

# Journal of Materials Chemistry A

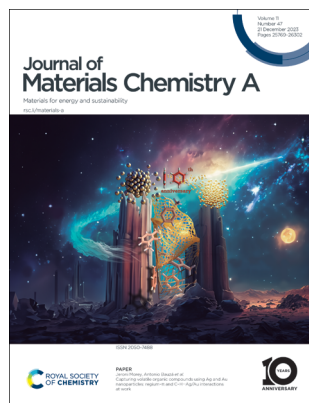
Materials for energy and sustainability

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## IN THIS ISSUE

ISSN 2050-7488 CODEN JMCAET 11(47) 25769–26302 (2023)



### Cover

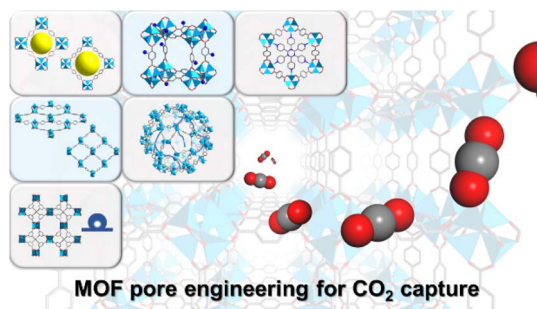
See Jeroni Morey, Antonio Bauzá et al., pp. 25865–25874. Image reproduced by permission of Antonio Bauzá from *J. Mater. Chem. A*, 2023, 11, 25865.

## REVIEWS

25784

### Pore engineering of metal–organic frameworks for boosting low-pressure CO<sub>2</sub> capture

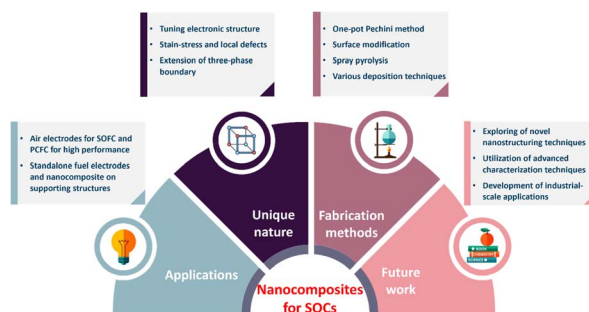
Meili Ding, Wei Rong, Yang Wang, Suyu Kong and Jianfeng Yao\*



25803

### Nanocomposite electrodes as a new opportunity to transform the performance of solid oxide cells

Xuemei Li, Lingfeng Zhou, Qingyuan Li, Awa Kalu, Cijie Liu, Bo Guan, Ahmed Fathi Salem Molouk, Xingbo Liu\* and Wenyan Li\*



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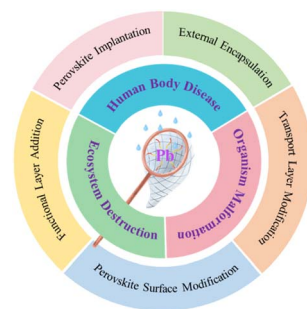


## REVIEWS

25825

### Pernicious effects and management of lead leakage from perovskite solar cells

Yan Yin, Li Yang,\* Xiaoli Zhang and Jinbao Zhang\*

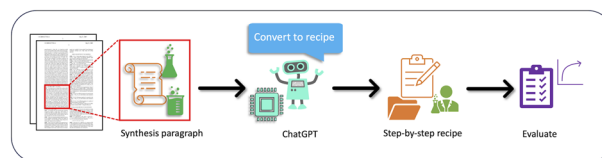


## COMMUNICATIONS

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### Realizing the cooking recipe of materials synthesis through large language models

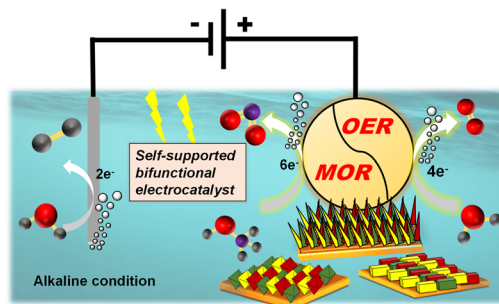
Jaydeep Thik, Siwen Wang, Chuhong Wang, Hadi Mansourifar, Honghong Lin, Keiichi Okubo and Chen Ling\*



25854

### Unveiling the bifunctional role of morphological differences of self-supported $\text{Cu}(\text{OH})_2$ in electrocatalysis

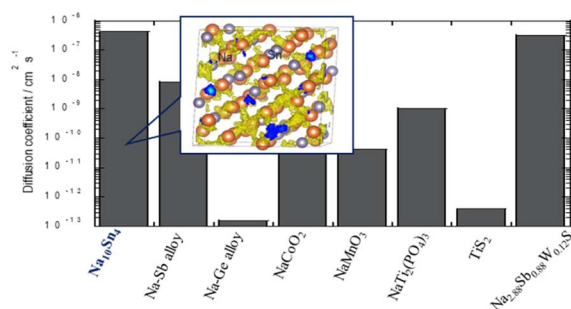
Brahmari Honnappa, T. R. Naveen Kumar, Prince J. J. Sagayaraj, Sulakshana Shenoy, Chitiphon Chuaicham, Manova Santhosh Yesupatham, Anantharaj Sengeni, Bernaurdshaw Neppolian, Keiko Sasaki\* and Karthikeyan Sekar\*



25859

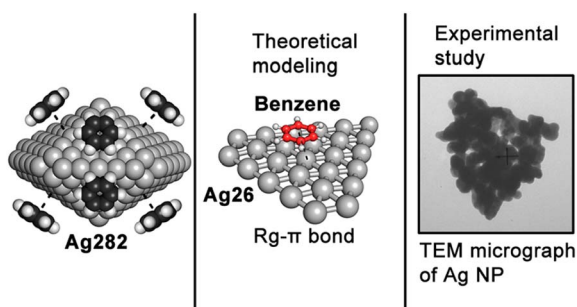
### Fast Na-diffusive tin alloy for all-solid-state Na-based batteries

Naoto Tanibata,\* Koki Matsunoshita, Hirokazu Takeuchi, Suzuno Akatsuka, Misato Koga, Hayami Takeda and Masanobu Nakayama



## PAPERS

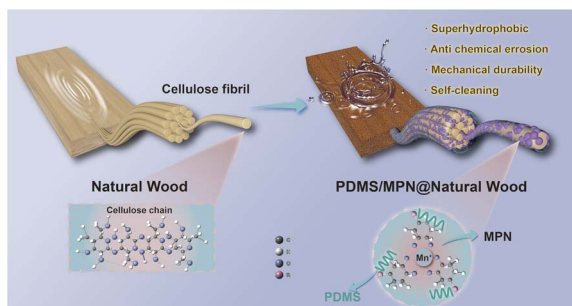
25865



### Capturing volatile organic compounds using Ag and Au nanoparticles: regium- $\pi$ and C-H $\cdots$ Ag/Au interactions at work

Maria de las Nieves Piña, Jeroni Morey,<sup>\*</sup> Antonio Frontera and Antonio Bauzá<sup>\*</sup>

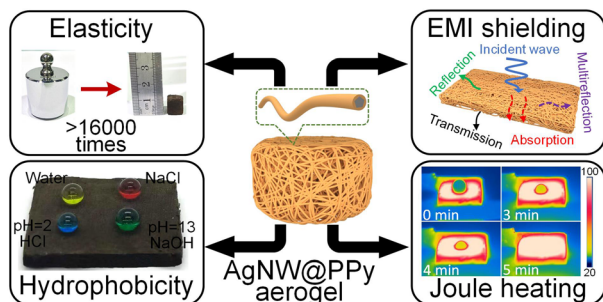
25875



### A nature-inspired strategy towards superhydrophobic wood

Shiqin Liu, Mengjia Zhu, Yuxiang Huang,<sup>\*</sup> Yanglun Yu, Wenji Yu and Bin Lv<sup>\*</sup>

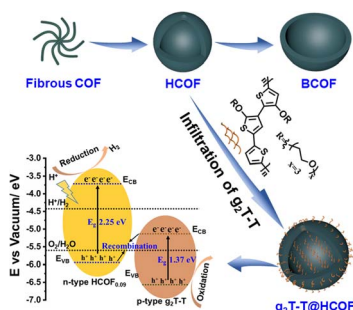
25887



### Superelastic, highly conductive, and superhydrophobic silver nanowires@polypyrrole hybrid aerogels with outstanding electromagnetic interference shielding and Joule heating performance

Fei Peng, Wenbo Zhu,<sup>\*</sup> Bicheng Fu, Yi Fang, Zhipeng Peng, Jingjing He, Hongtao Chen, Hongjun Ji, Chunjin Hang and Mingyu Li<sup>\*</sup>

25899



### Hollow sp<sup>2</sup>-conjugated covalent organic framework encapsulating thiophene-based photosensitizer for enhanced visible-light-driven hydrogen evolution

Chen Yang, Huawei Hu, Cheng Qian and Yaozu Liao<sup>\*</sup>



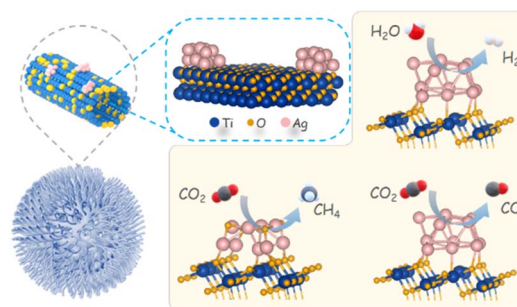


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# A highly durable AgO<sub>x</sub> cluster/mesoporous TiO<sub>2</sub> photocatalyst with synergistic effects induced superior H<sub>2</sub> evolution and CO<sub>2</sub> reduction

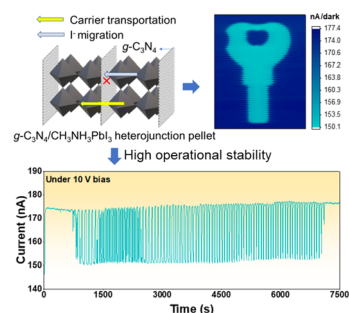
Yan Zhang, Chunyao Niu, Jian Liu, Rachel A. Caruso and Xiao Li Zhang\*



25918

# Realizing low-ion-migration and highly sensitive X-ray detection by building g-C<sub>3</sub>N<sub>4</sub> and CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> bulk heterojunction pellets

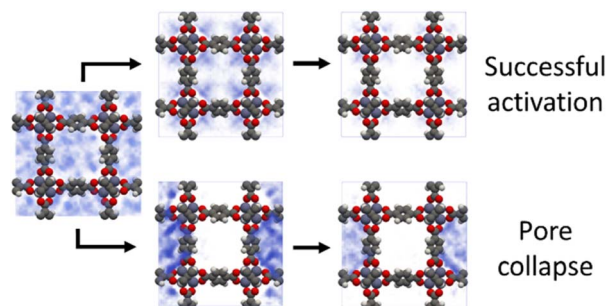
Chengzhi Xue, Yingrui Xiao, Xing Liu, Ziwei Xu, Nan Li, Shubo Wang, Ningyi Yuan, Jianding Ding, Xu Guo\*, Zhou Yang\* and Shengzhong (Frank) Liu\*



25929

# Identifying pathways to metal–organic framework collapse during solvent activation with molecular simulations

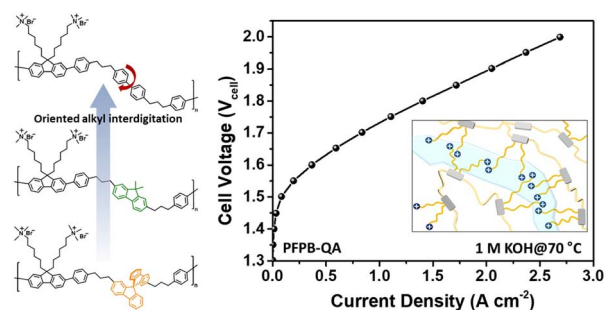
Joseph R. H. Manning\*, Gaël Donval, Mat Tolladay, Tom L. Underwood, Stephen C. Parker and Tina Düren\*



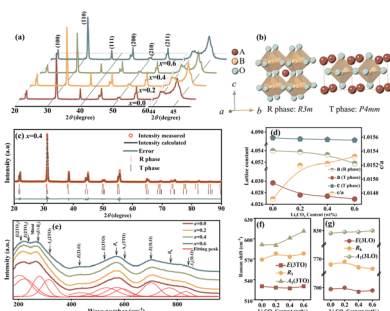
25938

# Morphology and cell performance of poly(fluorene)-based anion exchange membranes for water electrolysis: effect of backbone core structure

Haeryang Lim, Jae-Yeop Jeong, Dae Hwan Lee, Shin-Woo Myeong, Giwon Shin, Dayeong Choi, Won Bae Kim, Sung Mook Choi\* and Taiho Park\*



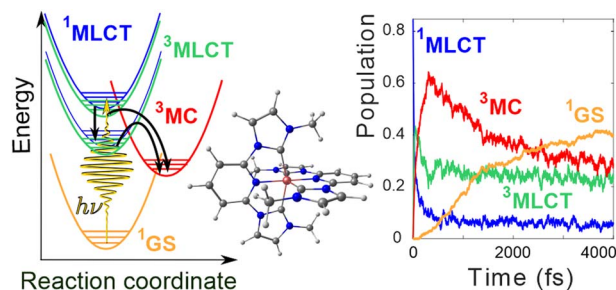
25945



### High piezoelectricity induced by lattice distortion and domain realignment in $\text{Li}_2\text{CO}_3$ -added lead-based ceramics

Hao Chen, Yining Xie, Jingwen Xi, Wanfeng Zhuang, Weiling Wang, Jie Xing, Hong Liu\* and Jianguo Zhu

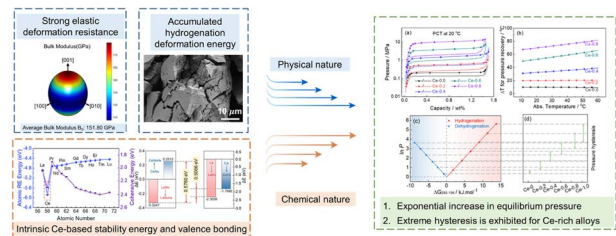
25955



### Ultrafast $^3\text{MLCT}$ quenching and vibrational coherence: excited-state dynamics of the first-discovered $\text{Fe(II)}$ -carbene sensitizer resolved

Mátyás Pápai,\* Tamás Rozgonyi and György Vankó

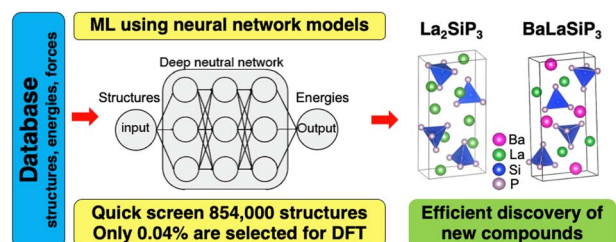
25963



### Underlying factors of mega pressure hysteresis in cerium-rich $\text{CaCu}_5$ -type metal hydrides and effective modification strategies

Panpan Zhou, Jianwei Zhang, Jiapeng Bi, Xuezhong Xiao,\* Ziming Cao, Liujun Zhan, Huahai Shen, Miao Lu, Zhinian Li, Yuyuan Zhao, Li Wang, Mi Yan\* and Lixin Chen\*

25973



### Accelerating materials discovery using integrated deep machine learning approaches

Weiye Xia, Ling Tang, Huaijun Sun, Chao Zhang, Kai-Ming Ho, Gayatri Viswanathan, Kirill Kovnir and Cai-Zhuang Wang\*

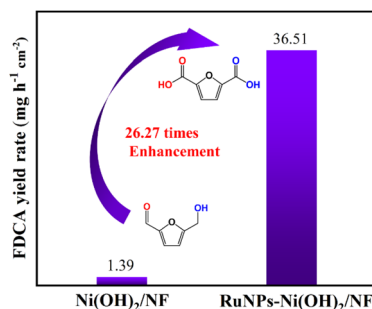


## PAPERS

25983

# Ru nanoparticle decorated Ni(OH)<sub>2</sub> nanosheets for highly efficient electrochemical synthesis of 2,5-furandicarboxylic acid: experimental and theoretical studies

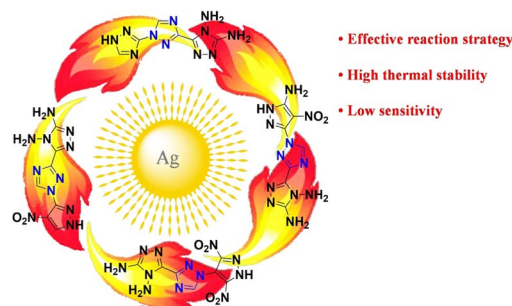
Zhong Cheng, Dingbang Fu, Wenjing Zhou, Wenfang Deng,\* Yueming Tan\* and Ming Ma\*



25992

# Achieving heat-resistant energetic compounds via silver-catalyzed one-pot cycloaddition of ethyl 2-isocyanoacetate and nitrogen-rich diazonium

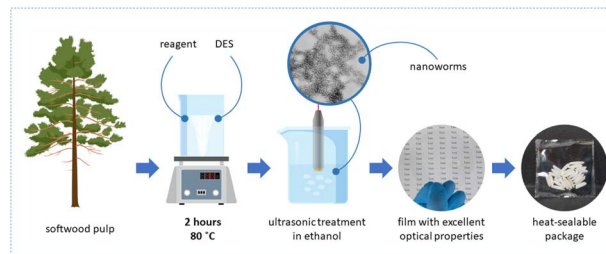
Yaqun Dong, Miao Li, Guangbin Cheng, Wei Huang, Yuji Liu,\* Chuan Xiao\* and Yongxing Tang\*



26000

# Glass-like transparent and heat-sealable films of cellulose nanoworms via ethanol triggered swelling of esterified cellulose

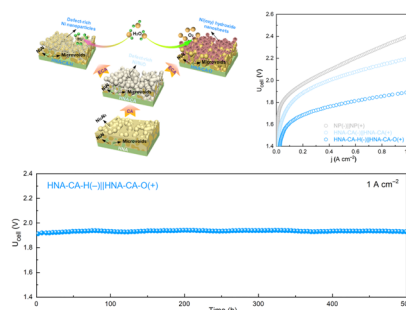
Matias Lakovaara, Juho Antti Sirviö, Luyao Wang, Terhi Suopajarvi, Feby Pratiwi, Hao Zhang, Jouko Peltonen, Chunlin Xu and Henrikki Liimatainen\*



26011

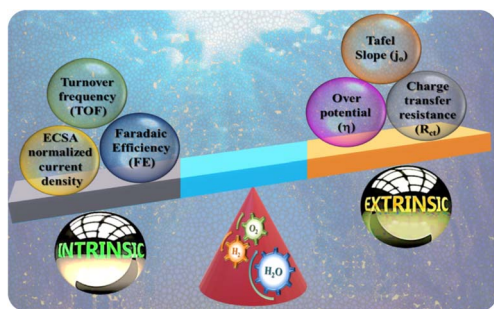
# Deep reconstruction of Ni–Al-based pre-catalysts for a highly efficient and durable anion-exchange membrane (AEM) electrolyzer

Tao Jiang,\* Xinge Jiang, Vasileios Kyriakou, Karel Bouzek and Hanlin Liao

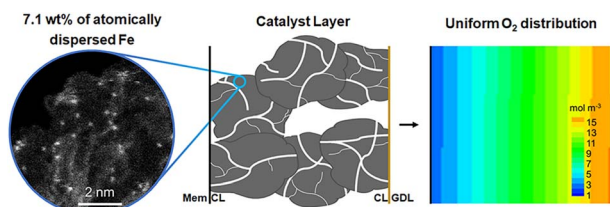


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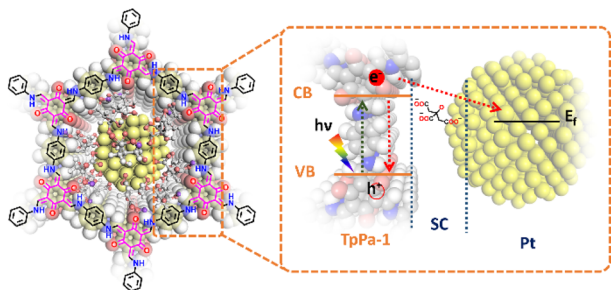
26023

**'Total electrode' and 'intrinsic' activity parameters in water electrolysis: a comprehensive investigation**Arun Karmakar,<sup>\*</sup> Bhagyashri. B. Kamble, Ragunath Madhu, Pradeep Gudlur and Subrata Kundu<sup>\*</sup>

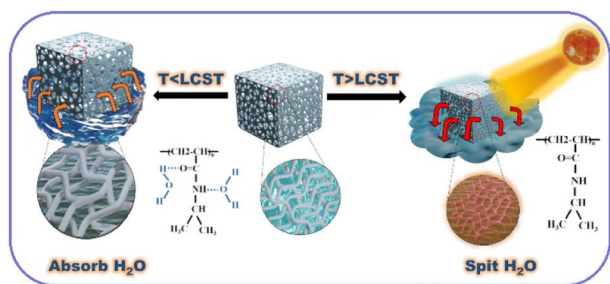
26044

**Fluorine-decorated high loading Fe–N–C electrocatalysts for proton exchange membrane fuel cells**Rui Gao, Zhongyu Qiu, Kun Xu, Zihui Zhai, Yuanyuan Cong, Qike Jiang, Guanghui Zhang, Yang Lv, Yizheng Guo, Yongpeng Li, Qingchuan Xu, Yi Xiao, Yiheng Pang, Yun Wang<sup>\*</sup> and Yujiang Song<sup>\*</sup>

26052

**Interface molecular wires induce electron transfer from COFs to Pt for enhanced photocatalytic H<sub>2</sub> evolution**Zhengfeng Zhao,<sup>\*</sup> Weiqiang Chen, Guofeng Zhang and Yao Chen<sup>\*</sup>

26063

**A mimosa-inspired photothermal-responsive multifunctional hydrogel for passive solar-driven efficient water purification**Jiangyang Mei, Yong Jin,<sup>\*</sup> Long Bai, Xiang Shang and Wenhua Zeng

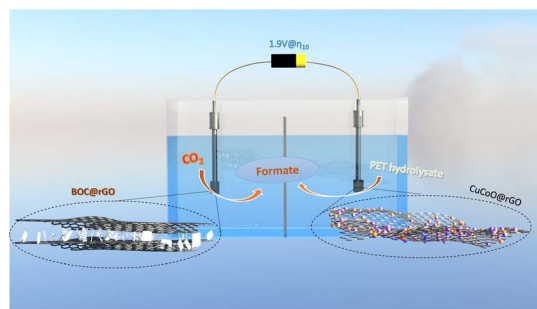


## PAPERS

26075

# Simultaneous upcycling of PET plastic waste and CO<sub>2</sub> reduction through Co-electrolysis: a novel approach for integrating CO<sub>2</sub> reduction and PET hydrolysate oxidation

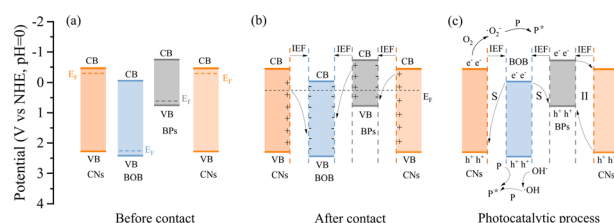
Sravan Kumar Kilaparthi, Ahmed Addad, Alexandre Barras, Sabine Szunerits and Rabah Boukherroub\*



26086

# The preserved S-scheme band structure of graphitic carbon nitride/bismuth oxobromide after the introduction of black phosphorus driven by an internal electric field: achieving significantly enhanced photocatalytic performance

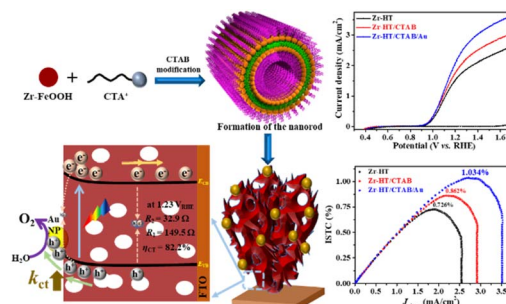
Lijun Chen, Feihong Wang, Jiahao Zhang, Hongyuan Wei\* and Leping Dang\*



26105

# Hierarchical Zr-doped Fe<sub>2</sub>O<sub>3</sub> photoanodes decorated with *in situ* Au nanoparticles via a surfactant-assisted one-step hydrothermal approach for efficient photoelectrochemical water splitting

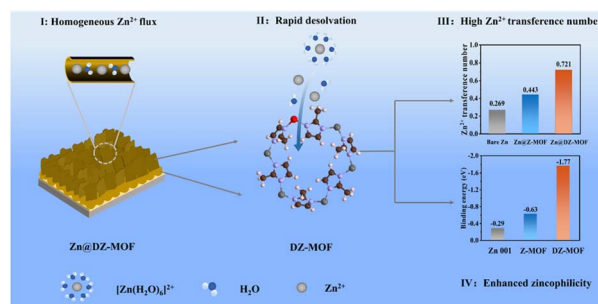
Periyasamy Anushkaran, Mahadeo A. Mahadik, Weon-Sik Chae, Hyun Hwi Lee, Sun Hee Choi\* and Jum Suk Jang\*



26115

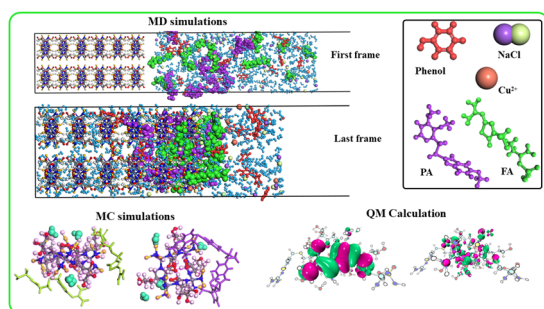
# *In situ* defect engineering in a multifunctional layer with strong zincophilicity and high Zn-ion conductivity on Zn anodes

Maoni Lu, Daochuan Jiang, Xiaoxing Zhou, Sichen Li, Xinghao Li, Ping Chen, Zhenjie Sun,\* Junnan Hao,\* Manzhou Zhu and Peng Li\*



## PAPERS

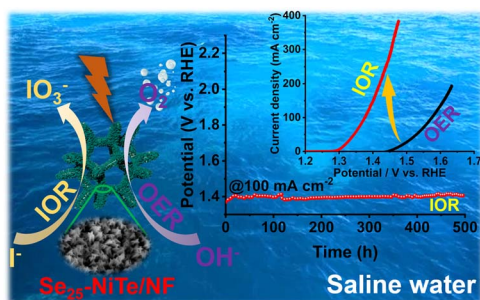
26127



**pH-Sensitive adsorption of gastrointestinal drugs (famotidine and pantoprazole) as pharmaceutical pollutants by using the Au-doped@ZIF-90-glycerol adsorbent: insights from computational modeling**

Narjes Montazeri, Iman Salahshoori,<sup>\*</sup>  
Parivash Feyzishendi, Fatemeh Sadat Miri, Mehdi  
Moayed Mohseni and Hossein Ali Khonakdar<sup>\*</sup>

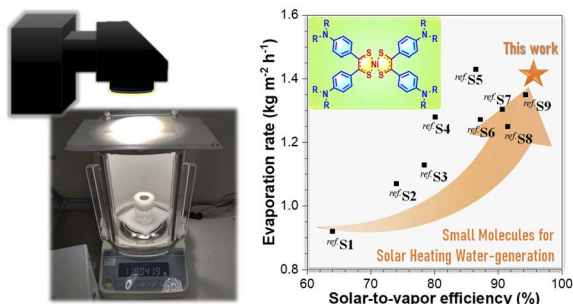
26152



**One-step hydrothermal synthesis of Se-doped NiTe electrocatalysts for efficient hydrogen production from saline water assisted by anodic iodide oxidation**

Hao Tan, Zhipeng Yu,<sup>\*</sup> Alec P. LaGrow, Shiyu Ma,  
Jingwei Wang, Hong Li, Dehua Xiong<sup>\*</sup> and Lifeng Liu<sup>\*</sup>

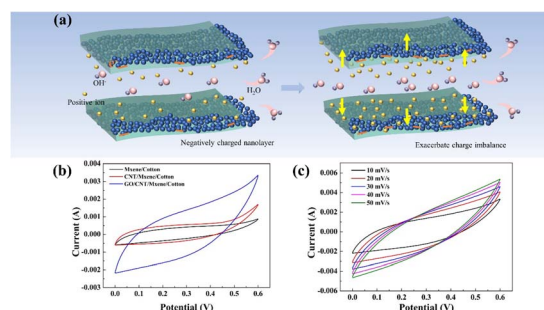
26164



**Neutral d<sup>8</sup> metal complexes with intervalence charge-transfer transition trigger an effective NIR-II photothermal conversion for solar-driven desalination**

Yung-Cong Yang, Joanna S. Lin and Jen-Shyang Ni<sup>\*</sup>

26173



**Fabrication and study of a high output power flexible fabric hydrovoltaic generator**

Xiaoyang Zhang, Xuefei Zhang, Xiaoxuan Fan,  
Hai-Tao Ren, Jia-Hong Lin, Ching-Wen Lou<sup>\*</sup>  
and Ting-Ting Li<sup>\*</sup>

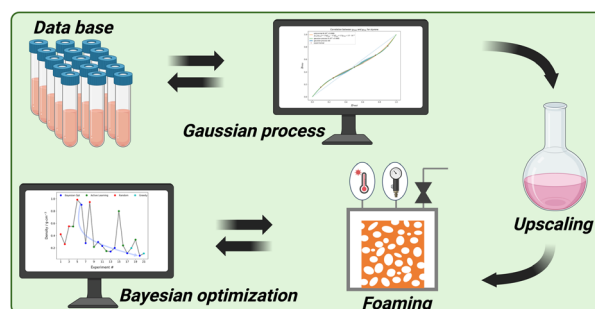


## PAPERS

26183

### Systematic copolymer screening for foaming experiments supported by computational methods

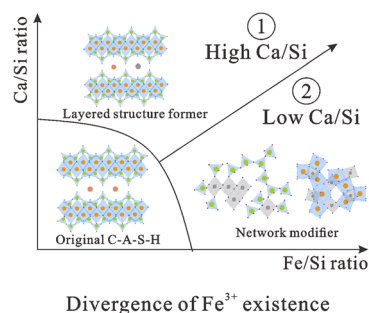
Patrick Endres, Timo Schuett, Christian Brütting, Julian Kimmig, Rodrigo Q. Albuquerque, Tobias Standau, Stefan Zechel, Holger Ruckdäschel\* and Ulrich S. Schubert\*



26193

### The state of $\text{Fe}^{3+}$ in the C–F–A–S–H system with varying Fe/Si and Ca/Si ratios

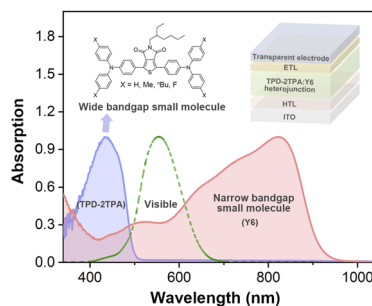
Yuan Fang, Kunde Zhuang, Hongzhi Cui, Zuhua Zhang, Aoxuan Wang, Chenman Wang, Dapeng Zheng\* and Xianfeng Wang



26212

### Efficient heterojunction constructed from wide-bandgap and narrow-bandgap small molecules enables dual-band absorption transparent photovoltaics

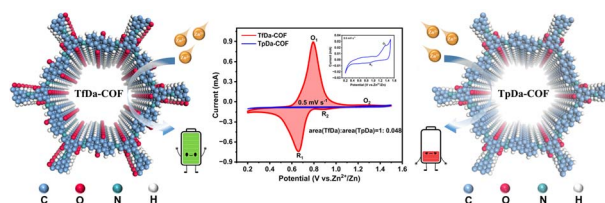
Ruiqian Meng, Ze Qiao, Qianqing Jiang and Dianyi Liu\*



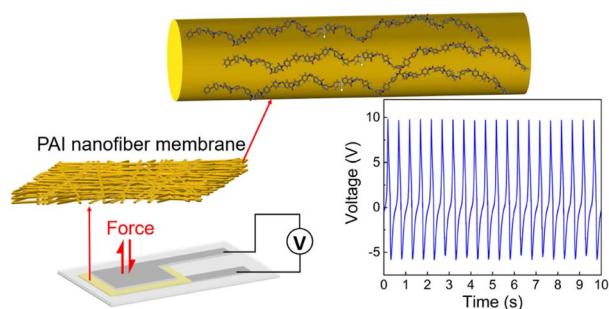
26221

### An anthraquinone-based covalent organic framework for highly reversible aqueous zinc-ion battery cathodes

Lihua Li,\* Haohao Yang, Xin Wang, Yinghu Ma, Weizhi Ou, Hui Peng\* and Guofu Ma\*



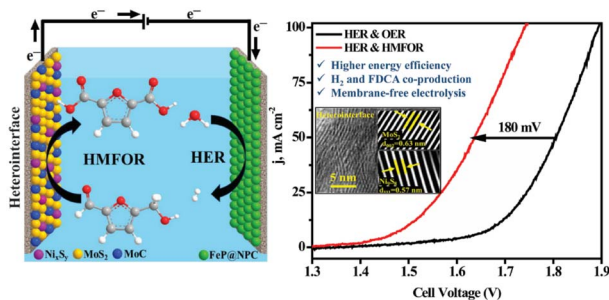
26230



### Novel piezoelectric properties of electrospun polyamide-imide nanofiber membranes

Ruixi Bai, Hao Shao, Haibo Chang, Hongxia Wang,\*  
Xiang Ding, Weihua Cao, Yuying Cao and Tong Lin\*

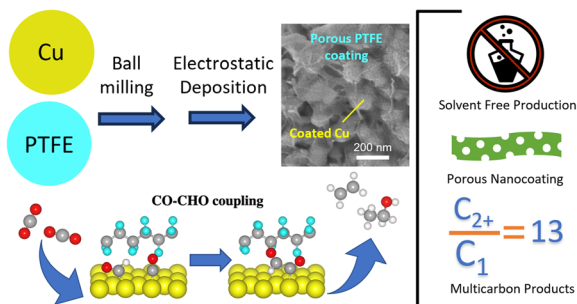
26242



### A heterostructured electrocatalyst for the electrochemical valorization of 5-hydroxymethylfurfural coupled with the hydrogen evolution reaction

Loknath Thapa, Asim Bhaumik, Swastik Mondal  
and C. Retna Raj\*

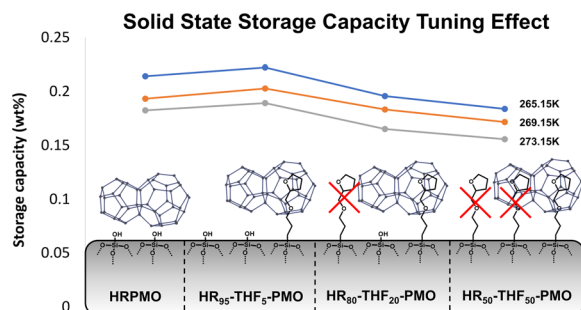
26252



### PTFE nanocoating on Cu nanoparticles through dry processing to enhance electrochemical conversion of CO<sub>2</sub> towards multi-carbon products

John Pellessier, Xiangtao Gong, Boyang Li, Jiaqi Zhang,  
Yang Gang, Kirk Hambleton, Chinmoy Podder,  
Zhongjia Gao, Hongcai Zhou, Guofeng Wang, Heng Pan\*  
and Ying Li\*

26265



### Engineering of hollow periodic mesoporous organosilica nanorods for augmented hydrogen clathrate formation

Geert Watson, Nithin B. Kumamuru,  
Sammy W. Verbruggen, Patrice Perreault,  
Maarten Houllberghs, Johan Martens, Eric Breynaert  
and Pascal Van Der Voort\*

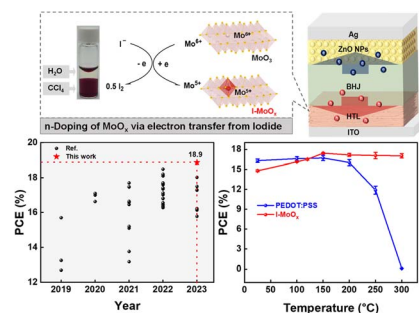




26277

## Efficient and stable organic solar cells based on all-solution-processed metal oxide transport layers

Yangdan Tao, Di Wang, Xinyu He, Hongzheng Chen and Chang-Zhi Li\*



26285

## Ultra-broadband microwave absorption of (Mn<sub>0.2</sub>Fe<sub>0.2</sub>Zn<sub>1.2</sub>)<sub>x</sub> substituted Co<sub>2</sub>Y hexaferrites with a self-aligned sheet stacked, highly c-axis oriented and multi-domain structure

Yijian Liu, Haifeng Li,\* Xutao Yan, Jihui Sun, Jiabao Zang, Xiang Luo, Li Sun and Meijie Zhang

