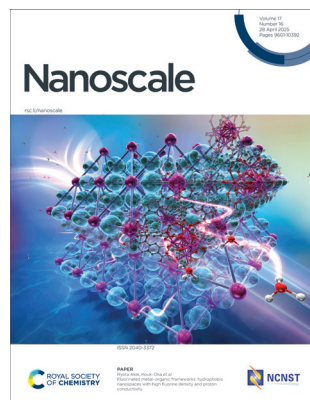


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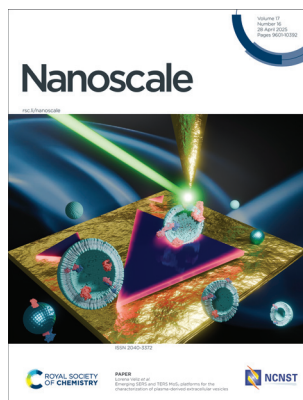
ISSN 2040-3372 CODEN NANOHL 17(16) 9601-10392 (2025)



### Cover

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Kouki Oka *et al.*,  
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pp. 9926–9936.

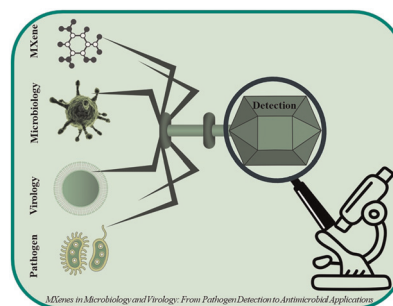
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### MXenes in microbiology and virology: from pathogen detection to antimicrobial applications

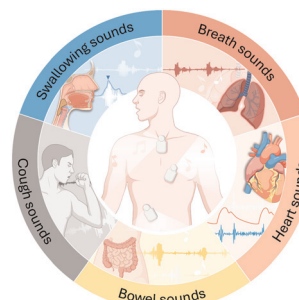
Beg m Sarac, Seydanur Y cer and Fatih Ciftci\*



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Tran Bach Dang, Thanh An Truong, Chi Cong Nguyen, Michael Listyawan, Joshua Sam Sapers, Sinuo Zhao, Duc Phuc Truong, Jin Zhang, Thanh Nho Do and Hoang-Phuong Phan\*



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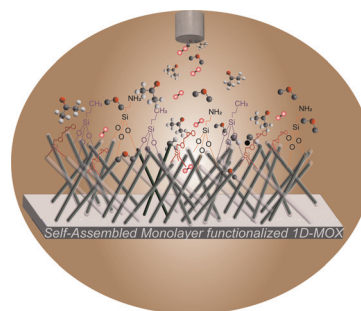


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### Self-assembled monolayer functionalized metal oxides: a path toward highly selective and low-power consuming gas sensors

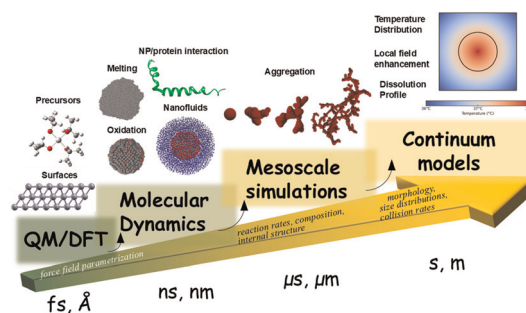
Navpreet Kaur\* and Mandeep Singh\*



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### Design of engineered nanoparticles for biomedical applications by computational modeling

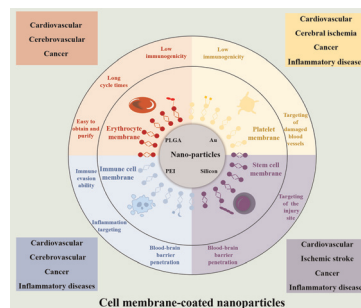
Diego Chaparro and Eirini Goudeli\*



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### Retrospective perspectives and future trends in nanomedicine treatment: from single membranes to hybrid membranes

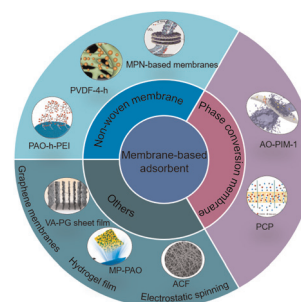
Xinya Du, Junyang Huang, Chuanrong Zhao, Ziqiu Hu, Liyuan Zhang, Zichen Xu, Xiaoying Liu, Xinglei Li, Zhengcai Zhang, Songtao Guo,\* Tieying Yin\* and Guixue Wang\*



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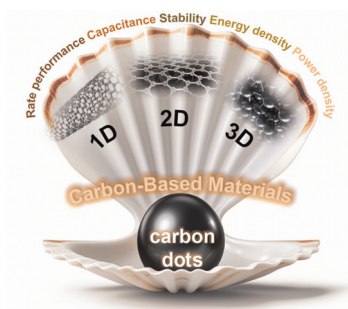
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Zhong Liu, Huanhuan Tan, Yuling Shao, Guoliang Nie,\* Zewei Hou, Peipei Yang, Songwei Li\* and Chuntai Liu



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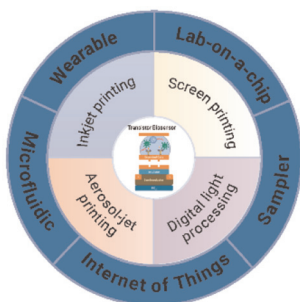
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### Carbon-based nanostructured materials incorporating carbon dots for supercapacitors: a review

Zhiwei Dong and Qihang Zhou\*

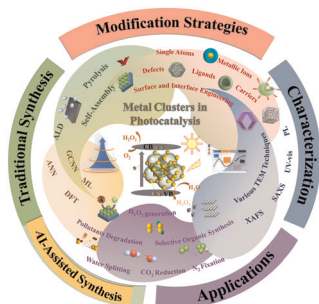
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### Advancing transistor-based point-of-care (POC) biosensors: additive manufacturing technologies and device integration strategies for real-life sensing

Xiaoao Shi, Haihui Pu, Lewis L. Shi, Tong-Chuan He and Junhong Chen\*

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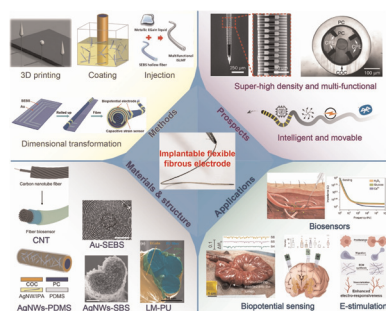


### Metal cluster-mediated photocatalysis: synthesis, characterization and application

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### Flexible fibrous electrodes for implantable biosensing

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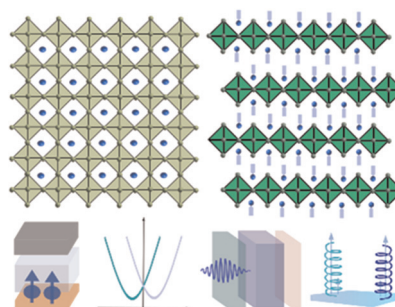


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## Spin effects in metal halide perovskite semiconductors

Md Azimul Haque and Matthew C. Beard\*

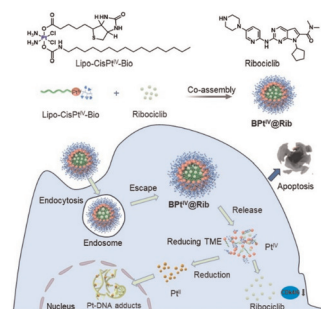


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A biotin guided Pt<sup>IV</sup> amphiphilic prodrug synergized with CDK4/6 inhibition for enhanced tumor targeted therapy

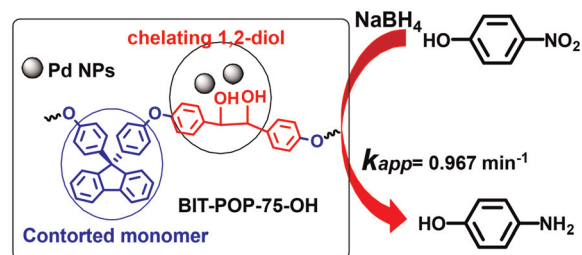
Shaoming Zhu, Jiayu Li, Hao Sun, Jian Liang, Zhi Qiu, Xiaoguang Zhou, Wei Wang,\* Dengshuai Wei\* and Lei Zhong\*



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## Flexible porous organic polymers with 1,2-diol subunits favoring the high loading of Pd nanoparticles

Zhi-Cun Wang, Boya Kuang, Hanyuan Chen, Nicolas Bogliotti, Ran Guo, Yan Liu, Jin-Xiu Zhou\* and Mu-Hua Huang\*



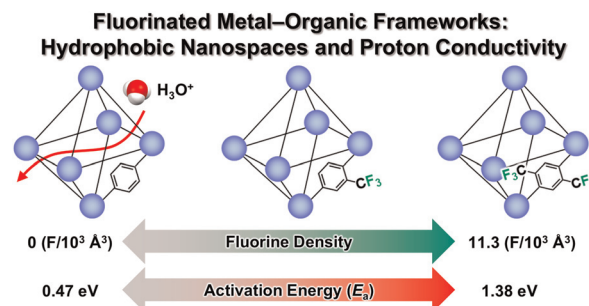
Flexible and soluble POPs to load 12.53% Pd NPs

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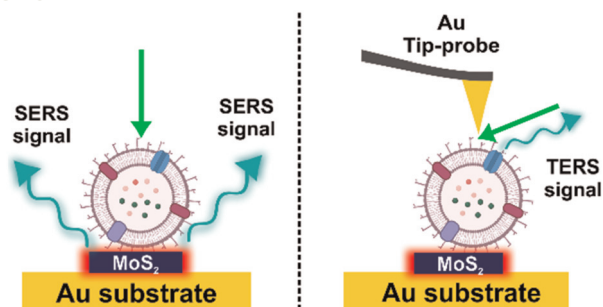
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## Fluorinated metal-organic frameworks: hydrophobic nanospaces with high fluorine density and proton conductivity

Ryota Akai, Hitoshi Kasai and Kouki Oka\*



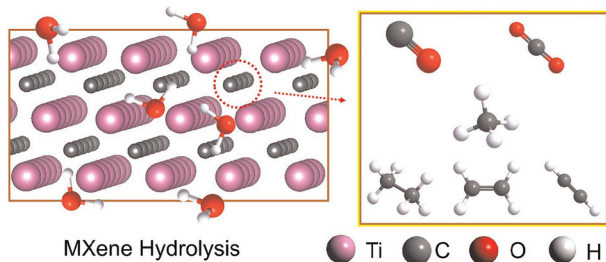
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### Emerging SERS and TERS MoS<sub>2</sub> platforms for the characterization of plasma-derived extracellular vesicles

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### Formation of hydrocarbons and carbon oxides in MXene reactions with water under varying oxidative conditions

Shuohan Huang,\* Guanglei Xiang and Vadym N. Mochalin\*

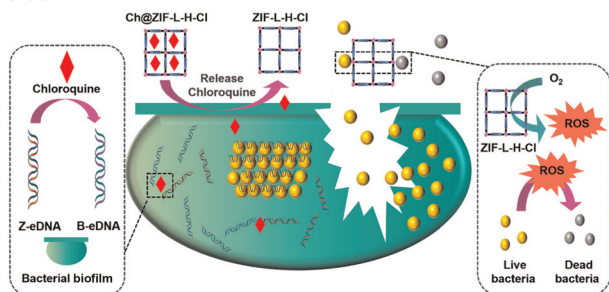
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### Synthesis of carbon dots from spent coffee grounds: transforming waste into potential biomedical tools

Yingru Zhou, Adalberto Camisasca, Sofia Dominguez-Gil, Michał Bartkowski, Keith D. Rochfort, Martina Piletti, Anita White, Dorottya Krizsan, Robert O'Connor, Susan J. Quinn, Daniela Iacopino, Alex J. Eustace\* and Silvia Giordani\*

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### Halogen anion modulated metal–organic frameworks with enhanced nanozyme activities for bacterial biofilm disruption

Tianjin Ge, Renfei Wu, Tianrong Yu, Muhammad Sajjad Ul Hasan\* and Jian Liu\*

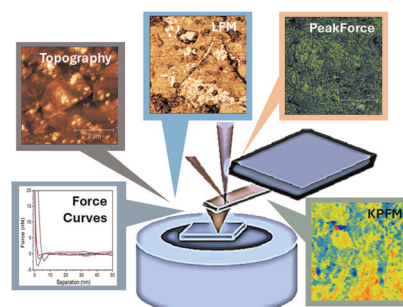


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### Probing the interactions in graphene oxide/MoS<sub>2</sub> and reduced graphene oxide/MoS<sub>2</sub> nanoarchitectures using multimodal scanning probe microscopy

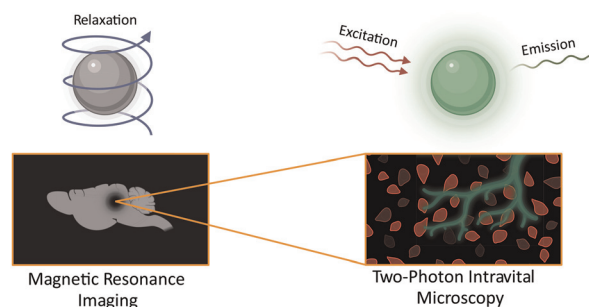
Amanda F. Pereira, Ariane Schmidt, Bernardo R. A. Neves, Camilla K. B. Q. M. de Oliveira and Aldo J. G. Zarbin\*



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### Multimodal imaging approach to track theranostic nanoparticle accumulation in glioblastoma with magnetic resonance imaging and intravital microscopy

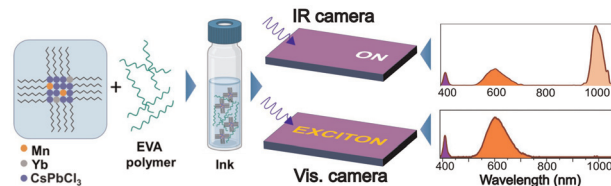
Giovanni Marco Saladino,\* Dilyana B. Mangarova, Kerem Nernekli, Jie Wang, Giacomo Annio, Zahra Shokri Varniab, Zubeda Khatoun, Goreti Ribeiro Morais, Yifeng Shi, Edwin Chang, Laura J. Pisani, Grigory Tikhomirov, Robert A. Falconer and Heike E. Daldrop-Link\*



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### Co-doped perovskite nanocrystals for multiplexed anticounterfeiting applications

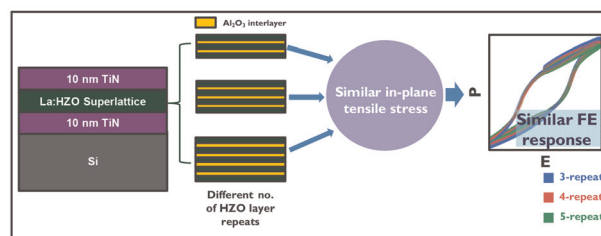
Manoj Sharma,\* Chang Cao, Gaveshana A. Sepalage, Shi Tang, Lan Nguyen, Hao Deng, Naufan Nurrosyid, Junlin Yan, Josh Moon, Tuncay Alan, James Andell Hutchison, Paul Mulvaney and Jacek J. Jasieniak\*



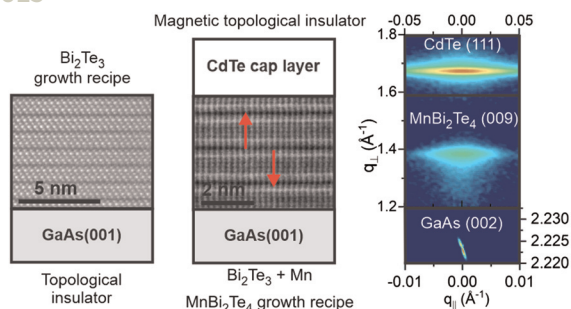
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### Investigation of the role of in-plane stress behavior on ferroelectric properties of scaled-up hafnium zirconium oxide superlattices

Gourab De,\* Mihaela Ioana Popovici, Shankha Mukherjee, Dae Seon Kwon, Federica Luciano, Tony Murphy, Gouri Sankar Kar, Annelies Delabie and Jan Van Houdt



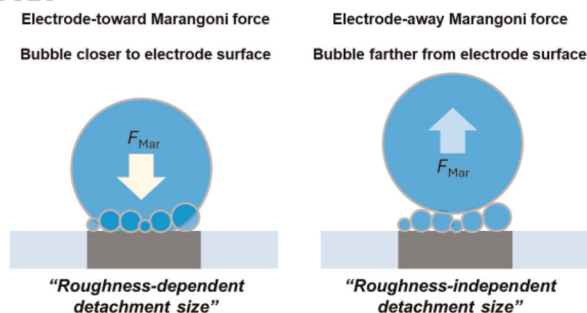
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### Epitaxial growth of antiferromagnetic $\text{MnBi}_2\text{Te}_4/\text{CdTe}$ heterostructures on $\text{GaAs}(001)$ using molecular beam epitaxy: structure and electronic properties

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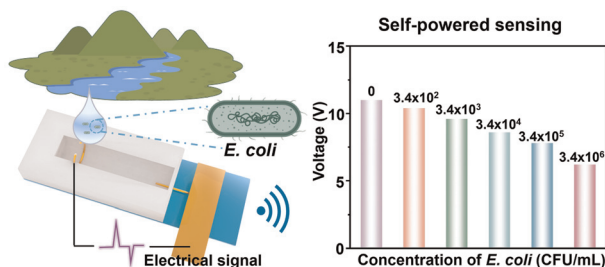
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### Combined effects of electrode morphology and electrolyte composition on single $\text{H}_2$ gas bubble detachment during hydrogen evolution reaction

Sunghak Park,\* Aleksandr Bashkatov,\* Jordy J. J. Eggebeen, Siyoung Lee, Detlef Lohse, Dominik Krug\* and Marc T. M. Koper\*

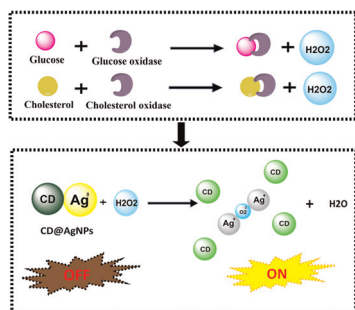
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### Triboelectric charge-separable probes for potential single-droplet biochemical sensing

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### A green carbon dot@silver nanoparticle hybrid: as a turn-on fluorescent probe for the detection and quantification of cholesterol and glucose

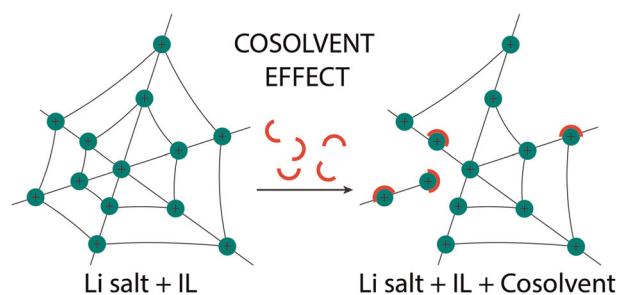
Nasrin Rahmatian, Shahryar Abbasi,\* Naser Abbasi and Mohammad Tavakkoli Yaraki\*



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### Effectively enhancing ion diffusion in superconcentrated ionic liquid electrolytes using co-solvent additives

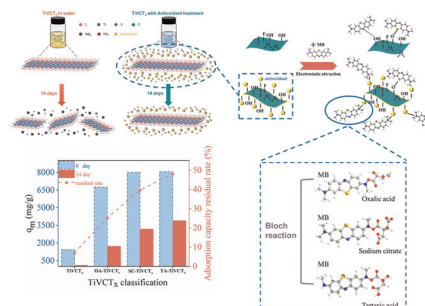
Jhonatan Soto Puelles, Luke A. O'Dell, M. C. Dilusha Cooray, Maria Forsyth and Fangfang Chen\*



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### Enhancing both the long-term stability and methylene blue adsorption performance of TiVCT<sub>x</sub> via a facile antioxidation treatment

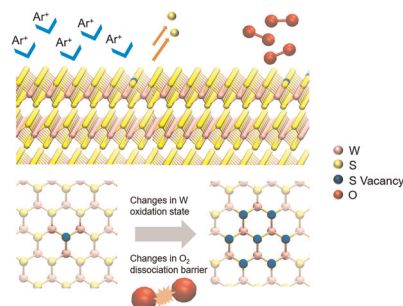
Xianliang Ren, Liang Fang,\* Yi Hu, Fang Wu,\* Gaobin Liu, Shufang Zhang and Haijun Luo\*



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### Unveiling surface dynamics: *in situ* oxidation of defective WS<sub>2</sub>

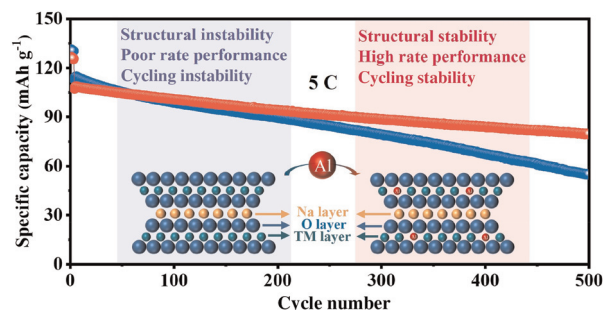
Daria Kieczka,\* Fabio Bussolotti,\* Thathsara D. Maddumapatabandi, Michel Bosman, Alexander Shluger, Anna Regoutz and Kuan Eng Johnson Goh



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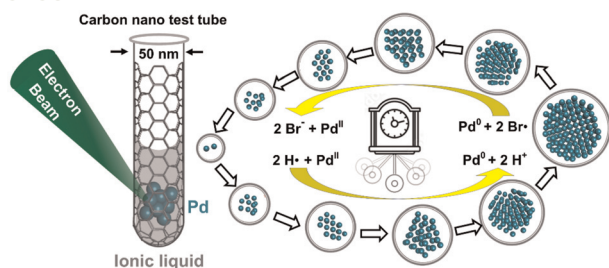
### Crystal structure modulation enabling fast charging and stable layered sodium oxide cathodes

Jingping Lin, Daoyuan Chen, Zhimin Lin, Zige Hong, Qiuyan Chen, Yating Wang, Yuxin Tang, Yanyan Zhang,\* Huibo Wang\* and Zhengshuai Bai\*



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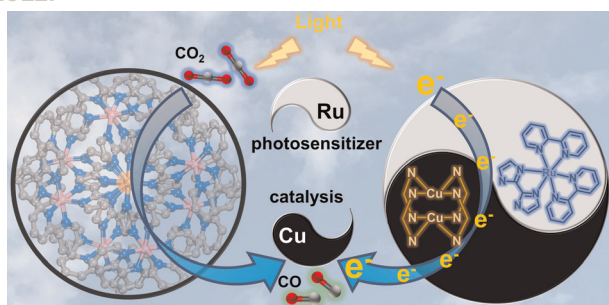
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### A nanoscale chemical oscillator: reversible formation of palladium nanoparticles in ionic liquid

Rhys W. Lodge, William J. Cull, Andreas Weiland, Stephen P. Argent, Jesum Alves Fernandes and Andrei N. Khlobystov\*

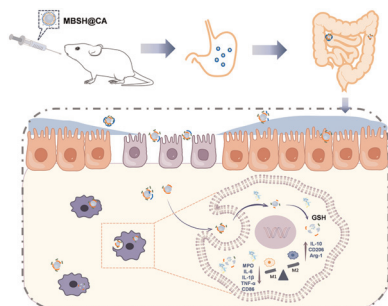
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### An artificial light-harvesting supramolecule with a Ru<sub>4</sub>Cu<sub>2</sub> core for efficient CO<sub>2</sub> photoreduction

Yu-Ou He, Wang-Kang Han, Yong Liu, Wen-Da Zhang, Ruo-Meng Zhu, Jing-Dong Feng, Ye Gao and Zhi-Guo Gu\*

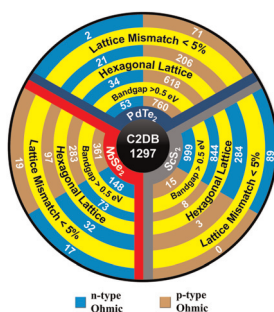
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### Oral pH- and inflammation-targeted delivery system with biodegradable multi-layer core-shell nanocapsules for the treatment of ulcerative colitis

Tian-Le Li, Jie Zhou, Jin-Long Gu, Han-Wen Zheng, Yu-Xian Shen\* and Meng-Meng Song\*

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### High throughput screening of Ohmic contacts in 2D metal-semiconductor van der Waals heterojunctions

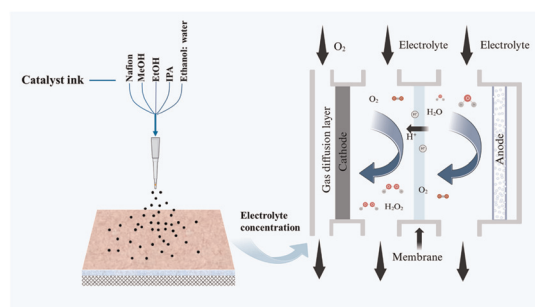
Fathima IS, Raihan Ahammed and Abir De Sarkar\*



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### Ink formulation and electrolytes affect electrochemical oxygen reduction into $\text{H}_2\text{O}_2$ : a kinetic study

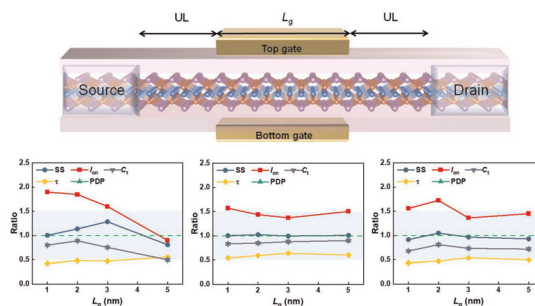
Lingling Yi, Min Sun, Renyu Zhang and Xiaofeng Zhu\*



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### Sub-5 nm monolayer $\text{KMgX}$ ( $X = \text{P, As, Sb}$ )-based homogeneous CMOS devices for high-performance applications

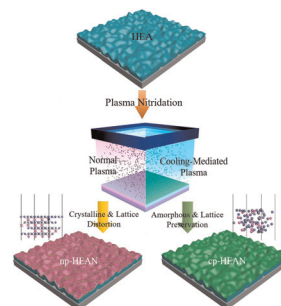
Yandong Guo,\* Yuting Guo, Zhipeng Huan, Yue Jiang,\* Dongdong Wang, Xinyi Gao, Kairui Bian, Zengyun Gu, Shenyi Zhao, Xiaolu Duan, Liyan Lin, Hongli Zeng\* and Xiaohong Yan



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### Phase-tailored $\text{CoCrFeNiAl}$ nitride for enhanced electrocatalytic hydrogen evolution via cooling-mediated plasma strategy

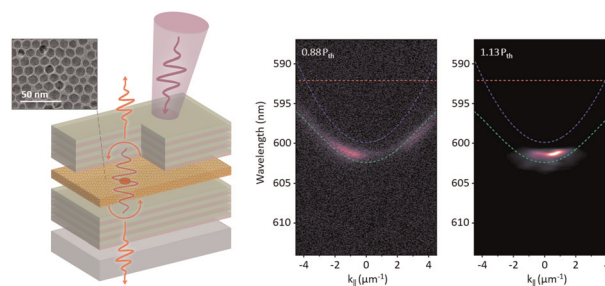
Bo Ouyang,\* Haonan Qin, Fengkun Li, Chen Li, Zhaofu Du, Yongqi Zhang, Li Yang, Erjun Kan,\* Kun Xu and Zhishan Mi\*



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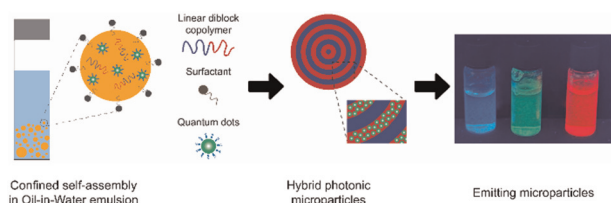
### Low-threshold colloidal quantum dot polariton lasing via a strong coupling microcavity at room temperature

Junxing Dong, Yuting Wu, Runchen Wang, Lisheng Wang, Jingzhuo Wang, Yifan Zhang, Yue Wang,\* Xianghu Wang, Si Shen\* and Hai Zhu\*



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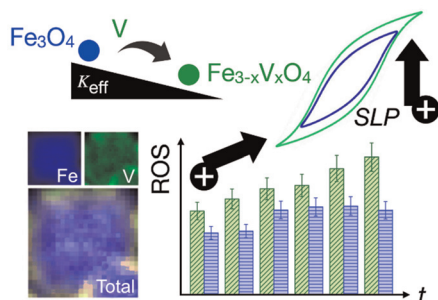
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### One-pot synthesis of photonic microparticles doped with light-emitting quantum dots

Simone Bertucci, Davide Piccinotti, Mauro Garbarino, Andrea Escher, Gianluca Bravetti, Christoph Weder, Paola Lova, Davide Comoretto, Ullrich Steiner, Francesco Di Stasio\* and Andrea Doderò\*

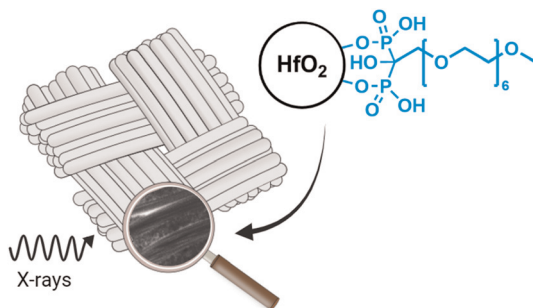
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### Vanadium incorporation in ferrite nanoparticles serves as an electron buffer and anisotropy tuner in catalytic and hyperthermia applications

T. E. Torres,\* D. P. Valdés,\* S. Hettler, J. M. Nuñez, I. Rodrigo, I. Orue, J. Á. García, F. Plazaola, R. D. Zysler, E. Lima, Jr., M. H. Aguirre, G. F. Goya and R. Arenal

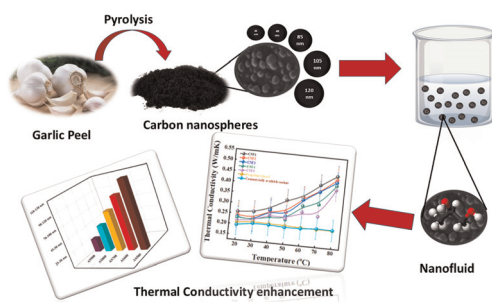
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### Contrast-enhanced imaging of carbon fiber composites using hafnium oxide nanocrystals

Eline Goossens, Ives De Baere, Yuriy Sinchuk, Evert Dhaene, John De Vos, Pauline Rooms, Matthieu N. Boone, Jonathan De Roo, Isabel Van Driessche, Wim Van Paepegem and Klaartje De Buysser\*

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### Unlocking efficiency: experimental and theoretical insights into biomass-derived carbon nanofluids with enhanced thermal conductivity

Kiran Bijapur, Samir Mandal, P. G. Siddheshwar, Suryasarathi Bose and Gurusurthy Hegde\*

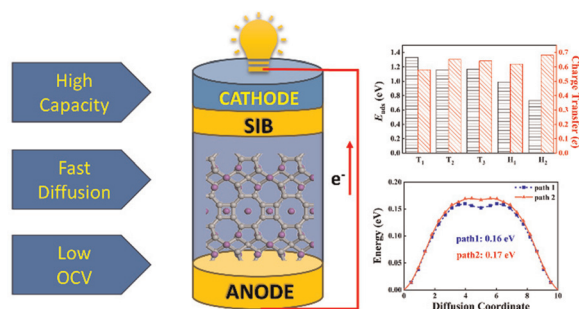


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### QPHO-graphene: a two-dimensional hexagon-free carbon allotrope as a high-performance anode material for sodium-ion batteries

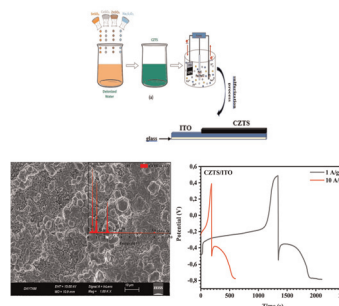
Tian-Le Zhao, Zhi-Hui Wu, Xiao-Hong Zheng, Xiao-Juan Ye,\* He Lin and Chun-Sheng Liu\*



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### High-performance supercapacitor electrode of $\text{Cu}_2\text{ZnSnS}_4$ (CZTS) thin films grown by ECD

Kübra Çınar Demir,\* Zeynep Orhan, Şakir Aydoğan and Mehmet Yilmaz



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### Uncovering the electrocatalytic potential of two-dimensional Pt–Ni bimetallic aerogels

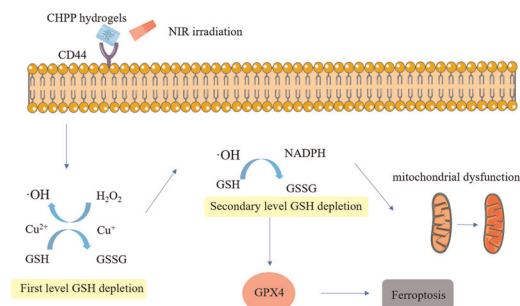
Pavel Khavlyuk, Fiona Tenhagen, Yuanwu Liu, René Hübner, Volodymyr Shamraienko, Johannes Kresse, Angelika Wrzesińska-Lashkova, Yana Vaynzof and Alexander Eychmüller\*



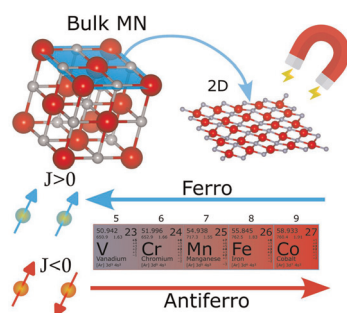
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### An injectable hydrogel with photothermal and chemodynamic therapies for targeted promotion of ferroptosis in oral squamous cell carcinoma

Xu Zhang, Mao Li, Xin Pang, Wan-Li Wang, Xiao-Chen Wang, Ze-Liang Shen, Rong-Jia Shi, Ya-Ling Tang\* and Xin-Hua Liang\*



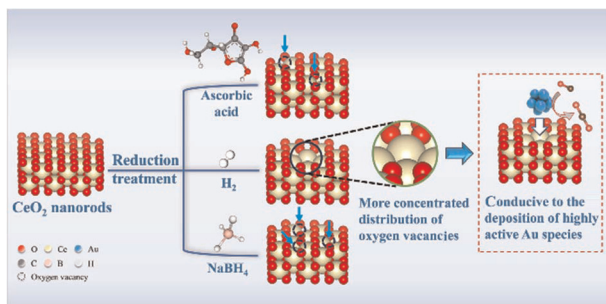
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### TMN (TM = V, Cr, Mn, Fe, Co) monolayers – a new class of non-van der Waals 2D magnets

Leonid Ilyich Kushchuk and Alexey Ivanovich Kartsev\*

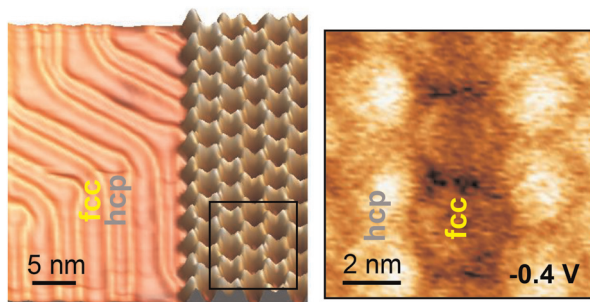
10303



### The influence of reducing agents on structure–activity relationships between oxygen vacancies and Au sites for CO preferential oxidation

Ganghua Xiang, Xing Lin and Zhigang Liu\*

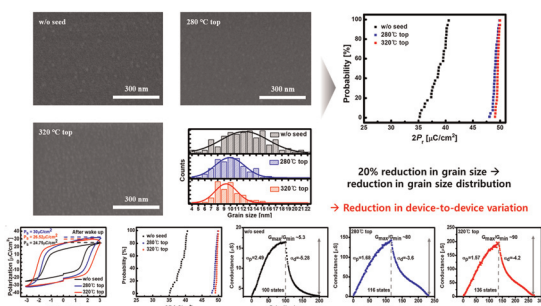
10314



### An organic array of quantum corrals modulated by the gold herringbone electronic superlattice

Jun Li, Ignacio Piquero-Zulaica, Stefano Gottardi, Mustafa A. Ashoush, Zakaria M. Abd El-Fattah,\* Leonid Solianykh, Jose Enrique Ortega, Johannes V. Barth, Juan Carlos Moreno-Lopez, Jorge Lobo-Checa\* and Meike Stöhr\*

10324



### Grain size engineering via a $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ seed layer for FeFET memory and synaptic devices

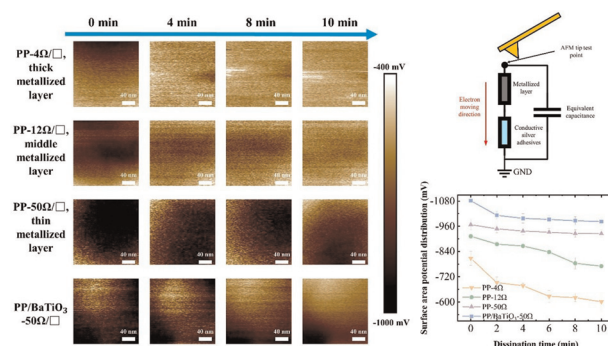
Junhyeok Park, Chulwon Chung, Boncheol Ku, Seunghyeon Yun, Kyungsoo Park and Changhwan Choi\*



10334

### Nanoscale electron transfer mechanism in metallized polypropylene films

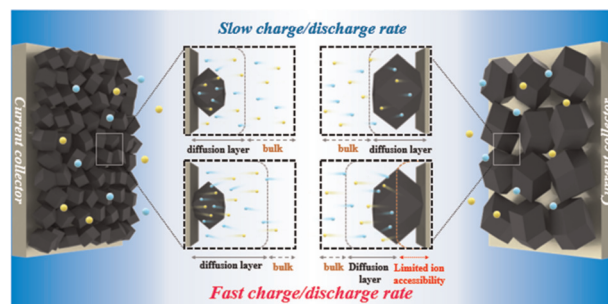
Zhi-Yuan Wu, Lei Huang, Shao-Long Zhong,\*  
Zhi-Yuan Wang, Jian-Tao Wang, Zhi-Min Dang\* and  
Wei Wang



10344

### Study on the importance of uniformity and nanoparticle size in ZIF-8 carbon nanoarchitecture for enhancing electrochemical properties

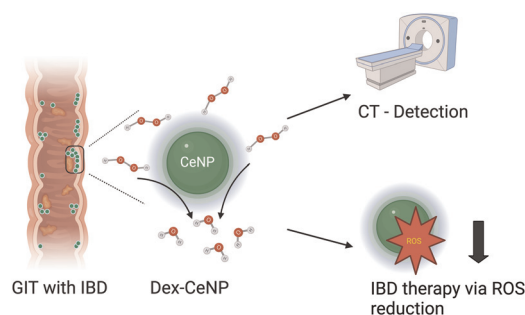
Donggyun Kim, Jinhyeon Park, Seonghyeon Jung,  
Jieun Jang, Minsu Han, Minjun Kim, Wenkai Zhu,  
Woo-Jin Song, Yusuke Yamauchi and Jeonghun Kim\*



10356

### CT imaging of and therapy for inflammatory bowel disease *via* low molecular weight dextran coated ceria nanoparticles

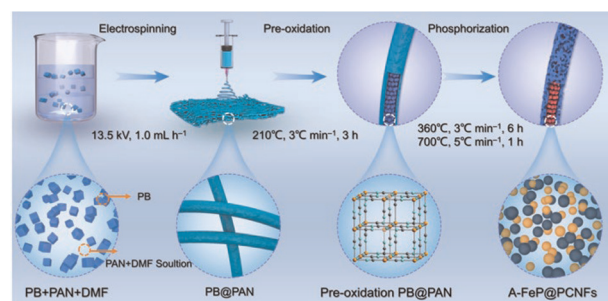
Derick N. Rosario-Berrios, Amanda Y. Pang,  
Katherine J. Mossburg, Johoon Kim,  
Victor R. Vázquez Marrero, Seokyoung Yoon,  
Mahima Gupta, Olivia C. Lenz, Leening P. Liu,  
Andrea C. Kian, Kálery La Luz Rivera, Sunny Shin,  
Peter B. Noël, Elizabeth M. Lennon and  
David P. Cormode\*



10371

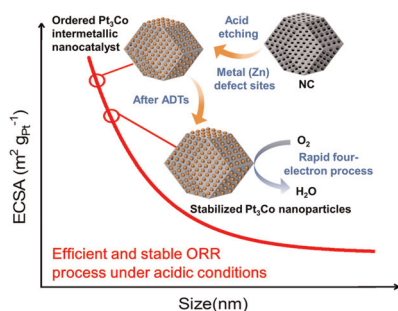
### Amorphous FeP@porous carbon nanofibers with sterically conductive networks for stable potassium-ion storage

Qi Wan, Jie Zhao, Yu Liu, Linshu Li, Juwei Yan,  
Qiwei Tan, Xun Xu, Qingchun Zhang, Xijun Wei,\*  
Ling Ni\* and Ping Li\*



## PAPERS

10380



### Ultrafine intermetallic platinum-cobalt with a contracted Pt–Pt pair for efficient acidic oxygen reduction reactions

Chudi Ni, Xiaoxia Chen, Yiwen Chen, Shiyu Li, Tao Zhou, Jing Yang, Meihuan Liu\* and Hui Su\*

## EXPRESSION OF CONCERN

10389

### Expression of concern: A hysteresis-free perovskite transistor with exceptional stability through molecular cross-linking and amine-based surface passivation

Hyeong Pil Kim, Maria Vasilopoulou,\* Habib Ullah, Salma Bibi, Anderson Emanuel Ximim Gavim, Andreia Gerniski Macedo, Wilson Jose da Silva, Fabio Kurt Schneider, Asif Ali Tahir, Mohd Asri Mat Teridi, Peng Gao, Abd. Rashid bin Mohd Yusoff\* and Mohammad Khaja Nazeeruddin\*

## CORRECTION

10390

### Correction: Hollow Au nanoparticles for single-molecule Raman spectroscopy via a synergistic electromagnetic and chemical enhancement strategy

Zihan Gao, Haiyao Yang, Jianzhi Zhang, Jie Yang, Lihong Hong\* and Zhi-Yuan Li\*

