

Journal of Materials Chemistry A

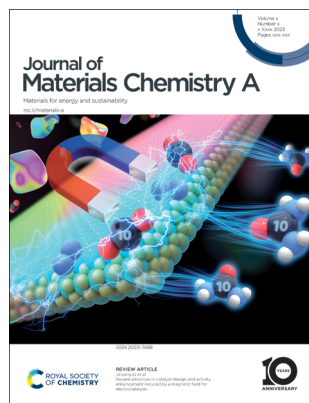
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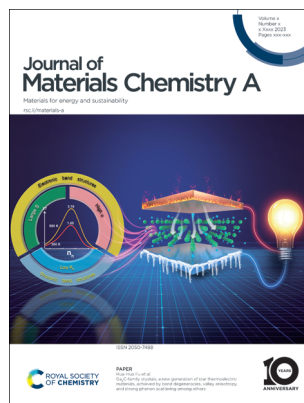
IN THIS ISSUE

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Cover

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Inside cover

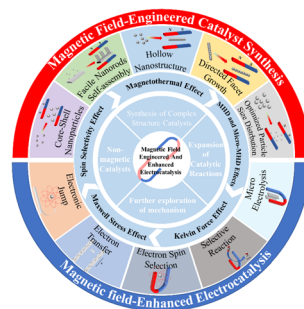
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REVIEWS

7802

Recent advances in catalyst design and activity enhancement induced by a magnetic field for electrocatalysis

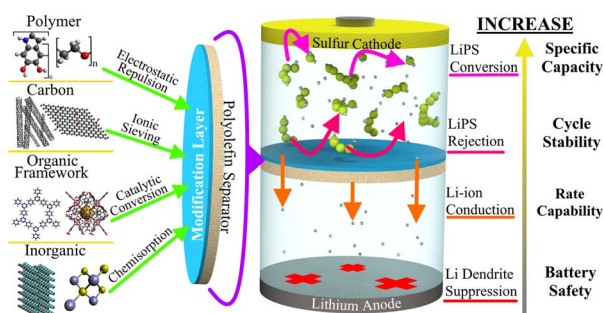
Kun Wang, Qian Yang, Haowen Zhang, Meiling Zhang, Hunan Jiang, Chen Zheng and Jinyang Li*



7833

Recent advances in modified commercial separators for lithium–sulfur batteries

Andrew Kim, Seok Hyeon Oh, Arindam Adhikari, Bhaskar R. Sathe, Sandeep Kumar and Rajkumar Patel*



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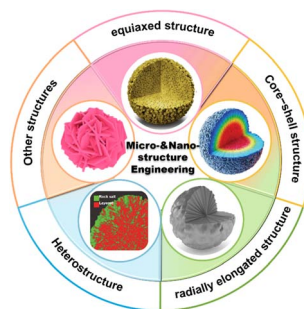


REVIEWS

7867

Micro- and nano-structural design strategies towards polycrystalline nickel-rich layered cathode materials

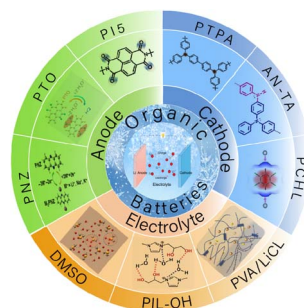
Lili Lin, Lihan Zhang,* Shuwei Wang,* Feiyu Kang* and Baohua Li*



7898

Research progress and perspectives on ultra-low temperature organic batteries

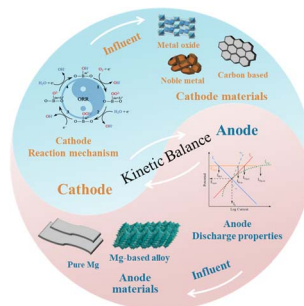
Yinhua Hong, Zhuang Ma, Kexin Li, Junyan Li, Shiyue Tang, Zheng Xu, Dandan Yu, Da Chen,* Laishun Qin, Jian Xie and Qinggang He*



7924

Approaches to construct high-performance Mg–air batteries: from mechanism to materials design

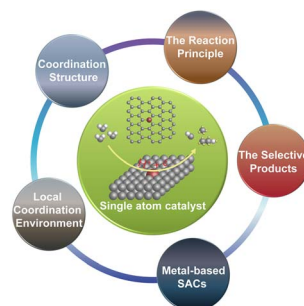
Jiahe Zhang, Hanfang Zhang, Yingge Zhang, Xuemei Wang, Hongfen Li, Feng Feng, Ke Wang,* Gaixia Zhang,* Shuhui Sun* and Yihe Zhang*



7949

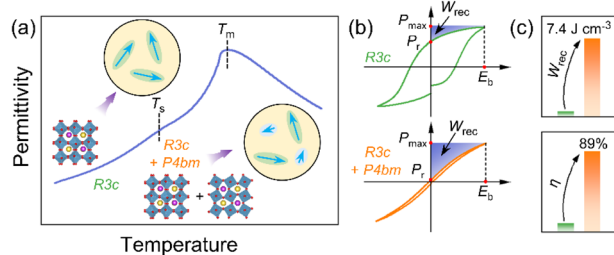
Recent advances in the regulation of the coordination structures and environment of single-atom catalysts for carbon dioxide reduction reaction

Qi-Ni Zhan, Ting-Yu Shuai, Hui-Min Xu, Zhi-Jie Zhang and Gao-Ren Li*



COMMUNICATIONS

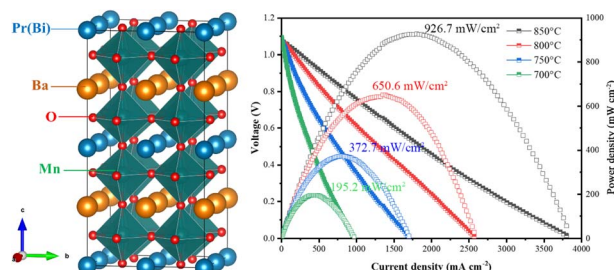
7987



Ultrahigh energy storage density, high efficiency and superior thermal stability in $\text{Bi}_{0.5}\text{Na}_{0.5}\text{TiO}_3$ -based relaxor ferroelectric ceramics *via* constructing multiphase structures

Yi-Ning Huang, Ji Zhang,* Jiajia Wang, Jing Wang* and Yaojin Wang*

7995

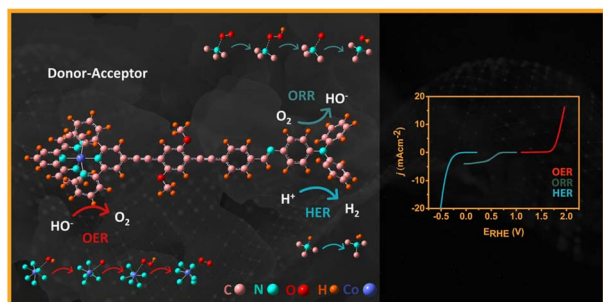


A highly efficient bismuth substitution induced A-site ordered layered perovskite electrode for symmetrical solid oxide fuel cells

Yang Yang, Zhengpeng Chen, Mingfei Li, Muming Rao, Fangjun Jin, Yihan Ling,* Peizhong Feng* and Shaorong Wang

PAPERS

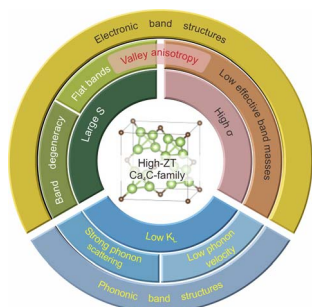
8003



Cobalt(II)-bridged triphenylamine and terpyridine-based donor-acceptor coordination polymer as an efficient trifunctional electrocatalyst

Sugandha Singh, Manas K. Ghorai* and Kamal K. Kar*

8013



Ga_4C -family crystals, a new generation of star thermoelectric materials, achieved by band degeneracies, valley anisotropy, and strong phonon scattering among others

Ao Lou, Hua-Hua Fu* and Ruqian Wu

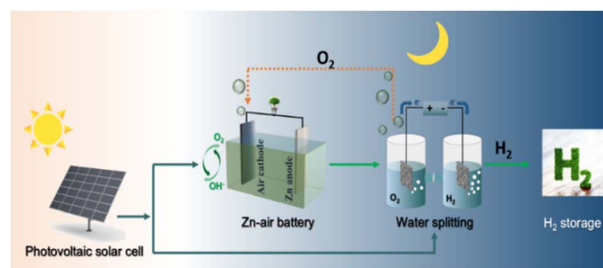


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8024

A trifunctional Co_{0.85}Se/NC collaborated electrocatalyst enables a self-powered energy system for uninterrupted H₂ production

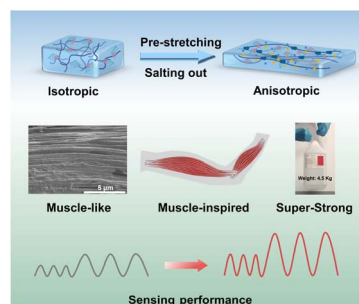
Wen-Wen Tian, Yi-Dai Ying, Jin-Tao Ren and Zhong-Yong Yuan*



8038

Anisotropic and super-strong conductive hydrogels enabled by mechanical stretching combined with the Hofmeister effect

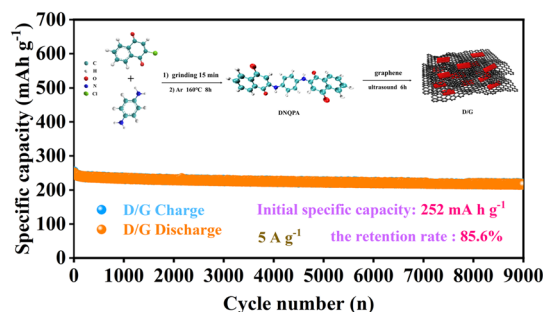
Bingyan Guo, Yukuan Wu, Shaoshuai He, Changyong Wang, Mengmeng Yao, Qingyu Yu, Xiaojun Wu, Chaojie Yu, Min Liu, Lei Liang, Zhongming Zhao, Yuwei Qiu, Fanglian Yao, Hong Zhang* and Junjie Li*



8048

Solvent-free synthesis of a naphthoquinone-based bipolar organic cathode towards practical durable lithium organic batteries

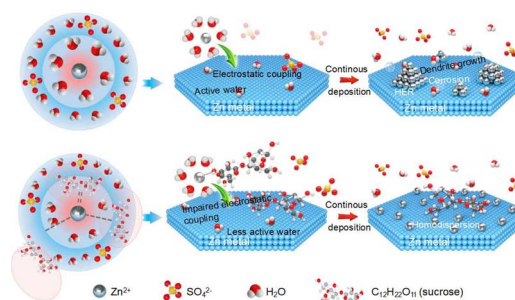
Jiakui Xiong, Xiaorong Yan, Haiping Yu, Chuanguang Wu, Guoqing Zhao, Jianze Zhang, Yujie Dai, Xinyu Wang, Jiefeng Gao, Xiong Pu, Mingjun Hu,* Jingru Liu* and Jun Yang*



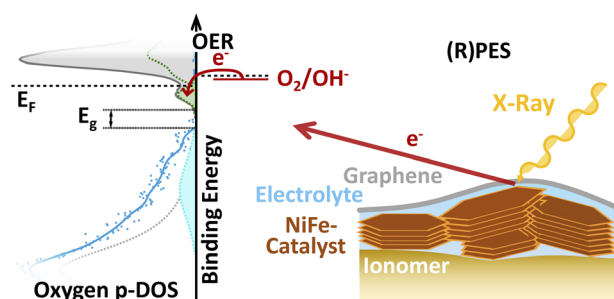
8057

Unraveling the regulation of a polyhydroxy electrolyte additive for a reversible, dendrite-free zinc anode

Cong Wang, Junming Hou, Yaping Gan, Lei Xie, Yi He,* Qiang Hu,* Shude Liu and Seong Chan Jun*



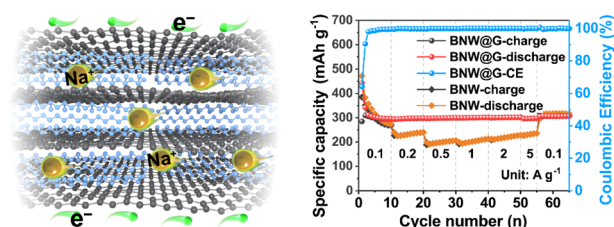
8066



Insights into the electronic structure of Fe–Ni thin-film catalysts during the oxygen evolution reaction using *operando* resonant photoelectron spectroscopy

Garlef Wartner, Dennis Hein, Arno Bergmann, Robert Wendt, Beatriz Roldan Cuenya and Robert Seidel*

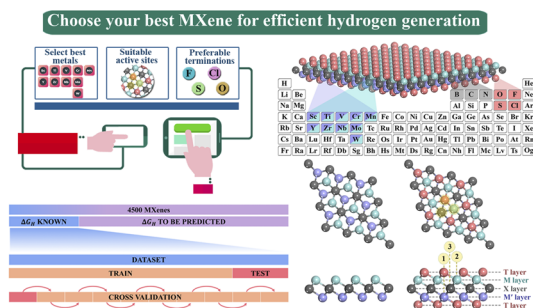
8081



Synergistic effect of 1D bismuth Nanowires/2D graphene composites for high performance flexible anodes in sodium-ion batteries

Xiaolong Cheng, Hai Yang, Changyun Wei, Fangzhi Huang*, Yu Yao, Ruilin Bai, Yu Jiang* and Shikuo Li*

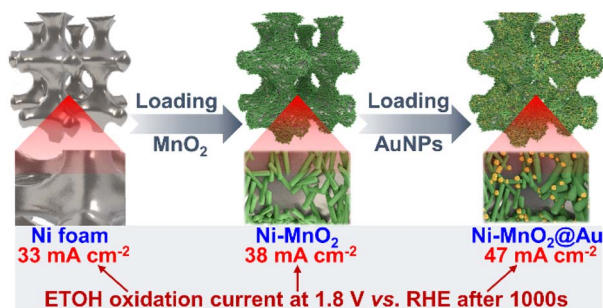
8091



Fusing a machine learning strategy with density functional theory to hasten the discovery of 2D MXene-based catalysts for hydrogen generation

B. Moses Abraham, Priyanka Sinha, Prosun Halder and Jayant K. Singh*

8101



Activating bulk nickel foam for the electrochemical oxidation of ethanol by anchoring MnO₂@Au nanorods

Shuiping Zhong, Huanlin Zhu, Lei Yang, Xiaopeng Chi, Wen Tan and Wei Weng*



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8110

A dual-functional device based on CB/PVDF@BFP for solar-driven water purification and water-induced electricity generation

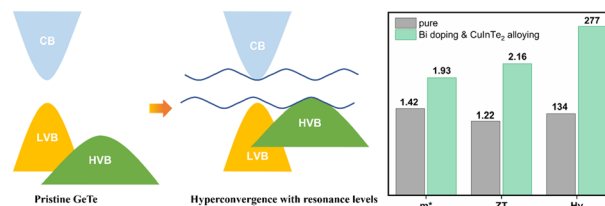
Jiangchao Huang, Veronica Pereira, Chenyue Wang, Haitao Li,* Hiang Kwee Lee* and Jie Han*



8119

High thermoelectric and mechanical performance achieved by a hyperconverged electronic structure and low lattice thermal conductivity in GeTe through CuInTe₂ alloying

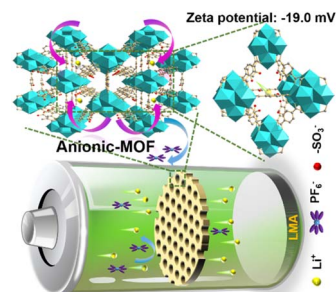
Hyunji Kim, Samuel Kimani Kihoi, U. Sandhya Shenoy, Joseph Ngugi Kahiu, Dong Hyun Shin, D. Krishna Bhat and Ho Seong Lee*



8131

Enabling dendrite-free and high-rate lithium anode with a self-standing anionic-MOF separator

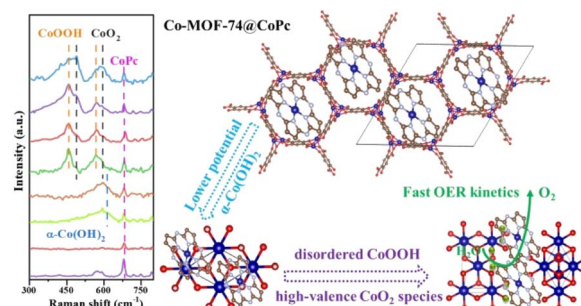
Chengjie Wang, Zhendong Hao, Yating Hu, Yue Wu, Jingbing Liu,* Yuhong Jin, Hao Wang and Qianqian Zhang*



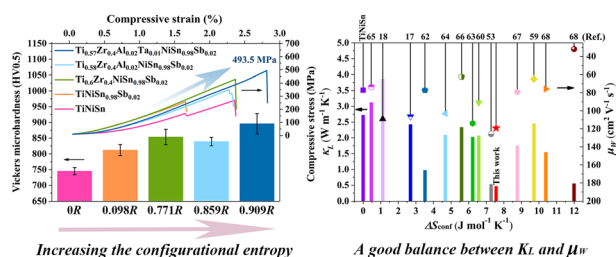
8141

Role of cobalt phthalocyanine on the formation of high-valent cobalt species revealed by *in situ* Raman spectroscopy

Jinzhi Jia, Xiaohua Zhao, Wenhui Hu, Yantao Wang, Junfeng Huang, Jier Huang, Hua Li, Yong Peng, Haiyan Ma* and Cailing Xu*



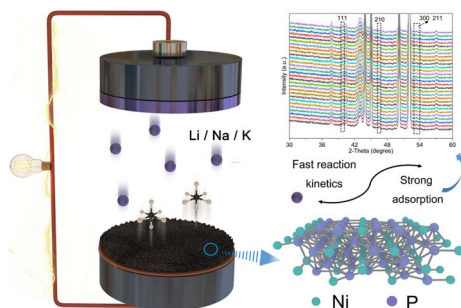
8150



Ultralow lattice thermal conductivity and improved thermoelectric performance in a Hf-free half-Heusler compound modulated by entropy engineering

Xiaoling Zhang, Ming Huang, Hongjun Li, Jiaxin Chen, Pengfei Xu, Biao Xu, Yifeng Wang, Guodong Tang* and Sen Yang*

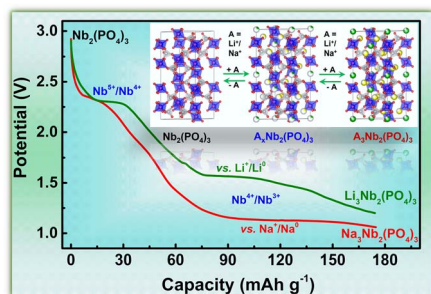
8162



Ni₂P immobilized on N,P-codoped porous carbon sheets for alkali metal ion batteries and storage mechanism

Mingzhe Zhang, Yazhan Liang, Fan Liu, Xuguang An, Jinkui Feng, Baojuan Xi* and Shenglin Xiong*

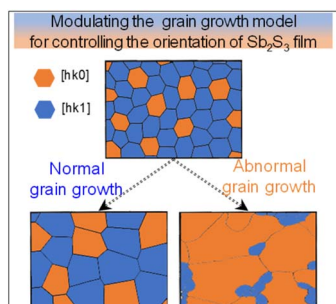
8173



Unveiling a high capacity multi-redox (Nb⁵⁺/Nb⁴⁺/Nb³⁺) NASICON-Nb₂(PO₄)₃ anode for Li- and Na-ion batteries

Biplab Patra, Keshav Kumar, Debolina Deb, Subham Ghosh, Gopalakrishnan Sai Gautam and Premkumar Senguttuvan*

8184



The role of grain growth in controlling the crystal orientation of Sb₂S₃ films for efficient solar cells

Chunyan Wu,* Lijian Zhang, Bo Che, Peng Xiao, Junjie Yang, Haolin Wang, Liang Chu, Wensheng Yan* and Tao Chen*

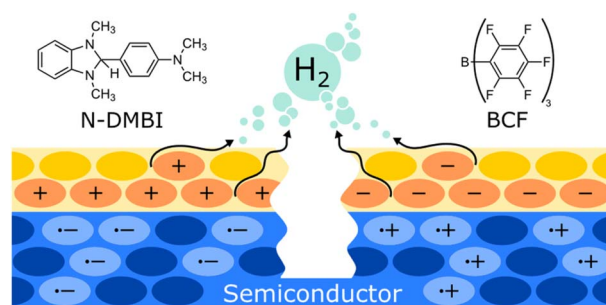


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8192

Direct detection of molecular hydrogen upon p- and n-doping of organic semiconductors with complex oxidants or reductants

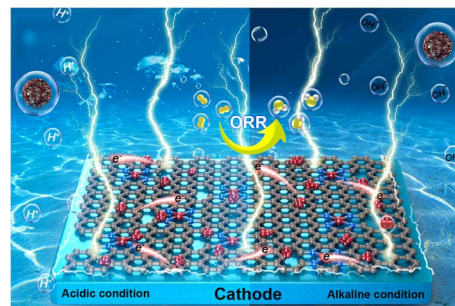
Francesca Pallini, Sara Mattiello, Norberto Manfredi, Sara Mecca, Alexey Fedorov, Mauro Sassi, Khaled Al Kurdi, Yi-Fan Ding, Chen-Kai Pan, Jian Pei, Stephen Barlow, Seth R. Marder, Thuc-Quyen Nguyen and Luca Beverina*



8202

Engineering an iron atom-cluster nanostructure towards efficient and durable electrocatalysis

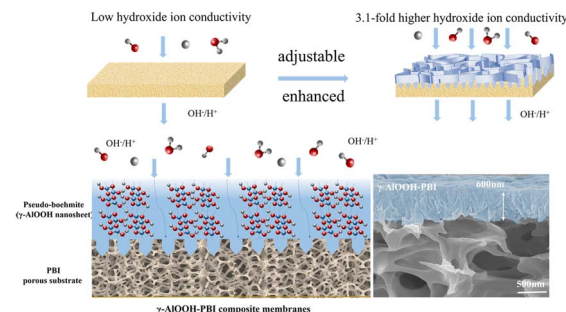
Feng-Yi Zheng, Ruisong Li, Shibo Xi, Fei Ai and Jike Wang*



8213

Advanced adjustable ionic conductivity of polybenzimidazole membranes with arrayed two-dimensional AlOOH nanosheets for water electrolysis

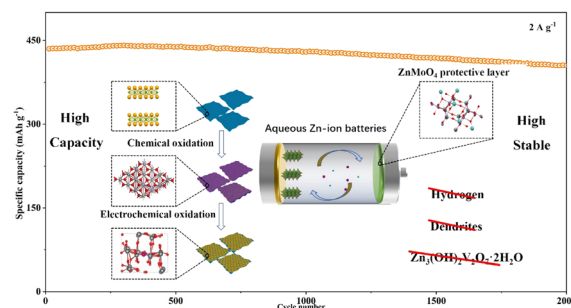
Zhi Qiu, Lihua Wang,* Min He and Yanbin Yun*



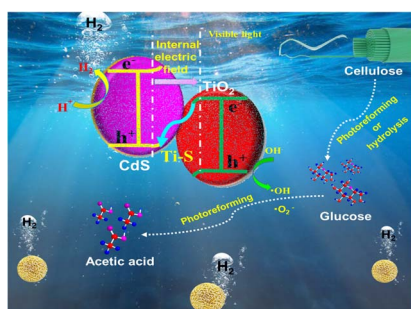
8224

A stepwise oxidation strategy for the synthesis of amorphous $V_2O_5@V_2CT_x$ nanohybrid cathodes toward high-performance aqueous Zn-ion batteries

Weiwei Wang, Ruiting Hu, Chi Zhang, Yu Tao, Ling Ran, Yani Li, Yao Ouyang and Jun Yan*



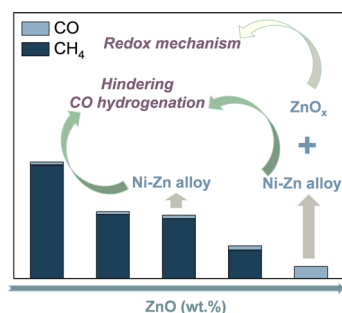
8235



Modulating the tunable interfacial charge transfer of Z-scheme TiO_2/CdS with Ti–S bonds for enhanced glucose photoreforming

Malin Eqi, Cai Shi, Miao Zhang, Fuyan Kang, Jianhua Ma, Zhanhua Huang* and Shouxin Liu

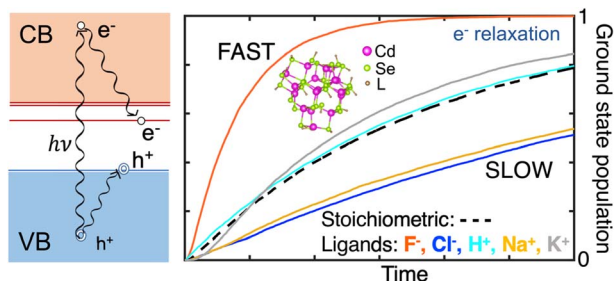
8248



Revealing the promoting effect of Zn on Ni-based CO_2 hydrogenation catalysts

Liang Shen, Wenhao Zhang, Yifei Feng, Jing Xu and Minghui Zhu*

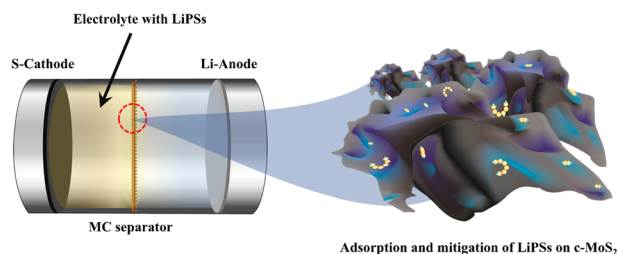
8256



Hot carrier relaxation dynamics in non-stoichiometric CdSe quantum dots: computational insights

Shriya Gumber, Omolola Enioudunmo, Sergei A. Ivanov, Svetlana Kilina, Oleg V. Prezhdo, Dibyajyoti Ghosh* and Sergei Tretiak*

8265



Capillary-induced self-crumpled and sulfur-deficient MoS_2 nanosheets inhibit polysulfide cycling in lithium–sulfur batteries

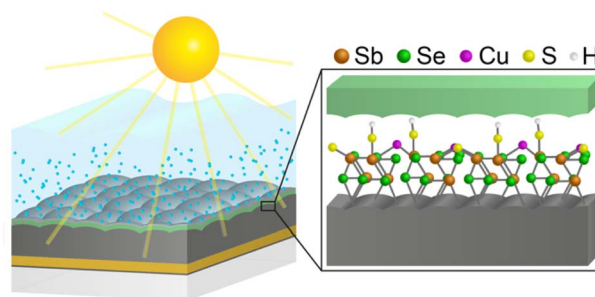
Rohan Paste, Shenghan Li, Jui-Han Fu, Yu-Hsiang Chiang, Arif I. Inamdar, Ming-Hsi Chiang, Vincent Tung*, Hong-Cheu Lin* and Chih Wei Chu*



8277

Solution phase treatments of Sb_2Se_3 heterojunction photocathodes for improved water splitting performance

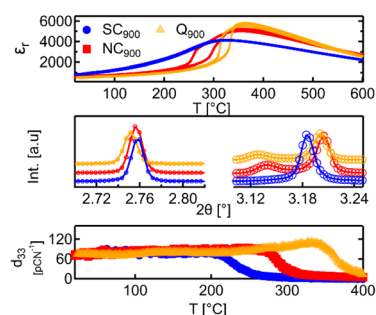
Pardis Adams, Fabrizio Creazzo, Thomas Moehl, Rowena Crockett, Peng Zeng, Zbynek Novotny, Sandra Luber, Wooseok Yang* and S. David Tilley*



8285

Influence of temperature-induced A-site cation redistribution on the functional properties of A-site complex polar perovskite $\text{K}_{1/2}\text{Bi}_{1/2}\text{TiO}_3$

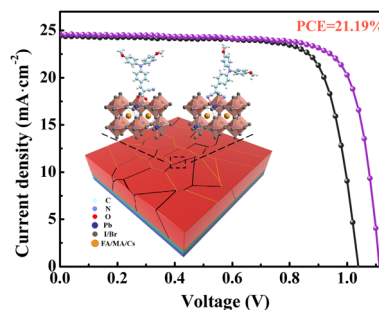
Gina E. Eyoun, Udo Eckstein, Hana Ursic, Monica Pinto-Salazar, Gerd Buntkowsky, Pedro B. Groszewicz, Stefano Checchia, Kouichi Hayashi, Kyle G. Webber and Neamul H. Khansur*



8299

Fine-tuning chemical passivation over photovoltaic perovskites by varying the symmetry of bidentate acceptor in D–A molecules

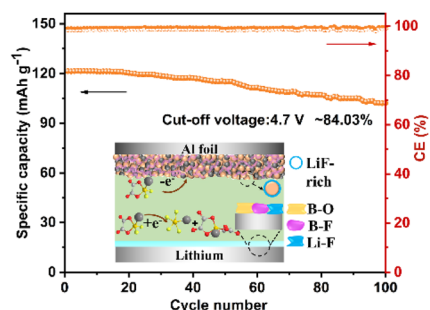
Minghuang Guo, Jianbin Xu, Jinting Li, Jianting Huang, Jingwei Zhu, Yafeng Li,* Peng Gao,* Junming Li and Mingdeng Wei*



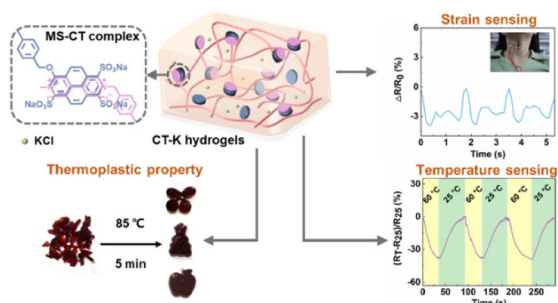
8308

Lithium salt-regulated dual-stabilized elastomeric quasi-solid electrolyte for high-voltage lithium metal batteries

Yali Liu, Youlong Xu,* Jing Wang, Yao Niu and Xiangdong Ding



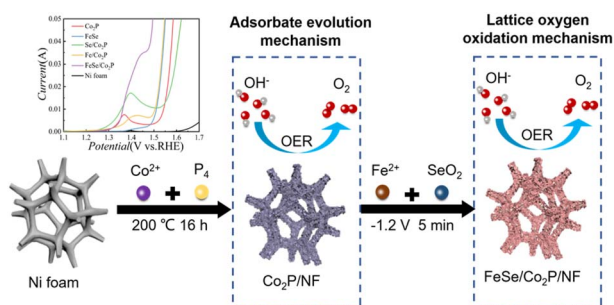
8320



Thermoplastic charge-transfer hydrogels for highly sensitive strain and temperature sensors

Ru Zhang, Cuiwen Liu, Chengmeng Wei, Yao Wang, Feng Li, Zhiqiang Zhang, Jinqing Qu, Ning Qing and Liuyan Tang*

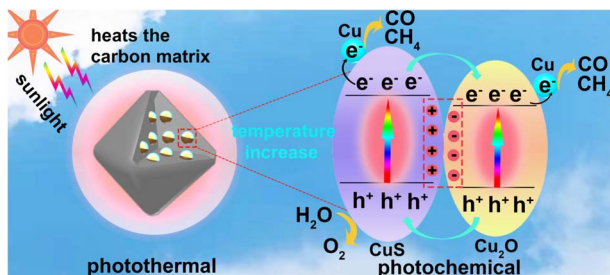
8330



Heterostructure iron selenide/cobalt phosphide films grown on nickel foam for oxygen evolution

Shuling Liu,* Yichuang Xing, Zixiang Zhou, Yifan Yang, Yvpei Li, Xuechun Xiao and Chao Wang*

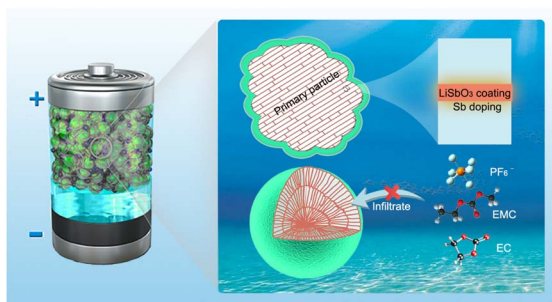
8342



Cu-BTC-confined synthesis of Cu-Cu₂O-CuS nanojunctions embedded in a porous carbon matrix for remarkable photothermal CO₂ conversion

Yajie Chen, Yi Ding, Wei Han, Wei Li, Xinyan Yu and Guohui Tian*

8352



Grain-boundary engineering of Ni-rich cathodes prolongs the cycle life of Li-ion batteries

Lele Cai, Qiang Han, Huawei Zhu, Haifeng Yu, Yanjie Hu and Hao Jiang*



An ultra-tough and ultra-sensitive ionogel pressure/temperature sensor enabled by hierarchical design of both materials and devices

Inhibition of side reactions and dendrite growth using a low-cost and non-flammable eutectic electrolyte for high-voltage and super-stable zinc hybrid batteries

(a) Price of Zn and Li salts (US\$ kg⁻¹)

Salt	Zn salts (US\$ kg ⁻¹)	Li salts (US\$ kg ⁻¹)
Ac	85	19
NO ₃	25	136
SO ₄	59	101
Cl	28	217
PF ₆	1956	338
OTF	427	563
TFSI	3683	366
Fs	14	14

(b) Potential (V) vs. Li/Li⁺

Electrolyte	Potential (V) vs. Li/Li ⁺	Category
Diluted electrolyte	2.1 V	Flammable
Free H ₂ O	1.23 V	Flammable
Li ₂ O/PEO ₁₀	2.2 V	Flammable
Li ₂ O/PEO ₁₀	3.5 V	Non-flammable
Li ₂ O/PEO ₁₀	3.7 V	Non-flammable
Li ₂ O/PEO ₁₀	3.8 V	Non-flammable
Li ₂ O/PEO ₁₀	3.1 V	Non-flammable
Li ₂ O/PEO ₁₀	3.0 V	Non-flammable
Li ₂ O/PEO ₁₀	3.8 V	Non-flammable

An urchin-like Co-doped NiS₂/C nanorod array with enriched sulfur vacancies for asymmetric supercapacitors

The diagram illustrates the synthesis of Co-NiS₂/C through two parallel pathways starting from a common Co-NiBTC framework. The initial step is the self-assembly of Co²⁺ and Ni²⁺ ions with H₂BTC to form the Co-NiBTC framework. From this intermediate, two pathways are shown: 1) Direct Sulfurization at 500°C for 2h to produce Co-NiS₂/C, and 2) Oxidation at 500°C for 2h to form Co-NiO, followed by Sulfurization at 500°C for 2h to produce Co-NiS₂. Insets provide a 3D visualization of the porous framework structure and the corresponding morphology of the final products.

Design and synthesis of a covalent organic framework bridging CdS nanoparticles and a homogeneous cobalt–bipyridine cocatalyst for a highly efficient photocatalytic CO₂ reduction