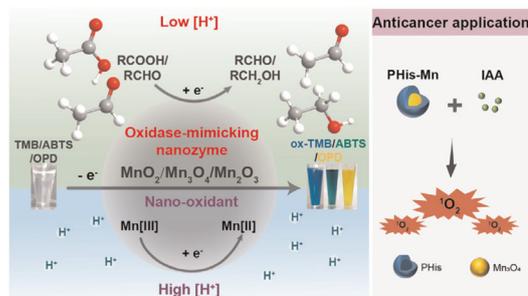
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### Oxidase-like manganese oxide nanoparticles: a mechanism of organic acids/aldehydes as electron acceptors and potential application in cancer therapy

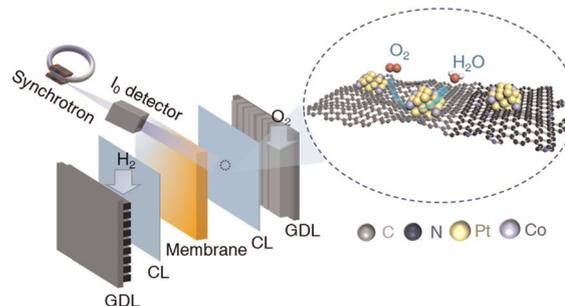
Yang Pan, Zhuangzhuang Zhang, Ju-E Cun, Xi Fan, Qingqing Pan, Wenxia Gao, Kui Luo, Bin He\* and Yuji Pu\*



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### Highly dispersed ultrafine PtCo alloy nanoparticles on unique composite carbon supports for proton exchange membrane fuel cells

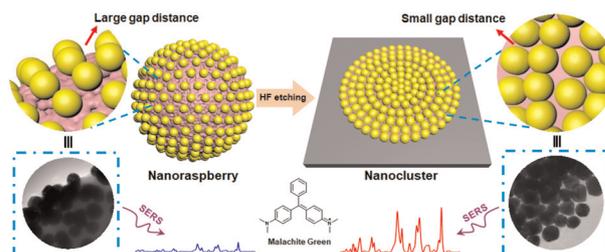
Lingling Zhang, Tong Liu, Xiaokang Liu, Sicheng Li, Xue Zhang, Qiquan Luo, Tao Ding,\* Tao Yao and Wei Zhang\*



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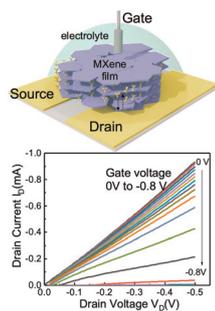
### Nanogap engineering of 3D nanoraspberries into 2D plasmonic nanoclusters toward improved SERS performance

Jian Yang, Xinxing Zhang, Lin Geng, Chao Xia, Xin Chen, Wenzhong Yang, Hui Xu\* and Zhiqun Lin\*



## COMMUNICATIONS

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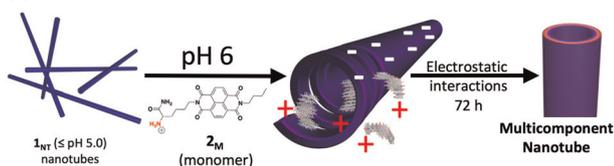


## 2D MXene electrochemical transistors

Jyoti Shakya, Min-A. Kang, Jian Li, Armin VahidMohammadi, Weiqian Tian,\* Erica Zeglio\* and Mahiar Max Hamedy\*

## PAPERS

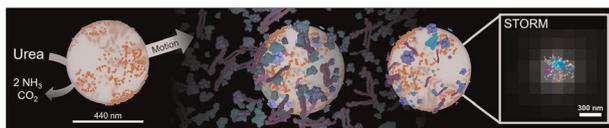
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## Electrostatic assembly of a multicomponent peptide/amphiphile nanotube

Jenae J. Linville, McKensie L. Mason, Edgar U. Lopez-Torres and Jon R. Parquette\*

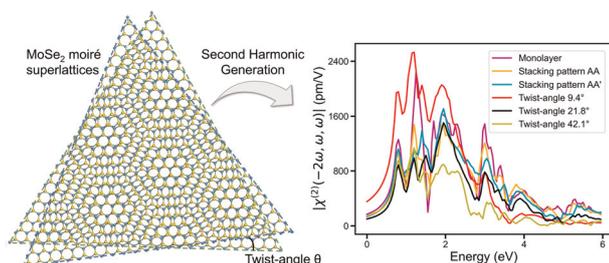
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## Unveiling protein corona formation around self-propelled enzyme nanomotors by nanoscopy

Tania Patiño,\* Joaquin Llacer-Wintle, Sílvia Pujals, Lorenzo Albertazzi\* and Samuel Sánchez\*

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## Second-harmonic generation in 2D moiré superlattices composed of bilayer transition metal dichalcogenides

Xiaoyu Yang, Xinjiang Wang, Muhammad Faizan, Xin He\* and Lijun Zhang\*

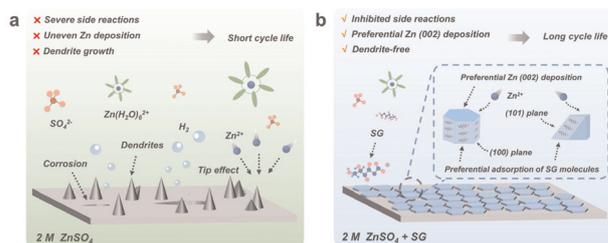


## PAPERS

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### Inducing preferential growth of the Zn (002) plane by using a multifunctional chelator for achieving highly reversible Zn anodes

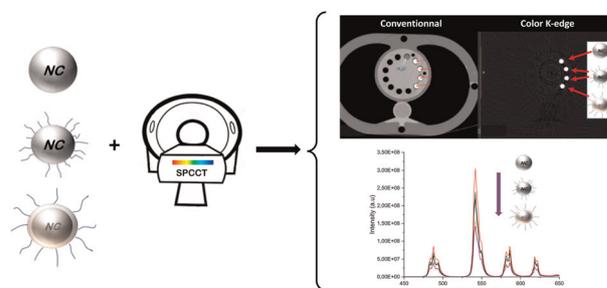
Xi Li, Zhenjie Chen, Pengchao Ruan, Xueting Hu, Bingan Lu, Xiaoming Yuan, Siyu Tian\* and Jiang Zhou\*



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### Surface modification effect on contrast agent efficiency for X-ray based spectral photon-counting scanner/luminescence imaging: from fundamental study to *in vivo* proof of concept

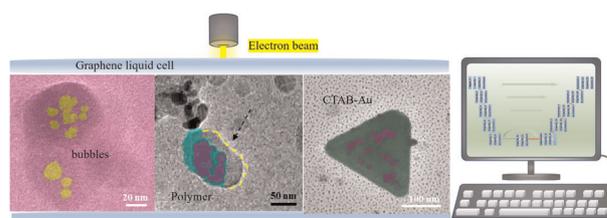
Loic Cuau, Pia Akl, A. Gautheron, Angèle Houmeau, Frédéric Chaput, Ala Yaromina, Ludwig Dubois, Philippe Lambin, Szilvia Karpati, Stephane Parola, B. Rezaeifar, Jean-Baptiste Langlois, Salim A. Si-Mohamed, Bruno Montcel, Philippe Douek and Frederic Lerouge\*



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### Revealing microscopic dynamics: *in situ* liquid-phase TEM for live observations of soft materials and quantitative analysis *via* deep learning

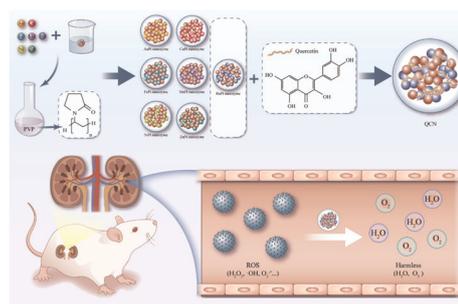
Yangyang Sun, Xingyu Zhang,\* Rui Huang, Dahai Yang, Juyeong Kim, Junhao Chen, Edison Huixiang Ang, Mufan Li, Lin Li and Xiaohui Song\*



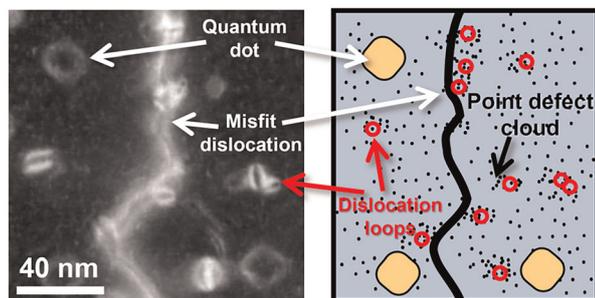
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### A bimetallic nanozyme coordinated with quercetin for efficient radical scavenging and treatment of acute kidney injury

Jiangpeng Pan, Tingting Wu, Lu Chen, Xiaoxi Chen, Chao Zhang, Yanyan Wang, Hao Li,\* Jiancheng Guo\* and Wei Jiang\*



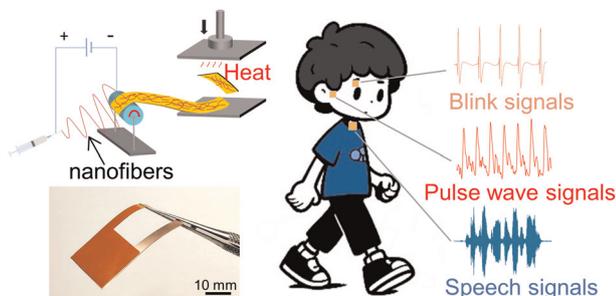
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### Gradual degradation in InAs quantum dot lasers on Si and GaAs

Eamonn T. Hughes, Chen Shang, Jennifer Selvidge, Daehwan Jung, Yating Wan, Robert W. Herrick, John E. Bowers\* and Kunal Mukherjee\*

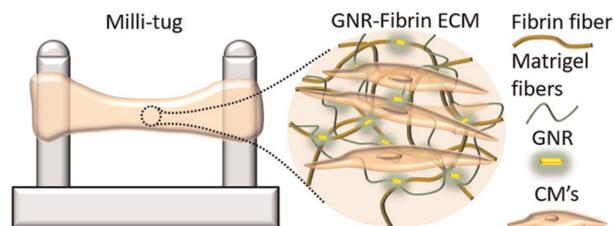
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### Ultralow-cost piezoelectric sensor constructed by thermal compression bonding for long-term biomechanical signal monitoring in chronic mental disorders

Xiaodong Shao, Zenan Chen, Junxiao Yu, Fangzhou Lu, Shisheng Chen, Jingfeng Xu, Yihao Yao, Bin Liu, Ping Yang,\* Qin Jiang\* and Benhui Hu\*

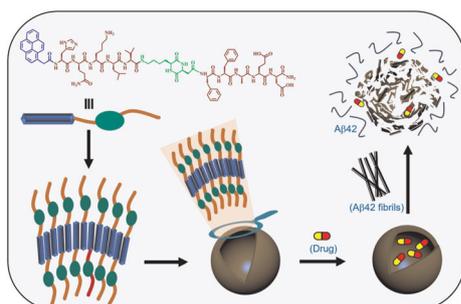
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### Improving the development of human engineered cardiac tissue by gold nanorods embedded extracellular matrix for long-term viability

Alberto Sesena-Rubfiaro,\* Navin J. Prajapati, Lihua Lou, Govinda Ghimire, Arvind Agarwal and Jin He\*

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### Cooperative dissolution of peptidomimetic vesicles and amyloid $\beta$ fibrils

Soumik Dinda, Debasis Ghosh and Thimmaiah Govindaraju\*

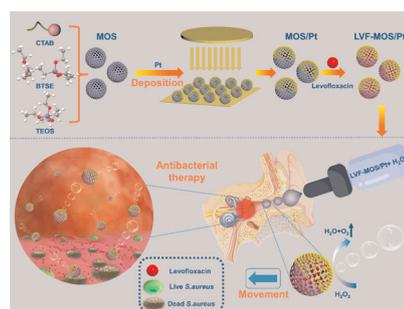


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### Janus mesoporous organosilica/platinum nanomotors for active treatment of suppurative otitis media

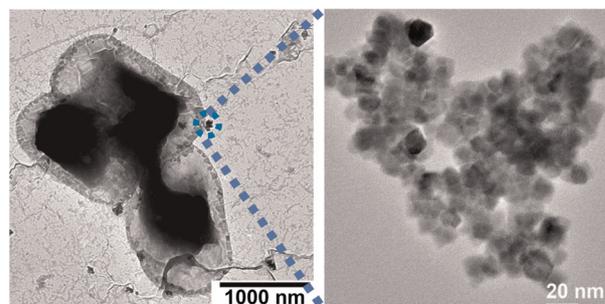
Zhizhou Luo, Ruonan Wang, Xiaoxia Deng, Tianxiang Chen, Xuehua Ma, Yujie Zhang,\* Changyong Gao\* and Aiguo Wu\*



3011

### A rapid and specific antimicrobial resistance detection of *Escherichia coli* via magnetic nanoclusters

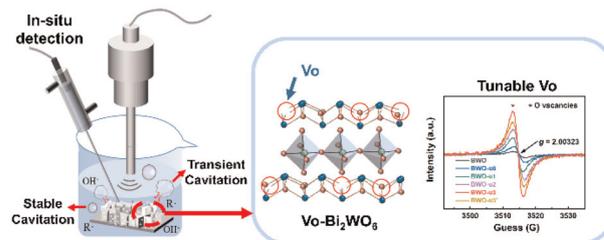
Fei Pan,\* Stefanie Altenried, Subas Scheibler and Qun Ren\*



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### Sonochemical regulation of oxygen vacancies for Bi<sub>2</sub>WO<sub>6</sub> nanosheet-based photoanodes to promote photoelectrochemical performance

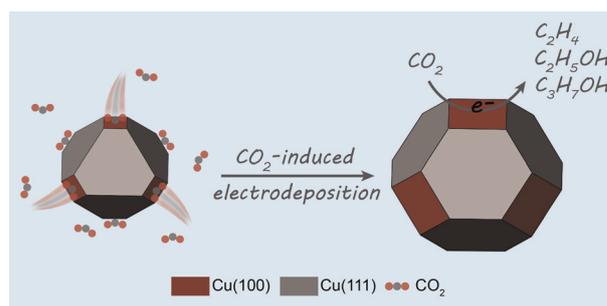
Ruowen Zhao, Yupu Zhang, Fangli Wu, Jianyuan Wang, Fang Chen\* and Wei Zhai\*



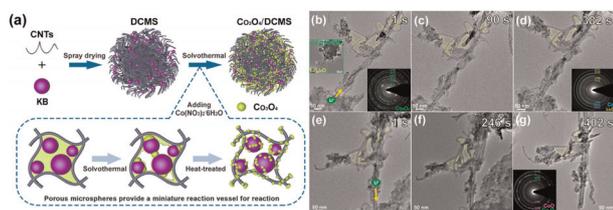
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### Gas-induced controllable synthesis of the Cu(100) crystal facet for the selective electroreduction of CO<sub>2</sub> to multicarbon products

Haoyang Wu, Zhili Wang, Benqiang Tian, Yaping Li, Zheng Chang,\* Yun Kuang\* and Xiaoming Sun



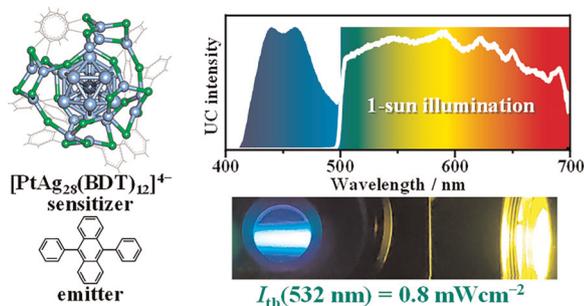
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### Hierarchical structure promoted lithiation/delithiation behavior of a double-carbon microsphere supported nano-Co<sub>3</sub>O<sub>4</sub> anode

Min Liu, Hai Li, Jie Yu, Shuo Zhang, Qi Chen, Wei Lu, Anbao Yuan,\* Li Zhong\* and Litao Sun

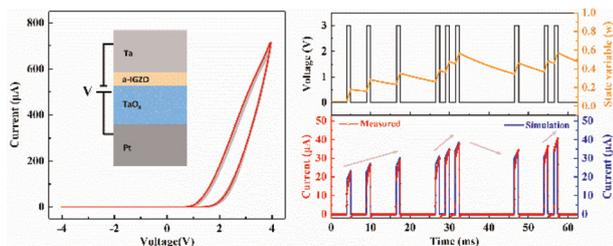
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### Triplet properties and intersystem crossing mechanism of PtAg<sub>28</sub> nanocluster sensitizers achieving low threshold and efficient photon upconversion

Masaaki Mitsui\* and Atsuki Uchida

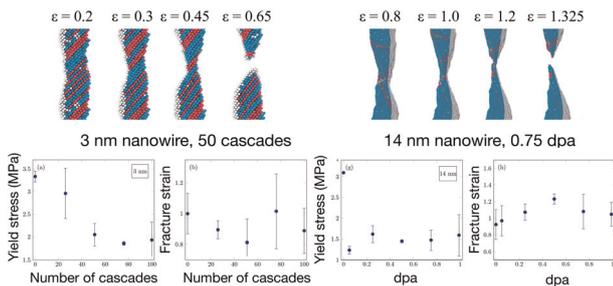
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### Unveiling transient current response in bilayer oxide-based physical reservoirs for time-series data analysis

Bo-Ru Lai, Kuan-Ting Chen, Rajneesh Chaurasiya, Song-Xian You, Wen-Dung Hsu and Jen-Sue Chen\*

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### Effects of radiation damage on the yielding and fracture of nanowires

Daniel Vizoso and Rémi Dingreville\*

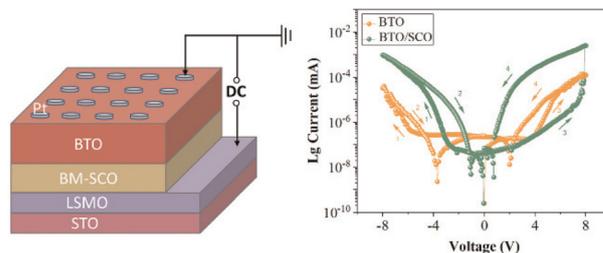


## PAPERS

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### Ultra-high resistive switching current ratio and improved ferroelectricity and dielectric tunability performance in a BaTiO<sub>3</sub>/La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub> heterostructure by inserting a SrCoO<sub>2.5</sub> layer

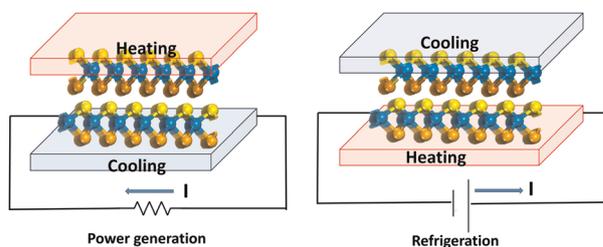
Xi Zhang, Xin Chen,\* J. P. Cao, H. W. Wang, W. Y. Deng, L. H. Yang, K. Lin, Q. Li, Q. H. Li, Y. L. Cao, J. X. Deng and Jun Miao\*



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### Ultralow thermal conductivity of W-Janus bilayers (WXY: X, Y = S, Se, and Te) for thermoelectric devices

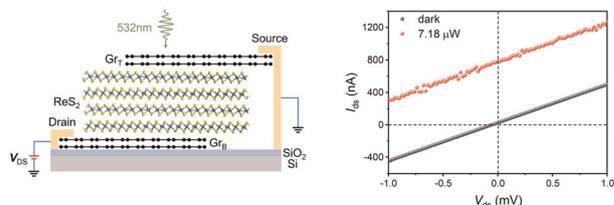
Neha Kapila Sharma,\* Vivek Mahajan, Rajendra Adhikari and Hitesh Sharma\*



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### A giant intrinsic photovoltaic effect in atomically thin ReS<sub>2</sub>

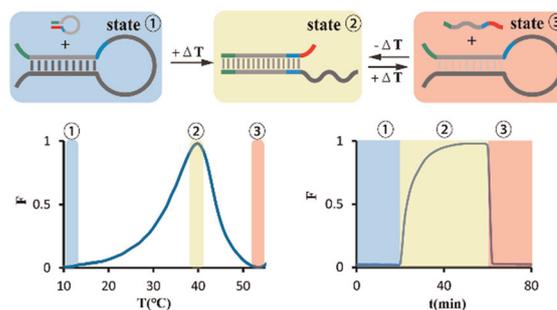
Jing Wang, Nannan Han,\* Zhihua Lin, Siqi Hu, Ruijuan Tian, Mingwen Zhang, Yu Zhang, Jianlin Zhao and Xuetao Gan\*



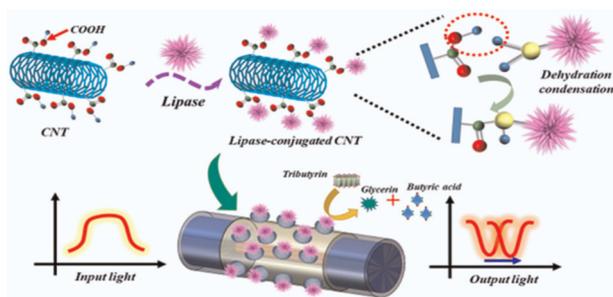
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### Multimode adaptive logic gates based on temperature-responsive DNA strand displacement

Zhekun Chen, Chun Xie, Kuiting Chen, Yingxin Hu, Fei Xu and Linqiang Pan\*



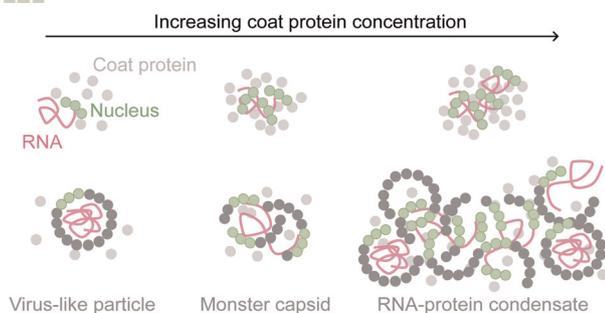
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### A lipase-conjugated carbon nanotube fiber-optic SPR sensor for sensitive and specific detection of tributyrin

Hongxin Zhang, Xuegang Li,\* Xue Zhou, Yanan Zhang and Yong Zhao\*

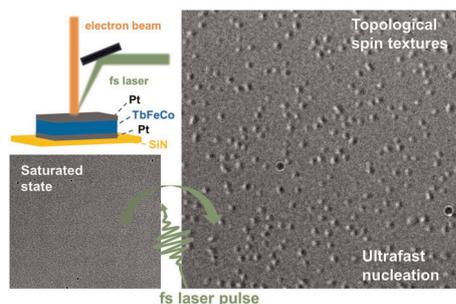
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### Effect of coat-protein concentration on the self-assembly of bacteriophage MS2 capsids around RNA

LaNell A. Williams, Andreas Neophytou, Rees F. Garmann, Dwaipayan Chakrabarti and Vinothan N. Manoharan\*

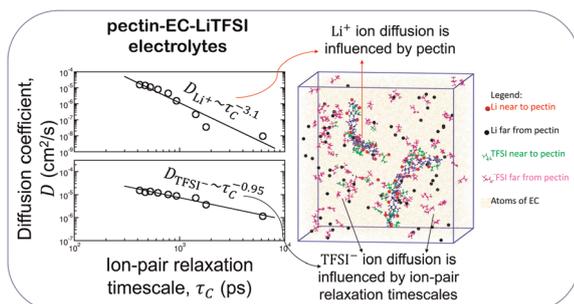
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### Ultrafast switching to zero field topological spin textures in ferrimagnetic TbFeCo films

Kaixin Zhu, Linzhu Bi, Yongzhao Zhang, Dingguo Zheng, Dong Yang, Jun Li, Huanfang Tian, Jianwang Cai, Huaixin Yang, Ying Zhang\* and Jianqi Li\*

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### Ion transport mechanisms in pectin-containing EC-LiTFSI electrolytes

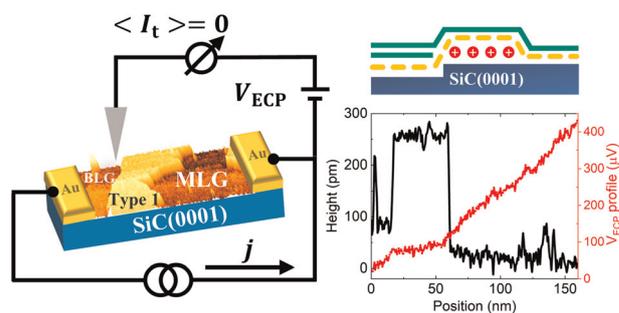
Sipra Mohapatra, Hema Teherpuria, Sapta Sindhu Paul Chowdhury, Suleman Jalilahmad Ansari, Prabhat K. Jaiswal, Roland R. Netz and Santosh Mogurampelly\*



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### Observation of different Li intercalation states and local doping in epitaxial mono- and bilayer graphene on SiC(0001)

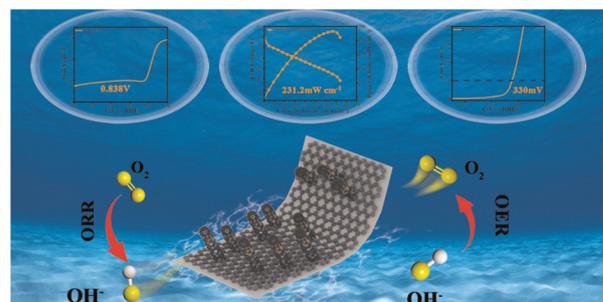
Wei Huang, Jeong Ah Seo, Mark P. Canavan, Pietro Gambardella and Sebastian Stepanow\*



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### Movable-type printing method to fabricate ternary FeCoNi alloys confined in porous carbon towards oxygen electrocatalysts for rechargeable Zn-air batteries

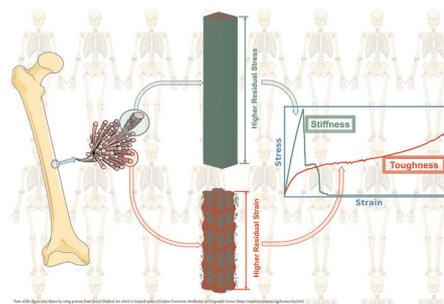
Xuzi Cong, Jigang Wang, Yinggang Sun, Gaojin Feng, Qiang Liu and Likai Wang\*



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### Elucidating the role of diverse mineralisation paradigms on bone biomechanics – a coarse-grained molecular dynamics investigation

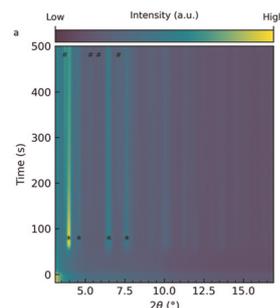
Mahdi Tavakol\* and Ted J. Vaughan\*



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### Stabilizing tetragonal ZrO<sub>2</sub> nanocrystallites in solvothermal synthesis

Magnus Kløve, Gilles Philippot,\* Aimery Auxéméry, Cyril Aymonier and Bo Brummerstedt Iversen\*



## CORRECTION

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**Correction: An interfacial toughening strategy for high stability 2D/3D perovskite X-ray detectors with a carbon nanotube thin film electrode**

Liwen Qiu, Mingqiang Wang, Tian Sun, Qiang Lou, Tong Chen, Guoshen Yang, Wei Qian, Zixuan Zhang, Shihe Yang, Min Zhang, Yufeng Jin and Hang Zhou\*

