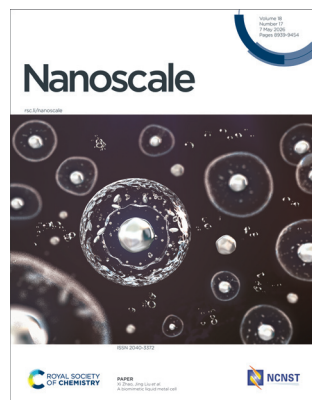


## IN THIS ISSUE

ISSN 2040-3372 CODEN NANOHL 18(17) 8939-9454 (2026)



### Cover

See Xi Zhao, Jing Liu *et al.*, pp. 9067–9081.

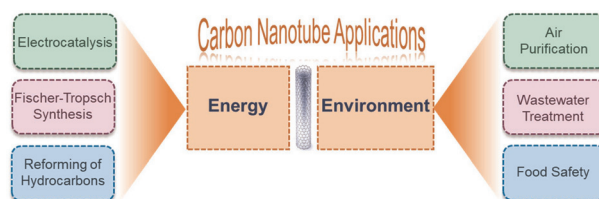
Image reproduced by permission of Jing Liu from *Nanoscale*, 2026, **18**, 9067.

## REVIEWS

8953

### Catalytic applications of carbon nanotubes in energy and environmental remediation: multifunctional roles and design strategy

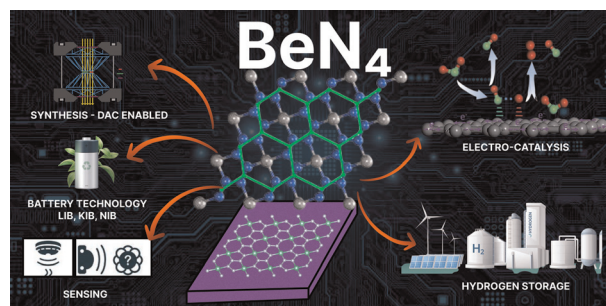
Samson A. Adeoye and Placidus B. Amama\*



8991

### Heteroatom-based 2D material BeN<sub>4</sub>: exciting properties, synthesis, and application in energy storage and sensing

Chaitanya Gend, Sathya Arumugam Thirumalai and Brahmananda Chakraborty\*



# Industrial Chemistry & Materials

GOLD  
OPEN  
ACCESS

Focus on industrial chemistry  
Advance material innovations  
Highlight interdisciplinary feature

Innovative.  
Interdisciplinary.  
Problem solving

APCs currently waived

Learn more about ICM  
Submit your high-quality article

 [@IndChemMater](#)

 [@IndChemMater](#)

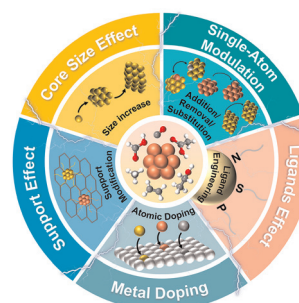
[rsc.li/icm](https://rsc.li/icm)

## REVIEWS

9012

## Recent progress in electrochemical carbon dioxide reduction using atomically precise copper nanoclusters

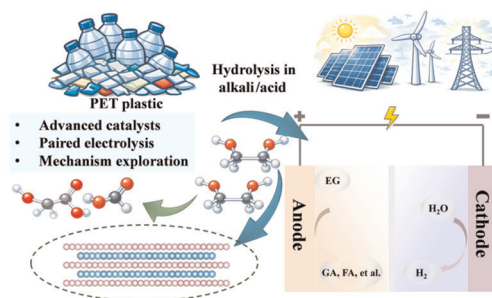
Yang Zuo, Xiaoshuang Ma,\* Shuo Zhang\* and Shuxin Wang\*



9028

## Advanced catalyst design and mechanistic insights in electrocatalytic upcycling of PET-derived ethylene glycol and coupled electrolysis systems

Wenjing Huang

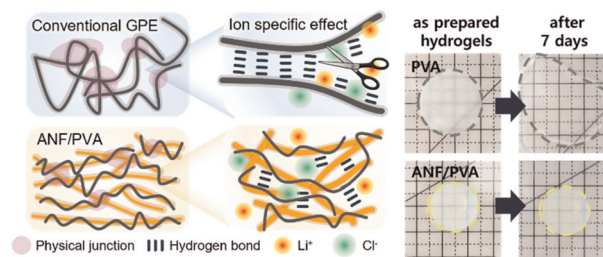


## COMMUNICATIONS

9050

## Aramid nanofiber–poly(vinyl alcohol) composite gel polymer electrolytes for lithium chloride-based supercapacitors

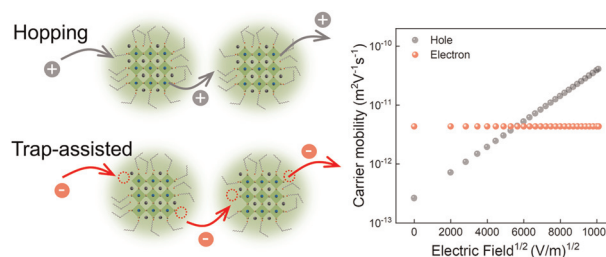
Yuseung Choi, Gilyong Shin, Eun Jae Nam, Ji Heon Hong, Byeong Jun So and Tae June Kang\*



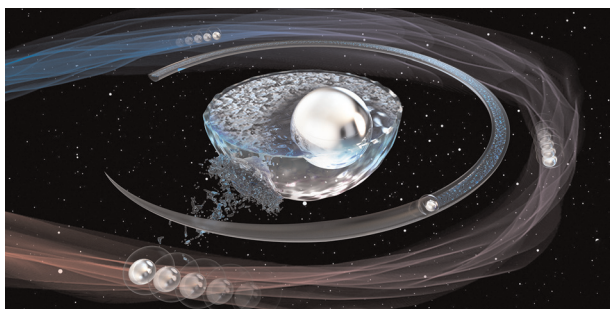
9061

Giant electric field dependent hole mobility of CsPbBr<sub>3</sub> nanocrystal films

Shipei Sun, Hui Bao, Lihao Liu, Jiahao Wan, Haitao Wang, Yunan Gao\* and Haizheng Zhong\*



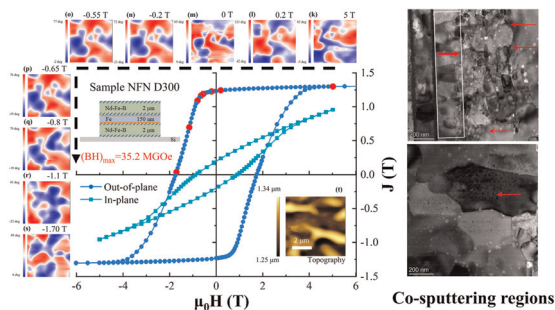
9067



### A biomimetic liquid metal cell

Jingyi Li, Mengwen Qiao, Minghui Guo, Zerong Xing, Yunlong Bai, Ju Wang, Yujia Song, Ren Xu, Xi Zhao\* and Jing Liu\*

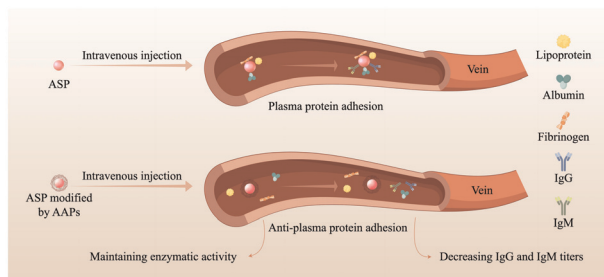
9082



### Achieving high energy products in anisotropic Nd–Fe–B/Fe composite thick films by Dy co-sputtering

Chunhao Li, Xiaotian Zhao,\* Long Liu,\* Weibin Cui, Qiang Li, Zhixing Ye, Bing Li, Wei Liu and Zhidong Zhang

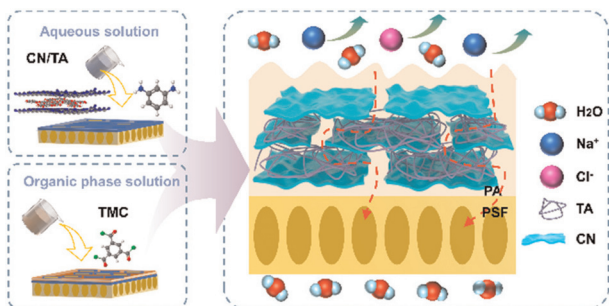
9093



### Anti-plasma adhesion peptides from one-bead one-compound technique for drug delivery

Lu-Ming Guo, Jun-Xiao Yuan, Yi-Jing Li, Xi-You Yang, Xin Cui, Guo-Yang Xu, Kuo Zhang, Wen-Jia Lai, Yu-Ting Li, Jia-Qi Feng, Litao Li, Long Yu, Hao Wang, Xu Cui\* and Lei Wang\*

9101



### Enhancing the reverse osmosis desalination performance of thin-film nanocomposite membranes by incorporating tannic acid-modified graphitic carbon nitride nanosheets

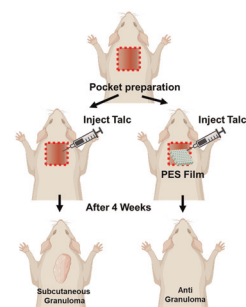
Shaotong Liang, Jiabin Jing, Jiapeng Wang, Haijia Wang, Wenxuan Du, Zhenjie Ding, Yuele Gu and Chengzhen Sun\*



9111

## Polyethersulfone films as promising biomaterials for reducing granuloma formation and preserving tissue compatibility

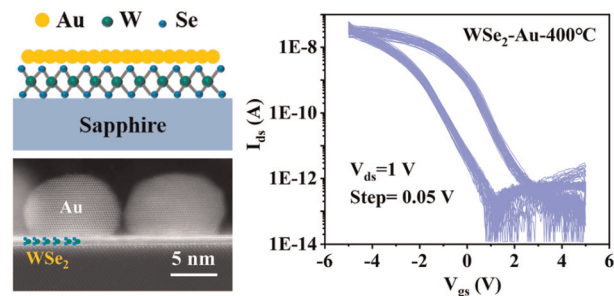
Andrew E.-Y. Chuang,\* Chia-Hung Liu, Brian Lu, Pei-Ru Jheng, Lekshmi Rethi, Nattapong Thakham, Thi Linh Le, Chu-Ying Yu, Yan-Ling Yang\* and Liao-Ping Cheng



9125

## CMOS-compatible Au doping boosts the hole carrier transport in the CVD-grown 2-inch monolayer WSe<sub>2</sub> films for p-type transistors

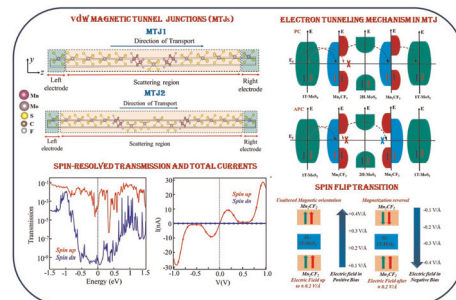
Xin Lu, Kai Huang, Ding Lu, Chao Tan, Xin Hao, Guohua Hu, Siyuan Luo and Zegao Wang\*



9133

## Two-dimensional Mn<sub>2</sub>CF<sub>2</sub> MXene-based magnetic tunnel junctions with giant spin filter tunnel magnetoresistance

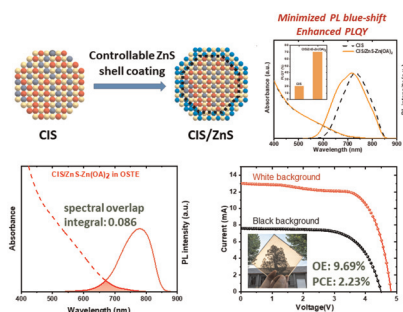
Sonali S. Pradhan, G. Vaitheeswaran\* and V. Kanchana\*



9146

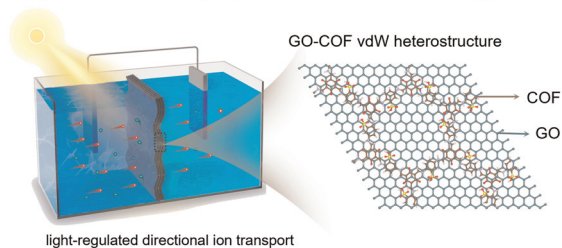
## Suppressed spectral blue-shift in ZnS-coated CuInS<sub>2</sub> quantum dots for efficient luminescent solar concentrators

Changhong Cheng, Jiayi Zhang, Yufan Wu, Jingjian Zhou, Qiliang Fu, Ilya Sychugov, Dan Shan, Bo Xu\* and Jing Huang\*



9156

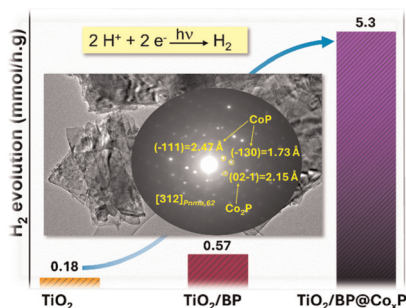
## Light-Driven Ion Pumping for Enhanced Osmotic Energy Conversion



## Light-driven cation pumping in atomic-level van der Waals heterostructures towards efficient osmotic energy harvesting

Yifan Guo, Xi Wang, Xinyu Chen, Xinyue Cao, Zhengwei Cao, Cuiwen Zong, Jia Ge, Junzhu Tao, Yu Zhang, Gao Liu, Lei Jiang and Zhen Zhang\*

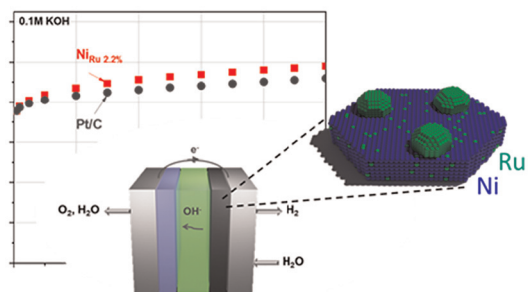
9167



## 2D black phosphorus as a phosphide source for the formation of mixed cobalt phosphide clusters active in photocatalytic hydrogen evolution

Giacomo Provinciali, Manuel Serrano-Ruiz, Jonathan Filippi, Beatrice Muzzi, Martina Banchelli, Carlo Calcatelli, Alberto Verdini, Stefano Caporali, Francesco D'Acapito, Maurizio Peruzzini and Maria Caporali\*

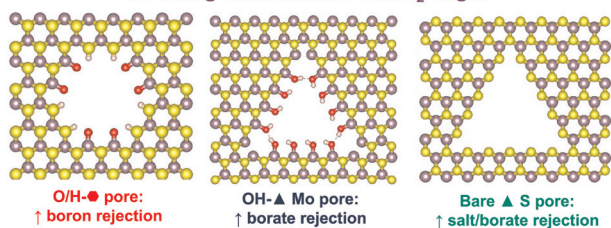
9177



## Synergistic ruthenium single-atom and nanoparticles in nickel as cooperative catalysts for the alkaline hydrogen evolution reaction

Gaëlle Khalil, Marie-Sophie Dias-Fernandes, Sumit Bawari, Linghui Li, Chidharth Muthuraj, Florent Ducrozet, Minkyong Kwak, Miguel Comesaña-Hermo, Andrea Zitolo, Stephan N. Steinmann, Shannon W. Boettcher, Cédric Tard, Benedikt Lassalle-Kaiser, Marion Giraud\* and Jennifer Peron\*

9190

Modeling functionalized MoS<sub>2</sub> edgesAqueous chemistry of MoS<sub>2</sub> nanopores: how functional groups influence water permeation and ion/borate rejection

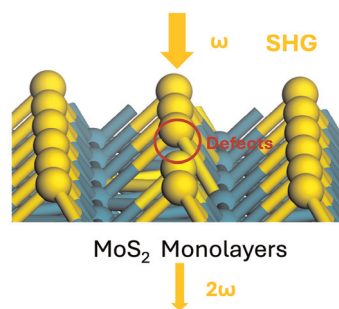
Pradeep Dhondi and Ananth Govind Rajan\*



9209

### Structural defects dependence of the second-harmonic generation in monolayer MoS<sub>2</sub>

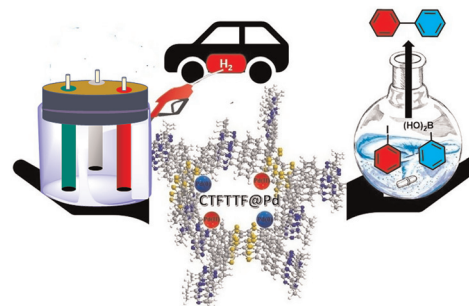
Hongjia Zhao, Anbing Zhang, Shi Qiu, Hongsheng Liu, Yuan Chang\* and Junfeng Gao\*



9216

### Palladium on S,N-containing carbon materials derived from covalent triazine-based frameworks (CTFs) for C–C coupling and electrocatalytic hydrogen production

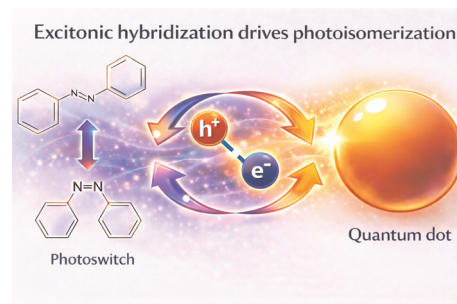
Arijit Maity, Debabrata Patra, Amit Saha and Asamanjoy Bhunia\*



9225

### Exciton-driven photoisomerization in photoswitch–quantum dot nanohybrids

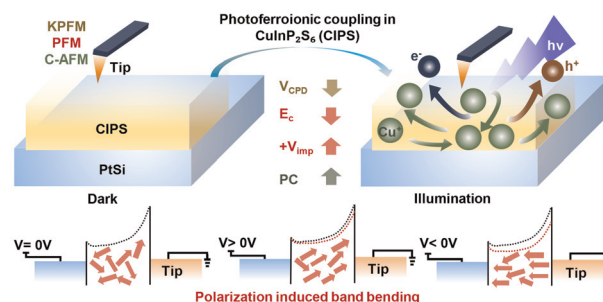
Daniel López Díaz,\* Gabriel Gil, Stefano Corni and Guido Goldoni



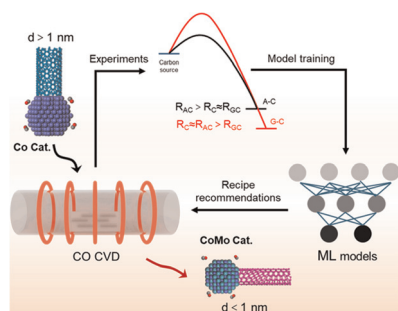
9236

### Photoferroelectric coupling and polarization-controlled interfacial band modulation in a van der Waals compound CuInP<sub>2</sub>S<sub>6</sub>

Subhashree Chatterjee, Rabindra Basnet, Rajeev Nepal and Ramesh C. Budhani\*



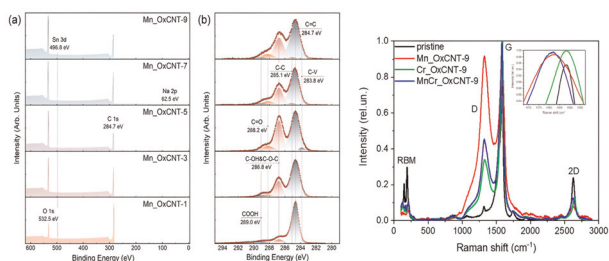
9250



### Co-designing growth factors for the synthesis of (6, 5)-enriched single-walled carbon nanotube horizontal arrays

Junxiao Li, Sizhe Lin, Wei Liu, Changlong Li, Jiacheng Song, Zhiwei Liu, Yue Hu and Shuchen Zhang\*

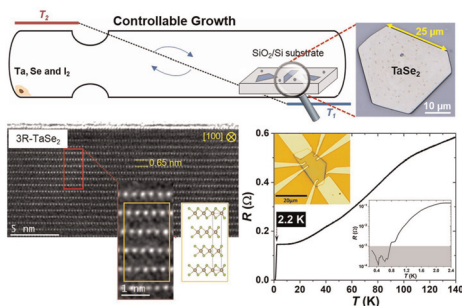
9260



### Deep oxidation of single-walled carbon nanotubes toward a versatile platform for direct functionalization

Maksim V. Gudkov,\* Nikolai I. Novosadov, Mikhail K. Torkunov, Maxim K. Rabchinskii, Svyatoslav D. Saveliev, Demid A. Kirilenko, Svetlana I. Serebrennikova, Dmitry V. Krasnikov, Ratibor G. Chumakov, Albert G. Nasibulin, Albert F. Arutyunyan, Roman A. Novikov and Valery P. Melnikov

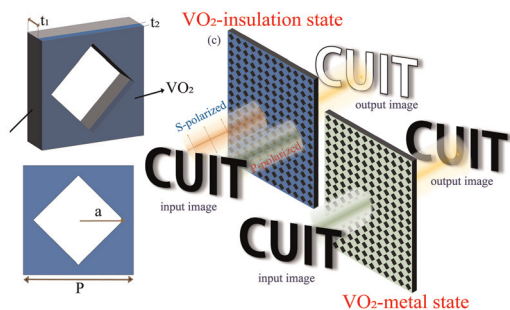
9273



### Thermodynamically guided synthesis of 3R-TaSe<sub>2</sub> nanocrystals and their superconducting behavior

Mahmoud M. Hammo,\* M. A. A. Mohamed,\* Esam K. Moustafa, Daniel Wolf, Samuel Froeschke, Ammar Soliman, Joseph Dufouleur, Romain Giraud, Bernd Büchner, Michael Mertig and Silke Hampel

9282



### Phase-change metasurface for switchable terahertz edge detection and bright-field imaging based on quasi-bound states in the continuum

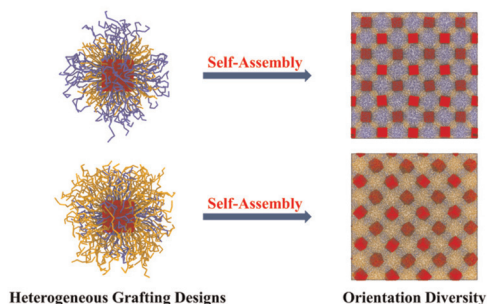
Ling Zhou, Li Luo, Kenan Guo, Lin Liang, Menghan Chen, Shichao Zhao, Yuxin Tang, Tingting Liu, Shuyuan Xiao, Jie Li\* and Jianquan Yao



9294

### Dictating orientation diversity of body-centered cubic superlattices in the self-assembly of polymer-grafted nanocubes through heterogeneous grafting designs

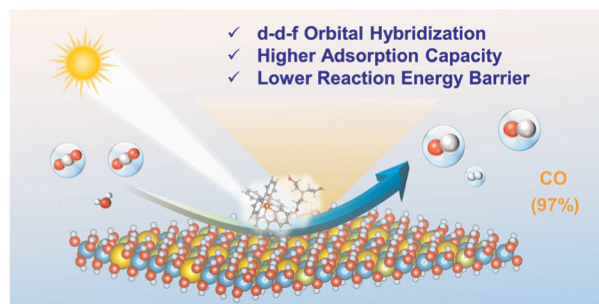
Chong Yu, Wei Deng and Hongxia Guo\*



9308

### Synergistic effects in NiMnEr-LDH: d-d-f orbital overlap enables efficient CO<sub>2</sub> photoreduction

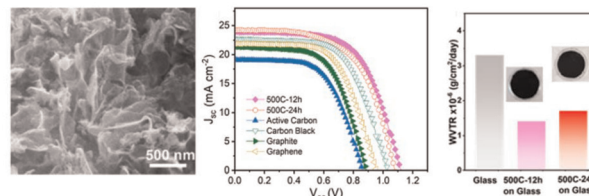
Zirui Wang, Cui Xu, Jiawei Li, Jiabin Li, Ziyang Zhu, Fanfan Meng, Gaofeng Deng, Yilin Yin, Bin Liu\* and Zenghe Li\*



9318

### Design and synthesis of hydrogenated carbon nanomaterials for perovskite solar cells

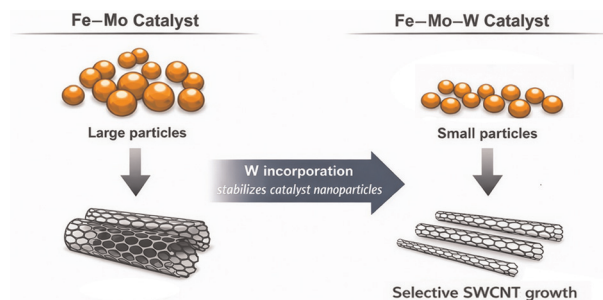
Sanan Appapillai, Sharmin Akter, Tajamul Syed, Hui Wang\* and Wei Wei\*



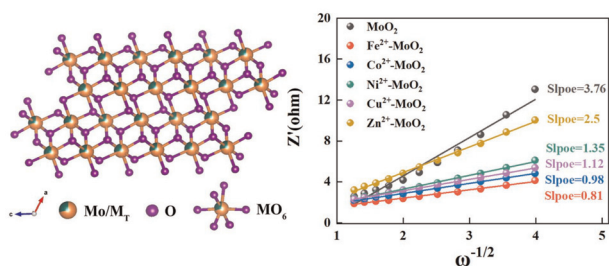
9326

### Tungsten-based ternary catalysts for selective growth of single-walled carbon nanotubes

Jae Hun Hwang, Geon Han, Young Soo Park, Sang Won Lee\* and Young Chul Choi\*



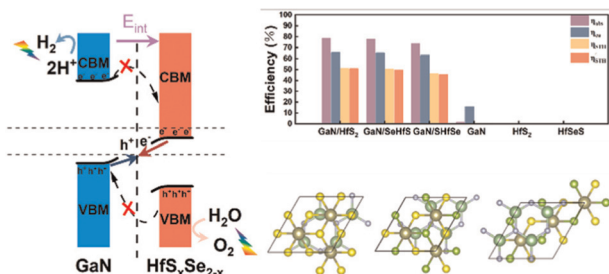
9338



### Transition metal doping enhances pseudocapacitive energy storage in monoclinic molybdenum dioxide

Ze-Dong Zhang, Guo-Xian Zhao, Zu-Tao Pan, Yao Xu and Ling-Bin Kong\*

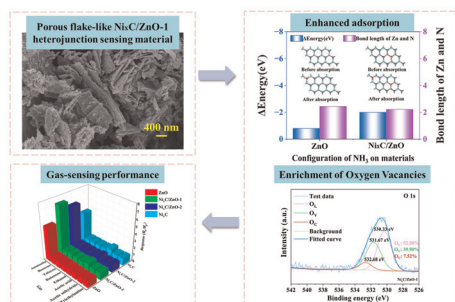
9347



### Unlocking ultrahigh solar-to-hydrogen efficiency in 2D GaN via S-scheme heterojunctions with HfS<sub>x</sub>Se<sub>2-x</sub>

Feng Tang, Dinghua Yang, Hongyu Zhu, Ya Nie, Xi Zhang\* and Gang Xiang\*

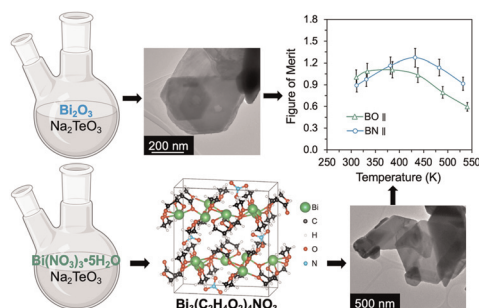
9355



### Highly selective room-temperature ammonia gas sensor based on a sheet-like Ni<sub>x</sub>C/ZnO heterojunction

Hongmin Zhu, Ying Li, Mingjie Dai, Bicheng Cai, Ru Wang, Yutong Guo, Yanbai Shen, Tianyao Qi,\* Fanli Meng\* and Yong Zhao\*

9365



### Precursor effects and formation mechanism of polyol-synthesized thermoelectric Bi<sub>2</sub>Te<sub>3</sub>

Madison Donohoe, Tristan Liciskai, Ehsan Niknam, Abdeljalil Assoud, Tianze Zou, Jan Kycia and Holger Kleinke\*

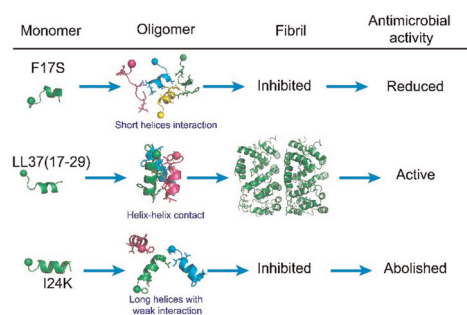


## PAPERS

9380

### Molecular interaction modes of the host-defense peptide cathelicidin LL-37 and its mutants dictate diverse antimicrobial activities

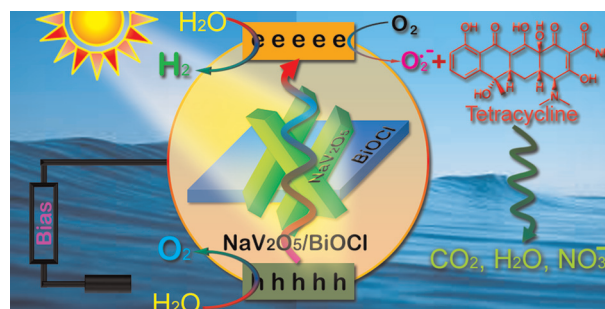
Xiaofei Jin, Huipan Wang\* and Huayuan Tang\*



9390

### Boosting photo-induced charge separation by the NaV<sub>2</sub>O<sub>5</sub>/BiOCl nanocomposite for alkaline water splitting and environmental remediation

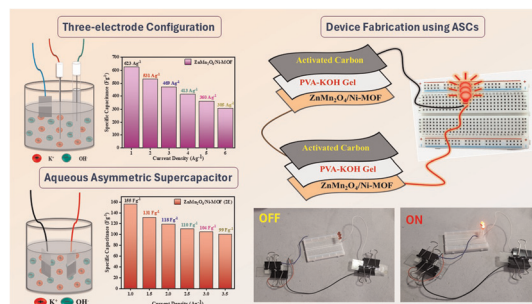
Soumita Sarkar, Soumalya Banerjee, Sk Afsar Ali and Astam K. Patra\*



9405

### Spinel ZnMn<sub>2</sub>O<sub>4</sub>/Ni-based metal–organic framework hybrid composite for high-performance asymmetric supercapacitors

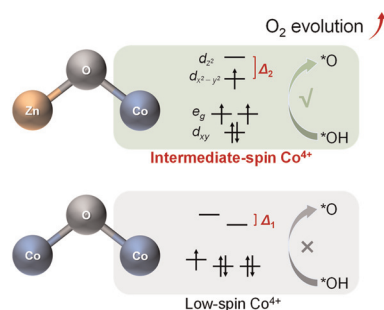
Abinash Kumararaj, Kamala Bharathi Karuppanan and Geetha Arunachalam\*



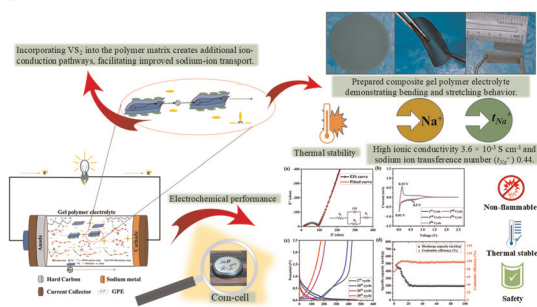
9416

### Modulating the electronic structure of cobalt sites using zinc to promote the oxygen evolution electrocatalysis

Chizhong Wang,\* Sizhe Chen, Wen Guo, Fanghua Liu, Lei Qiu, Qiufan Xiang, Yijia Cai and Huazhen Chang\*



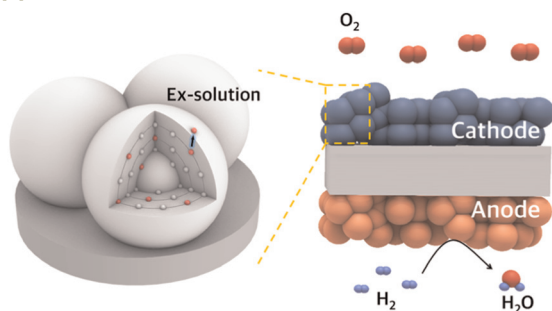
9425



## Impact of 2D layered $\text{VS}_2$ on the electrochemical properties of gel polymer electrolytes for sodium-ion battery applications

Awanish Gupta, Ashish Bhatnagar\* and Devendra Kumar Rai\*

9444



## Anchored nanocatalysts enable efficient oxygen reduction in barium cobaltite cathodes

InSik Lim, Hyun Sik Yoo, DongHwan Oh, Gaon Heo, Seonmin Oh, Bonjae Koo, Wonyoung Lee\* and Jun Hyuk Kim\*

