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Materials for energy and sustainability

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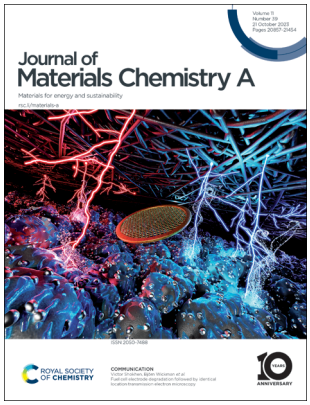


**Cover**
See Victor Shokhen, Björn Wickman *et al.*, pp. 21029–21035. Image reproduced by permission of Victor Shokhen from *J. Mater. Chem. A*, 2023, **11**, 21029.

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**Recent progress in anion exchange membranes (AEMs) in water electrolysis: synthesis, physio-chemical analysis, properties, and applications**

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## REVIEWS

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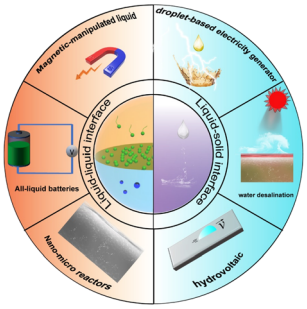
**Liquid interfaces: an emerging platform for energy conversion and harvesting**

Sai Zhao, Yuchen Fu, Haowu Cao and Yu Chai*




## COMMUNICATION

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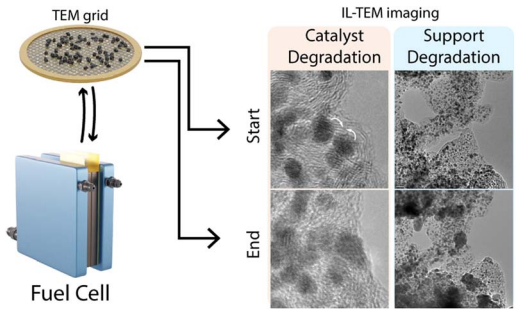
**Fuel cell electrode degradation followed by identical location transmission electron microscopy**

Victor Shokhen,* Linnéa Strandberg, Magnus Skoglundh and Björn Wickman*

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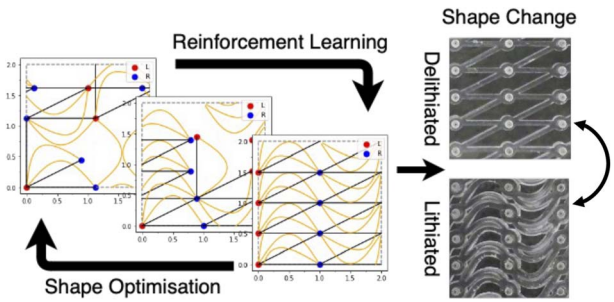


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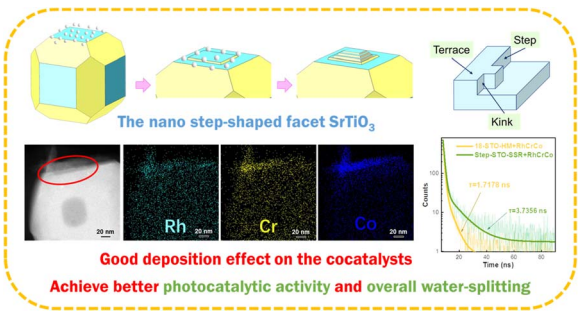
**A unique octadecahedron $SrTiO_3$ perovskite oxide with a nano step-shaped facet structure for enhanced photoredox and hydrogen evolution performance**

Chuyu Wang, Yan Li, Xiaojiao Cai, Dongping Duan* and Qibo Jia*



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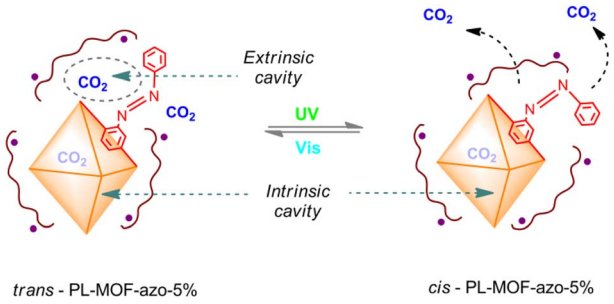


**Role of cavities created by azobenzene-modified UiO-66 in bulky ionic liquid for high photoresponsive $CO_2$ uptake behavior**

Meng-Meng Li, Manish Kumar Dinker, Yang Liu, Mingrui Zuo, Lifeng Ding,* Xiao-Qin Liu and Lin-Bing Sun*

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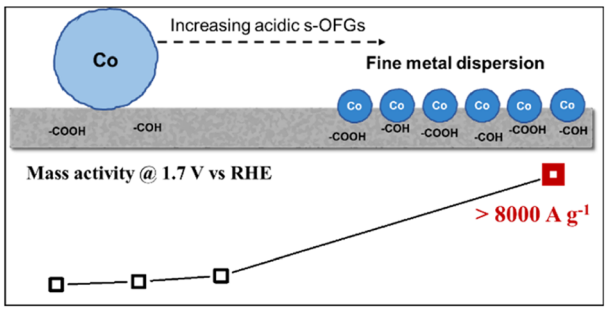


**Understanding the role of surface oxygen-containing functional groups on carbon-supported cobalt catalysts for the oxygen evolution reaction**

Thi Ha My Pham, Youngdon Ko, Manhui Wei, Kangning Zhao, Liping Zhong* and Andreas Züttel

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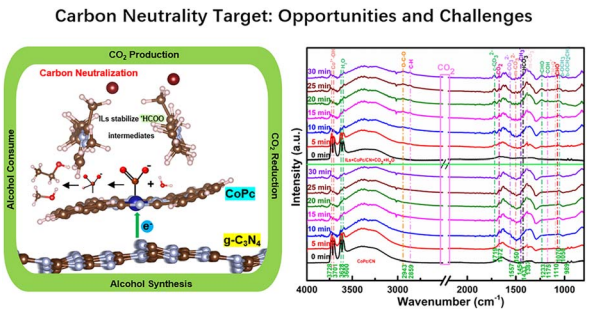


**Efficient photoelectrocatalytic $CO_2$ reduction to $CH_3OH$ *via* porous g-$C_3N_4$ nanosheets modified with cobalt phthalocyanine in ionic liquids**

Pengyan Li, Yuhang Lin, Zhenhong Qi and Dongpeng Yan*

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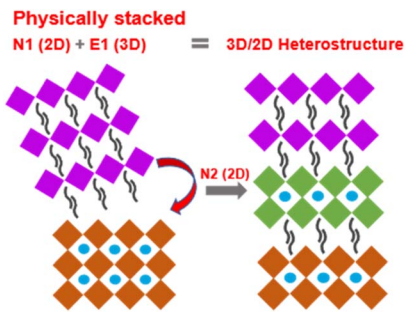


**Diffusion of bulky organic cations in the 3D/2D heterostructures to form interfacial quasi-2D (N2) phase for tin perovskite solar cells**

Ashank Seetharaman, Sudhakar Narra, Parameswaran Rajamanickam, Raghunath Putikam, Ming-Chang Lin and Eric Wei-Guang Diau*

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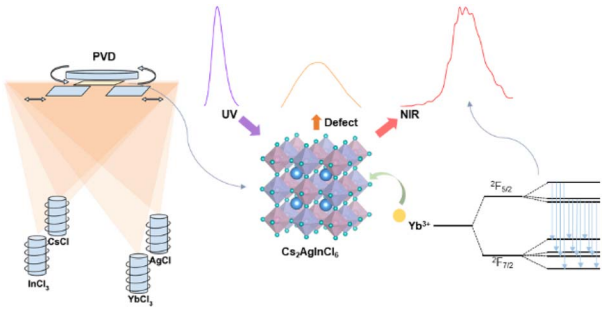
**Optical properties of ytterbium-doped and undoped $Cs_2AgInCl_6$ thin films deposited by co-evaporation of chloride salts**

Yukun Liu, Pulkita Jain, Iver J. Cleveland, Minh Tran, Seda Sarp, Kajini Sandrakumar, Rafaella Saa Rodriguez and Eray S. Aydil*

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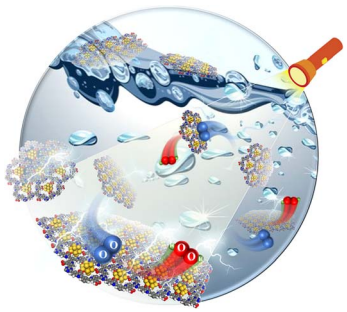
Qigao Shang, Yanyang Liu, Jing Ai, Ying Yan, Xiaofang Yang, Dongsheng Wang and Guiying Liao*



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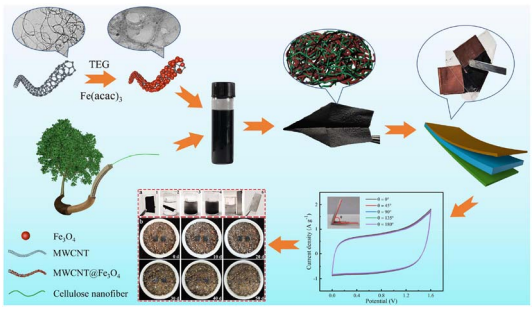
Haoran Zhao, Haidong Jin, Shenghui Li, Yahui Dong, Shipeng Wang, Qian Cheng* and Yu Li*

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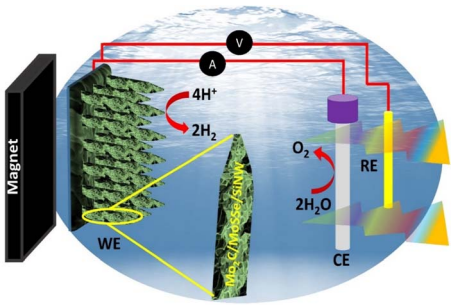
Krishnendu Roy, Dibyendu Ghosh, Soumyajit Maitra and Praveen Kumar*



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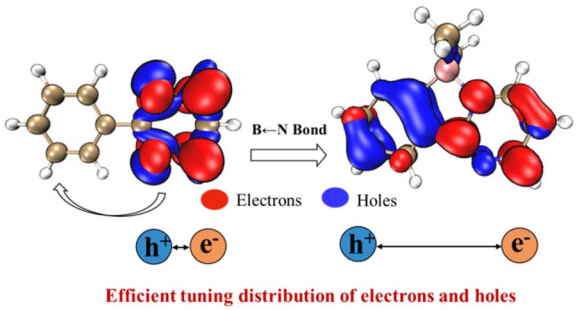


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Peiyan Chen, Fanbo Ji, Detian Ma, Yangbin Xie, Xuan Wu, Mingcai Zhang, Chenglong Ru,* Lian Zhou,* Jincai Wu and Xiaobo Pan*

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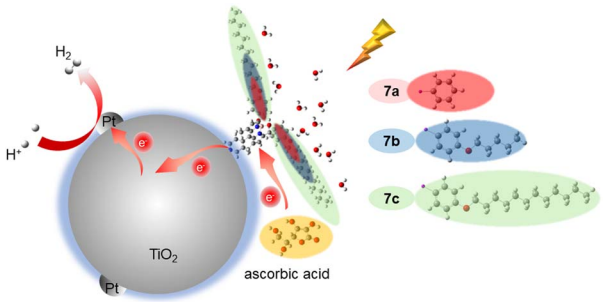


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Xiao-Feng Shen, Motonori Watanabe,* Jun Tae Song, Atsushi Takagaki, Tatsuki Abe, Keiji Tanaka and Tatsumi Ishihara

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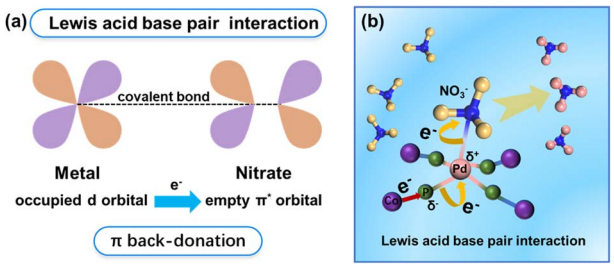


**Enhancing the selective electrochemical conversion of nitrate *via* π back-donation on Lewis acid sites induced by noble-metal doped CoP**

Yihong Gao, Kunpeng Wang, Shikuo Li,* Hui Zhang* and Fangzhi Huang*

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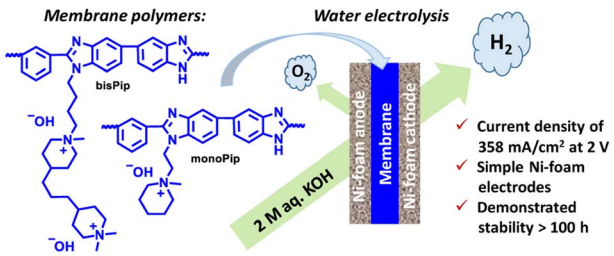


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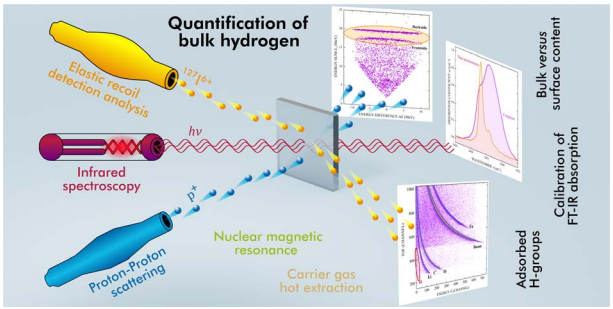


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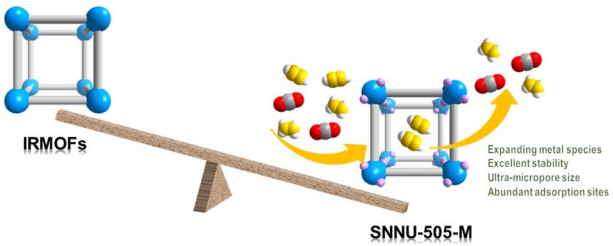
**Development of MOF-5-like ultra-microporous metal-squarate frameworks for efficient acetylene storage and separation**

Hai-Peng Li, Jia-Wen Wang and Quan-Guo Zhai*

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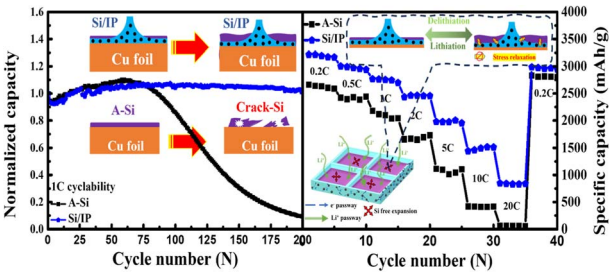
Yi-Xiu Chen, Yin-Wei Cheng, Jun-Han Huang and Chuan-Pu Liu*

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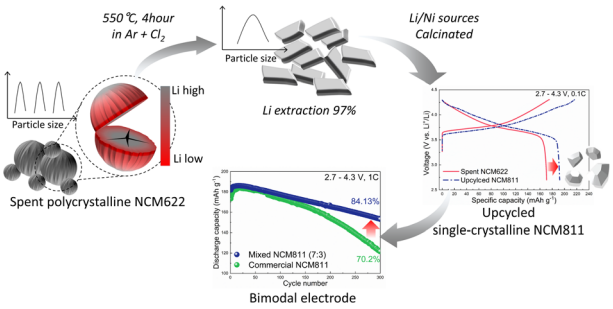
**Upcycling spent cathodes into single-crystalline Ni-rich cathode materials through selective lithium extraction**

Kyoung Sun Kim, Min Ku Jeon, Seok Hyun Song, Seokjae Hong, Hwa Soo Kim, Sung-Wook Kim, Jinsoo Kim, Pilgun Oh, Junhyeok Hwang, Jinju Song, Jiyoung Ma, Jung-Je Woo, Seung-Ho Yu and Hyungsub Kim*



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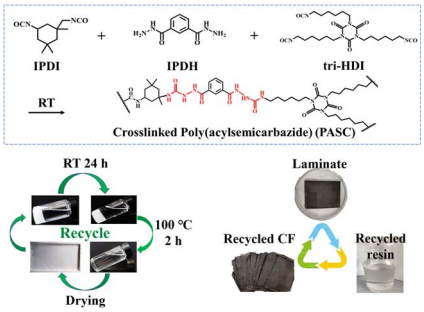


## Fully recyclable high-performance polyacylsemicarbazide/carbon fiber composites

Zhiwen Jian, Yindong Wang, Xiaokang Zhang, Xi Yang, Zhanhua Wang, Xili Lu* and Hesheng Xia*

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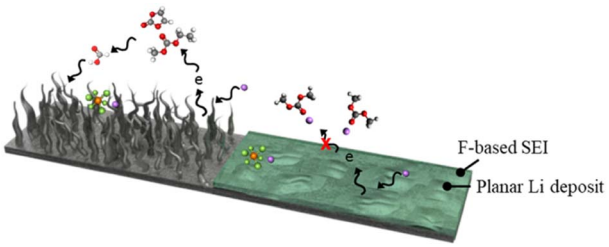


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Min A Lee, Han Jun Leem, Jeong Beom Lee, Chihyun Hwang, Jisang Yu* and Hyun-seung Kim*

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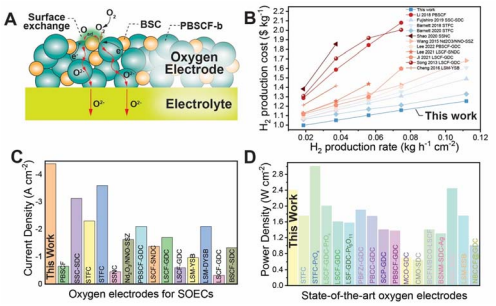


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Liyang Fang, Fan Liu, David Diercks, Praveen Kumar, Feng Zhao, Dong Ding* and Chuancheng Duan*

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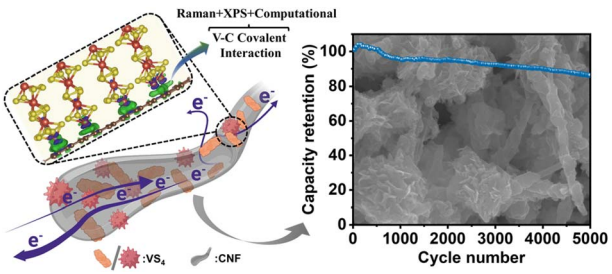


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Saad Zafar, Arpit Thomas, Soumyasri Nikhilesh Mahapatra, Naiwrit Karmodak, Harpreet Singh Arora* and Bimlesh Lochab*

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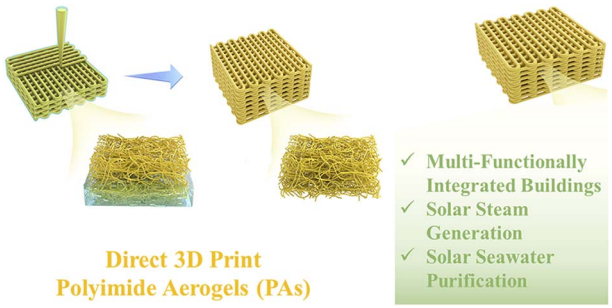
Jianming Yang, Jialu Lu, Shuang Xi, Hongqiang Wang, Dongxiao Han, Caide Fan, Zhihua Zhang, Jun Shen, Bin Zhou* and Ai Du*

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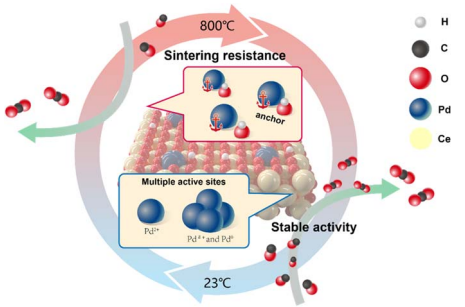
**Sintering resistance of Pd single atoms on steam-modified ceria: deciphering the role of hydroxyl groups**

Yuanyuan An, Sheng-Yu Chen, Li Zhou, Beibei Wang, Guoxiu Hao, Junchen Chen, Yanli Wang, Hui Zhang, Zheng Peng, Tsung-Cheng Yang, Chia-Min Yang, Jeng-Lung Chen, Chia-Kuang Tsung, Zhi Liu* and Lien-Yang Chou*

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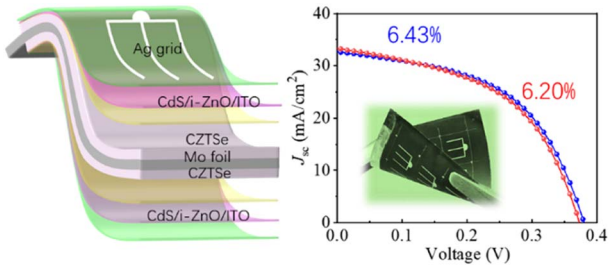
**Interface-suppressed high-quality symmetrical bifacial flexible CZTSe solar cells through a green electrodeposition process**

Jingling Liu, Hang Cai, Xinyu Wu, Sheng Liu, Ying Xue, Xinsheng Liu, Ke Cheng* and Zuliang Du*

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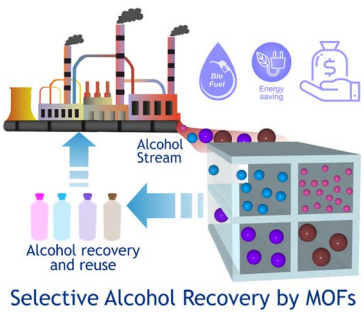
**Guest-induced breathing mediated selective alcohol recovery from water by MIL-88A(Fe)**

Nagore Barroso, Subhajit Dutta, Jacopo Andreo, Garikoitz Beobide, Oscar Castillo,* Antonio Luque, Sonia Pérez-Yáñez and Stefan Wuttke*



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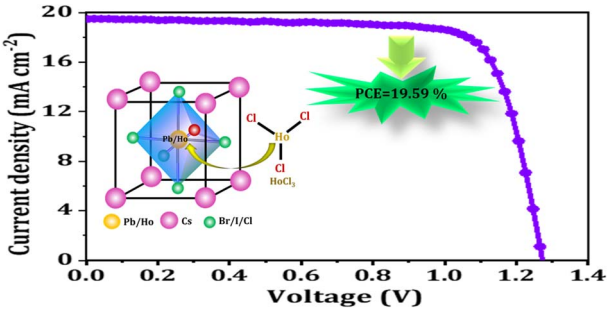


**Holmium rare earth metal ion incorporated and ambient-air processed all-inorganic γ-$CsPbI_{2.5}Br_{0.5}$ perovskite solar cells yielding high efficiency and stable performance**

Jyoti V. Patil, Sawanta S. Mali and Chang Kook Hong*

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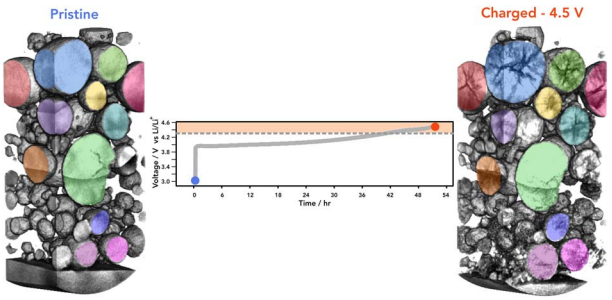


**Direct observations of electrochemically induced intergranular cracking in polycrystalline NMC811 particles**

Huw C. W. Parks, Adam M. Boyce, Aaron Wade, Thomas M. M. Heenan, Chun Tan, Emilio Martínez-Pañeda, Paul R. Shearing, Dan J. L. Brett and Rhodri Jervis*

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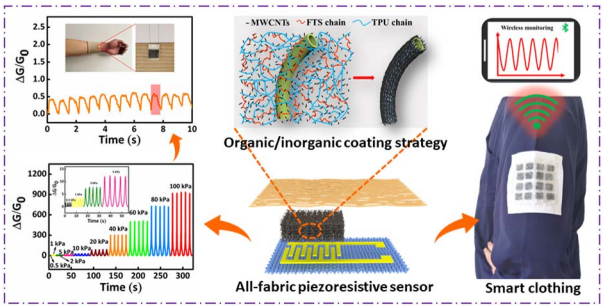


**An organic/inorganic coating strategy that greatly enhanced sensing performances and reliability of all-fabric piezoresistive sensors**

Guangliang Tian, Kangli Xu, Yaoli Huang, Xinxin You, Wenhua Yu, Honggang Liu, Juan Li, Jiawei Liu, Xiangyu Jin, Haoxuan Li,* Qinfei Ke* and Chen Huang*

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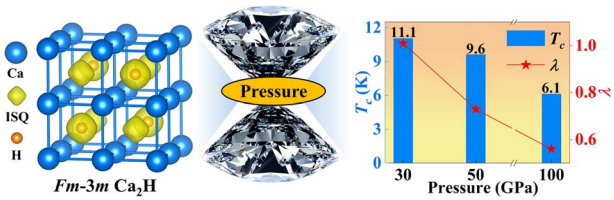


**Coexistence of superconductivity and electride states in $Ca_2H$ with an antifluorite-type motif under compression**

Qianyi Wang, Shoutao Zhang,* Honggang Li, Hongbo Wang, Guangtao Liu, Jiangang Ma, Haiyang Xu, Hanyu Liu* and Yanming Ma

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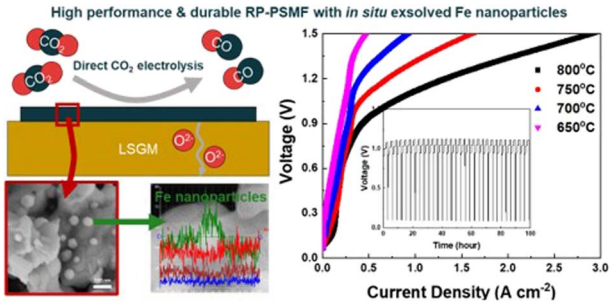
**High-performance Ruddlesden–Popper perovskite oxide with *in situ* exsolved nanoparticles for direct $CO_2$ electrolysis**

Ka-Young Park, Taehee Lee, Wanhua Wang, Haixia Li and Fanglin Chen

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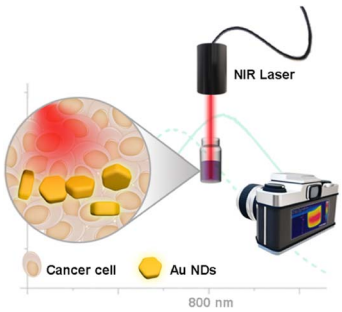
**Photothermal therapy for cancer cells using optically tunable $Fe_2O_3$@Au hexagonal nanodisks**

Lin Li, Fenglian Qi, Jiong Guo, Jing Fan, Wenxiang Zheng, Murtaza Ghulam, Weizhi Wang, Zihui Meng* and Lili Qiu*

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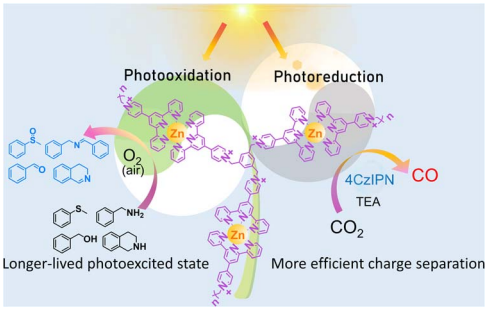
**Unveiling dual catalysis enhancement of a pyridinium-containing Zn(II) coordination polymer in aerobic photooxidation of organic substrates and selective photoreduction of $CO_2$**

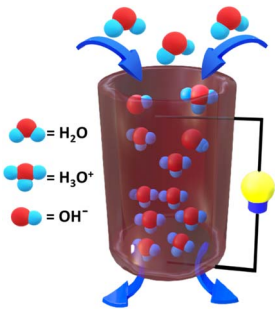
Youting Fang and Duobin Chao*




21383

**Sustainable electricity from gravity-driven nanofluidic flow of water through modified bio-channels of coir fibers**

Barsha Rani Bora, Monotosh Mondal, Nabamallika Nath, K. K. R. Datta and Kalyan Raidongia*



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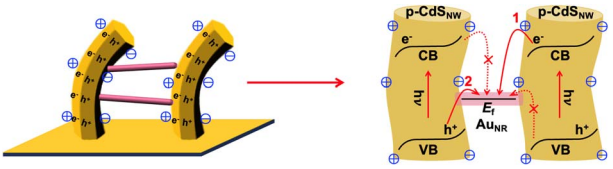
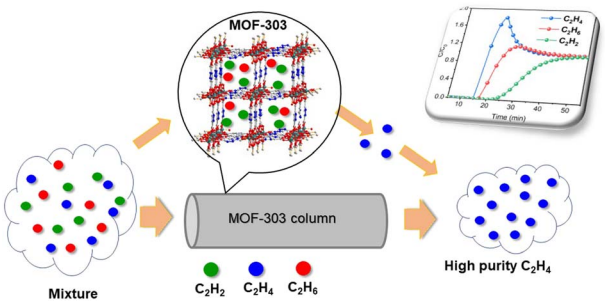



**Multipoint-bridging structure with a piezoelectricity-induced S-scheme junction for piezoelectricity-enhanced photoelectrochemical $H_2O_2$ production**

Chenpu Chen and Jun Cheng*

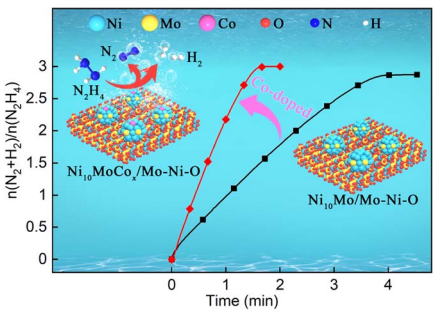
21401




**Simultaneous removal of $C_2H_2$ and $C_2H_6$ for $C_2H_4$ purification by robust MOFs featuring a high density of heteroatoms**

Shikai Xian, Junjie Peng, Haardik Pandey, Wells Graham, Liang Yu, Hao Wang, Kui Tan, Timo Thonhauser and Jing Li*

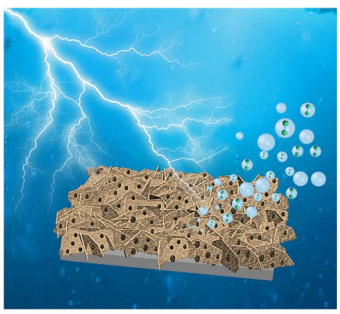
21411




**Noble-metal-free $Ni_{10}MoCo_x$/Mo–Ni–O as an active and durable catalyst for hydrogen generation from hydrazine monohydrate**

Si-Huan Qin, Yu-Ping Qiu,* Mu-Hua Chen and Ping Wang*

21420



**Defective NiMn LDH prepared using hydrogen evolution coupled electrodeposition for highly efficient oxygen evolution reaction**

Mao Sun and Jike Wang*

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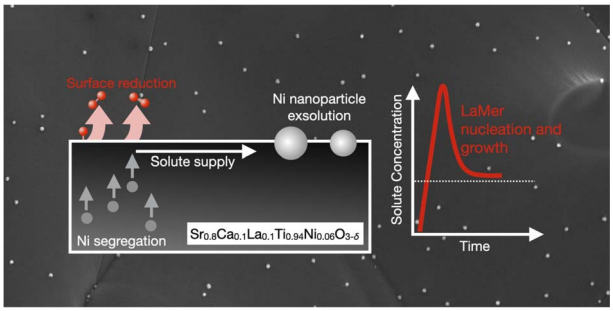
**Tuning reduction conditions to understand and control Ni exsolution from $Sr_{0.8}La_{0.1}Ca_{0.1}Ti_{0.94}Ni_{0.06}O_{3-\delta}$**

Willis O'Leary, Livia Giordano and Jennifer L. M. Rupp*




21443

**Maximizing energy efficiency with a mirror-structured hybrid generator leveraging triboelectric and photovoltaic cells for optimal coverage and wind awareness**

Inkyum Kim and Daewon Kim*