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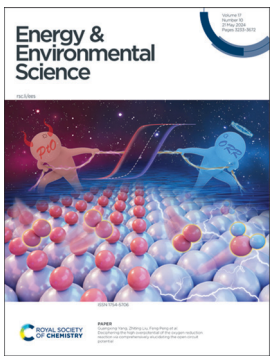

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See Jinping Li, Guang Liu, Xiaopeng Han *et al.*, pp. 3347–3357. Image reproduced by permission of Xiaopeng Han from *Energy Environ. Sci.*, 2024, **17**, 3347.

REVIEWS

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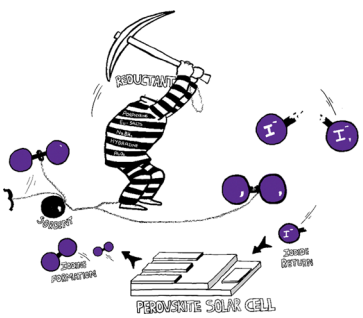
A comparison of molecular iodine evolution on the chemistry of lead and tin perovskites

Thomas Webb and Saif A. Haque*



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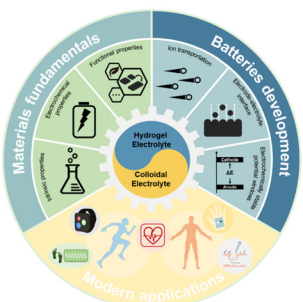
Critical challenges and solutions: quasi-solid-state electrolytes for zinc-based batteries

Haoyang Ge, Xian Xie,* Xuesong Xie, Bingyao Zhang, Shenglong Li, Shuquan Liang, Bingan Lu and Jiang Zhou*



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REVIEWS

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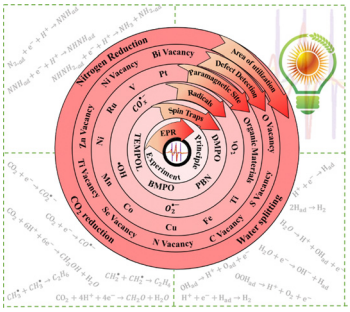
Advanced electron paramagnetic resonance in chemical energy conversion: current status and future potential

Farid Attar, Hang Yin, Simon Lennard Schumann, Julien Langley, Nicholas Cox,* Zhiyuan Zeng,* Kylie Catchpole, Siva Karuturi* and Zongyou Yin*

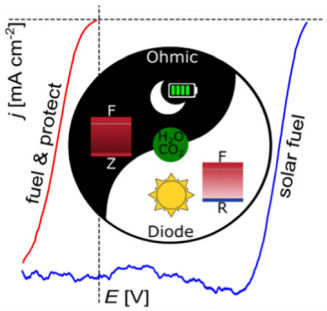


COMMUNICATION

3329

Utilizing three-terminal, interdigitated back contact Si solar cells as a platform to study the durability of photoelectrodes for solar fuel production

Darci K. Collins,* Zebulon G. Schichtl, Nathan T. Nesbitt, Ann L. Greenaway, Valentin D. Mihailetchi, Daniel Tune and Emily L. Warren*



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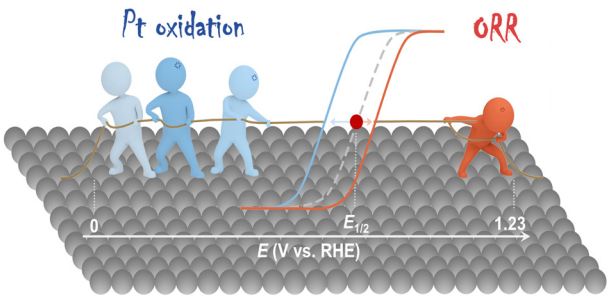
Deciphering the high overpotential of the oxygen reduction reaction *via* comprehensively elucidating the open circuit potential

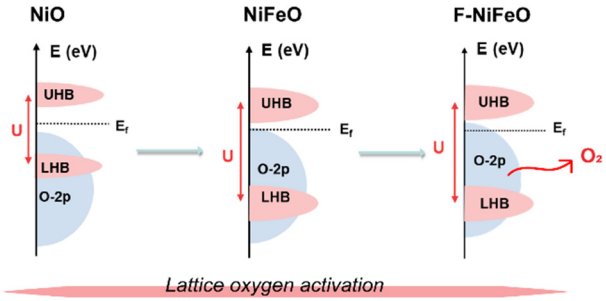
Zenan Wu, Guangxing Yang,* Qiao Zhang, Zhiting Liu* and Feng Peng*



3347

Activating lattice oxygen based on energy band engineering in oxides for industrial water/saline oxidation

Yijie Zhang, Weiyi Zhang, Xiaowen Zhang, Xin Wang, Jiajun Wang, Qiang Zhao, Yuhan Sun, Jinping Li,* Guang Liu* and Xiaopeng Han*



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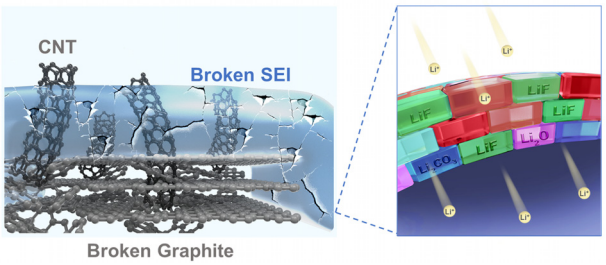

The acupuncture effect of carbon nanotubes induced by the volume expansion of silicon-based anodes

Ziying He, Chenxi Zhang, Yukang Zhu and Fei Wei*

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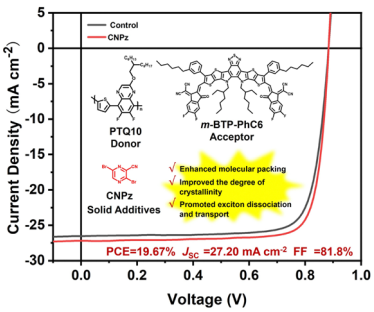

Cyano-functionalized pyrazine: an electron-deficient unit as a solid additive enables binary organic solar cells with 19.67% efficiency

Lijun Tu, Hao Wang, Weixu Duan, Ruijie Ma,* Tao Jia, Top Archie Dela Peña, Yongmin Luo, Jiaying Wu, Mingjie Li, Xiaomin Xia, Siqi Wu, Kai Chen,* Yue Wu, Yulin Huang, Kun Yang, Gang Li* and Yongqiang Shi*

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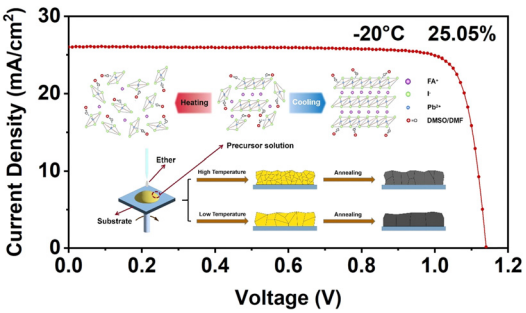

"Freezing" intermediate phases for efficient and stable $FAPbI_3$ perovskite solar cells

Muyang Chen, Tingting Niu, Lingfeng Chao, Xiaozheng Duan, Jingpei Wang, Tengfei Pan, Yajing Li, Junhan Zhang, Chenyue Wang, Biyun Ren, Lijuan Guo, Mohammad Hatamvand, Jing Zhang, Qingxun Guo, Yingdong Xia, Xingyu Gao and Yonghua Chen*

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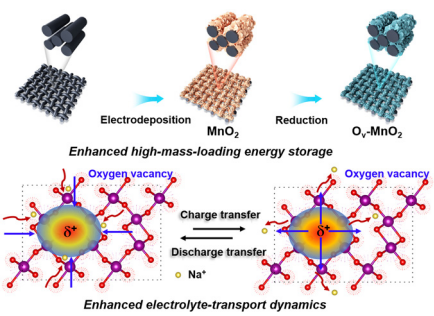

Regulating oxygen vacancies and coordination environment of manganese dioxide for enhanced high-mass-loading energy storage

Zhongyou Peng, Yuting Huang, Alexander G. Bannov, Shulong Li, Ling Tang, Licheng Tan* and Yiwang Chen*

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PAPERS

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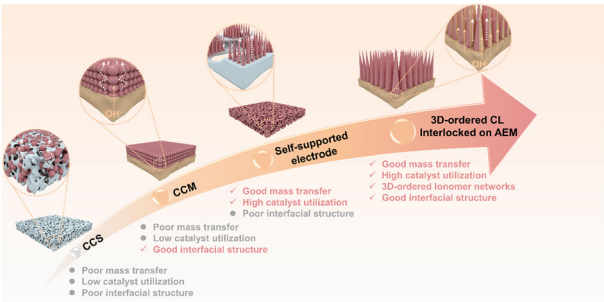
3D-ordered catalytic nanoarrays interlocked on anion exchange membranes for water electrolysis

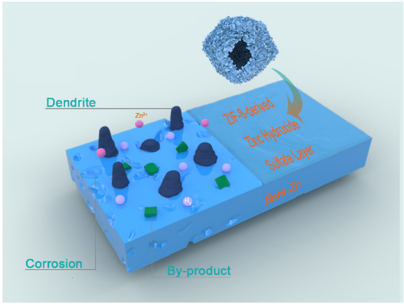
Lei Wan, Jing Liu, Dongcheng Lin, Ziang Xu, Yihan Zhen, Maobing Pang, Qin Xu and Baoguo Wang*



3409

Inherited construction of porous zinc hydroxide sulfate layer for stable dendrite-free Zn anode

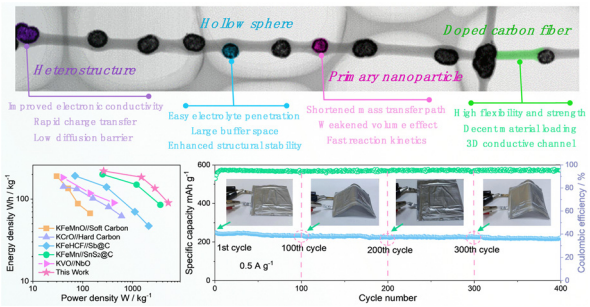
Zhicheng Xiang, Yubing Qiu, Xingpeng Guo, Kai Qi,* Zheng-Long Xu* and Bao Yu Xia*



3419

Confining hollow ZnSe/NiSe microspheres in freestanding carbon nanofibers for flexible potassium-ion batteries

Bo Yan, Hao Sun, Xueping Liu, Xinyuan Fu, Changqing Xu, Tiantian Zhang, Huachao Tao, Lulu Zhang, Xifei Li, Xuelin Yang* and Renheng Wang*



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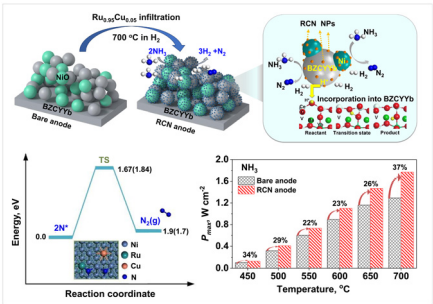
***In situ* formed catalysts for active, durable, and thermally stable ammonia protonic ceramic fuel cells at 550 °C**

Hua Zhang, Kang Xu, Yangsen Xu, Fan He, Feng Zhu, Kotaro Sasaki, YongMan Choi* and Yu Chen*



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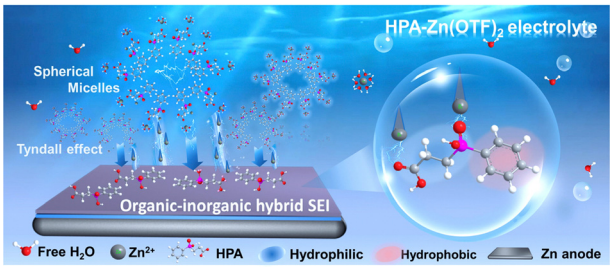

Amphiphilic electrolyte additive as an ion-flow stabilizer enables superb zinc metal batteries

Zimin Yang, Yilun Sun, Siting Deng, Hao Tong, Mingqiang Wu, Xinbin Nie, Yifan Su, Guanjie He, Yinghe Zhang, Jianwei Li* and Guoliang Chai*

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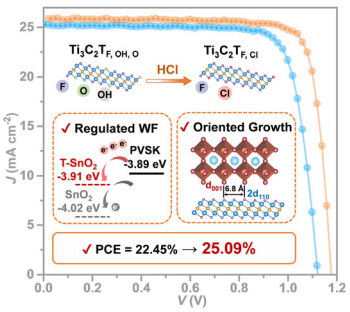

Chlorinated-$Ti_3C_2T_F$ as a dual-functional buried interface on SnO_2 electron-transporting layers for 25.09% high-performance n–i–p perovskite solar cells

Ji Cao, Qiaoyun Chen, Wenting Wu, Jianfei Fu, Zelong Zhang, Lei Chen, Rui Wang, Wei Yu, Lijie Wang, Xiaoting Nie, Jing Zhang, Yi Zhou,* Bo Song* and Yongfang Li*

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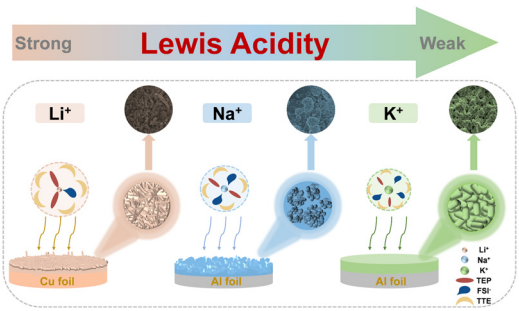

Superior electrochemical performance of alkali metal anodes enabled by milder Lewis acidity

Linlin Wang, Jiacheng Zhu, Nan Li, Zhe Zhang, Shiwan Zhang, Yifan Chen, Jianwen Zhang, Yusi Yang, Lulu Tan, Xiaogang Niu, Xuefeng Wang,* Xiao Ji* and Yujie Zhu*

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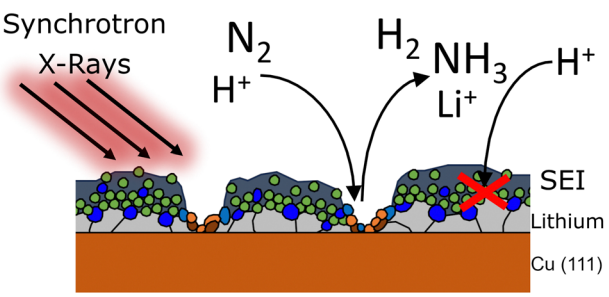

***Operando* investigations of the solid electrolyte interphase in the lithium mediated nitrogen reduction reaction**

Niklas H. Deissler, J. Bjarke V. Mygind, Katja Li, Valerie A. Niemann, Peter Benedek, Valentin Vinci, Shaofeng Li, Xianbiao Fu, Peter C. K. Vesborg, Thomas F. Jaramillo, Jakob Kibsgaard, Jakub Drnec and Ib Chorkendorff*

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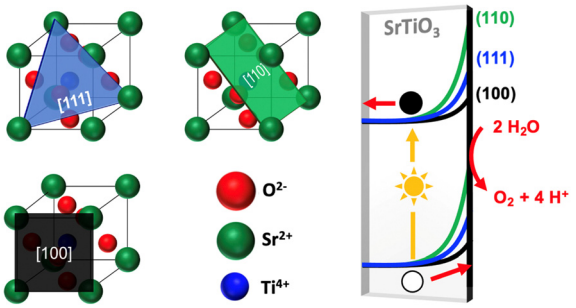
Facets control charge separation during photoelectrochemical water oxidation with strontium titanate ($SrTiO_3$) single crystals

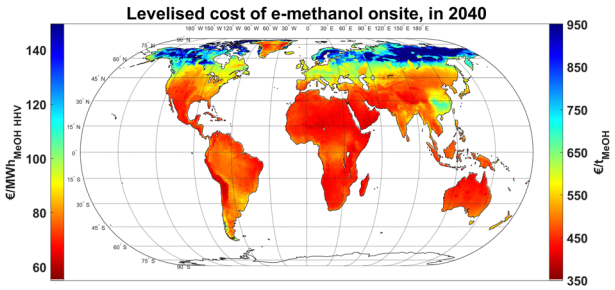
Samutr Assavachin, Chengcan Xiao, Kathleen Becker and Frank E. Osterloh*



3503

Global production potential of green methanol based on variable renewable electricity

Mahdi Fasihi* and Christian Breyer



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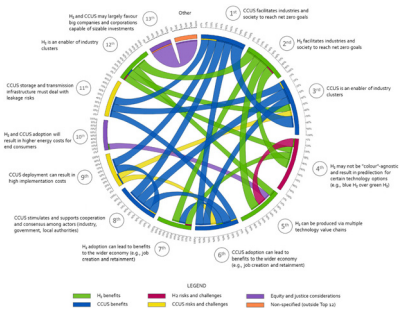
Reconfiguring European industry for net-zero: a qualitative review of hydrogen and carbon capture utilization and storage benefits and implementation challenges

Benjamin K. Sovacool,* Dylan Furszyfer Del Rio, Kyle Herman, Marfuga Iskandarova, Joao M. Uratani and Steve Griffiths



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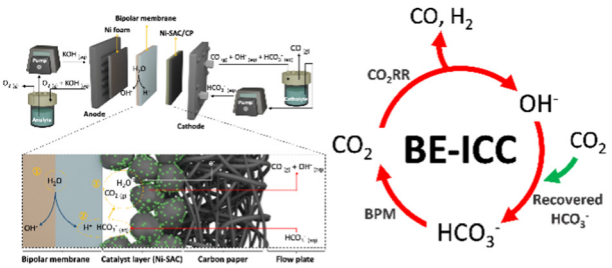
Integrated carbon capture and CO production from bicarbonates through bipolar membrane electrolysis

Hakhyeon Song, Carlos A. Fernández, Hyeonuk Choi, Po-Wei Huang, Jihun Oh* and Marta C. Hatzell*



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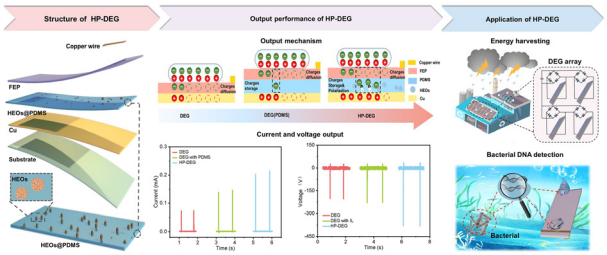

Enhancement of the voltage output of droplet electricity generators using high dielectric high-entropy oxide composites

Yanan Zhou, Yan Zeng, Jianming Wang, Xiaoyi Li, Peng Wang,* Wenlong Ma, Congyu Wang, Jiawei Li, Wenyong Jiang and Dun Zhang

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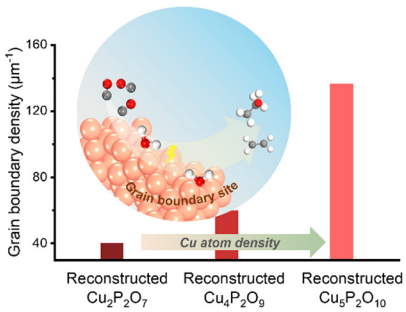

Grain boundary generation *via* steering $Cu_xP_2O_{x+5}$ precursor composition enhances CO electrolysis

Jiaqi Sang, Tianfu Liu, Pengfei Wei, Hefei Li, Conghui Liu, Yi Wang, Youwen Rong, Qi Wang, Guoxiong Wang* and Xinhe Bao*

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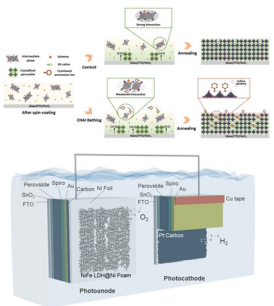

Large-area all-perovskite-based coplanar photoelectrodes for scaled-up solar hydrogen production

Wooyong Jeong, Gyumin Jang, Juwon Yun, Chang-Seop Jeong, Young Sun Park, Hyungsoo Lee, Jaehyun Son, Chan Uk Lee, Jeongyoub Lee, Junwoo Lee, Seongyeon Yang, Soobin Lee, Subin Moon and Jooho Moon*

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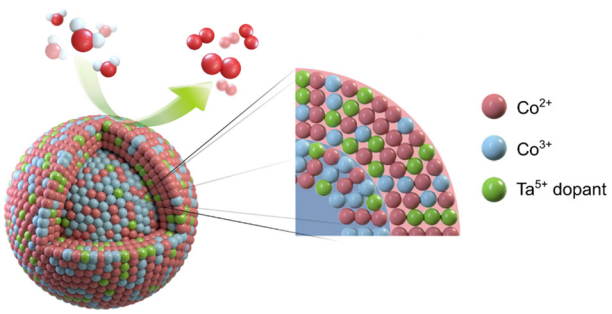

Tailoring cobalt spinel oxide with site-specific single atom incorporation for high-performance electrocatalysis

Kangjae Lee, Jaehyuk Shim, Hyunsoo Ji, Jungho Kim, Hyeon Seok Lee, Heejong Shin, Megalamane S. Bootharaju, Kug-Seung Lee, Wonjae Ko, Jaewoo Lee, Kang Kim, Seungwoo Yoo, Sungeun Heo, Jaeyune Ryu, Seoin Back,* Byoung-Hoon Lee,* Yung-Eun Sung* and Taeghwan Hyeon*

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PAPERS

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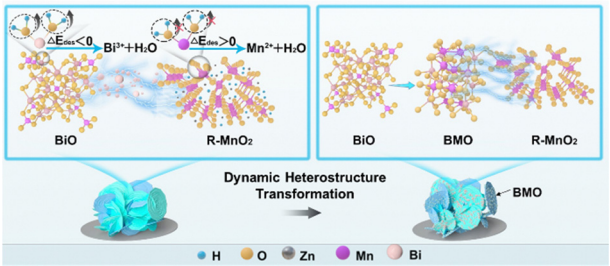
Dynamic heterostructure design of MnO_2 for high-performance aqueous zinc-ion batteries

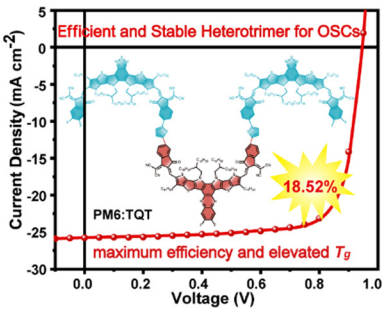
Xiaoru Zhao, Feng Zhang, Houzhen Li, Huitong Dong, Chuncheng Yan, Chao Meng, Yuanhua Sang, Hong Liu,* Yu-Guo Guo* and Shuhua Wang*



3641

A quinoxaline–benzothiadiazole heterotrimer for organic solar cells with extraordinary efficiency and stability

Jinfeng Liu, Xiaopeng Duan, Jiali Song, Chunhui Liu, Jiaxin Gao, Min Hun Jee, Zheng Tang, Han Young Woo and Yanming Sun*



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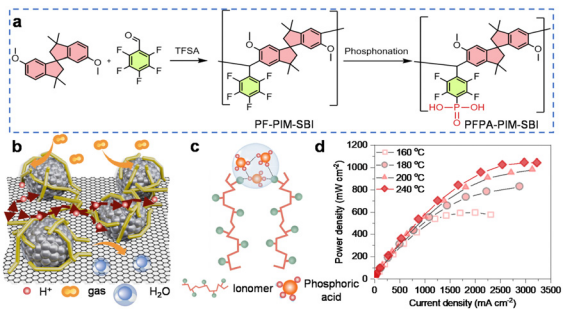
Electrode binder design for high-power, low-Pt loading and durable high temperature fuel cells

Hui Li, Peipei Zuo, Wenyi Wu, Gonggen Tang, Junkai Fang, Tongwen Xu and Zhengjin Yang*



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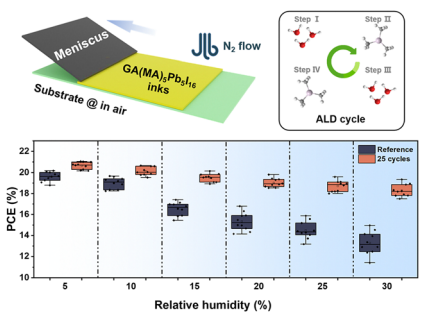
Repairing humidity-induced interfacial degradation in quasi-2D perovskite solar cells printed in ambient air

Zhi Xing, Baojin Fan, Xiangchuan Meng, Dengxue Li, Zengqi Huang, Linfeng Li, Yanyan Zhang, Fuyi Wang, Xiaotian Hu, Ting Hu,* Thomas Riedl* and Yiwang Chen*