

# Journal of Materials Chemistry A

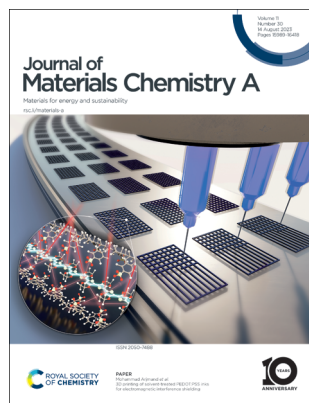
Materials for energy and sustainability

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## IN THIS ISSUE

ISSN 2050-7488 CODEN JMCAET 11(30) 15989–16418 (2023)



### Cover

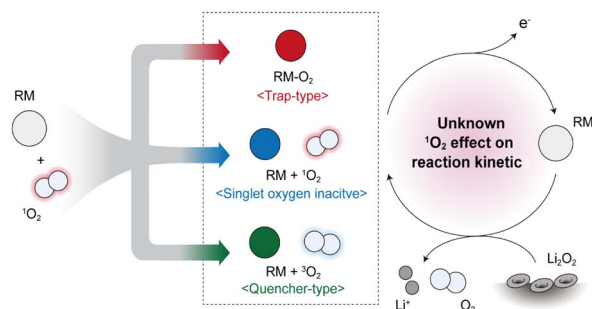
See Mohammad Arjmand *et al.*, pp. 16027–16038. Image reproduced by permission of Mohammad Arjmand from *J. Mater. Chem. A*, 2023, **11**, 16027.

## COMMUNICATIONS

16003

### Effect of singlet oxygen on redox mediators in lithium–oxygen batteries

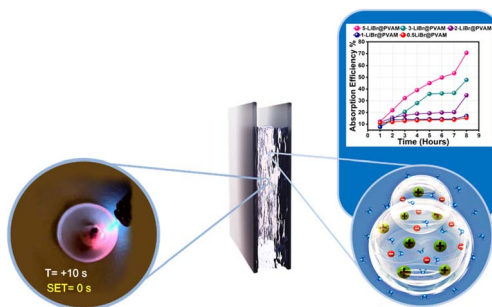
Hyun-Wook Lee, Ja-Yeong Kim, Joo-Eun Kim, Yun-Joo Jo, Daniel Dewar, Sixie Yang, Xiangwen Gao,\* Peter G. Bruce\* and Won-Jin Kwak\*



16009

### Novel self-regenerative and non-flammable high-performance hydrogel electrolytes with anti-freeze properties and intrinsic redox activity for energy storage applications

Abdelrahman A. M. Ismail, Loujain G. Ghanem, Abdallah A. Akar, Ghada E. Khedr, Mohamed Ramadan, Basamat S. Shaheen and Nageh K. Allam\*



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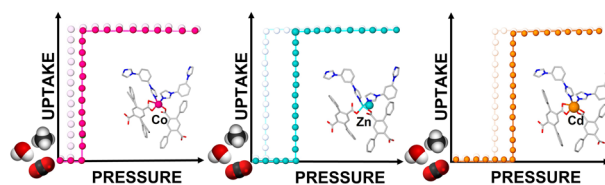


## COMMUNICATIONS

16019

### Metal cation substitution can tune CO<sub>2</sub>, H<sub>2</sub>O and CH<sub>4</sub> switching pressure in transiently porous coordination networks

Varvara I. Nikolayenko, Dominic C. Castell, Debobroto Sensharma, Mohana Shivanna, Leigh Loots, Ken-ichi Otake, Susumu Kitagawa, Leonard J. Barbour and Michael J. Zaworotko\*

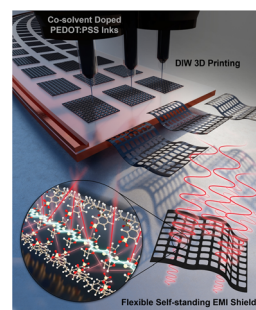


## PAPERS

16027

### 3D printing of solvent-treated PEDOT:PSS inks for electromagnetic interference shielding

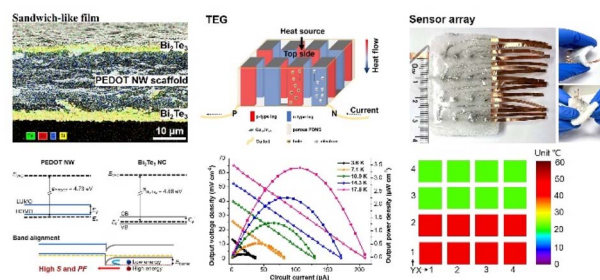
Saeed Ghaderi, Hadi Hosseini, Seyyed Arash Haddadi, Milad Kamkar and Mohammad Arjmand\*



16039

### Flexible Bi<sub>2</sub>Te<sub>3</sub>/PEDOT nanowire sandwich-like films towards high-performance wearable cross-plane thermoelectric generator and temperature sensor array

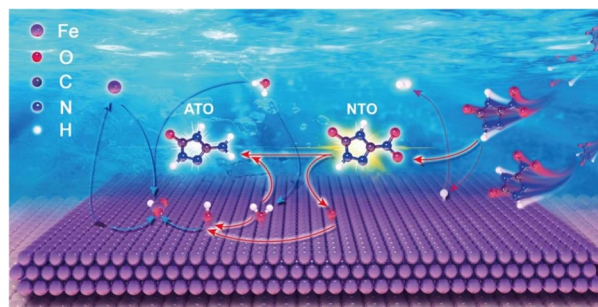
Minzhi Du, Jianyong Ouyang\* and Kun Zhang\*



16049

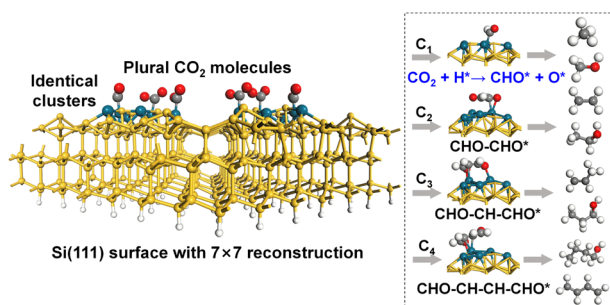
### Unveiling the corrosion mechanism of 3-nitro-1,2,4-triazol-5-one (NTO) toward mild steel from *ab initio* molecular dynamics: how the "nitro-to-amino" reaction matters

Ziyang Guo, Liyuan Qin, Shuai Zhao,\* Deqiu Wang, Xijuan Lv, Yujie Qiang, Wei Guo,\* Qinghai Shu\* and Y. Yao



## PAPERS

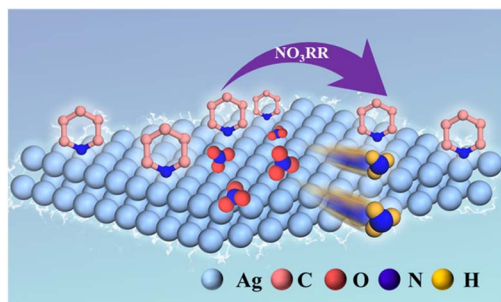
16059



### A Si(111)-(7 × 7) surface as a natural substrate for identical cluster catalysts

Yu Guo, Yanyan Zhao, Wei Pei, Si Zhou\* and Jijun Zhao\*

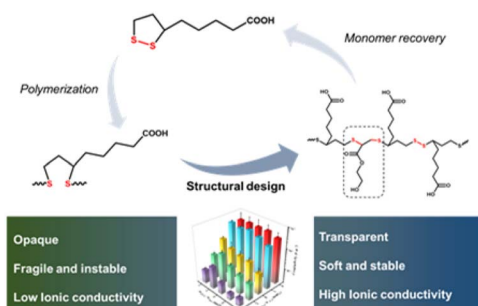
16068



### Pyridine functionalized silver nanosheets for nitrate electroreduction

Han-Yue Yang, Kai-Yue He, Xuan Ai,\* Xue Liu, Yun Yang,\* Shi-Bin Yin, Pu-Jun Jin and Yu Chen

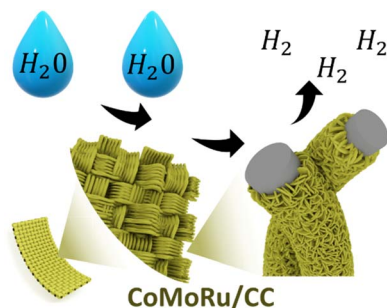
16074



### Study on fabricating transparent, stretchable, and self-healing ionic conductive elastomers from biomass molecules through solvent-free synthesis

Zhaolin Wu, Yuhang Guo, MingZhi Qin, Chaoyou Liao, Xiufen Wang\* and Liqun Zhang\*

16084



### Strategically designed trimetallic catalyst with minimal Ru addresses both water dissociation and hydride poisoning barriers in alkaline HER

Hashikaa Rajan, Sengeni Anantharaj,\* Jin-Kuk Kim,\* Min Jae Ko\* and Sung Chul Yi\*



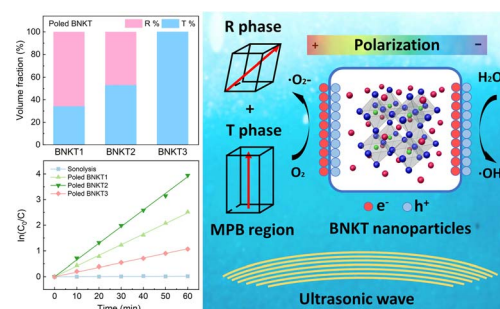


## PAPERS

16093

# Efficient piezocatalysis of $\text{Bi}_{0.5}(\text{Na}_{1-x}\text{K}_x)_{0.5}\text{TiO}_3$ nanoparticles: bridging the phase ratio at MPB composition and piezocatalytic activity

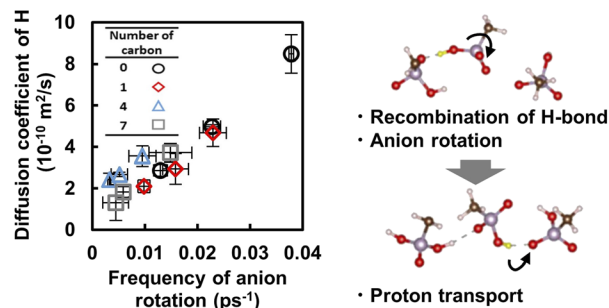
Jun Liang, Yue Jiang, Yunlong Sun, Aditya Rawal, Qi Zhang, Zizheng Song, Yasuhiro Sakamoto, Jianhao Du, Chenlu Jiang, Shery L. Y. Chang, Linfeng Fei, Shanming Ke, Zibin Chen, Wenxian Li and Danyang Wang\*



16104

# Accelerating anhydrous proton conduction via anion rotation and hydrogen bond recombination: a machine-learning molecular dynamics

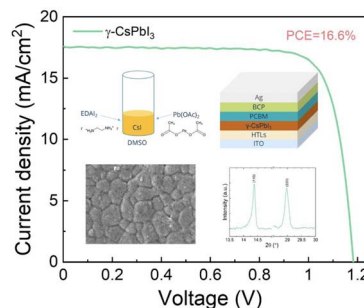
Saori Minami\* and Ryosuke Jinnouchi



16115

# Towards low-temperature processing of efficient $\gamma$ - $\text{CsPbI}_3$ perovskite solar cells

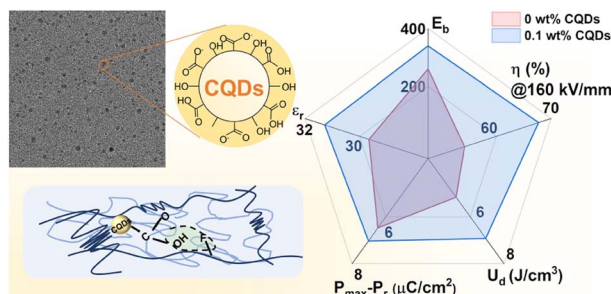
Zongbao Zhang, Ran Ji, Yvonne J. Hofstetter, Marielle Deconinck, Julius Brunner, Yanxiu Li, Qingzhi An and Yana Vaynzof\*



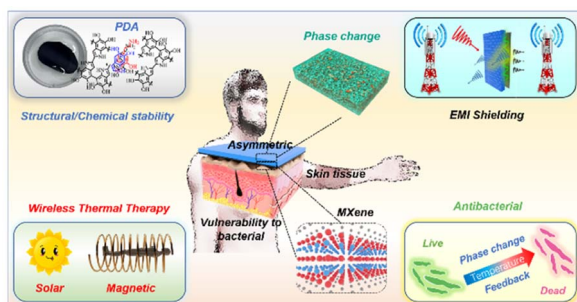
16127

# Ultralow loading of carbon quantum dots leading to significantly improved breakdown strength and energy density of P(VDF-TrFE-CTFE)

Xun Jiang, Hang Luo,\* Fan Wang, Xiaona Li, Haoran Xie, Yuan Liu, Guoqiang Zou, Xiaobo Ji, Hongshuai Hou\* and Dou Zhang\*



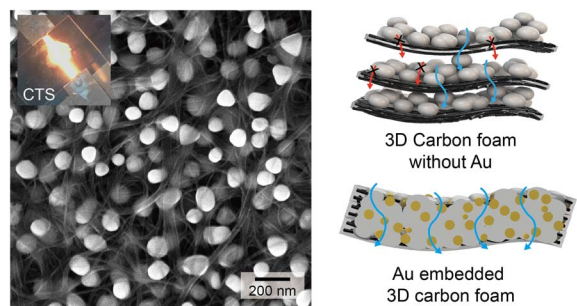
16138



### Engineering asymmetric multifunctional phase change composites for improved electromagnetic interference shielding and wireless personal thermal therapy

Xinpeng Hu, Bingqing Quan, Bin Ai, Mengjie Sheng, Shuang Liu, Xianrong Huang, Hao Wu, Xiang Lu\* and Jinping Qu\*

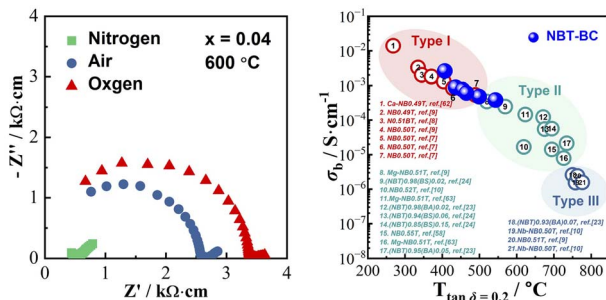
16153



### Highly loaded gold (Au) nanoseeds with uniform distribution on 3D carbon foam for long-cycle lithium-metal batteries

Ji-Yoon Song, Jeessoo Yoon, Jungdon Suk, Mihye Wu\* and Hee-Tae Jung\*

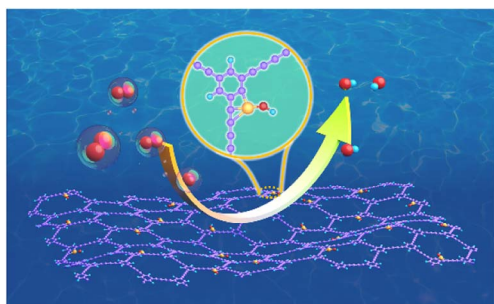
16159



### Mixed ionic–electronic conduction and defect chemistry of $(\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3)_{1-x}(\text{BiCoO}_3)_x$ ( $0 \leq x \leq 0.06$ ) solid solutions

Fan Yang,\* Yunzhu Du, Yidong Hu, Qiaodan Hu, Patrick Wu and Derek C. Sinclair

16172



### Constructing atomic single metal $\text{Co}-\text{C}_3(\text{OH})_1$ sites with graphdiyne for zinc–air batteries

Meiping Li, Zhufeng Hou, Xiaodong Li, Changshui Huang and Qing Lv\*

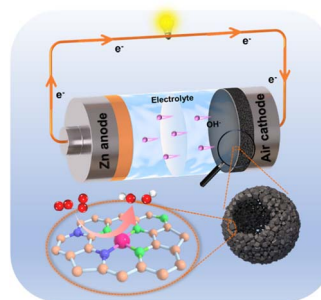


## PAPERS

16180

### Heteroatom sulfur-doping in single-atom Fe-NC catalysts for durable oxygen reduction reaction in both alkaline and acidic media

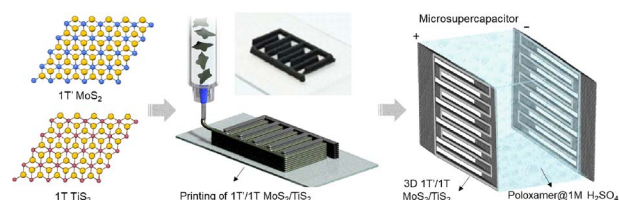
Jin Yan, Tianyi Gu, Ruhua Shi, Xin Chen, Mark H. Rummeli and Ruizhi Yang\*



16190

### 3D printed inks of two-dimensional semimetallic MoS<sub>2</sub>/TiS<sub>2</sub> nanosheets for conductive-additive-free symmetric supercapacitors

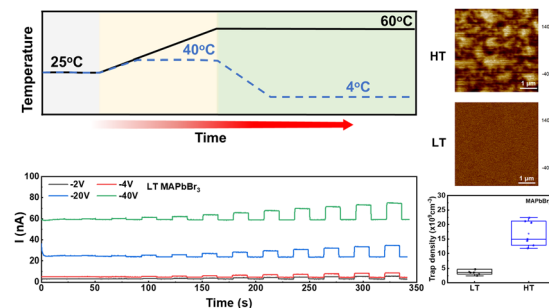
A. Panagiotopoulos, G. Nagaraju, S. Tagliaferri, C. Grotta, P. C. Sherrell, M. Sokolikova, G. Cheng, F. Iacoviello, K. Sharda and C. Mattevi\*



16201

### Low ion migration and defect density MAPbX<sub>3</sub> single crystals grown at low temperature for X-ray detection

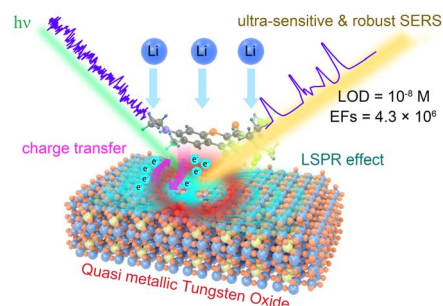
Haibin Li, Ziming Zhang, Wei Jiang, Chen Zhao, Haipeng Di, Jiwei Ren, Bing Ou, Ying Xiong, Feiyi Liao\* and Yiyang Zhao\*



16212

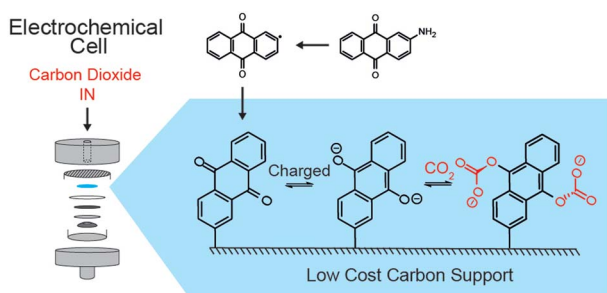
### Boosting ultrasensitive SERS activity on quasi-metallic tungsten oxide through synergistic vibronic coupling and electromagnetic resonance

Le Tang, Xiancheng Pan, Man Luo, Ruyu Yang, Lulu Guo, Zixu Sun, Shenlong Jiang, Jun Jiang, Guozhen Zhang\* and Qing Zhu\*



## PAPERS

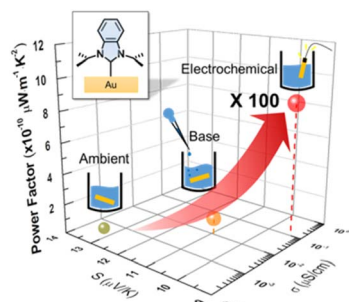
16221



### Quinone-functionalised carbons as new materials for electrochemical carbon dioxide capture

Niamh A. Hartley, Suzi M. Pugh, Zhen Xu, Daniel C. Y. Leong, Adam Jaffe and Alexander C. Forse\*

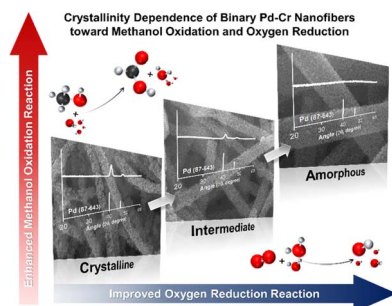
16233



### Deposition condition impacts charge tunneling and thermoelectric properties of N-heterocyclic carbene monolayers

Hungu Kang, Jiung Jang, Gyu Don Kong, Sangmin Jung, Tatsuhiko Ohto\* and Hyo Jae Yoon\*

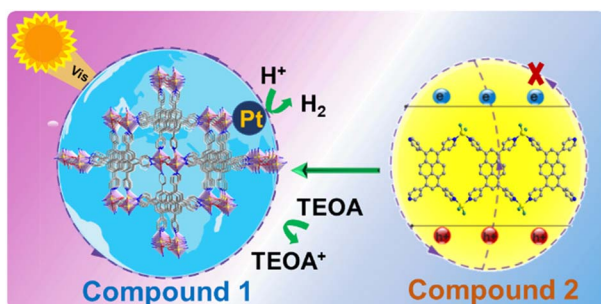
16243



### Impact of controlling the crystallinity on bifunctional electrocatalytic performances toward methanol oxidation and oxygen reduction in binary Pd-Cr solid solution

Dasol Jin, Youngmi Lee, In Young Kim, Chongmok Lee\* and Myung Hwa Kim\*

16255



### A strong-alkali resistant zinc-organic framework with 1,3,6,8-tetra(pyridin-4-yl)pyrene for efficient photocatalytic hydrogen evolution

Guo-Li Yang, Yao Xie, Zhuo-Hao Jiao, Jian Zhao, Sheng-Li Hou,\* Ying Shi, Jie Han and Bin Zhao\*



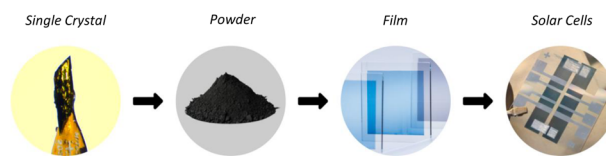


## PAPERS

16263

### Understanding the role of non-fullerene acceptor crystallinity in the charge transport properties and performance of organic solar cells

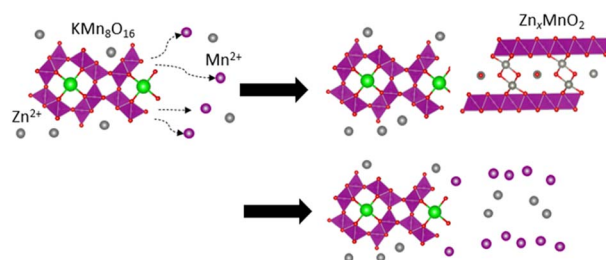
Pierluigi Mondelli,\* Pascal Kaienburg, Francesco Silvestri, Rebecca Scatena, Claire Welton, Martine Grandjean, Vincent Lemaire, Eduardo Solano, Mathias Nyman, Peter N. Horton, Simon J. Coles, Esther Barrena, Moritz Riede, Paolo Radaelli, David Beljonne, G. N. Manjunatha Reddy and Graham Morse\*



16279

### Operando investigation of aqueous zinc manganese oxide batteries: multi-stage reaction mechanism revealed

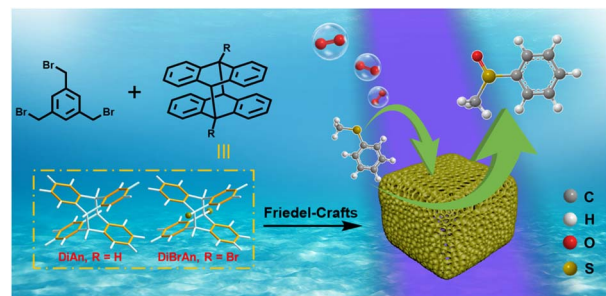
Daren Wu, Steven T. King, Nahian Sadique, Lu Ma, Steven N. Ehrlich, Sanjit Ghose, Jianming Bai, Hui Zhong, Shan Yan, David C. Bock, Esther S. Takeuchi, Amy C. Marschilok, Lisa M. Housel, Lei Wang and Kenneth J. Takeuchi\*



16293

### Fabrication of dianthracene-based hyper-cross-linked polymers for selective photocatalytic oxidation of organic sulfides

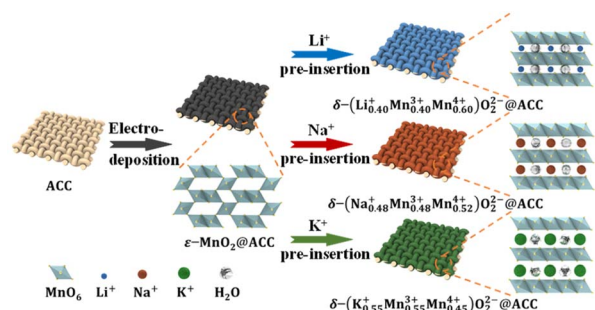
Ze-Jiu Diao, Guan-Zhou Wu, Tian-Jing Zhang, Hang-Ou Qi, Jing-Jing Li, Ming Lu, Guoliang Liu,\* Xiao-Qin Liu and Lin-Bing Sun\*



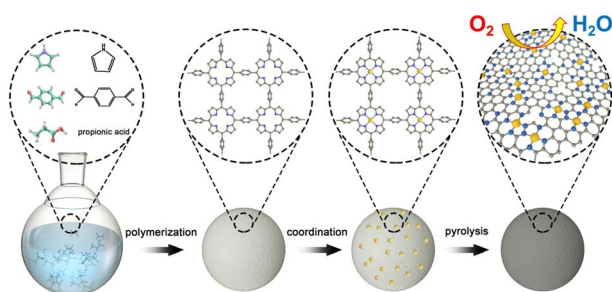
16303

### In situ insertion of shutter ions in $\text{MnO}_2$ to boost the supercapacitive performance of flexible supercapacitors

Haoyu Wei, Tongchuan Sun, Mingyue Liu, Qingyang Pang, Yuting Qian, Xinwen Dou, Yuwei Zhang, Qiang Ju\* and Zhenlan Fang\*



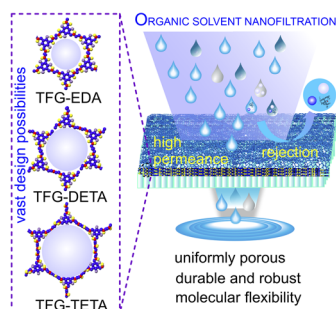
16314



### Isolated iron single-atom sites for oxygen reduction derived from a porphyrin-based carbon sphere by a polymerization–coordination–pyrolysis strategy

Shengjie Wei,<sup>\*</sup> Rongyan Yang and Qinghua Zhang

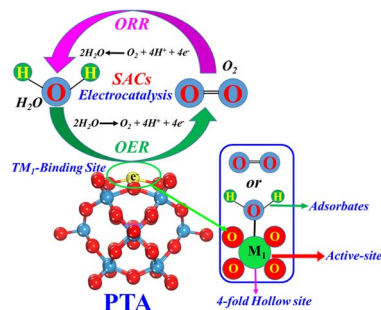
16321



### Flexible covalent organic framework membranes with linear aliphatic amines for enhanced organic solvent nanofiltration

Biswajit Mishra and Bijay P. Tripathi<sup>\*</sup>

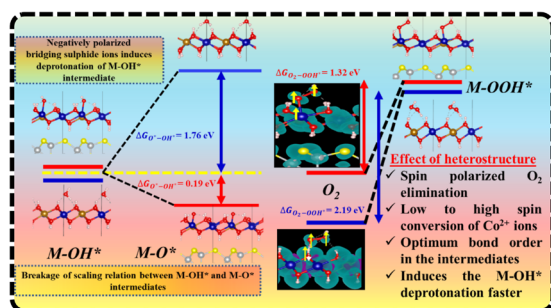
16334



### Computational screening of $M_1/PW_{12}O_{40}$ single-atom electrocatalysts for water splitting and oxygen reduction reactions

Shamraiz Hussain Talib, Babar Ali, Sharmarke Mohamed,<sup>\*</sup> Xue-Lian Jiang, Khalil Ahmad, Ahsanulhaq Qurashi<sup>\*</sup> and Jun Li<sup>\*</sup>

16349



### Bypassing the scaling relationship with spin selectivity: construction of Lewis base-functionalized heterostructural 2D nanosheets for enhanced oxygen evolution reaction

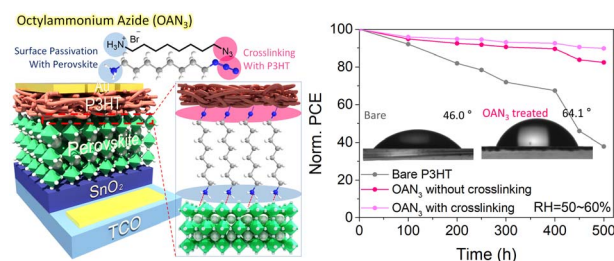
Arun Karmakar, Durairaj Mahendiran, Ragunath Madhu, Palanichamy Murugan<sup>\*</sup> and Subrata Kundu<sup>\*</sup>

## PAPERS

16363

### A dual functional molecule for perovskite/P3HT interface to achieve stable perovskite solar cells

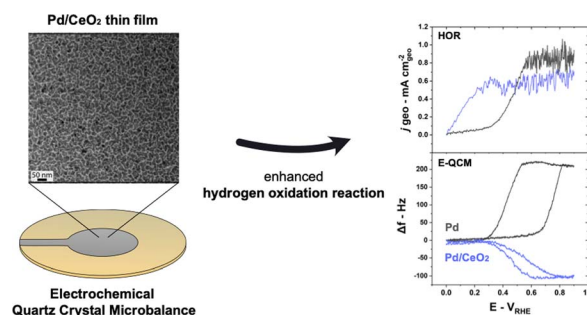
Hyuntae Choi, Haeryang Lim, Heesu Kim, Jeongin Lim, Minji Park, Chandra Shakher Pathak and Seulki Song\*



16370

### Fundamental insight into enhanced activity of Pd/CeO<sub>2</sub> thin films in hydrogen oxidation reaction in alkaline media

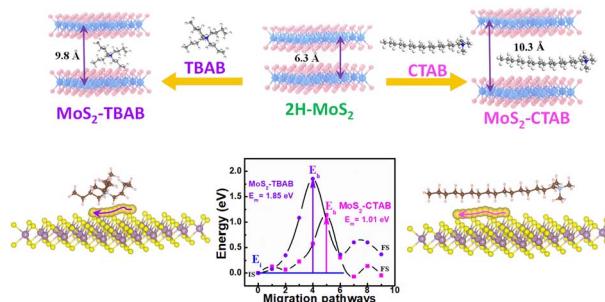
Mathilde Luneau,\* Linnéa Strandberg, Gerard Montserrat-Sisó, Victor Shokhen, Roopathy Mohan, Henrik Grönbeck and Björn Wickman



16383

### Unveiling the capacitive energy storage of linear CTAB or tetrahedral TBAB organic-molecule intercalated MoS<sub>2</sub>

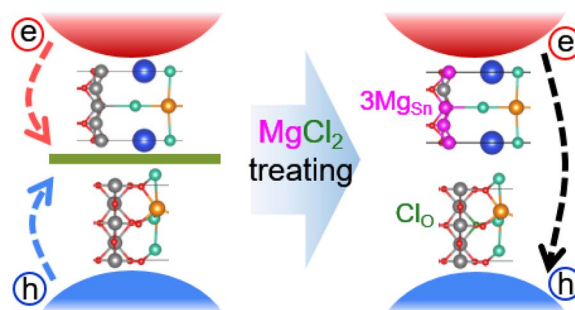
Xin Wang,\* Mingzhu Ma, Weixin Wang, Can Tang, Zhongliao Wang, Jie Ru, Han Li, Bing Li, Yongxing Zhang\* and Xuebin Zhu



16395

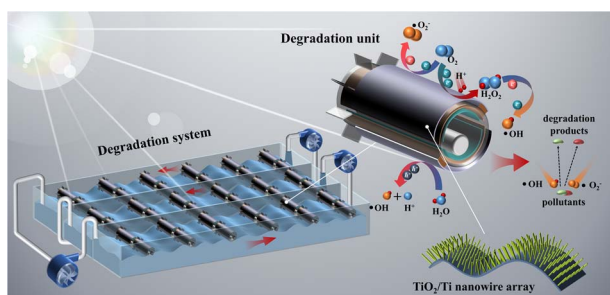
### Self-selective passivation of diversely charged SnO<sub>2</sub>/CsPbI<sub>3</sub> heterointerfaces using binary ionic compounds

Huiwen Xiang, Jinping Zhang, Ke Zhao, Haiyue Zhang, Feifei Ren, Yu Jia and Chengyan Liu\*



## PAPERS

16403



### Low-frequency AC-photocatalysis coupling for high-efficiency removal of organic pollutants from water based on the self-powered triboelectric nanogenerator

Xinyu Hao, Tao Huang, Ming Li, Yating Pan, Lei Liao,\*  
Kaiyou Zhang and Aimiao Qin\*

## CORRECTION

16414

### Correction: Constructing a novel TiO<sub>2</sub>/γ-graphyne heterojunction for enhanced photocatalytic hydrogen evolution

Lulu Wu, Qiaodan Li, Chaofan Yang, Xiaoqing Ma, Zefan Zhang and Xiaoli Cui\*

