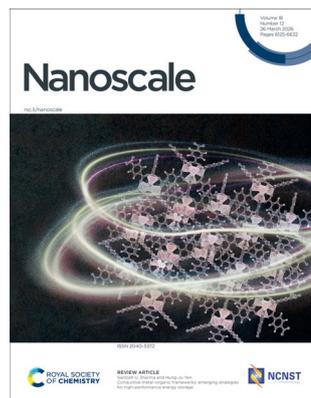


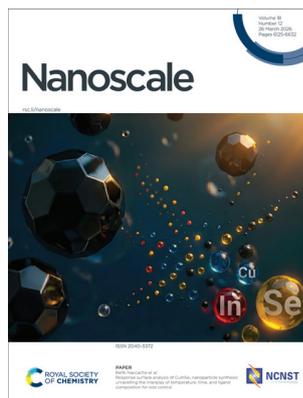
## IN THIS ISSUE

ISSN 2040-3372 CODEN NANOHL 18(12) 6125–6632 (2026)



**Cover**  
See Santosh U. Sharma and Hung-Ju Yen, pp. 6139–6183.

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**Inside cover**  
See Rafik Naccache *et al.*, pp. 6271–6281.

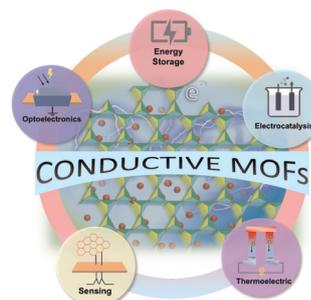
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## REVIEWS

6139

### Conductive metal–organic frameworks: emerging strategies for high-performance energy storage

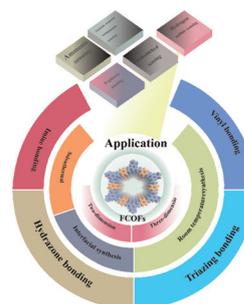
Santosh U. Sharma and Hung-Ju Yen\*



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### Application of fluorescent covalent organic frameworks in gas sensors

Qiuhan Wu, Teng Yang, Junjun Shi, Liping Jia, Binghui Xie, Weilong Lu, Tong Zhao, Changxi Yu, Xiaojuan Mo, Wucheng Xie\* and Jie Sheng\*



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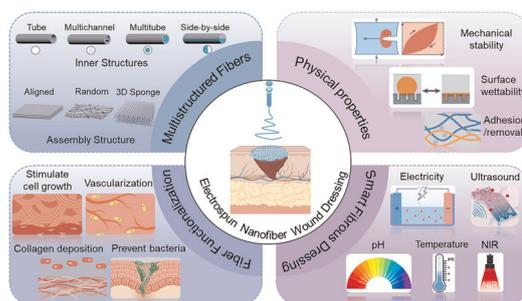
Fundamental questions  
Elemental answers

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### Wound dressing applications of electrospun nanofibers: mechanism, construction and recent progress

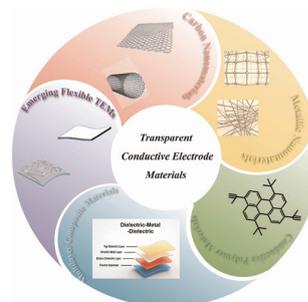
Yaqiong Wang,\* Guichu Yue, Hongru Lu, Zhengjiang Liu, Nü Wang, Fuwei Liu,\* Hongyu Yin\* and Yong Zhao\*



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### Research progress and perspective of transparent electrode materials in flexible perovskite solar cells

Le Liu, Wenjie Zhu,\* Lu Zi,\* Xingtao Ma, Jun Zhao, Xurong Wang, Xinhui Zhang, Yanjie Liu and Xiaowei Fan\*

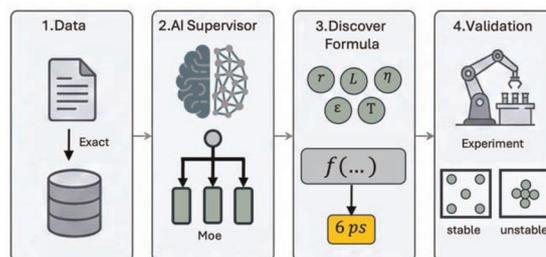


## COMMUNICATIONS

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### From AI discovery to macroscopic formula: a quasi-stability criterion for quantum dots inspired by Elon Musk's vision

Zhenhai Lai, Jiagen Li and Xi Zhu\*

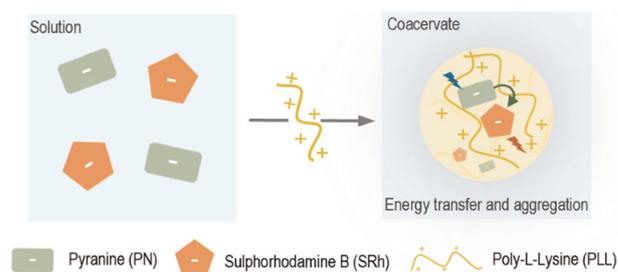


Mining Knowledge, Deriving a Formula, Predicting Stability

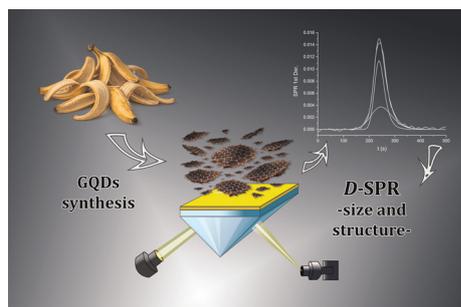
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### Coacervate microenvironments modulate fluorescent dye behaviour and Förster energy transfer dynamics

Mohit Kumar, Minea Kapidžić and Shikha Dhiman\*



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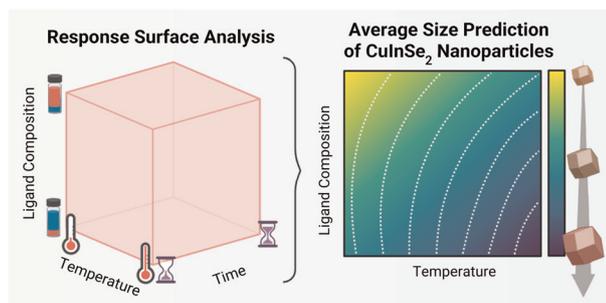


### Surface plasmon resonance as a breakthrough tool for characterizing the size and shape of graphene quantum dots

Giuseppe Stefano Basile, Damiano Calcagno, Nunzio Tuccitto, Benoit Maxit, Pascal Boulet, Mélanie Emo, Liang Liu, Giuseppe Grasso\* and Philippe Pierrat\*

## PAPERS

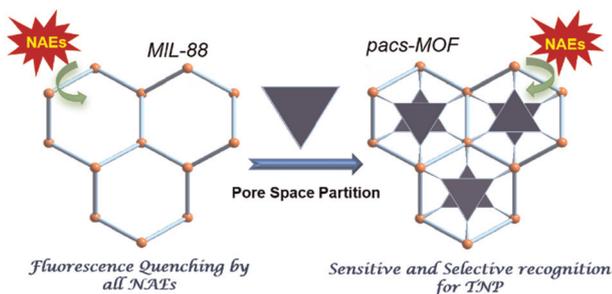
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### Response surface analysis of CuInSe<sub>2</sub> nanoparticle synthesis: unravelling the interplay of temperature, time, and ligand composition for size control

Luis Páramo, Camilo Garcia-Henao, John A. Capobianco and Rafik Naccache\*

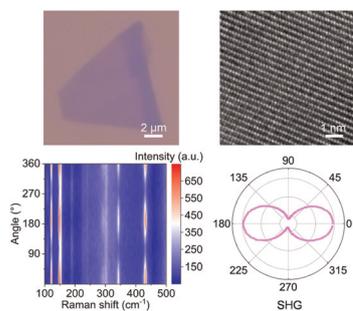
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### Pore-space-partitioned metal–organic frameworks for sensitive and selective recognition of 2,4,6-trinitrophenol

Meng-Le Tuo, Nan Song, Chen-Chen Xing and Quan-Guo Zhai\*

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### In-plane optical anisotropy and nonlinear optical effects in 2D InTeO<sub>3</sub>Cl

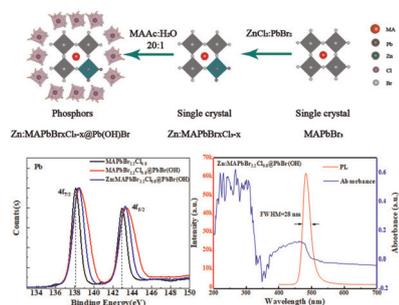
Zemin Zheng, Siyuan Li, Jiuxiang Dai, Ang Li, Xingxing Zhang, Mo Cheng, Zhitong Jin\* and Lin Zhou\*



6299

### Solution-assisted layer peeling for stable and high-efficiency Zn:MAPbBr<sub>x</sub>Cl<sub>3-x</sub>@PbBr(OH) cyan phosphors

Feng Chen,\* Xuejie Peng, Kai Liu, Qingyi Zhang, Yi Zhang, Jiabin Yan, Yuxin Yang, Dawei Gu and Lei Wang



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### Reshaping the oxidative stress microenvironment by bionic chiral Cu–Phe (D/L) nanozymes for promoting osteoimmunomodulation and osteogenic differentiation

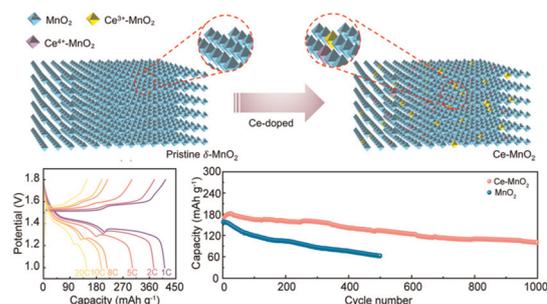
Shaoxiong Feng, Xu Peng, Xi Gao, Lian Jun Tang and Xixun Yu\*



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### A single-element heterovalent doping strategy stabilizing the cathode structure for reversible zinc-ion storage to power soft robotics

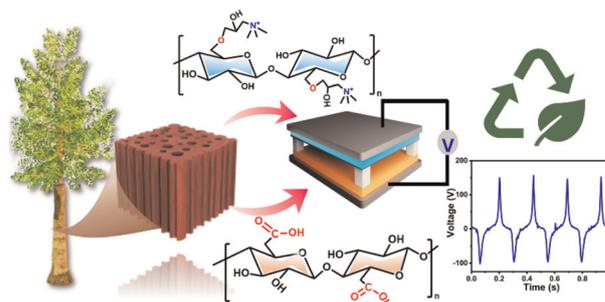
Yameng Zhu, Xiaona Wang,\* Jiajia Xia, Xuechun Wang, Ying Kong, Yurong Zhou, Shuxuan Qu, Wei Feng\* and Jiangtao Di\*



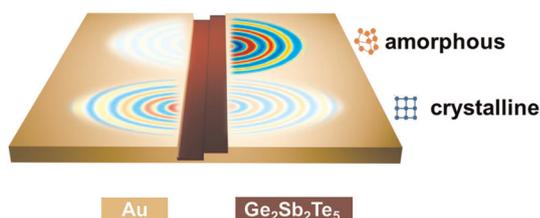
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### Completely degradable bilayer functional-ionic wood heterostructure-derived nanogenerator for eco-friendly power generation

Vishu Verma, Ritik Mohanty, Romy Garg and Kaushik Parida\*



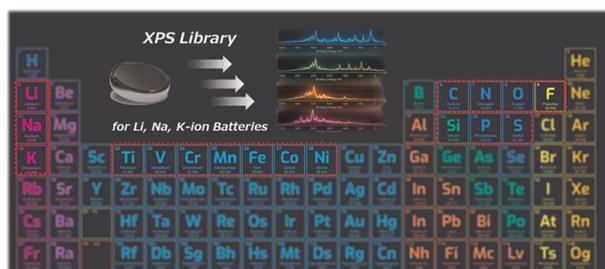
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### Multilevel dynamic control of surface plasmon propagation direction using phase-change materials

Xianghua Liu, Ruxue Wang,\* Ruotian Lu, Jiahao Peng, Chenyang Liu, Qianhong Gong, Peichuan Yin, Xinrui Lei, Qiwen Zhan and Aimin Wu\*

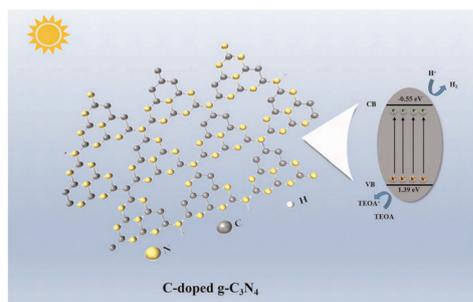
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### X-ray photoelectron spectroscopy analysis of reference compounds for studying rechargeable Li-, Na-, and K-ion batteries

Ryoichi Tataru,\* Shogo Yamazaki, Satoshi Yasuno and Shinichi Komaba\*

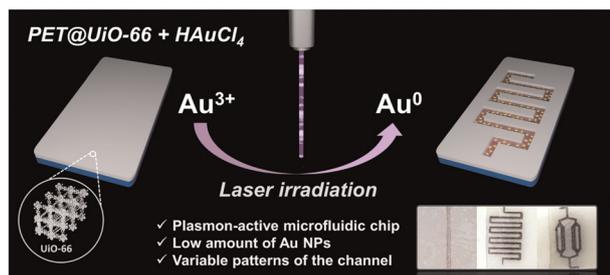
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### Band structure engineering in porous g-C<sub>3</sub>N<sub>4</sub> via tailoring surface carbon for enhanced photocatalytic hydrogen evolution

Junwen He, Shuben Ye, ZhiXin He, Yong Chen, Lihui Chen, Wenjun Ma, Ao Li,\* Fu Yang\* and Shuying Gao\*

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### Laser writing of plasmonic catalytic microchannels on UiO-66 layer

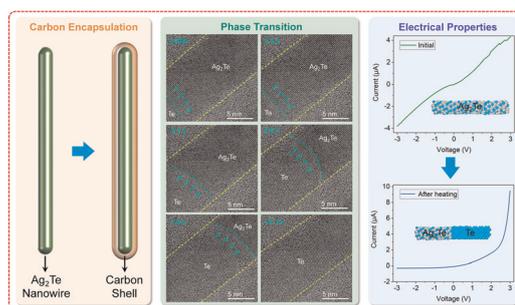
Alina Gorbunova, Swagato Sarkar, Dmitry Kogolev, Wanderson Ferraz do Valle, Markus Ostermann, Thomas Schachinger, Hradil Klaudia, Alexey Ivanov, Markus Valtiner, Pavel S. Postnikov\* and Olga Guselnikova\*



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### Tailoring the phase transition pathway of $\text{Ag}_2\text{Te}$ nanowires *via* surface confinement: an *in situ* transmission electron microscopy study

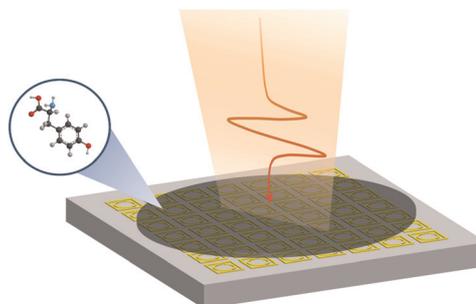
Lei Shangguan,\* Ming-Yuan Wang, Hui-Jun Liang, Shuang-Ying Lei, Zhi-Qun Cheng, Long-Bing He\* and Li-Tao Sun



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### Ultrasensitive trace-analyte detection empowered by a quasi-BIC terahertz metasensor

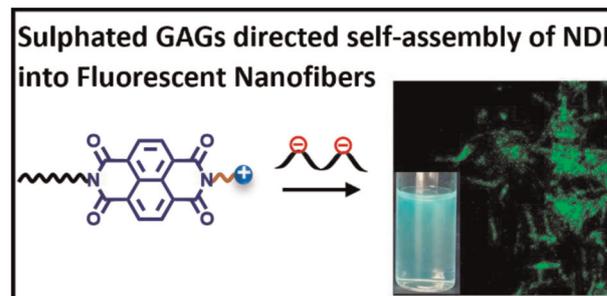
Tian Ma,\* Zihao Chen, Jiangkun Tian, Yizu Zou, Doudou Wang, Guozhong Zhao, Depeng Kong and Jun Li



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### Selective binding of sulphated glycosaminoglycans induces self-assembly of naphthalene diimide into fluorescent nanofibers

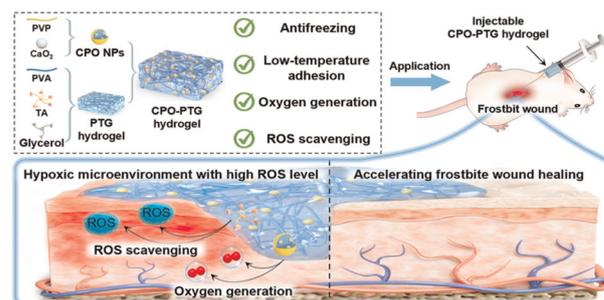
Poonam Sharma, Esteban Fernández-Pedreira López, Beatriz Cantero Nieto, Annalisa Calò, Subhadip Ghosh, Paula Rodríguez, Xavier Companyó, Bart Limburg and Mohit Kumar\*



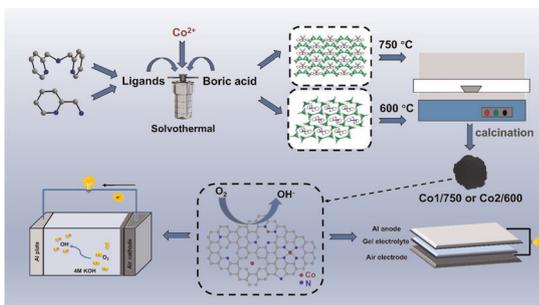
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### $\text{CaO}_2$ nanoparticle-loaded injectable hydrogel with sustained oxygen release and ROS-scavenging functions for accelerating frostbite wound healing at high altitude

Qinsheng Hu, Shiyang Lang, Yangrui Du, Hexin Zhou, Miao Liu,\* Qiao Jin,\* Kaijun Li\* and Gongyan Liu



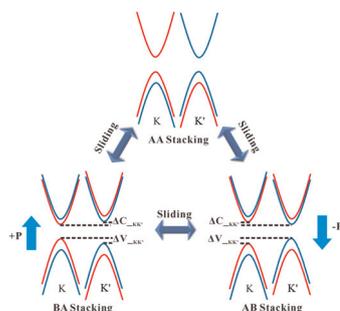
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### Pyridylamine templated borate-derived Co nanoparticles anchored on N-doped carbon for enhanced oxygen reduction reaction in Al-air batteries

Xiao-Ting Zhang, Cun-Mao Chen, Qi-Ming Huang and Chun-Yang Pan\*

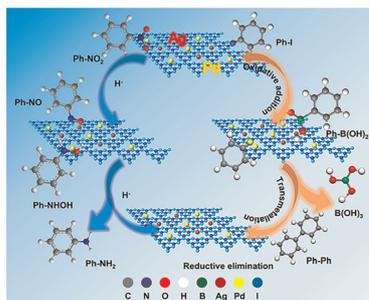
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### Sliding ferroelectricity and ferroelectricity-valley coupling in Janus RuXY (X, Y = Cl, Br, I) bilayers

Shuisheng Yi, Peiyao Chen, Yumin Liao, Xumin Chen\* and Dexuan Huo

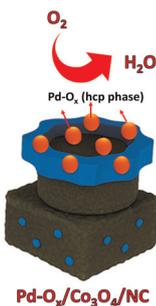
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### Ag/Pd bimetallic sites embedded in g-C<sub>3</sub>N<sub>4</sub> nanosheets synergistically catalyze Suzuki coupling and nitroaromatic reduction reactions

Gongshu Wang,\* Aiye Shi, Nannan Wang, Feng Xue\* and Jianshe Hu\*

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### Epitaxial growth of hexagonal Pd on Co<sub>3</sub>O<sub>4</sub>/NC heterostructures for high-performance ORR electrocatalysis

Fatima Nasim, Muhammad Sajid, Guobao Xu\* and Muhammad Arif Nadeem\*

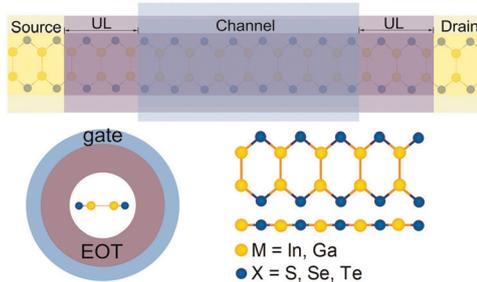


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### Sub-5 nm one-dimensional post-transition-metal monochalcogenide gate-all-around MOSFETs

Xiao-Lu Duan, Yan-Dong Guo,\* Ye-Wei Chen, Yue Jiang,\* Hao-Ran Hu, Man-Jun Jiang, Xing-Yu Ma, Jie-Ling Hu, Cheng-Biao Lin, Fan Guo,\* Hong-Li Zeng\* and Xiao-Hong Yan

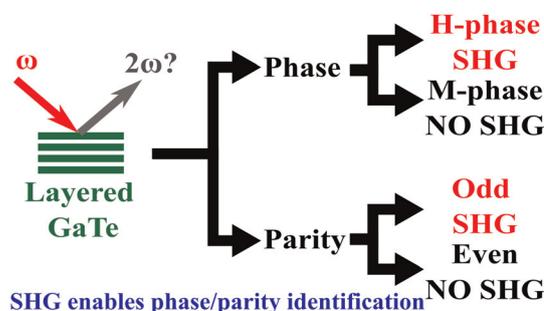
#### Gate-All-Around Nanowire Field-Effect Transistors



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### Layers and phase identification of h- and m-GaTe via second harmonic generation

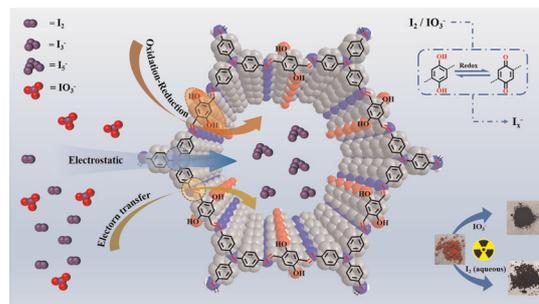
Shi Qiu, Hongsheng Liu, Juan Hou, Zhongran Wei,\* Hu Jiang\* and Junfeng Gao\*



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### Designing atomically precise and robust covalent organic frameworks for enhanced iodine/iodate uptake: structures with and without phenol hydroxy groups

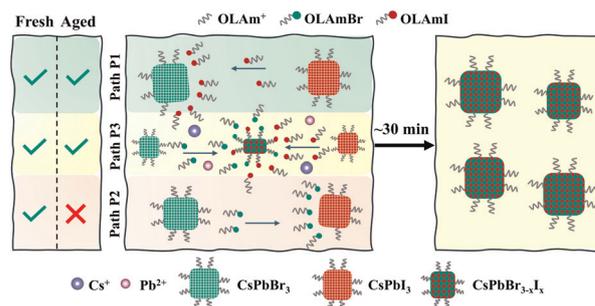
Qianyi Zuo, Xin Zheng, Aokun Jia, Tao Jiang, Bing Han,\* Jiahong Pan and Zhuoyu Ji\*



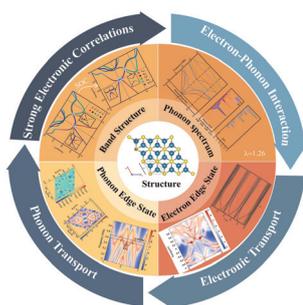
6501

### Do the halide ions exchange and mix the same way in fresh and aged CsPbI<sub>3</sub>-CsPbBr<sub>3</sub> perovskite nanocrystal mixtures?

Subitan Laskar and Chandran Sudakar\*



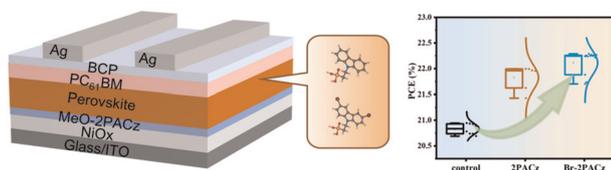
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### Interwoven electronic and phononic topologies *via* electron–phonon coupling and locality-engineered edge states in monolayer ZrBr

Jinghua Zhao, Zhengxin Yan,\* Yu Wang, Chen Qi, Kezhao Xiong and Zhaoqi Wang

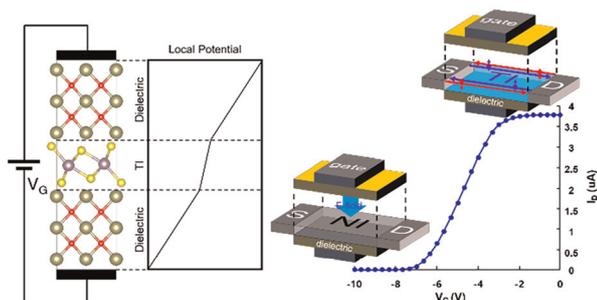
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### Bromine-functionalized carbazole derivatives in perovskite precursors: defect passivation for enhanced perovskite photovoltaics

Qianwen Cao, Lifang Wu, Ye Wang, Hengji Li, Xiaojie Liu, Tenglong Xu, Qiling Xiao, Chang Xue, Xingli Zou, Tianhao Wu,\* Emilio J. Juarez-Perez, Marta Haro, S. B. Donaev\* and Shenghao Wang\*

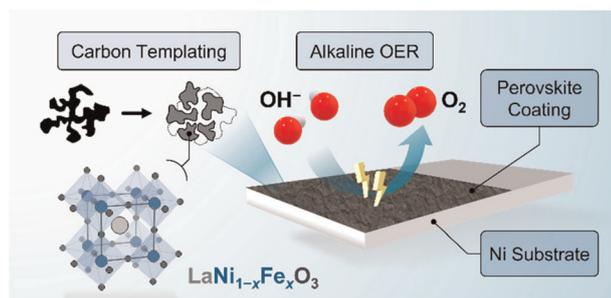
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### First-principles modeling of electrostatics and transport in 2D topological transistors

Hyeonseok Choi, Yosep Park, Subeen Lim and Yeonghun Lee\*

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### High surface area mixed lanthanum nickelate/ ferrates ( $\text{LaNi}_{1-x}\text{Fe}_x\text{O}_3$ ) *via* modified carbon templating coated on nickel in alkaline OER

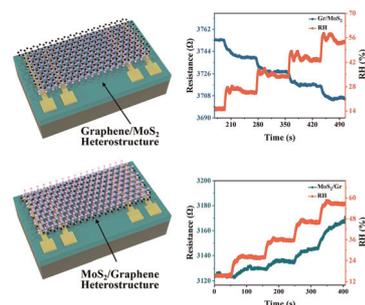
Nikolas Mao Kubo, Harol Moreno Fernández, Ilias Efthimiopoulos, Leila Novalic, Martin Rabe, Jan P. Hofmann and Regina Palkovits\*



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## Humidity sensing characteristics of graphene and MoS<sub>2</sub> as well as their heterostructures with different stacking configurations

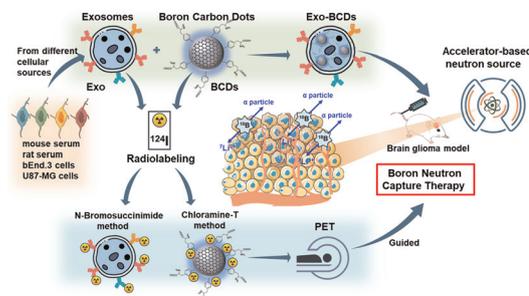
Hongliang Ma, Qiang Gao, Zhe Zhang, Kaige Yang, Jiayin Li, Yabin Chen, Jie Ding,\* Wendong Zhang\* and Xuge Fan\*



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## An <sup>124</sup>I-radiolabeled exosome-based treatment platform for enhanced boron neutron capture therapy: precise delivery and real-time PET tracking of boron

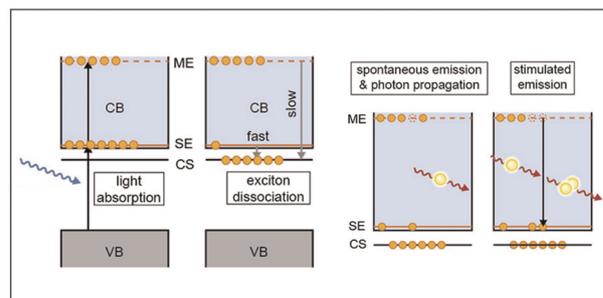
Ziteng Chen, Zhijie Wang, Mingxin Yang, Ruyu Yan, Linwen Lv, Ya-nan Chang, Kui Chen, Wenjiang Yang, Hui Yuan, Xiangxi Meng, Lingbo Zhu, Zhi Yang, Gengmei Xing\* and Juan Li\*



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## Unravelling the amplified spontaneous emission mechanism in three-dimensional metal halide perovskites

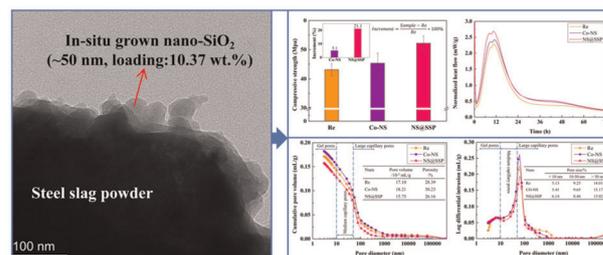
Gayoung Lee, Jinhong Kim, EunSeo Jang, Hyeonji Lee, Yejin Jun, Minhyuk Lee, JunWoo Kim\* and Kwangdong Roh\*



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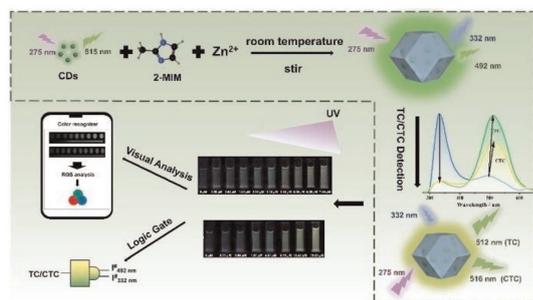
## Controllable *in situ* growth of highly dispersed nano-SiO<sub>2</sub> on steel slag powder for enhancing cement-based materials

Feifei Zhou, Renjie Mi, Ganghua Pan,\* Qingping Wang, Jiufu Zhang, Hailong Sun, Saqib Iqbal and Jiayu Sun



## PAPERS

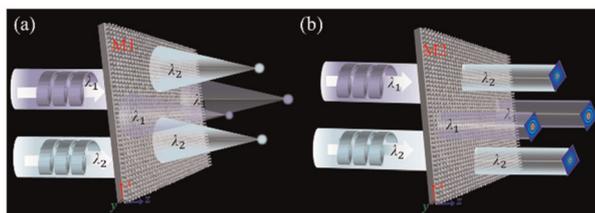
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### A ratiometric fluorescent sensor based on carbon dots encapsulated in ZIF-8 for visual discrimination and detection of tetracycline and chlortetracycline

Jin Wang, Baojie Liu, Jixing Liang, Hongguo Hao, Yaoyao Wang, Yunwu Li\* and Suna Wang\*

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### Arbitrary independent wavefront shaping at dual frequency with an all-silicon metasurface

Susu Hu, Zetao Xu, Li Wei,\* Bo Dai,\* Songlin Zhuang and Dawei Zhang

## CORRECTION

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### Correction: Mechanism of RGD-conjugated nanodevice binding to its target protein integrin $\alpha_v\beta_3$ by atomistic molecular dynamics and machine learning

Giulia Frigerio, Edoardo Donadoni, Paulo Siani, Jacopo Vertemara, Stefano Motta, Laura Bonati, Luca De Gioia and Cristiana Di Valentin\*

