

# Journal of Materials Chemistry A

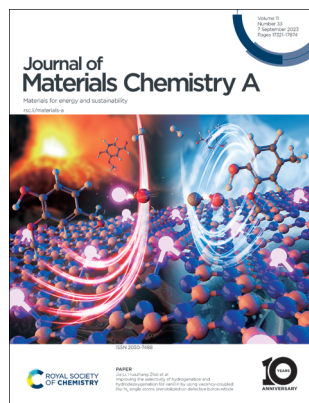
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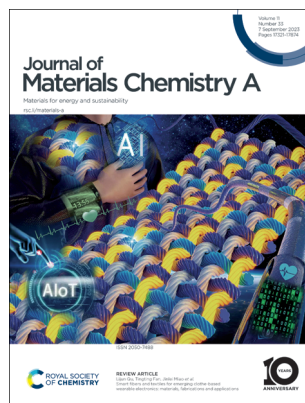
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ISSN 2050-7488 CODEN JMCAET 11(33) 17321–17874 (2023)



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### Inside cover

See Lijun Qu, Tingting Fan, Jinlei Miao *et al.*, pp. 17336–17372. Image reproduced by permission of Jinlei Miao from *J. Mater. Chem. A*, 2023, **11**, 17336.

## REVIEWS

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### Smart fibers and textiles for emerging clothe-based wearable electronics: materials, fabrications and applications

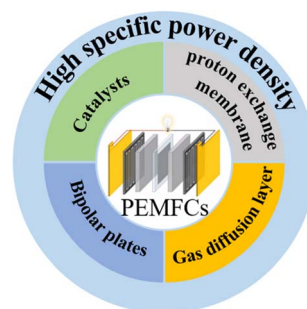
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### Designing proton exchange membrane fuel cells with high specific power density

Hongda Li,\* Hao Zhao, Shuai Jian, Boran Tao, Shaonan Gu, Guoxiao Xu, Guofu Wang\* and Haixin Chang\*



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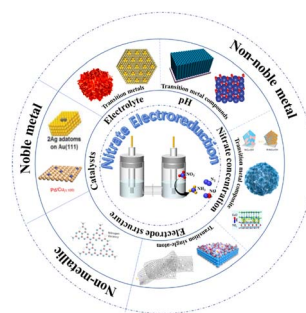


## REVIEWS

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**Progress and prospects of electrochemical reduction of nitrate to restore the nitrogen cycle**

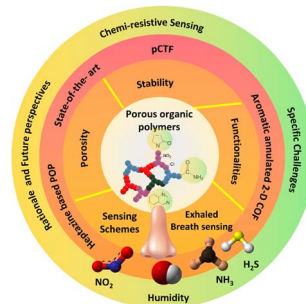
Yudong Wu, Kun-Kun Lu and Lian-Hua Xu\*



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**A critical insight into porous organic polymers (POPs) and its perspectives for next-generation chemiresistive exhaled breath sensing: a state-of-the-art review**

Parthasarathy Srinivasan, Kirti Dhingra and Kamalakannan Kailasam\*

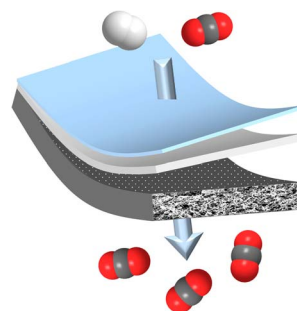


## PERSPECTIVE

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**Progressing thin-film membrane designs for post-combustion CO<sub>2</sub> capture: performance or practicality?**

Ji Wu, Febrian Hillman, Can-Zeng Liang, Yuewen Jia and Sui Zhang\*

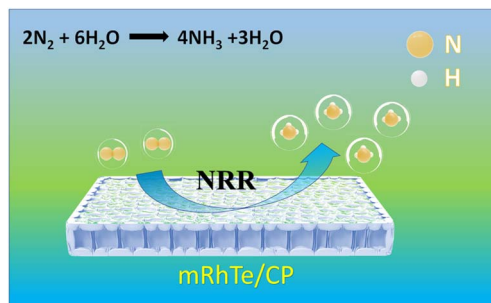


## COMMUNICATION

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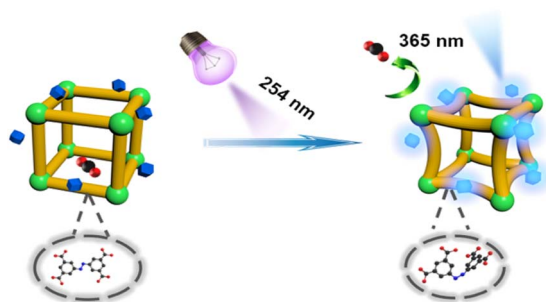
**Metal-metalloid alloys: mesoporous Rh-Te films for electrocatalytic nitrogen fixation**

Ziqiang Wang, Duanyang Li, Xian Zhang, Hongjie Yu, Kai Deng, You Xu, Hongjing Wang\* and Liang Wang\*



## PAPERS

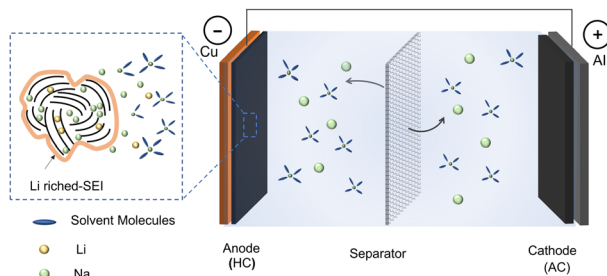
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### Maintaining the configuration of a light-responsive metal–organic framework: $\text{LiYGeO}_4\cdot\text{Bi}^{3+}$ -incorporation-induced long-term bending through short-time light irradiation

Wen-Juan Zhang, Li Zheng, Shi-Chao Qi,<sup>\*</sup> Jia-Xin Li, Ding-Ming Xue, Xiao-Qin Liu and Lin-Bing Sun<sup>\*</sup>

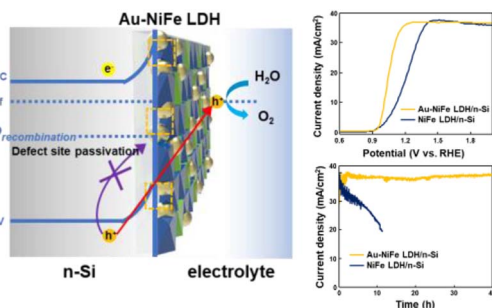
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### Electrochemically prelithiated carbon anodes with regulated Na-ion intercalation behaviours for advanced sodium-ioni energy storage devices

Qingyuan Liu, Jianchao Chen, Danni Du, Shuxian Zhang, Chunyan Zhu, Zhiwei Zhang, Chengxiang Wang,<sup>\*</sup> Longwei Yin and Rutao Wang<sup>\*</sup>

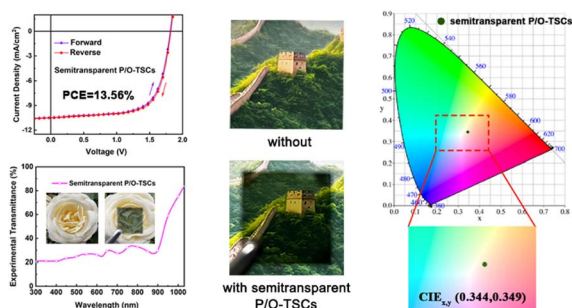
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### Boosted charge transport through Au-modified NiFe layered double hydroxide on silicon for efficient photoelectrochemical water oxidation

Sungkyun Choi, Sol A Lee, Jin Wook Yang, Woonbae Sohn, Jaehyun Kim, Woo Seok Cheon, Jaemin Park, Jin Hyuk Cho, Chung Won Lee, Sang Eon Jun, Sung Hyuk Park, Jooho Moon,<sup>\*</sup> Soo Young Kim<sup>\*</sup> and Ho Won Jang<sup>\*</sup>

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### Synergy of the transmittance fluctuation factor and absorption selectivity for efficient semitransparent perovskite/organic tandem solar cells with high color-fidelity

Yiming Bai, Fei Han, Rui Zeng, Shilei Tian, Fuzhi Wang, Xi Wang, Meilin Dai, Meicheng Li and Zhan'ao Tan<sup>\*</sup>



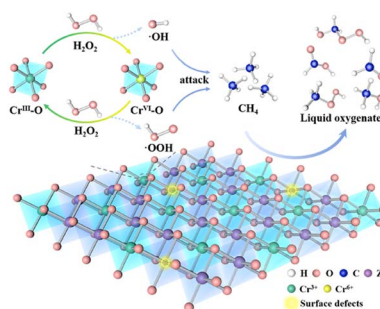


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## Efficient methane oxidation to oxygenates over etched ZnCr layered double hydroxide nanosheets

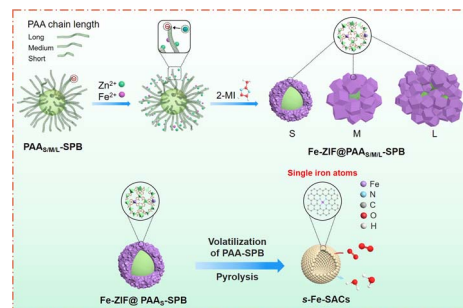
Lei Wu, Dandan Liu, Fan Chen, Huanyu Zhou, Rui Shi, Yana Liu, Jiguang Zhang, Yunfeng Zhu and Jun Wang\*



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## Facile synthesis of single-atom electrocatalysts with tailored carbon architectures via a polyelectrolyte brush-templated-growth approach

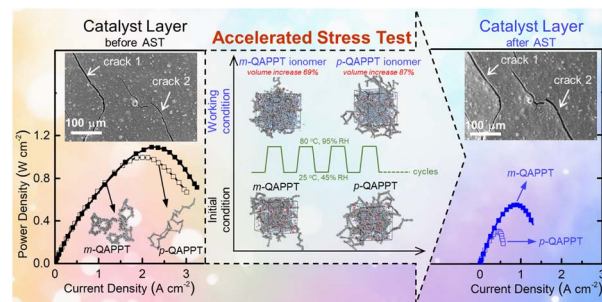
Zhinan Fu, Lizhen Wang, Weijun Zhang, Xuan Tang, Wenxin Xia, Jinxia Li, Kuanwen Wang, Lihui Zhou,\* Xuhong Guo and Sheng Dai\*



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## Conformational distortion of the ionomer backbone for reinforcing the catalyst layer under dynamic operation

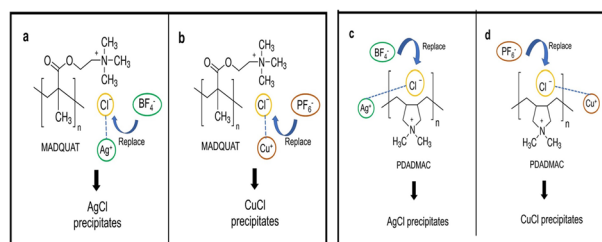
Chenyang Zheng, Di Xiao, Junfeng Zhang,\* Yabiao Pei, Lianqin Wang, Xin Liu, Yan Yin,\* Michael D. Guiver\* and Xianguo Li



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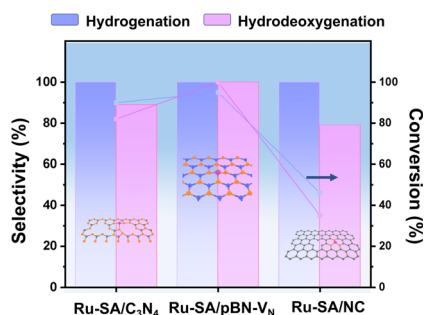
## Designing n-type all-ionic thermoelectric polymers with improved air stability via a solution-processing anion exchange technique

Nan (Louise) Chen, Yunjia Song, Taein Lee, Sasikumar Mayarambakam and Howard E. Katz\*



## PAPERS

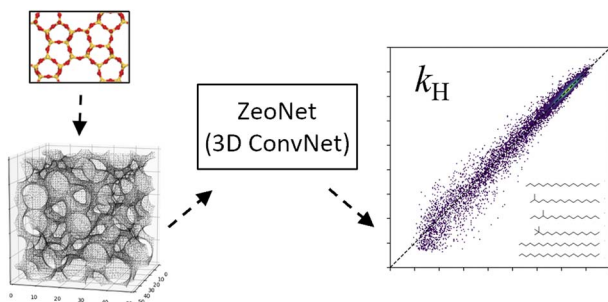
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### Improving the selectivity of hydrogenation and hydrodeoxygenation for vanillin by using vacancy-coupled Ru–N<sub>3</sub> single atoms immobilized on defective boron nitride

Haoxiang Fan, Fengjuan Qin, Qi Yuan, Zhiyi Sun, Hongfei Gu, Wenjing Xu, Hao Tang, Shuhu Liu, Yu Wang, Wenxing Chen, Jia Li\* and Huazhang Zhai\*

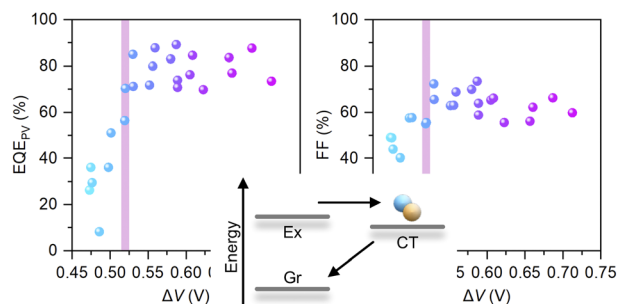
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### ZeoNet: 3D convolutional neural networks for predicting adsorption in nanoporous zeolites

Yachan Liu, Gustavo Perez, Zezhou Cheng, Aaron Sun, Samuel C. Hoover, Wei Fan, Subhansu Maji\* and Peng Bai\*

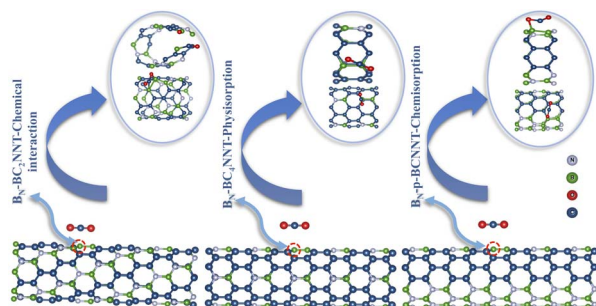
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### Role of the energy offset in the charge photogeneration and voltage loss of nonfullerene acceptor-based organic solar cells

Yasunari Tamai,\* Rei Shirouchi, Toshiharu Saito, Kazuki Kohzaki and Shin-ichiro Natsuda

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### Boron-rich enhanced ambient CO<sub>2</sub> capture and storage of boron-carbon-nitride hybrid nanotubes

Fatemeh Ershadi Moghaddam, Farzaneh Shayeganfar\* and Ali Ramazani

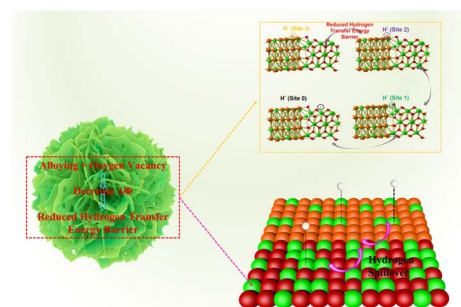


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# Concurrent alloying and vacancy engineering for intensifying hydrogen spillover towards alcohol–water co-electrolysis

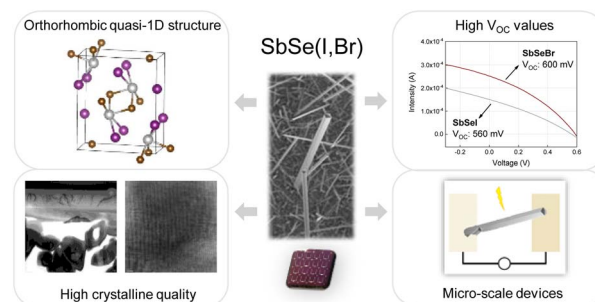
Hui Xu, Kun Wang, Guangyu He\* and Haiqun Chen\*



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# SbSeI and SbSeBr micro-columnar solar cells by a novel high pressure-based synthesis process

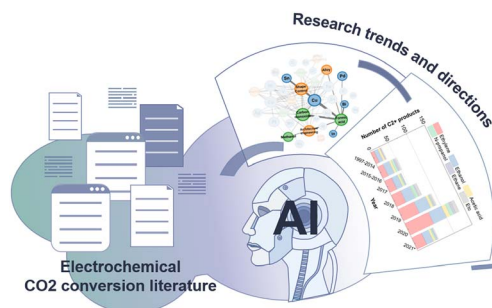
Ivan Caño,\* Alejandro Navarro-Güell, Edoardo Maggi, Maria Barrio, Josep-Lluís Tamarit, Simon Svatek, Elisa Antolín, Shunya Yan, Esther Barrena, Beatriz Galiana, Marcel Placidi, Joaquim Puigdollers and Edgardo Saucedo



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# Deep learning of electrochemical CO<sub>2</sub> conversion literature reveals research trends and directions

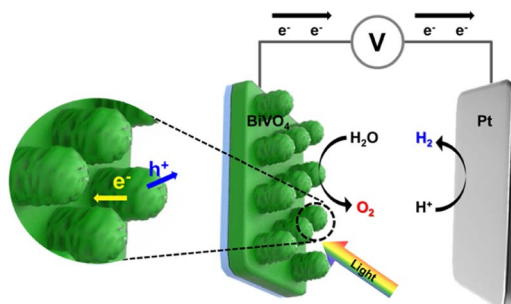
Jiwoo Choi, Kihoon Bang, Suji Jang, Jaewoong Choi, Juanita Ordonez, David Buttler, Anna Hiszpanski, T. Yong-Jin Han, Seok Su Sohn, Byungju Lee, Kwang-Ryeol Lee, Sang Soo Han\* and Donghun Kim\*



17644

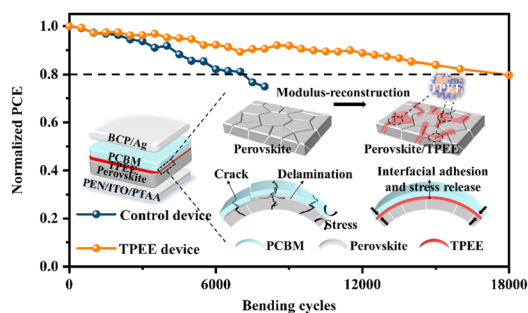
# Nanostructured BiVO<sub>4</sub> obtained by the vanadium calcination of Bi<sub>2</sub>O<sub>3</sub> nanohelices for enhanced photoelectrochemical water splitting

Sucheol Ju, Noho Lee, Hansang Sung, Soomin Son, Nakhyun Kim, Jaerim Kim, Jong kyu Kim\* and Heon Lee\*



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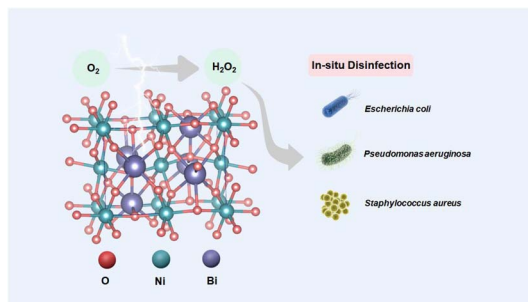
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### Surface modulus reconstruction toward robust flexible perovskite solar cells

Zheng Lu, Xiaoli Xu, Yanhui Lou,\* Lingbo Xiao, Jie Zhao, Shuai Zou, Yingzhuang Ma, Lutao Li, Chen Wang, Xiaodong Su\* and Guifu Zou\*

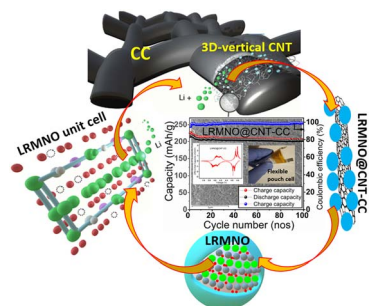
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### Electrochemical synthesis of hydrogen peroxide on BiNiO<sub>x-4</sub> and *in situ* disinfection

Yizhen Shao, Yanfei Fei, Ge Feng, Shijie Zhang, Xiaoge Peng, Chenghang Jiang, Yuanan Li, Zhong-Ting Hu, Zhikang Bao\* and Jianguo Wang\*

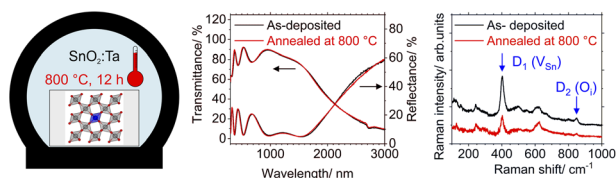
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### Outstanding capacity assimilated from lithium-rich manganese nickel oxide flexible cathode material relies on CNT-wrapped carbon fibers for flexible lithium-ion batteries

Abhilash Karuthedath Parameswaran,\* Lukáš Děkanovský, Vlastimil Mazánek, Sivaraj Pazhaniswamy and Zdenek Sofer\*

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### Exceptionally high-temperature in-air stability of transparent conductive oxide tantalum-doped tin dioxide

Matthias Krause,\* Mareen Hoppe, Carlos Romero-Muñiz, Alvaro Mendez, Frans Munnik, Aurelio Garcia-Valenzuela, Christian Schimpf, David Rafaja and Ramon Escobar-Galindo



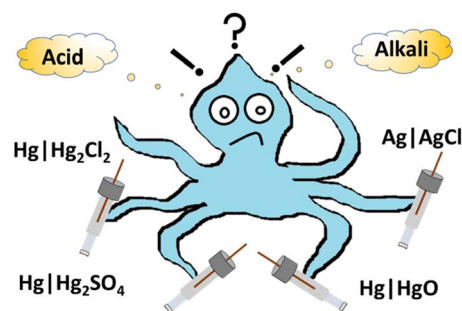


## PAPERS

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# The reference electrode dilemma in energy conversion electrocatalysis: "right vs. okay vs. wrong"

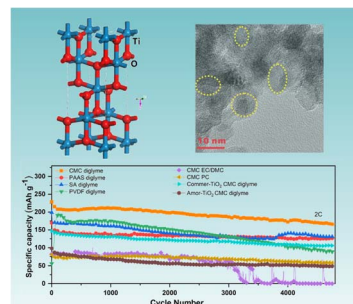
Sengeni Anantharaj,\* Prince J. J. Sagayaraj, Manova Santhosh Yesupatham, Roshini Arulraj, Karthik Eswaran, Karthikeyan Sekar and Suguru Noda



17710

# Ultra-high initial coulombic efficiency of the TiO<sub>2</sub> anode induced by the synergistic role of the electrolyte and binder for sodium-ion batteries

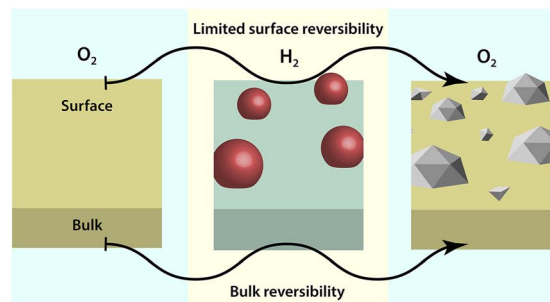
Li Yang, Yingchang Yang,\* Wei Shi, Senlin Leng, Deliang Cheng and Hongshuai Hou



17718

# Reversibility limitations of metal exsolution reactions in niobium and nickel co-doped strontium titanate

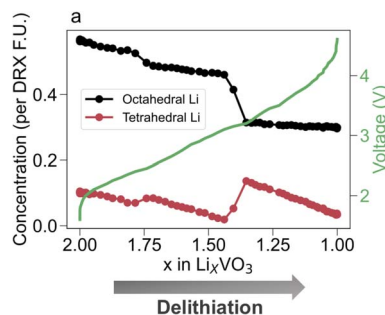
Moritz L. Weber,\* Yoo Jung Sohn, Regina Dittmann, Rainer Waser, Norbert H. Menzler, Olivier Guillon, Christian Lenser, Slavomír Nemšák and Felix Gunkel



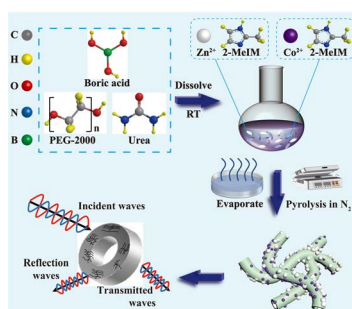
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# Ab initio study of short-range ordering in vanadium-based disordered rocksalt structures

Zinab Jadidi, Julia H. Yang, Tina Chen, Luis Barroso-Luque and Gerbrand Ceder\*



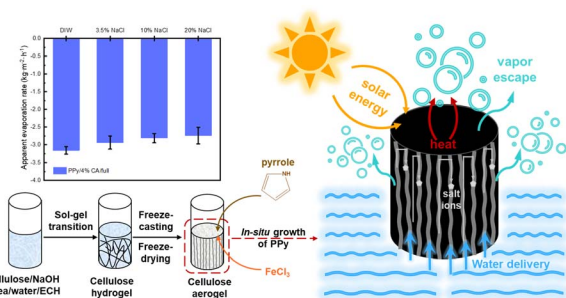
17737



### CoZnO/C@BCN nanocomposites derived from bimetallic hybrid ZIFs for enhanced electromagnetic wave absorption

Xuexia Lin,<sup>\*</sup> Jiafu Hong, Chong-Chen Wang,<sup>\*</sup> Mengxing Su and Shu-Feng Zhou

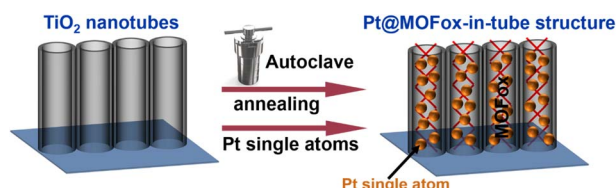
17748



### Wood-inspired polypyrrole/cellulose aerogels with vertically aligned channels prepared by facile freeze-casting for efficient interfacial solar evaporation

Yuxuan Ren, Rufan Zhou, Tao G. Dong and Qingye Lu<sup>\*</sup>

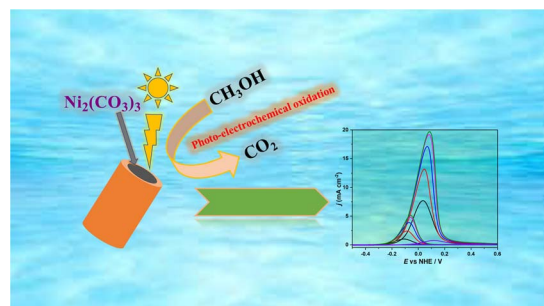
17759



### Pt single atoms dispersed in a hybrid MOF@in-tube structure for efficient and long-term stable photocatalytic H<sub>2</sub> generation

Shanshan Qin, Junli Guo, Xuwen Chen, Ran Cao, Nikita Denisov, Yan-Yan Song and Patrik Schmuki<sup>\*</sup>

17769



### Nickel carbonate (Ni<sub>2</sub>(CO<sub>3</sub>)<sub>2</sub>) as an electrocatalyst and photo-electrocatalyst for methanol electro-oxidation

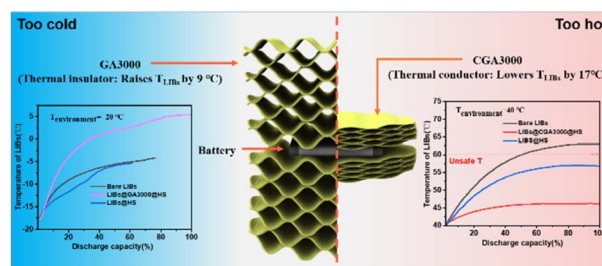
Iranna Udachyan, Jayesh T. Bhanushali, Shanti G. Patra, Tomer Zidki, Amir Mizrahi and Dan Meyerstein<sup>\*</sup>



17779

## A graphene aerogel with reversibly tunable thermal resistance for battery thermal management

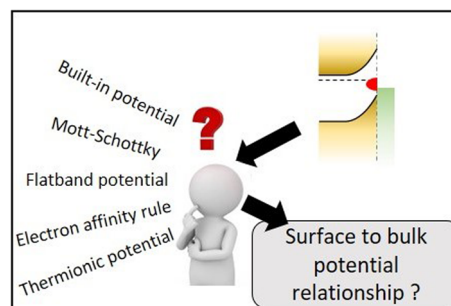
Shujian Cheng, Xiaoxiao Guo, Peng Tan, Bo Yan, Mingyuan Lin, Jiafa Cai, Yufeng Zhang,\* Weiwei Cai\* and Xue-ao Zhang\*



17787

## How flat is the flatband potential?

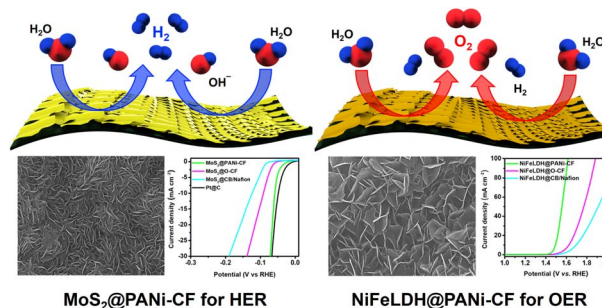
Raphaël Poulain\*



17797

## Polyaniline induced multi-functionalities in interfacially coupled electrocatalysts for hydrogen/oxygen evolution reactions

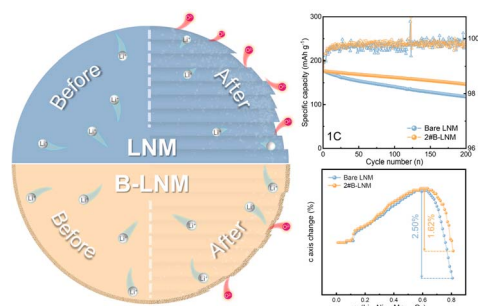
Niranjanmurthi Lingappan,\* Insu Jeon and Wonoh Lee\*



17810

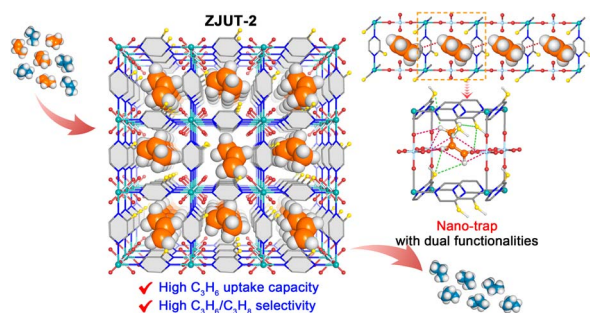
## Dual-functional boron-modification on a cobalt-free single-crystal layered cathode for high-voltage lithium-ion batteries

Tiancheng Liu, Ke Fan, Zezhou Lin, Zhuojian Liang, Changsheng Chen, Guangchao Li, Xuyun Guo, Yanping Zhu, Gao Chen, Hao Li, Tai-Sing Wu, Yun-Liang Soo, Molly Meng-Jung Li, Ye Zhu, Mingxia Dong and Haitao Huang\*



## PAPERS

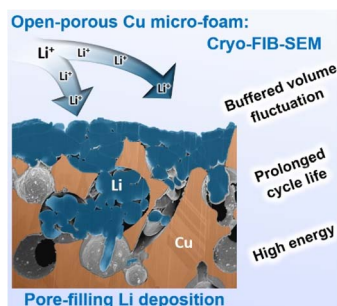
17821



### A metal–organic framework based propylene nano-trap with dual functionalities for highly efficient propylene/propane separation

Hui-Min Wen, Miaoyu Liu, Yujia Ling, Xiao-Wen Gu, Di Liu, Chenyi Yu, Yulan Liang, Bo Xie, Bin Li\* and Jun Hu\*

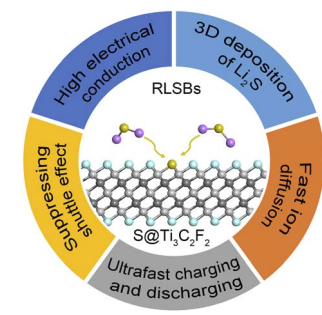
17828



### Elucidating the lithium deposition behavior in open-porous copper micro-foam negative electrodes for zero-excess lithium metal batteries

Tjark T. K. Ingber, Marlena M. Bela, Frederik Püttmann, Jan F. Dohmann, Peter Bieker, Markus Börner, Martin Winter and Marian C. Stan\*

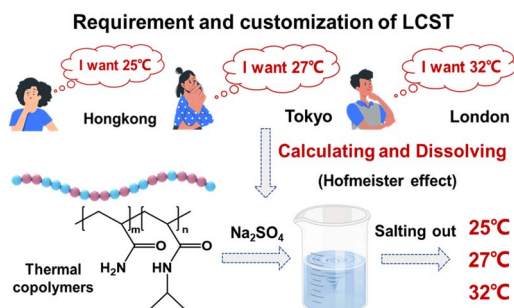
17841



### S-doped $Ti_3C_2F_2$ MXene as an ideal sulfur cathode host for high-performance rechargeable lithium–sulfur batteries

Hao Yuan, Jing Yang and Yong-Wei Zhang\*

17848



### Thermochromic smart windows with broad-range customizable responsive temperature via the Hofmeister effect

Hongchao Peng, Xuekun Yang, Yingchun Gu, Qin Yang, Tu Lan,\* Sheng Chen\* and Bin Yan\*



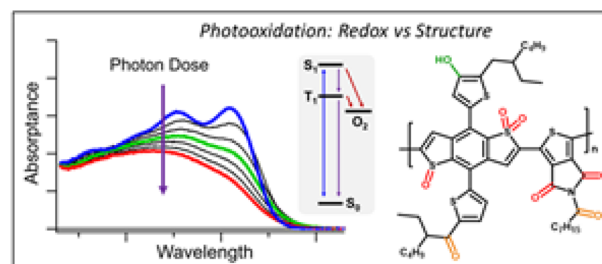


## PAPERS

17858

# Distinguishing photo-induced oxygen attack on alkyl chain *versus* conjugated backbone for alkylthienyl-benzodithiophene (BDTT)-based push–pull polymers

Michael A. Anderson, Anna Hamstra, Bryon W. Larson and Erin L. Ratcliff\*



## CORRECTION

17872

# Correction: Improving the selectivity of hydrogenation and hydrodeoxygenation for vanillin by using vacancy-coupled Ru–N<sub>3</sub> single atoms immobilized on defective boron nitride

Haoxiang Fan, Fengjuan Qin, Qi Yuan, Zhiyi Sun, Hongfei Gu, Wenjing Xu, Hao Tang, Shuhu Liu, Yu Wang, Wenxing Chen, Jia Li\* and Huazhang Zhai\*

