

# Journal of Materials Chemistry A

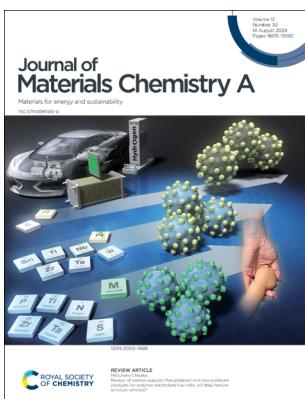
Materials for energy and sustainability

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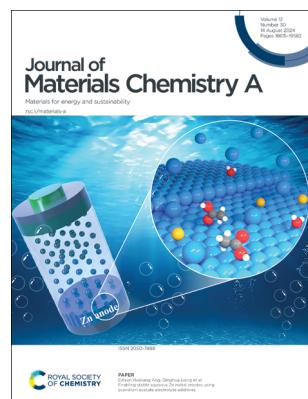
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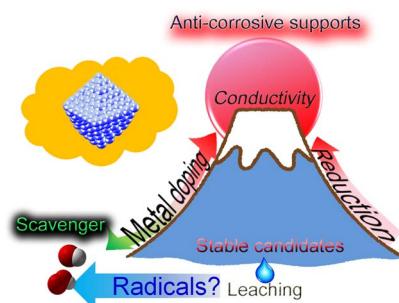
See Edison Huixiang Ang, Qinghua Liang et al., pp. 18968–18976. Image reproduced by permission of Qinghua Liang from *J. Mater. Chem. A*, 2024, 12, 18968.

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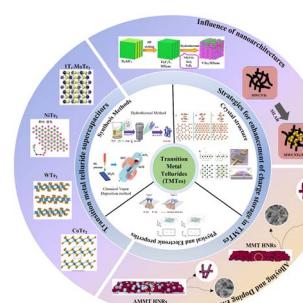
Mitsuharu Chisaka\*



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### A comprehensive review on advanced supercapacitors based on transition metal tellurides: from material engineering to device fabrication

Chumuiria Debbarma, Sithara Radhakrishnan, Sang Mun Jeong\* and Chandra Sekhar Rout\*



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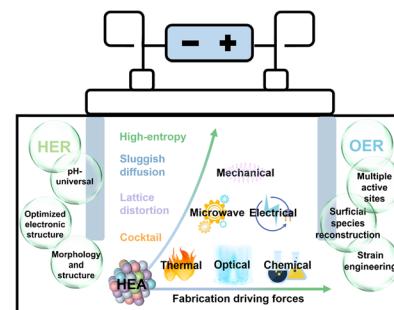
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**Functional high-entropy alloys: promising catalysts for high-performance water splitting**

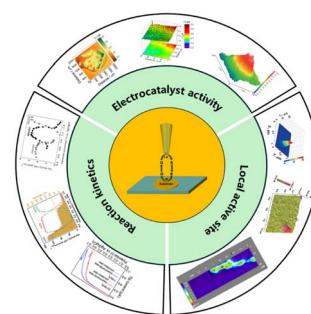
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**Recent advances in scanning electrochemical microscopy for probing the sites in electrocatalysts**

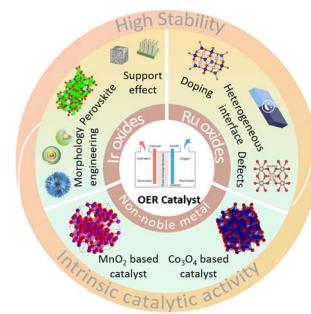
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**Balancing the relationship between the activity and stability of anode oxide-based electrocatalysts in acid for PEMWE electrolyzers**

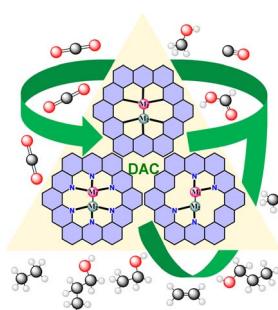
Yingying Xu, Yingxia Zhao, Zihui Yuan, Yue Sun, Shaomin Peng, Yuanhong Zhong, Ming Sun\* and Lin Yu\*



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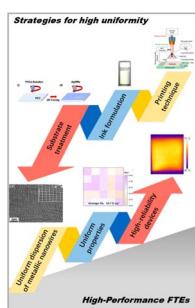
**A synergic investigation of experimental and computational dual atom electrocatalysis for CO<sub>2</sub> conversion to C<sub>1</sub> and C<sub>2+</sub> products**

Saurabh Vinod Parmar, Damanpreet Kaur and Vidya Avasare\*



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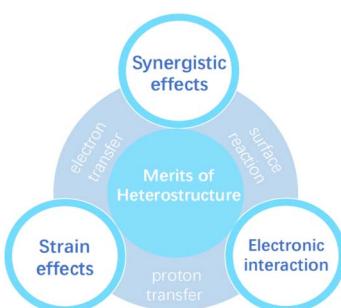
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## Fabrication strategies for metallic nanowire flexible transparent electrodes with high uniformity

Su Ding, Junjie Chen, Ke Li\* and He Zhang\*

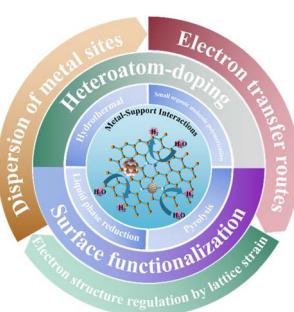
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## Heterostructured electrocatalysts for the oxygen evolution reaction

Shao-Lan Zheng, Hui-Min Xu, Hong-Rui Zhu, Ting-Yu Shuai, Qi-Ni Zhan, Chen-Jin Huang and Gao-Ren Li\*

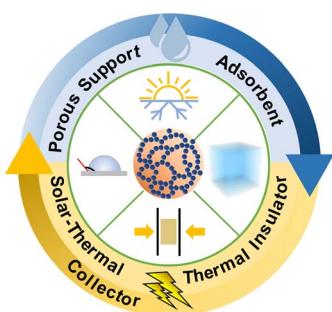
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## Metal–support interactions of 2D carbon-based heterogeneous catalysts for the hydrogen evolution reaction

Weihang Feng, Wei Zhang, Quanying Lin, Heshuang Zhang, Jingyuan Qiao, Linhong Xia, Nosipho Moloto, Wei He\* and Zhengming Sun\*

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## Harnessing the power of silica aerogels for applications in energy and water sustainability

Ming Hang Tai\* and Palaniswamy Suresh Kumar\*

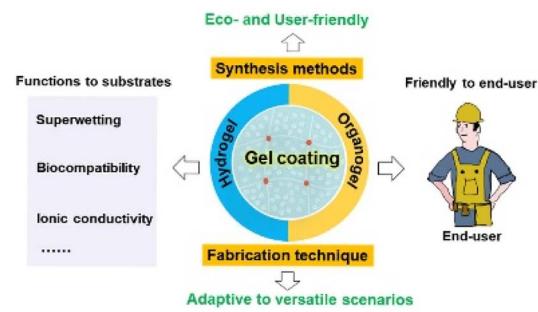


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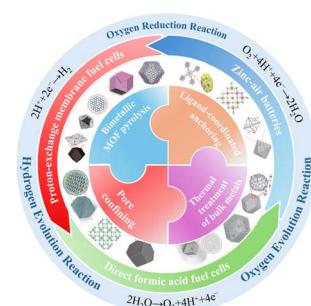
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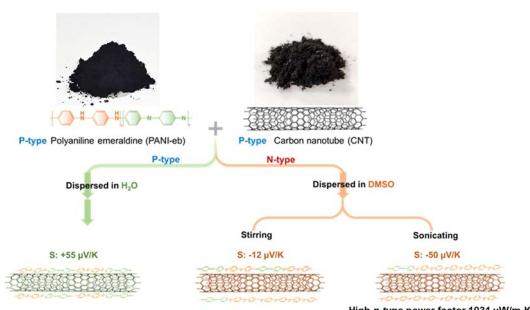


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## Solvent effect induced charge polarity switching from p- to n-type in polyaniline and carbon nanotube hybrid films with a high thermoelectric power factor

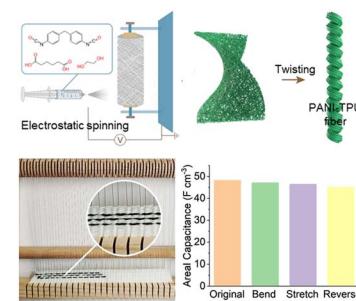
Yizhuo Wang, Xu Dai, Jiahao Pan, Jing Wang,\* Xu Sun, Kuncai Li and Hong Wang\*



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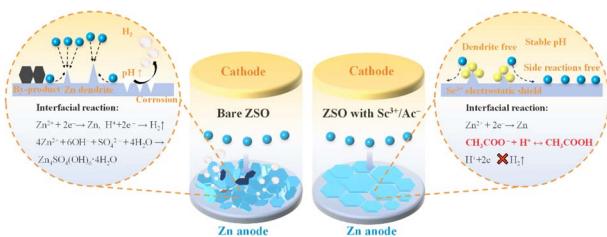
## Stretchable flexible fiber supercapacitors for wearable integrated devices

Yujia Chen, Huihui Jin, Jiayu Zhang, Qirui Wu, Songjiu Han, Anbang Chen and Lunhui Guan\*



## PAPERS

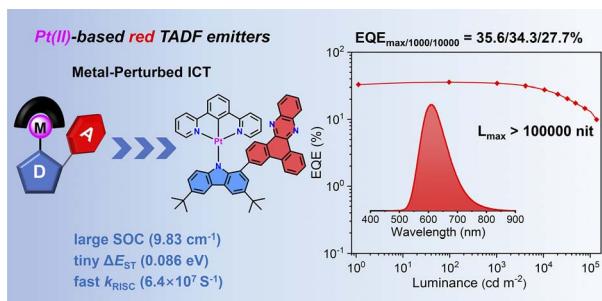
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## Enabling stable aqueous Zn metal anodes using scandium acetate electrolyte additives

Chun Chen, Liansheng Li, Zuxin Long, Edison Huixiang Ang\* and Qinghua Liang\*

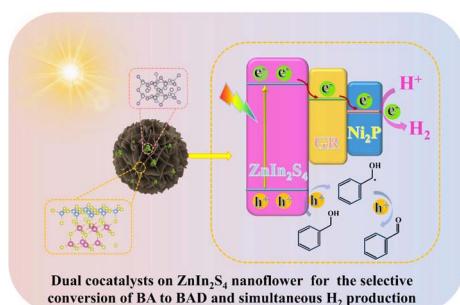
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## A thermally activated delayed fluorescent platinum(II) complex for red organic light emitting diodes with high efficiencies and small roll-off

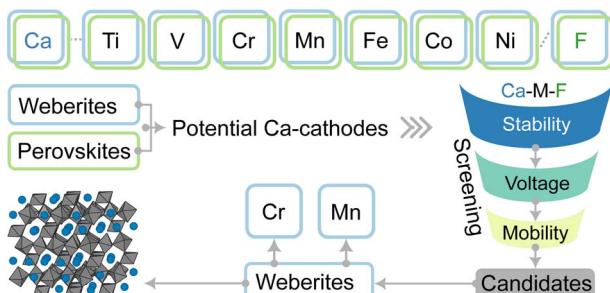
Jian-Gong Yang, Nengquan Li, Jiayu Li, Xiu-Fang Song, Ming-De Li,\* Jingling Zhang and Kai Li\*

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Rationally designed dual cocatalysts on  $ZnIn_2S_4$  nanoflowers for photoredox coupling of benzyl alcohol oxidation with  $H_2$  evolution

Yu Wei, Yuzheng Wu, Jun Wang, Yong-Hui Wu, Zonglin Weng, Wei-Ya Huang, Kai Yang, Jia-Lin Zhang, Qi Li, Kang-Qiang Lu\* and Bin Han\*

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## Fluoride frameworks as potential calcium battery cathodes

Dereje Bekele Tekliye and Gopalakrishnan Sai Gautam\*

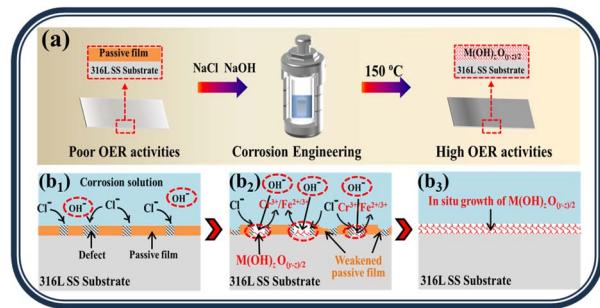


## PAPERS

19008

***In situ* growth of an active catalytic layer on commercial stainless steel via a hydrothermal-assisted corrosion process for efficient oxygen evolution reaction**

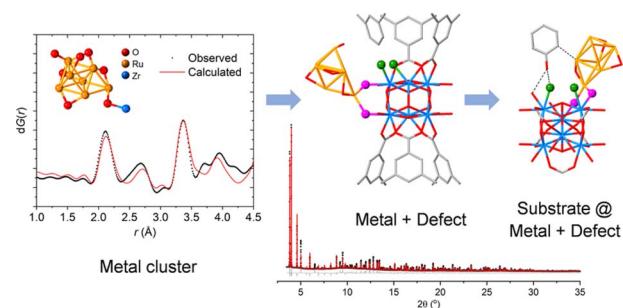
Jiuyang Xia, Jianghong Zhang, Kang Huang, Bowei Zhang,\* Fei Wu, Yu Liang, Shuai Lu, Yizhong Huang\* and Junsheng Wu\*



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**Direct visualisation of metal–defect cooperative catalysis in Ru-doped defective MOF-808**

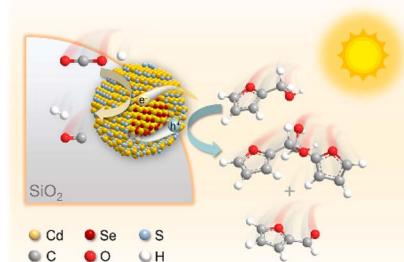
Chirui Xu, William Orbell, Guilian Wang, Boye Li, Bryan K. Y. Ng, Tai-Sing Wu, Yun-Liang Soo, Zhao-Xue Luan, Kangjian Tang, Xin-Ping Wu, S. C. Edman Tsang\* and Pu Zhao\*



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**Engineering semiconductor quantum dots for co-upcycling of CO<sub>2</sub> and biomass-derived alcohol**

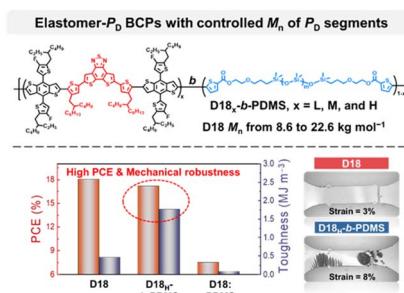
Lin-Xing Zhang, Zi-Rong Tang, Ming-Yu Qi\* and Yi-Jun Xu\*



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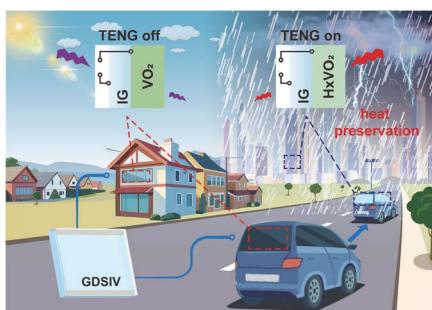
**The effect of rigid-block length in elastomer-containing photoactive block copolymers on the photovoltaic and mechanical properties of polymer solar cells**

Heung-Goo Lee, Jin-Woo Lee, Eun Sung Oh, Michael J. Lee, Taek-Soo Kim,\* Changyeon Lee\* and Bumjoon J. Kim\*



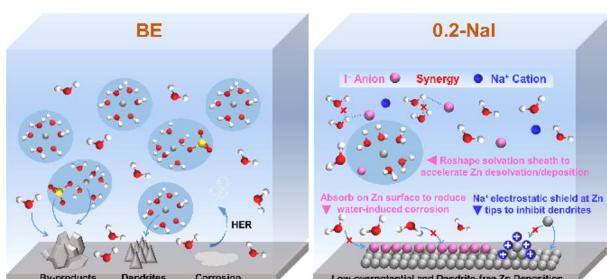
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Self-powered  $\text{VO}_2$  phase transition based on triboelectric nanogenerator

Tianrui Dang, Junqing Zhao, Jianhua Zeng, Tianzhao Bu, Jiaodi Li, Yiming Dai, Zefang Dong, Yuan Feng, Yuanfen Chen\* and Chi Zhang\*

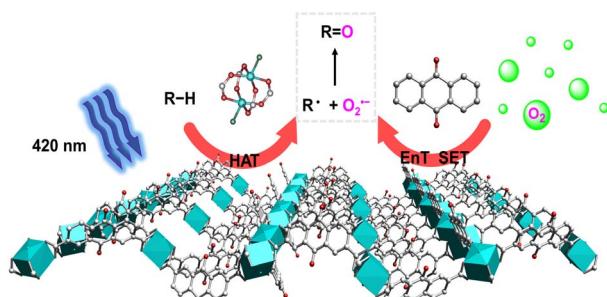
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## Elucidating synergistic mechanisms of an anion-cation electrolyte additive for ultra-stable zinc metal anodes

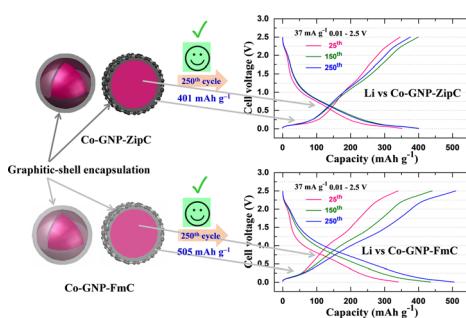
Chenbo Yuan, Jin Xiao, Cong Liu and Xiaowen Zhan\*

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*In situ* exfoliation of a copper-based metal-organic framework for boosting the synergistic photoactivation of inert  $\text{C}(\text{sp}^3)\text{-H}$  bonds and oxygen

Huaqing Li, Songtao Liu, Guanfeng Ji, Cheng He, Yefei Wang, Hui Gao, Liang Zhao\* and Chunying Duan

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Graphene triggered catalytic attack on plastic waste produces graphitic shell encapsulation on cobalt nanoparticles for ferromagnetism and stable  $\text{Li}^+$  ion storage

Manikandan Palanisamy,\* Ramakrishnan Perumal, Di Zhang, Haiyan Wang, Olga Maximova, Leonid Rokhinson and Vilas G. Pol\*

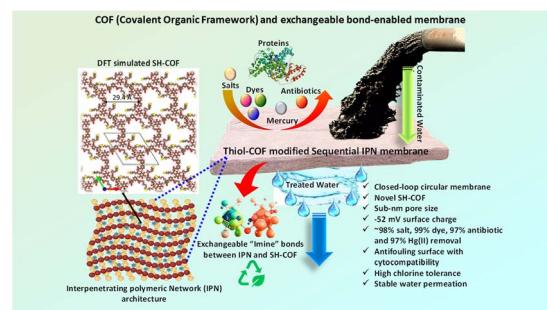


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**Tuning the surface charge and pore size of IPNs arrests covalent organic nanostructures through *in situ* exchangeable bonds for the removal of persistent contaminants**

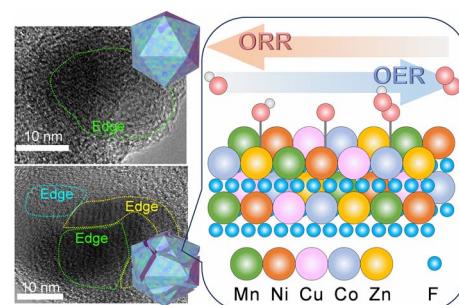
Ria Sen Gupta, Sk. Safikul Islam, Amit Malakar, Tridip Das and Suryasarathi Bose\*



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**Zinc-induced polycrystalline transformation of high-entropy fluorides and derived regulatory mechanisms for bifunctional oxygen electrocatalysis**

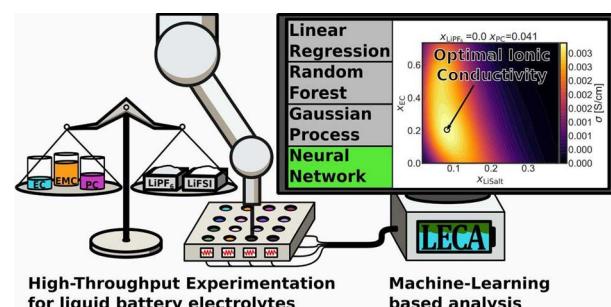
Gang Wang, Hao Chi, Yang Feng, Jie Fan, Nanping Deng,\* Weimin Kang\* and Bowen Cheng\*



19123

**Non-aqueous battery electrolytes: high-throughput experimentation and machine learning-aided optimization of ionic conductivity**

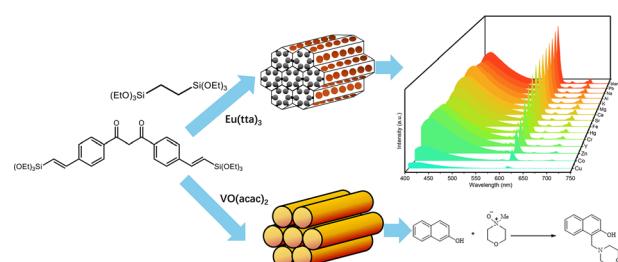
Peng Yan, Mirko Fischer, Harrison Martin, Christian Wölke, Anand Narayanan Krishnamoorthy, Isidora Cekic-Laskovic, Diddo Diddens, Martin Winter and Andreas Heuer\*



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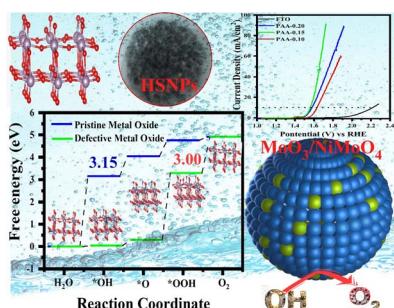
**Acetylacetone functionalized periodic mesoporous organosilicas: from sensing to catalysis**

Chunhui Liu, Mahdieh Haghigheh, Himanshu Sekhar Jena, Dirk Poelman, Nathalie De Geyter, Rino Morent, Anna M. Kaczmarek\* and Pascal Van Der Voort\*



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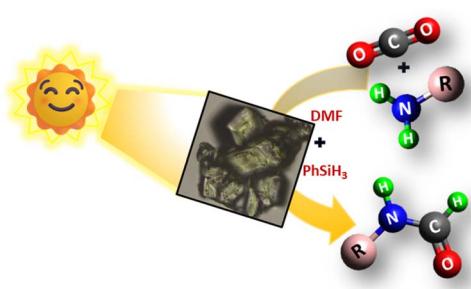
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### Unveiling the impact of oxygen vacancies in engineered bimetallic oxides for enhanced oxygen evolution reaction: insights from experimental and theoretical approaches

Pratheep Panneerselvam, Chob Singh, Santhosh Kumar Jayaraj, Thamarainathan Doulassiramane, Ramanathan Padmanaban, Akshaya K. Samal, Sakar Mohan and Arvind H. Jadhav\*

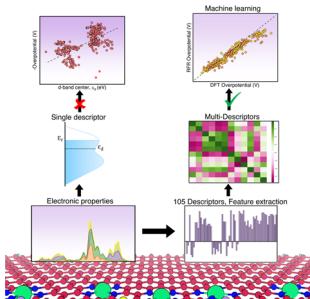
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### A Keggin-based hybrid solid emerged as a promising candidate for CO2-mediated photocatalytic N-formylation of amines

Parul Sood, Sakshi Bhatt, Harshita Bagdwal, Arti Joshi, Ashi Singh, Suman L. Jain\* and Monika Singh\*

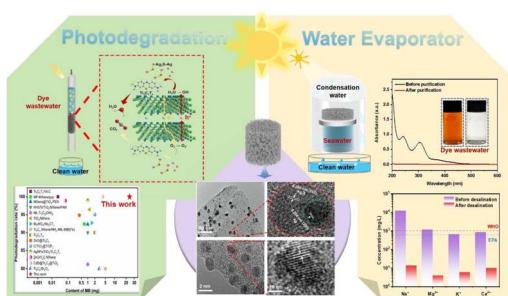
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### Site specific descriptors for oxygen evolution reaction activity on single atom catalysts using QMML

Erakulan E. Siddharthan, Sourav Ghosh and Ranjit Thapa\*

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### An all-in-one aPAN/MXene@Ag-Ag2S nanofibrous aerogel for efficient oil/water separation, solar interfacial evaporation and photocatalytic degradation of high-concentration dyes

Busaremu Wulayimujiang, Fang Guo, Qianyu Ma, Yong Wen, Yang Yang, Hongyan Huang, Quanpei Xie, Meng Shen, Jinxin Liu\* and Si Cheng\*

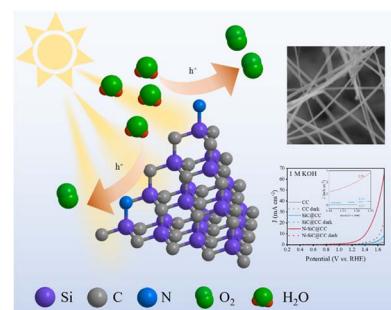


## PAPERS

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**Plasma-induced N doping and carbon vacancies in a self-supporting 3C-SiC photoanode for efficient photoelectrochemical water oxidation**

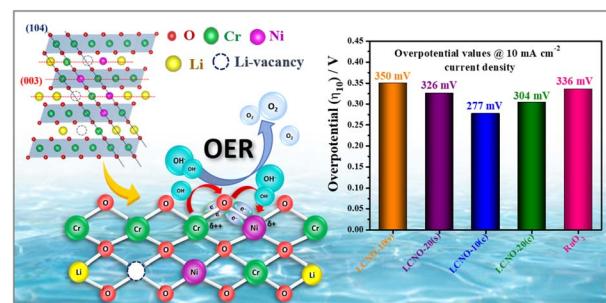
Linyi Wu, Shuchang Guan, Binghua Zhou,\* Shien Guo,\* Jie Wang, Ling Wu, Gan Jet Hong Melvin, Josue Ortiz-Medina, Mingxi Wang, Hironori Ogata, Masaki Tanemura, Yoong Ahm Kim, Mauricio Terrones, Morinobu Endo and Zhipeng Wang\*



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**Nickel-doped lithium-vacant layered  $\text{Li}_y\text{Cr}_{1-x}\text{Ni}_x\text{O}_2$ : a potentially active electrocatalyst for the oxygen evolution reaction**

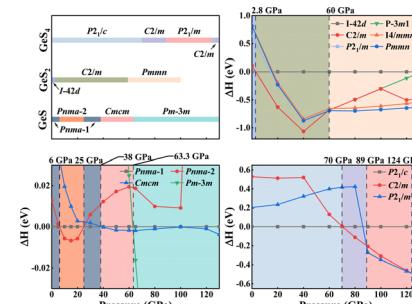
Vaishali Soni, Shraddha Jaiswal, Krishna Gopal Nigam, Preetam Singh and Asha Gupta\*



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**Structural stabilities, electronic structures, and superconductivity properties of  $\text{Ge}_x\text{S}_{1-x}$  compounds under high pressure**

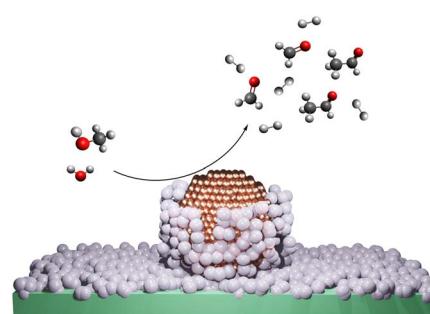
Yibo Sun, Bohan Cao, Xinwei Wang, Jiajin Chen, Defang Duan, Fubo Tian\* and Tian Cui\*



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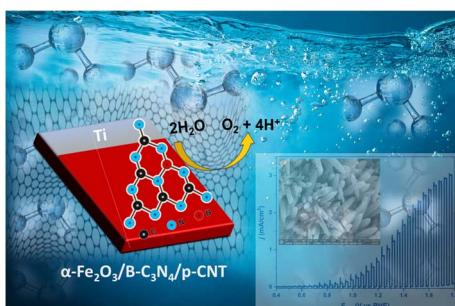
**Abnormal copper coordination obtained by a  $\text{TiO}_2$  overlayer as the key to enhance photocatalytic hydrogen generation**

Vien-Duong Quach, Maria Chiara Spadaro, Diana Dragoe, Marc Botifoll, Hervé Vezin, Christophe Colbeau-Justin, Franck Dumeignil, Jordi Arbiol, Robert Wojcieszak and Mohamed Nawfal Ghazzal\*



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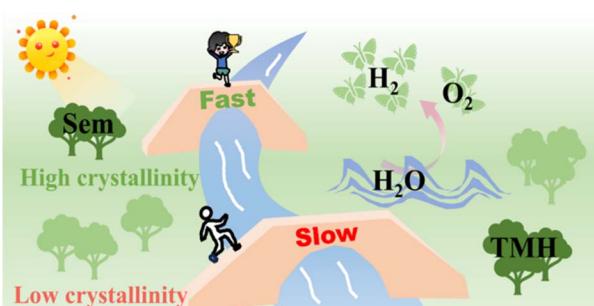
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**Photoelectrochemical water splitting by hematite boosted in a heterojunction with B-doped g-C<sub>3</sub>N<sub>4</sub> nanosheets and carbon nanotubes**

Irfan Khan,\* Tímea Benkó, Anita Horváth, Shaohua Shen,\* Jinzhan Su, Yiqing Wang, Zsolt E. Horváth, Miklós Németh, Zsolt Czigány, Dániel Zámbó and József Sándor Pap

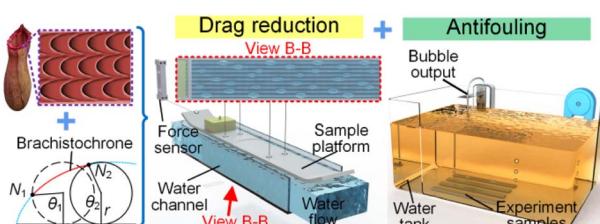
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**Engineering the transition metal hydroxide–photoanode interface with a highly crystalline mediator for efficient photoelectrochemical water splitting**

Meihua Li, Mujtaba Saqib, Li Xu, Chenglong Li, Jingjing Quan, Xingming Ning,\* Pei Chen,\* Qiang Weng, Zhongwei An and Xinbing Chen\*

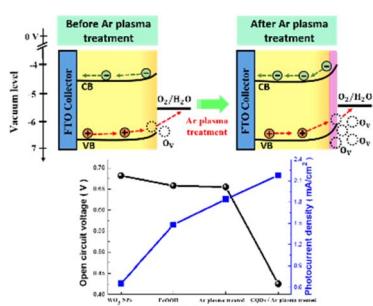
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**Drag reduction and antifouling of a spontaneous fast moving air film**

Defeng Yan, Junyi Lin, Bingzhen Zhang, Song Zhang, Siying Ling\* and Jinlong Song\*

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**Co-modification of WO<sub>3</sub> nanoplates with β-FeOOH/carbon quantum dots combined with plasma treatment enables high-efficiency photoelectrochemical characteristics**

Jui-Teng Lee, Zhi-Cheng Yan, Kuan-Han Lin, Po-Hsuan Hsiao, Pin-Chao Liao, Ying-Chih Pu and Chia-Yun Chen\*

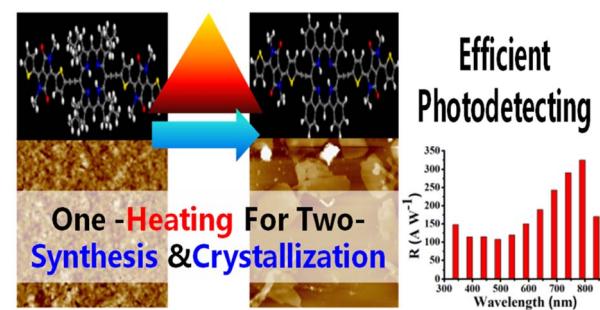


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**Dual-benefit strategy for developing an efficient photodetector with prompt response to UV-near IR radiations: *in situ* synthesis and crystallization through a simple one-step annealing**

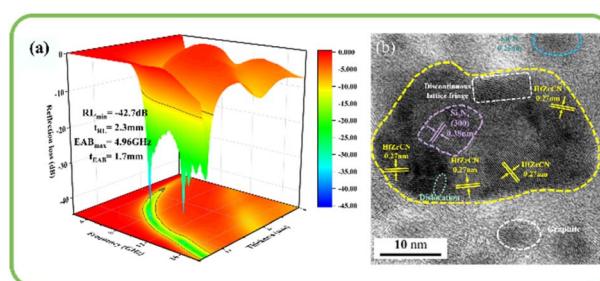
Miao Yu, Zhi-Chen Wan, Si-Wei Song, Zhi-Yong Yang,\*  
Mitsuharu Suzuki\* and Hiroko Yamada\*



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**A competitive reaction strategy toward dielectric phases for enhancing electromagnetic wave absorption of polymer-derived ceramics**

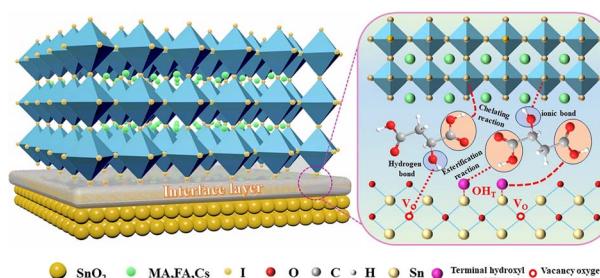
Shuhao Hu, Pingan Chen,\* Xiangcheng Li,\* Yingli Zhu and Boquan Zhu



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**Molecule-bridged electron-selective contact for high-efficiency halide-based perovskite solar cells**

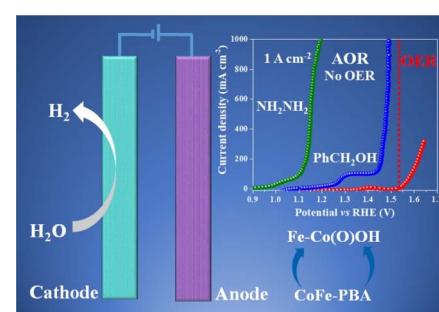
Kun He, Jie Zhang, Xiaoliang Zhao, Fei Liu, Ruiqian Chen, Jintao Ma, Bin Du,\* Yanlong Wang\* and Lin Song\*



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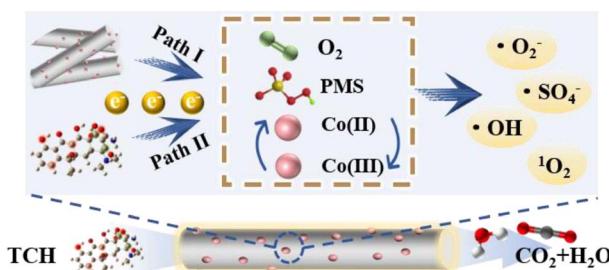
**Evaluating the impact of anodic oxidation reactions on water splitting using Prussian blue analog-derived metal-(oxy)hydroxides**

Baghendra Singh, Toufik Ansari, Neetu Verma, Yu-Cheng Huang, Pandian Mannu, Chung-Li Dong\* and Arindam Indra\*



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**Oxygen defect regulation and photocatalytic-peroxyomonosulfate activation of  $\text{Co}(\text{II})/\text{BiPO}_{4-x}$  composites synergistically promoting medical waste degradation**

Jiaying Zhang, Fan Fan, Wei Zhu, Wenqing Yao, Fupeng Zhao, Zhuang Yang, Cong Wang and Yajun Wang\*

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**Tri-functional Fe-based electrocatalyst with sturdy three-dimensional frame construction for the ORR, OER and HER**

Haixia Liang, Jian Li, Jinli Zhang,\* Wencai Peng,\* Jun Li and Jichang Liu

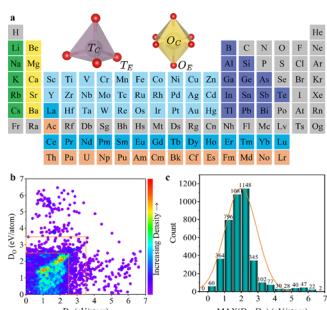
19352



**Operando measurement of electrocatalyst potential on particulate photocatalysts for overall water splitting**

Yudai Kawase, Keisuke Obata, Yuu Shioiri, Tomohiro Higashi and Kazuhiro Takanabe\*

19362



**Accelerating materials discovery for electrocatalytic water oxidation via center-environment deep learning in spinel oxides**

Yihang Li, Xinying Zhang, Tao Li, Yingying Chen, Yi Liu and Lingyan Feng\*

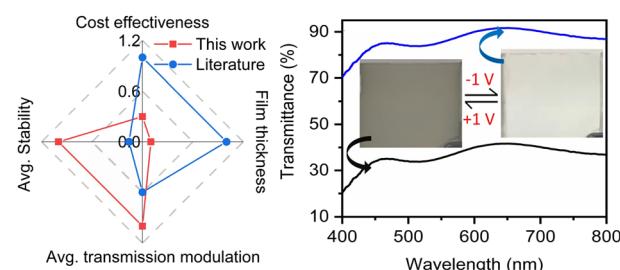


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19378

**Ultrathin sputtered NiO films for enhanced electrochromic performance in smart windows**

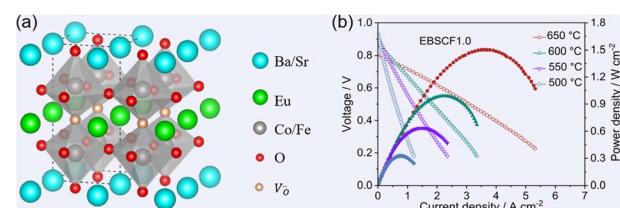
Ganesha Krishna V. S., Mukhesh K. Ganesha, Chirag Sarthi J., Hafis Hakkeem, Ashutosh K. Singh\* and Giridhar U. Kulkarni\*



19392

**An acidity-regulated double perovskite cathode for efficient and durable power generation of intermediate-temperature solid oxide fuel cells**

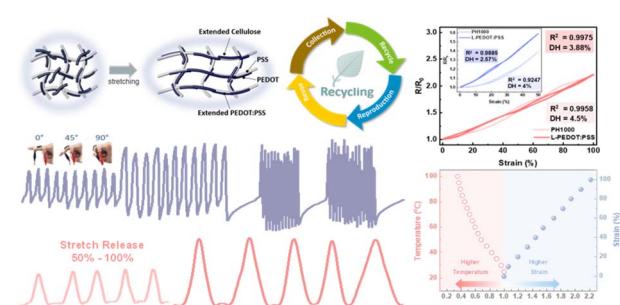
Aoqin Xu, Daoming Huan,\* Pengqi Dai, Lu Zhang and Changrong Xia\*



19403

**Recyclable, ultralow-hysteresis, multifunctional wearable sensors based on water-permeable, stretchable, and conductive cellulose/PEDOT:PSS hybrid films**

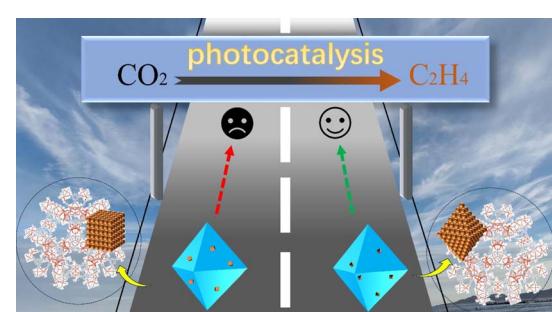
Anky Fitrian Wibowo, Saravanan Nagappan, Siti Aisyah Nurmaulia Entifar, Jung Ha Kim, Yulia Shara br Sembiring, Joo Won Han, Junghwan Oh, Guohua Xie, Jonghee Lee, Jincheol Kim, Dong Chan Lim, Myoung-Woon Moon, Min-Seok Kim, Soyeon Kim\* and Yong Hyun Kim\*



19414

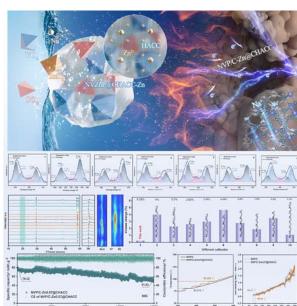
**Photocatalytic CO<sub>2</sub> reduction to C<sub>2+</sub> products using a metal–organic framework composited with facet engineered Pd nanoparticles**

Xiang-Yu Lu, Qiang Zhou, Xiao-Yu Zhang, Ya Zhang, Feng Gong\* and Wei-Yin Sun\*



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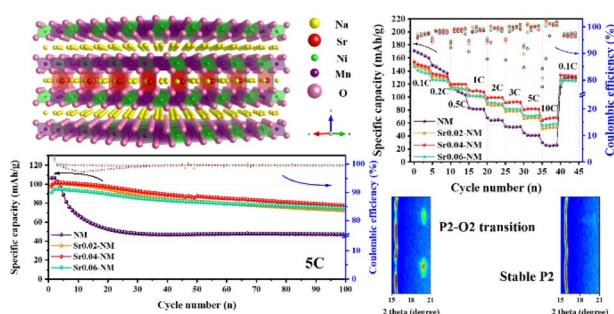
19422



**Win–win strategy: zinc-ion anchoring crosslinked hydrogels and regulating electronic structure to achieve  $V^{3+}/V^{4+}/V^{5+}$  redox reaction of  $Na_3V_2(PO_4)_3$  with high thermal stability and zero strain characteristics**

Tao Zhou, Baofeng Zhang, Shengnan He, Yaxiong Yang, Chao Zheng, Yanzhong Wang, Li Guo and Yanjun Chen\*

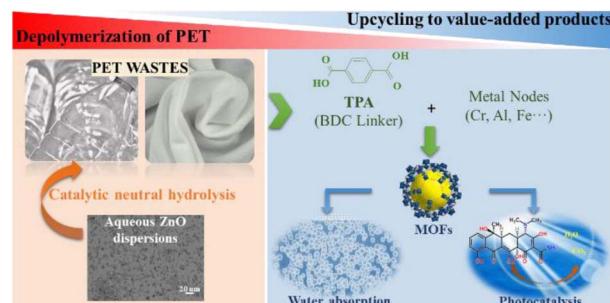
19440



**Mitigating the Jahn–Teller distortion and phase transition in the P2- $Na_{0.67}Ni_{0.33}Mn_{0.67}O_2$  cathode through large  $Sr^{2+}$  ion substitution for improved performance**

Xilong Zhang, Fei Xie, Xuejie Wang, Tao Liu, Liuyang Zhang\* and Jiaguo Yu\*

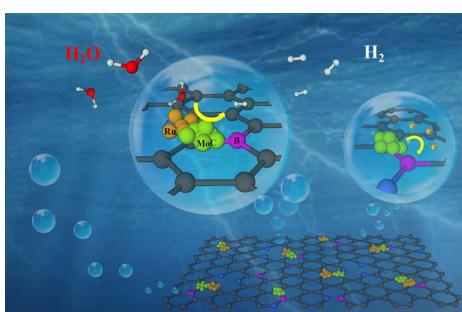
19452



**Upcycling plastic wastes into high-performance nano-MOFs by efficient neutral hydrolysis for water adsorption and photocatalysis**

Ling-Xia Yun, Meng Qiao, Bin Zhang, Hang-Tian Zhang and Jie-Xin Wang\*

19462



**Interfacial modulation of Ru catalysts using B, N co-doped porous carbon-confined MoC quantum dots for enhanced hydrogen evolution reaction performance**

Shumin Xie, Mang Niu, Xingyun Li,\* Yang Lei, Huanfang Zhang, Shuai Xu, Deyu Wang, Sameh M. Osman, Zhi Peng and Yusuke Yamauchi\*

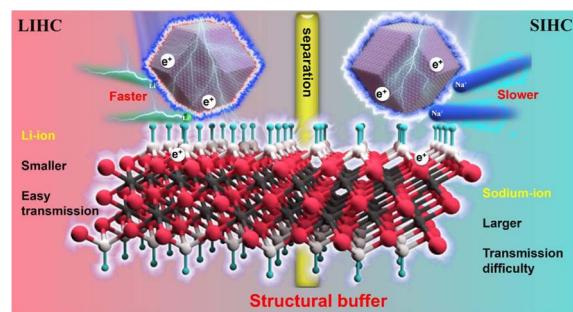


## PAPERS

19470

**Hierarchical architecture composites of N-doped hollow polyhedra anchored on  $\text{Ti}_3\text{C}_2\text{T}_x$  nanosheets for advanced lithium-ion and sodium-ion capacitors**

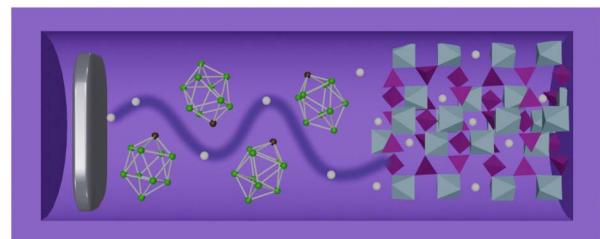
Wenling Wu,\* Jiahao Diwu, Jiang Guo, Yuan Fang, Lei Wang, Chenguang Li, Qing Wu and Jianfeng Zhu



19485

**Sodium decahydrido-closo-1-carbadeborate as a solid electrolyte: new insight into polymorphism and electrochemical performance**

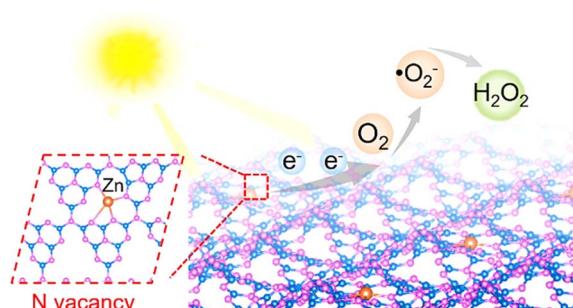
Therese S. S. Kjær, Jakob B. Grinderslev, Lasse N. Skov and Torben R. Jensen\*



19497

**N vacancies modulated Zn single atoms for efficient  $\text{H}_2\text{O}_2$  photosynthesis**

Wenke Xie, Junyu Liu and Xuan-He Liu\*



19504

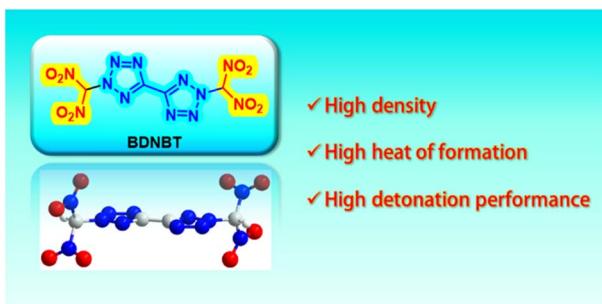
**Theoretical probing of monolayer  $\text{BiI}_3$  as an electrolyte separator and 3d-TM-doped  $\text{BiI}_3$  as electrocatalysts toward high-performance lithium–sulfur batteries**

Wentao Wu, Kaixin Zou, Li Wang, Boyan Li,\* Wen Yang, Chunlai Gao, Feng Lu,\* Weichao Wang and Wei-Hua Wang\*



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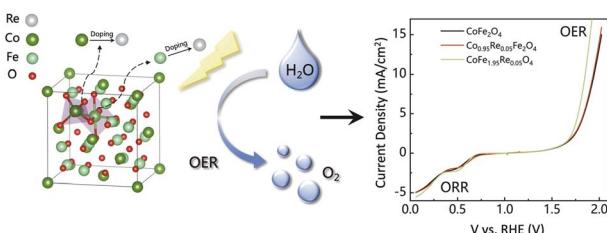
19513



### Intramolecular assembly of dinitromethyl and bistetrazole: a strategy for constructing advanced and environmentally friendly high-energy density materials

Xuezhi Yu, Jie Tang, Caijin Lei, Chungui Xue, Guangbin Cheng,\* Chuan Xiao\* and Hongwei Yang\*

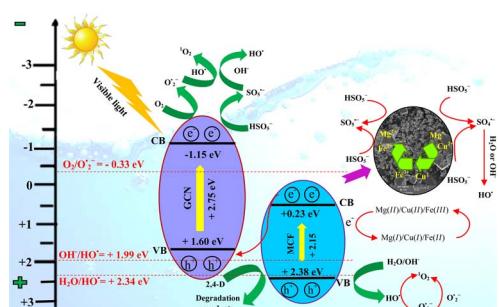
19521



### Impact of the rhenium substitution on the oxygen evolution reaction of spinel $\text{CoFe}_2\text{O}_4$

Yuruo Zheng, Ghulam Hussain, Changcheng Zheng, Xiaoqi Zhou, Man Zhang, Suirong Xie, Qianhe Yin, Shuyi Li, Batoor Shanta and Xiawa Wang\*

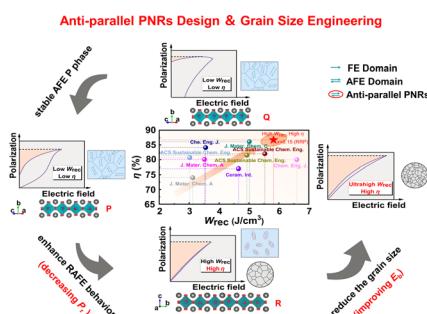
19532



### Enhanced peroxymonosulfate-mediated photocatalytic pesticide degradation by a novel stable multi-metal ferrite (Mg, Cu, Fe) anchored on $\text{g-C}_3\text{N}_4$

Samaneh Taghilou, Mohammad Reza Mehrasbi, Ali Esrafil, Emad Dehghanifard, Majid Kermani,\* Babak Kakavandi\* and Stefanos Giannakis

19551



### Improved energy storage properties achieved in $\text{NaNbO}_3$ -based relaxor antiferroelectric ceramics via anti-parallel polar nanoregion design

Zhentao Wang, Da Li, Wenyuan Liu, Xu Liang, Weichen Zhao, Jinnan Liu, Jiajia Ren, Tao Zhou, Diming Xu, Wenfeng Liu and Di Zhou\*

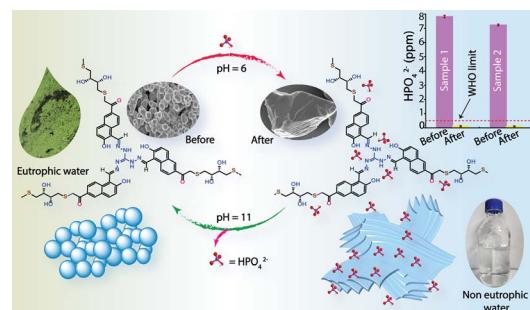


## PAPERS

19559

**A pH-responsive covalent organic network: morphology change leads to capture and removal of phosphate ions from water**

Gunanka Hazarika, Sribash Das, Niku Moni Das and Debasis Manna\*



19567

**Strong anharmonicity and medium-temperature thermoelectric efficiency in antiperovskite  $\text{Ca}_3\text{XN}$  ( $\text{X} = \text{P, As, Sb, Bi}$ ) compounds**

Shuyao Lin, Jincheng Yue, Wenling Ren, Chen Shen\* and Hongbin Zhang

