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Cover

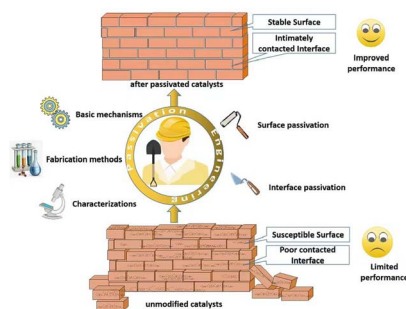
See Kangming Li, Jason Hattrick-Simpers *et al.*, pp. 12412–12422. Image reproduced by permission of Kangming Li from *J. Mater. Chem. A*, 2024, **12**, 12412.

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A review on passivation engineering for improving photocatalytic hydrogen evolution performance

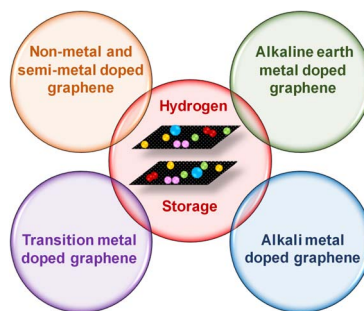
Dandan Ma, Jiantao Chen, Jun Li, Xin Ji and Jian-Wen Shi*



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Hetero-atom doped graphene for marvellous hydrogen storage: unveiling recent advances and future pathways

Shankar Ghotia, Tripti Rimza, Shiv Singh, Neeraj Dwivedi, Avانش Kumar Srivastava and Pradip Kumar*



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Fundamental questions
Elemental answers

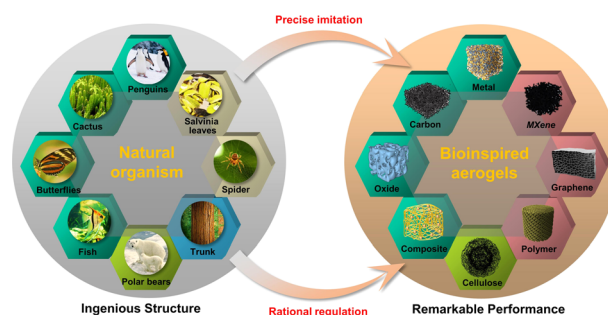


REVIEWS

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Bioinspired aerogels: ingenious structure, remarkable performance, and versatile applications

Hao Sun, Bin Yang,* Dexian Ji, Cong Ma, Ruixue Pang, Baolong Yuan, Jiawei Liu, Hui Zhang and Meiyun Zhang*

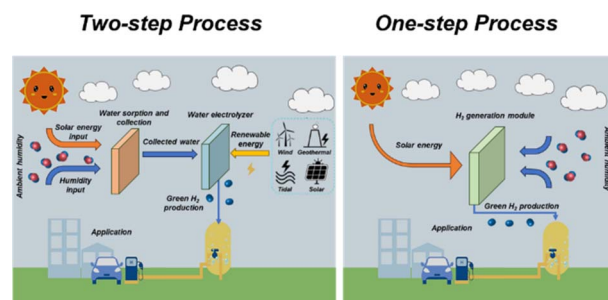


PERSPECTIVE

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Hydrogen generation from atmospheric water

Jining Guo, Joshua D. Butson, Yuecheng Zhang, Guoping Hu,* Xiaolei Fan* and Gang Kevin Li*

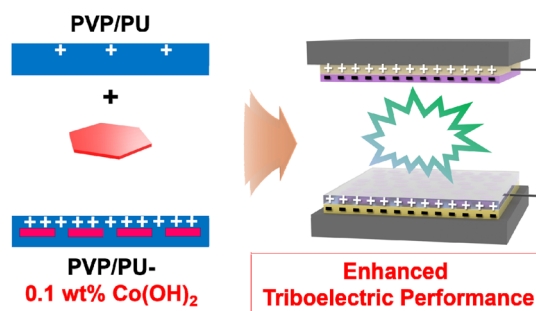


COMMUNICATIONS

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A very small amount (0.1 wt%) of Co(OH)₂ nanoplates enhances triboelectric performance of polymers

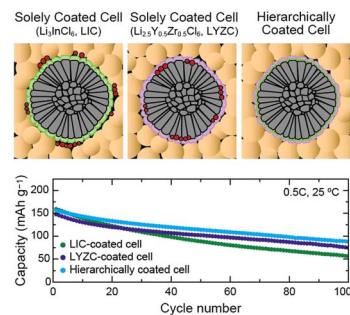
Jina Park, Inah Hyun, Yoon Kee Kim, Hanbyeol Jung, Dong-Min Lee, Sang-Woo Kim* and Seung Uk Son*



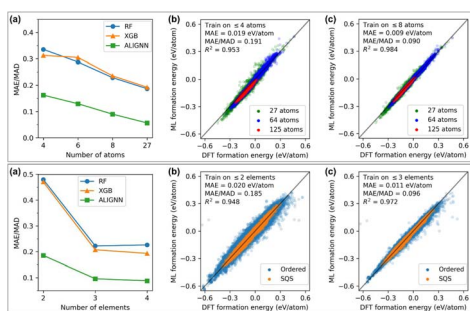
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Hierarchically coated halide layers: enhancing the performance at composite cathode interfaces in solid-state Li-metal batteries

Jee Yun Jung, Hyeseong Jeong, Young Jung Kim, Sung Man Cho, Yongjun Jang and Hyoungchul Kim*



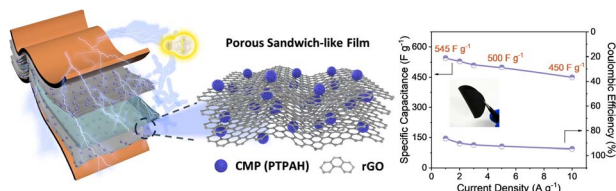
12412



Efficient first principles based modeling *via* machine learning: from simple representations to high entropy materials

Kangming Li,^{*} Kamal Choudhary, Brian DeCost, Michael Greenwood and Jason Hattrick-Simpers^{*}

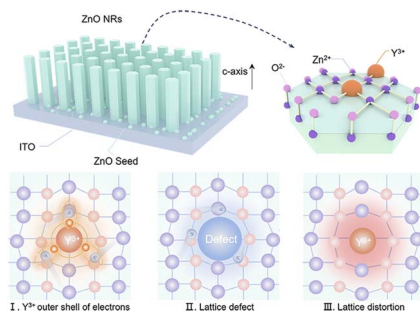
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A conjugated microporous polymer–graphene composite porous sandwich-like film for highly efficient flexible supercapacitors

Likuan Teng, Ju Duan, He Liu, Xinzeyu Zhang, Jiaqiang Li, Yitao Li, Jianhao Hong, Wei Lyu^{*} and Yaozu Liao^{*}

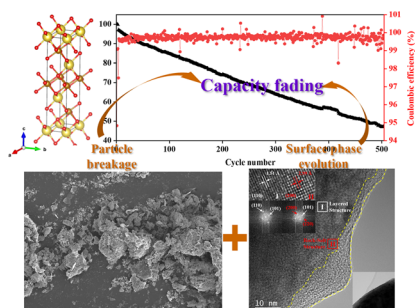
12435



Insight into piezoelectricity modulation mechanism of ZnO doped with Y ions

Zihan Wang, Yue Sun, Shenglong Wang, Da Xiong, Guo Tian, Longchao Huang, Boling Lan, Long Jin, Weiqing Yang and Weili Deng^{*}

12443



Insights into the capacity fading and failure mechanism of an $O3\text{-NaNi}_{1/3}\text{Fe}_{1/3}\text{Mn}_{1/3}\text{O}_2$ layered oxide cathode material for sodium-ion batteries

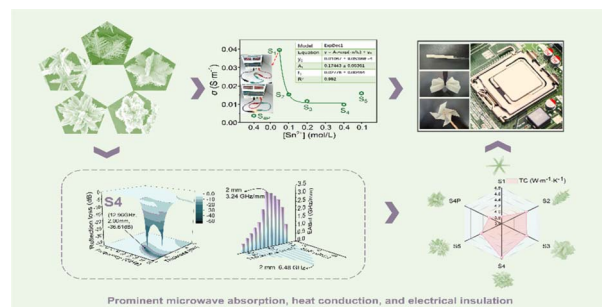
Xiaohan Zhao, Lijuan Hou, Qi Liu,^{*} Yanshuo Zhao, Daobin Mu, Zhikun Zhao,^{*} Li Li, Renjie Chen and Feng Wu



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Morphology- and defect-coordinated prominent microwave absorption, thermal exhaustion, and electrical insulation in SnO₂@SnP₂O₇@Sn₂P₂O₇ hierarchical architectures

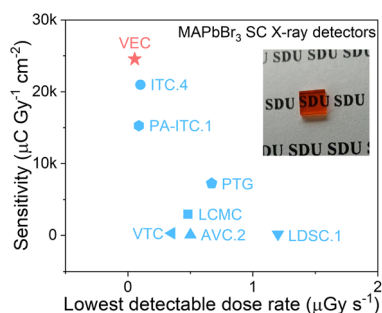
Xinyu Liu, Siyu Xie, Shiyang Cai, Kang Fu, Xiangyang Liu, Lingling Lin, Zhenjie Yu, Guoxiu Tong* and Wenhua Wu



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Ultralow detection limit and high sensitivity X-ray detector of high-quality MAPbBr₃ perovskite single crystals

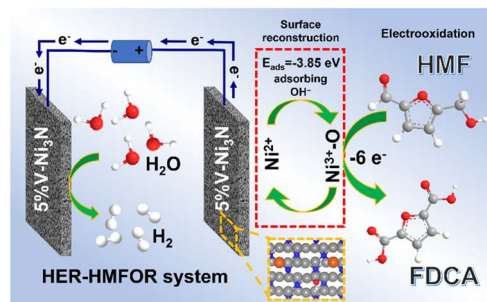
Dong Liu, Xue Sun, Li Jiang, Xianyuan Jiang, Hao Chen, Fucui Cui, Guodong Zhang,* Yong Wang, Ying-Bo Lu, Zhongchen Wu,* Zhijun Ning and Xutang Tao



12475

Enhanced surface reconstruction of V-doped Ni₃N driven by strong OH adsorption to boost 5-hydroxymethylfurfural electrooxidation for energy-saving H₂ production

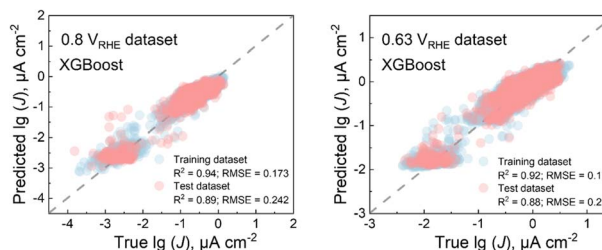
Qi Zhou, Juan Wang, Ga Jin, Huiling Liu* and Cheng Wang



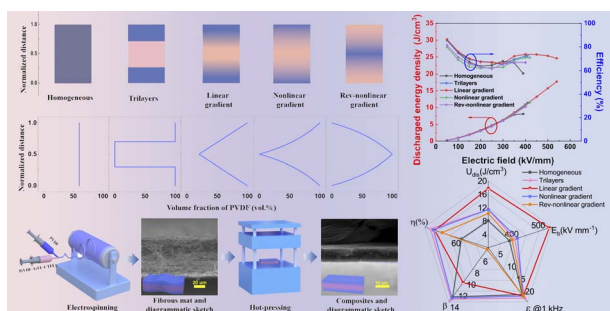
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Machine learning enabled exploration of multicomponent metal oxides for catalyzing oxygen reduction in alkaline media

Xue Jia* and Hao Li*



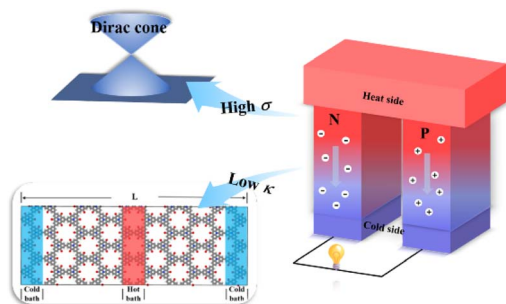
12501



Gradient structured all-organic dielectrics by electrospinning for enhanced energy storage performance

Yuan Liu, Hang Luo,* Haiyan Chen, Minxi Li, Yuting Wan, Bo Peng, Xiaona Li and Dou Zhang*

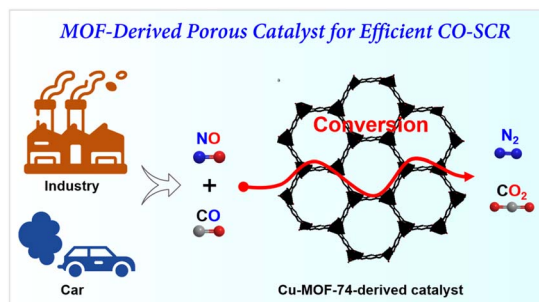
12515



Exploring the thermoelectric properties of two-dimensional organic conjugated polymers with Dirac cone-like electronic structures

Jie Zhu, Yajing Sun,* Zhen Zhang* and Wenping Hu

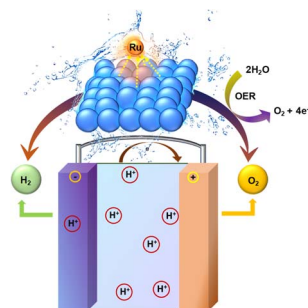
12524



Modulation of active metal species in MOF-derived catalysts for efficient NO reduction by CO

Ning-Rui Zhou, Zhen Yang, Ying Tang, Ming-Qi Zhang, Yun-Peng Zha, Min-Min Liu,* Feng Yu* and Jiang Liu*

12533



Atomically dispersed Ru sites on MOF-derived NC-ZnO for efficient oxygen evolution reaction in acid media

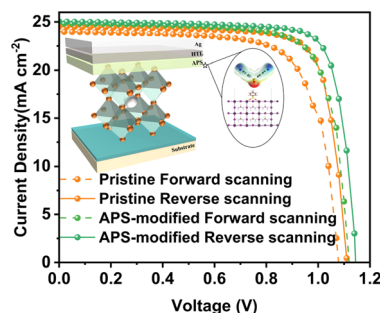
Sagar Varangane, Ragunath Madhu, Saad Mehmood, Bhavya Jaksani, Vidha Bhasin, B. Moses Abraham, Ammavasi Nagaraj, Chandra Shobha Vennapoosa, B. V. Subba Reddy, Subrata Kundu* and Ujjwal Pal*



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Surface passivation with an electron-donating sulfonate group for high-performance and stable perovskite solar cells

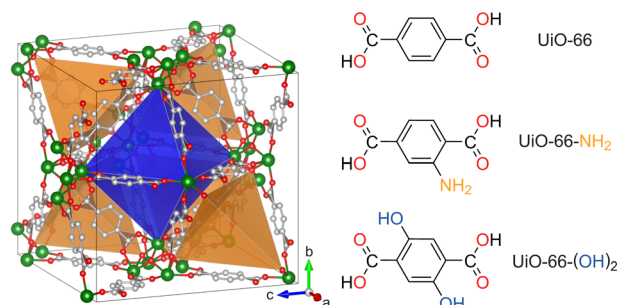
Qingquan He, Zenan Zhang, An Chen, Tao Zhang, Xiuyuan Chen, Xiaolong Bian, Gaopeng Xu, Ting Chen, Shicheng Pan, Jiewen Yu, Guochao Lu, Jing Li and Jun Pan*



12552

Tuning the ion conductivity of Zr-based metal-organic framework ionogels by linker functionalization

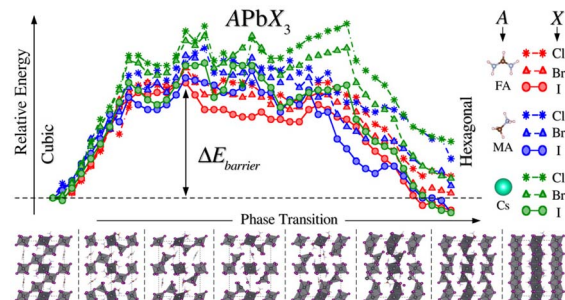
Antonija Ferbezar, Roman Zettl, Katharina Hogrefe, Harald Fitzek, Bernhard Gadermaier, H. Martin R. Wilkening and Ilie Hanzu*



12564

Cubic-to-hexagonal structural phase transition in metal halide compounds: a DFT study

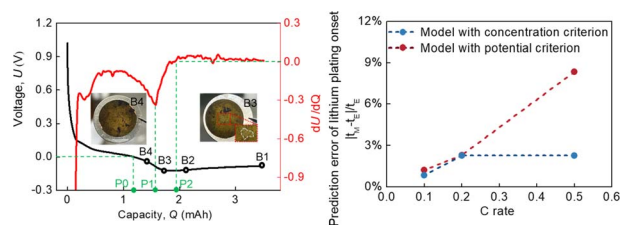
Iván Ornelas-Cruz, Ramiro M. dos Santos, José E. González, Matheus P. Lima and Juarez L. F. Da Silva*



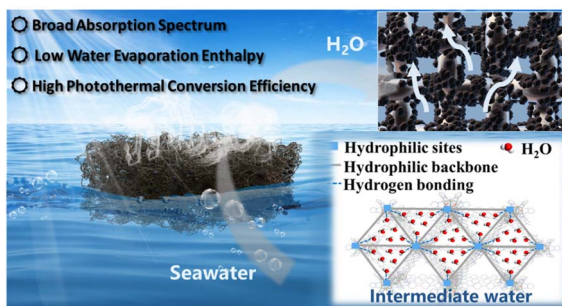
12581

Investigation of the lithium plating triggering criterion in graphite electrodes

Jiani Li, Lubing Wang and Jun Xu*



12592

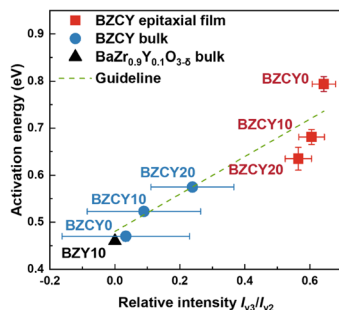
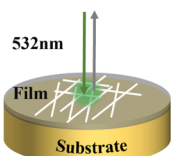


A cationic radical metal–organic framework enabling low water evaporation enthalpy and high photothermal conversion efficiency for solar-driven water purification

Zi-Yu Wang, Rui Wang, Hannah M. Johnson, Lei Cai, An-An Zhang, Qiang Zhang* and Tian-Fu Liu*

12599

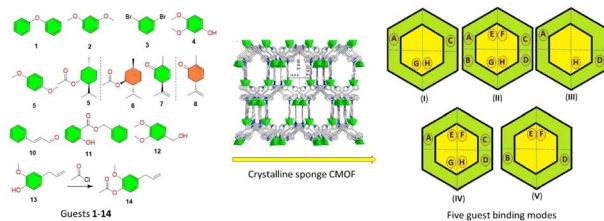
Surface enhanced Raman spectroscopy



Symmetry-induced modulation of proton conductivity in Y-doped Ba(Zr,Ce)O₃: insights from Raman spectroscopy

Yiming Yang, Jiachen Lu, Xinyu Zhang, Yanuo Shi, Peng Du, Xiao Ling, Nan Yang* and Qianli Chen*

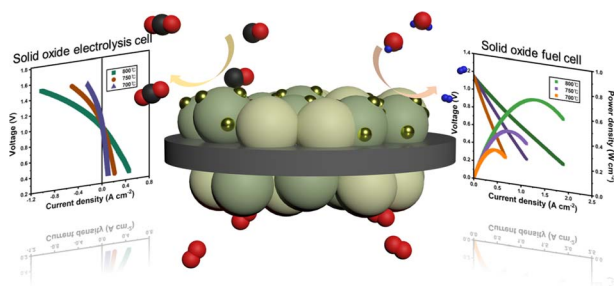
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A new versatile crystalline sponge for organic structural analysis without the need for activation

Jin-Chang Liu, Wei-Ping Huang, Yu-Xin Tian, Wei Xu,* Wen-Cai Ye* and Ren-Wang Jiang*

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Multi-functional perovskite oxide Pr_{0.6}Sr_{0.4}Mn_{0.2}Fe_{0.7}Ni_{0.1}O_{3-δ} as an efficient quasi-symmetric electrode for solid oxide fuel/electrolysis cells

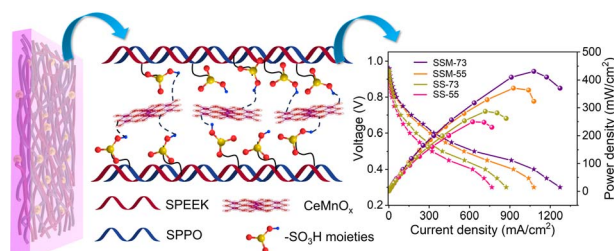
Junil Choi, Daehee Jang, Minho Kim, Jungseub Ha, Hwicheon Ahn and Won Bae Kim*



12628

Ce–Mn bimetallic oxide-doped SPEEK/SPPO blend composite membranes to induce high oxidative tolerance and proton conductivity for hydrogen fuel cells

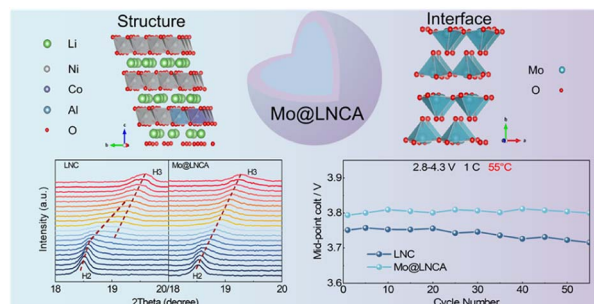
Sk Miraz Hossain, Pratyush Patnaik, Suman Sarkar, Ritika Sharma and Uma Chatterjee*



12645

Structure/interface synergy stabilizes high-nickel cathodes for lithium-ion batteries

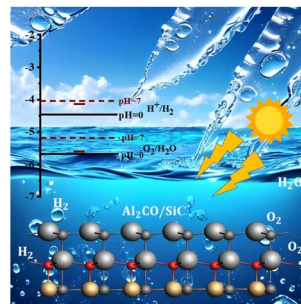
Guihong Mao, Liming Zeng, Jieyu Yang, Tengyu Yao, Fangming Xiao, Renheng Tang, Xin Shu, Ying Wang* and Laifa Shen*



12657

Probing the potential of Al₂CO/SiC heterostructures for visible light-driven photocatalytic water splitting using first-principles strategies

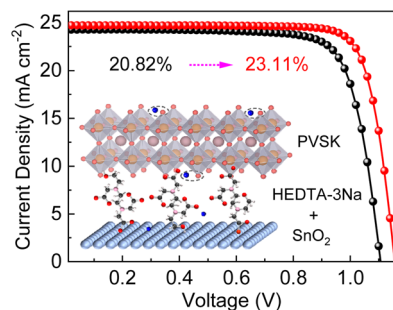
Amina Shehbaz, Abdul Majid,* Hira Batool, Mohammad Alkhedher, Sajjad Haider and Kamran Alam



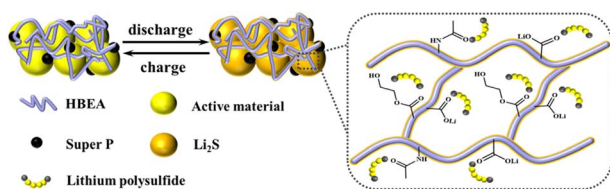
12672

Multifunctional buried interface modification for efficient and stable SnO₂-based perovskite solar cells

Rui Wu, Junhua Meng,* Yiming Shi, Zhengchang Xia, Chunxia Yan, Lisheng Zhang, Wenkang Liu, Jinliang Zhao, Jinxiang Deng and Xingwang Zhang



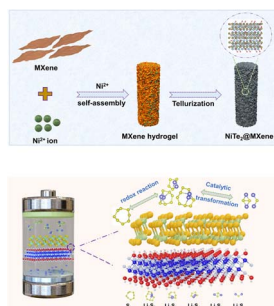
12681



Amphipathic emulsion binder for enhanced performance of lithium–sulfur batteries

Yuan He, Xulong Jing, Tianxing Lai, Dong Jiang, Chao Wan,* Pavel S. Postnikov, Olga Guselnikova, Lixin Xu, Xiaojun He,* Yusuke Yamauchi and Biyu Jin*

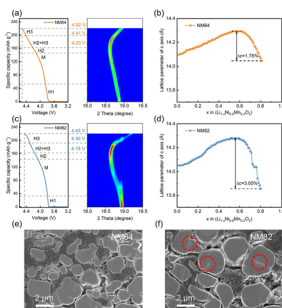
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Constructing metal telluride-grafted MXene as electron “donor–acceptor” heterostructure for accelerating redox kinetics of high-efficiency Li–S batteries

Tianli Li, Yizhou Liu, Jian Wang, Hua Hao, Zhiyong Yu* and Hanxing Liu*

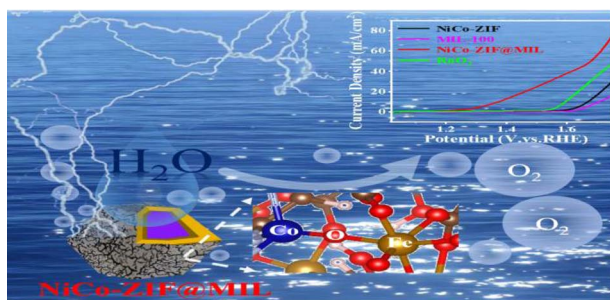
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Insights into the enhanced cycling stability of cobalt-free single-crystal layered oxide cathodes at elevated voltage

Tiancheng Liu, Ke Fan, Changsheng Chen, Mingxia Dong, Yanping Zhu, Gao Chen, Jiangtong Li, Zezhou Lin, Liuqing Li, Ye Zhu, Huangxu Li and Haitao Huang*

12712



Interfacial Co–O–Fe bonding in novel amorphous NiCo–ZIF@MIL-100 as efficient active sites enabling electrocatalytic water oxidation

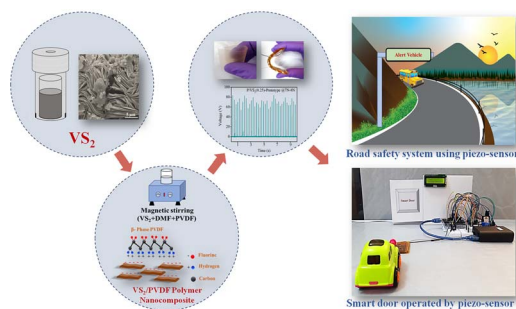
Tianhao Yu, Peng Gao, Hong Du* and Ling Dong*



12721

Vanadium disulfide-incorporated polymer nanocomposites for flexible piezoelectric energy generators and road safety sensors

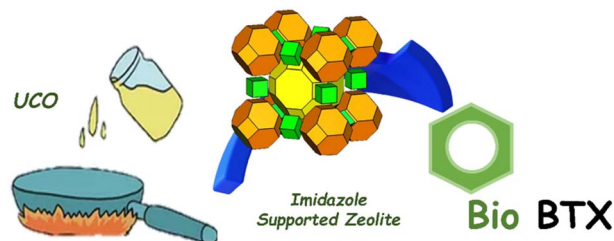
Ankur Verma, Arjun Hari M. and Subash Cherumannil Karumuthil*



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Renewable aromatic hydrocarbons from waste cooking oil over hierarchical imidazole supported zeolites

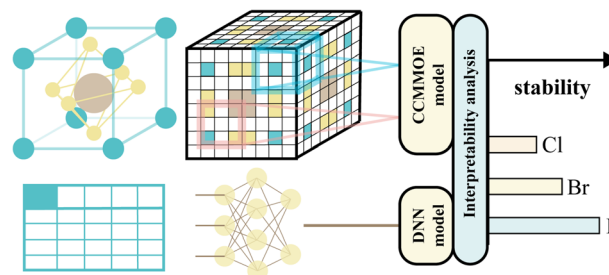
Bhanu Joshi, Omvir Singh,* Ankit Agrawal, Neha Dhiman, Bhanu Prasad Vempatapu, Navin Gopinathan, Anjan Ray and Bipul Sarkar*



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The influence of perovskite crystal structure on its stability

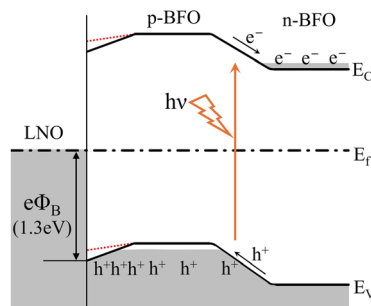
Hualin Bi, Mengke Wang, Lei Liu, Jiahe Yan, Rongfei Zeng, Zhang Xu and Jun Wang*



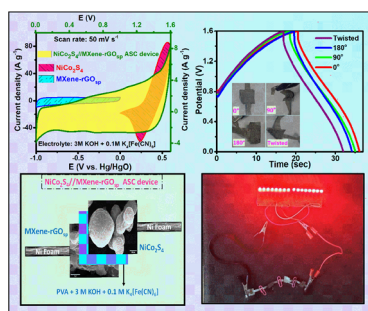
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Growth of p/n-type BiFeO₃ thin films for construction of a bilayer p–n junction for photodegradation of organic pollutants

Hao-Yun Tu and Xiaoding Qi*



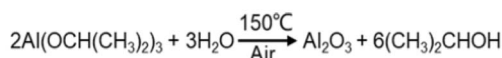
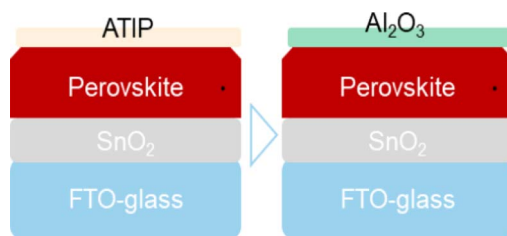
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High-performance flexible solid-state asymmetric supercapacitor with NiCo₂S₄ as a cathode and a MXene-reduced graphene oxide sponge as an anode

Rajeshvari Samatbhai Karmur, Debika Gogoi, Shrishti Sharma, Manash R. Das, Anshuman Dalvi and Narendra Nath Ghosh*

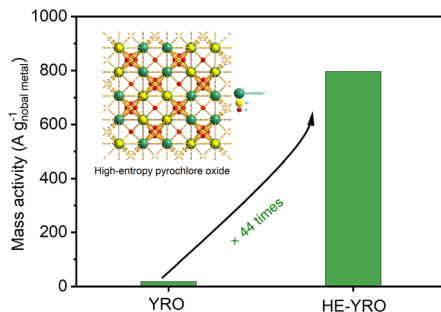
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A facile solution-based aluminum oxide interface layer for enhancing the efficiency and stability of perovskite solar cells

Xinning Jiao, Guoqing Ma, Wei-Min Gu, Ke-Jian Jiang,* Tangyue Xue, Guanghui Yu, Limei Wu, Qing-Wu Zhang, Cai-Yan Gao, Xin-Heng Fan, Lian-Ming Yang* and Yanlin Song*

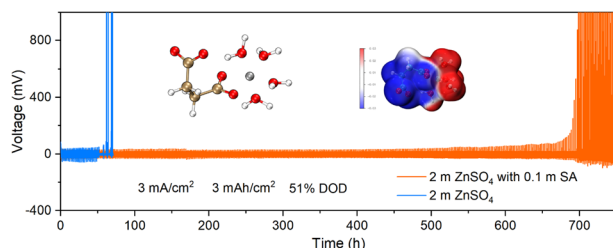
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A new-type high-entropy electrocatalyst with a pyrochlore structure for acid-water oxidation

Jinhui Zhang, Lei Shi,* Xianbing Miao, Liping Yang and Shiming Zhou

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Regulation of the solvation structure and electrode interface using a succinic acid additive for highly stable aqueous Zn batteries

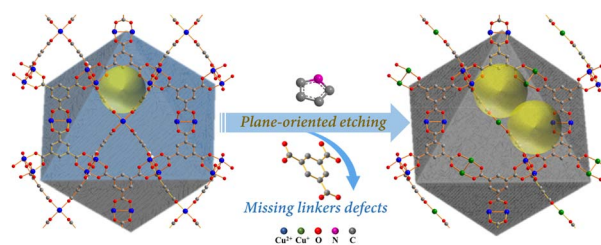
Yuanjun Zhang, Fangfang Yu, Haoxuan Liu, Nana Wang, Xianzhong Yang, Shunjian Xu, Chao Wu,* Hua-Kun Liu and Shi-Xue Dou*



12803

Reduction on specific lattice planes for metal–organic frameworks/poly-pyrrole composites with dilated porosity

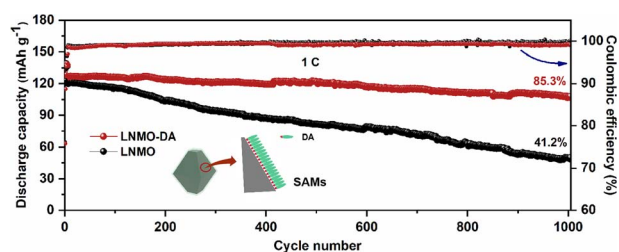
Wenxiu He, Xu Zhai, Zhipeng Qiao, Huan Chen, Weiliang Tian, Yu Fu* and Junyi Chen*



12810

Extraordinary cycling performance of high-voltage spinel $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ materials enabled by interfacial engineering *via* molecular self-assembly

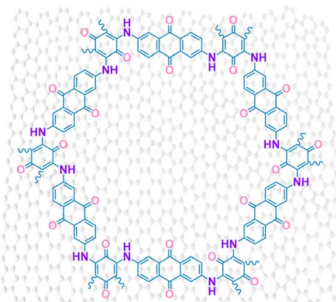
Chao Zhang, Jing-Zhe Wan, Liang Gao, Zhi-Peng Cai, Chao Ma, Kai-Xue Wang* and Jie-Sheng Chen*



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Bipolar conjugated microporous polymer anchoring graphene hybrids for high-performance zinc–organic batteries

Chengmin Hu, Yumin Chen, Ziyang Song, Ling Miao,* Hui Duan,* Yaokang Lv, Li Xie, Mingxian Liu* and Lihua Gan*



12826

High performance water electrolysis using a poly(fluorene phenylpropylammonium) anion-exchange membrane with 2 M aqueous KOH

Matteo Rossini,* Dong Pan, Burak Koyutürk, Si Chen, Amirreza Khataee, Göran Lindbergh, Patric Jannasch and Ann Cornell

