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Materials for energy and sustainability

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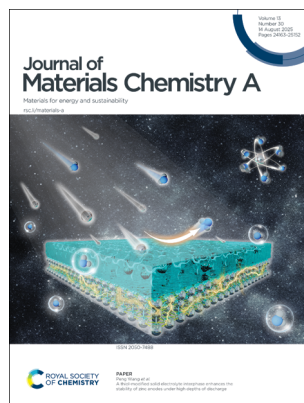
IN THIS ISSUE

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Cover

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Inside cover

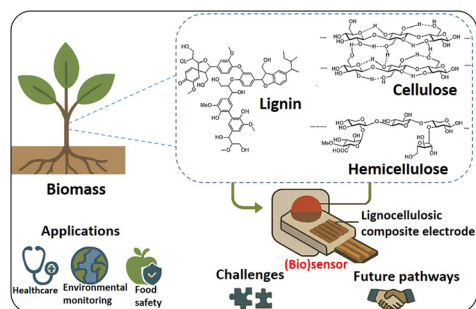
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REVIEWS

24185

Lignocellulosic biomass and its main structural polymers as sustainable materials for (bio)sensing applications

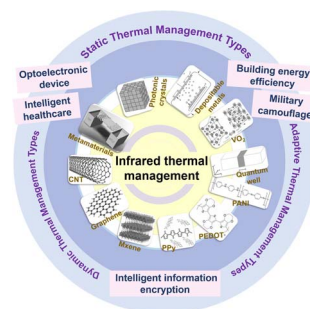
Arnaud Kamdem Tamo,* Ingo Doench, Gullit Deffo, Sherman Lesly Zambou Jiokeng, Giscard Doungmo, Cyrille Ghislain Fotsop, Ranil Clément Tonleu Temgoua, Alexandra Montembault, Anatoli Serghei, Evangéline Njanja, Ignas Kenfack Tonle and Anayancy Osorio-Madrado*



24254

Cutting-edge infrared thermal management materials: principles, modulation modes and applications

Xiaoxiao Liu, Wenshuo Zhao, Ying Feng, Xinyu Zhao, Kunming Zhao, Yanli Xiao, Jingyi Guan,* Guohua Wu, Xuyang Zhang, Nana Liu, Lebin Wang,* Xiangwei Wang and Bo Wang*



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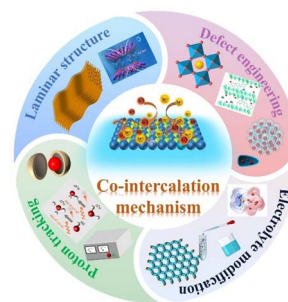
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REVIEWS

24300

Proton co-intercalation enabled high-performance aqueous multivalent metal-ion batteries

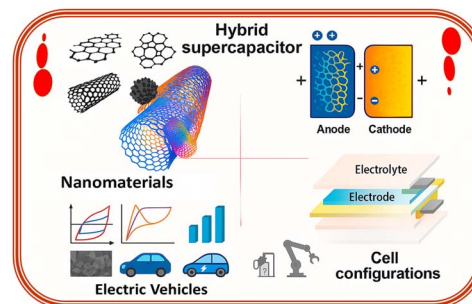
Long Fu, Xiaoqiang Wang,* Ruihao Zhang, Ruiyang Li, Guoqing Wei and Mingya Li



24320

Recent advances in hybrid supercapacitors: a review of high performance materials and scalable fabrication techniques

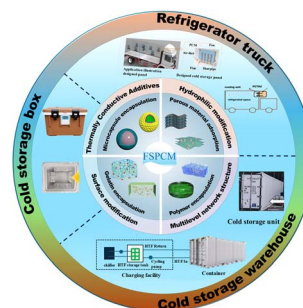
Nargish Parvin, Dhananjaya Merum, Misook Kang, Sang Woo Joo, Jae Hak Jung* and Tapas Kumar Mandal*



24387

A comprehensive review of form-stable phase change materials in cold chain logistics: encapsulation strategies, thermal conductivity enhancement, and applications

Cai Liang, Xin Wang, Yajie Hao, Yuang Zhang, Lanlan Jiang,* Bingtao Tang and Yongchen Song*

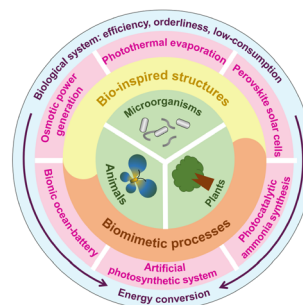


PERSPECTIVE

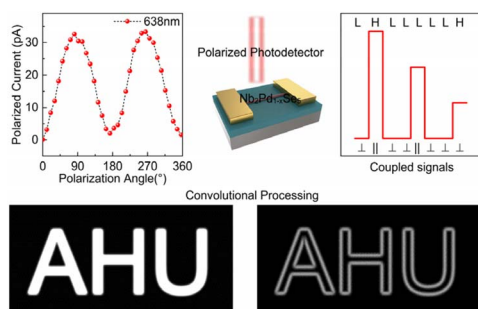
24416

Ordered energy conversion systems inspired from the biological world

Chengzhen Sun,* Xinyi Ma, Qingyun Chen, Dong Li, Wen Cao, Wei Yin, Wenting Wang, Zixuan Gao and Liejin Guo*



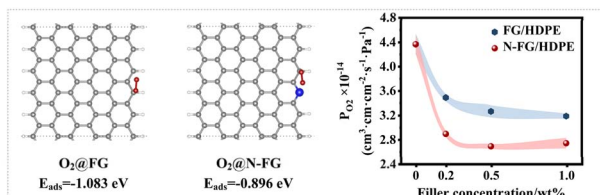
24435



Symmetry-reduction enhanced one-dimensional polarization-sensitive photodetectors for multi-functional applications

Wei Gan, Chentao Zhang, Guanghui Peng, Liqiang Xu, Zihao Tong, Zhuxin Zhang, Chuanqiang Wu,* Yang Zhou* and Zhen Wang*

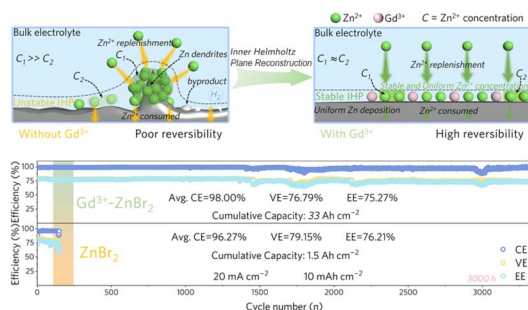
24443



Enhanced multifunctional performance of flash graphene-polymer composites via nitrogen doping

Xiangbo Liu, Channa Wang, Yaping Zhang, Chao Ma, Junkai Deng,* Xiangdong Ding* and Changsheng Xiang*

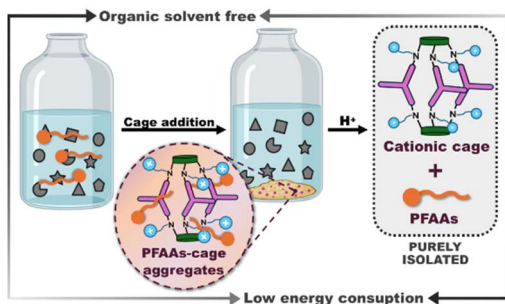
24455



Reconstructing a Gd^{3+} -enriched inner Helmholtz plane with a dynamic electrostatic shielding effect for highly reversible Zn–bromine flow batteries

Guangyu Zhu, Yichan Hu, Zhenglin Li, Wei Xiong,* Haibo Hu* and Guojin Liang*

24466



Sustainable recovery of perfluoroalkyl acids using a reusable molecular cage

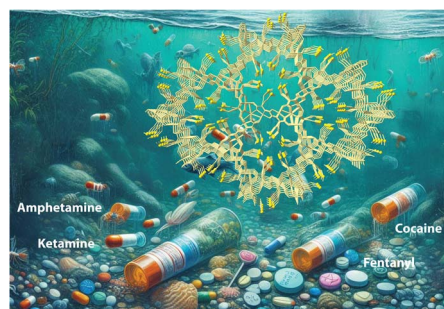
María Pérez-Ferreiro, Quinn M. Gallagher, Michael A. Webb, Alejandro Criado* and Jesús Mosquera*



24473

Efficient removal of drugs of abuse from drinking water using metal–organic frameworks

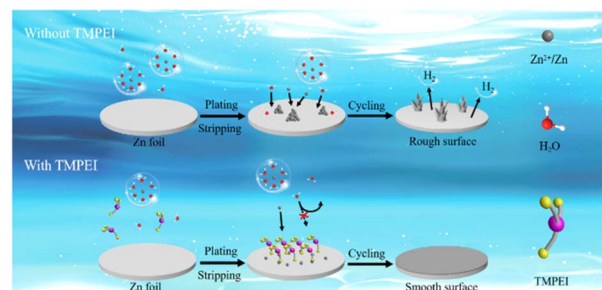
Thais Grancha, Patricia Garcia-Atienza, Sergio Armenta, José Manuel Herrero-Martínez,* Rita Maria Percoco, Donatella Armentano,* Jesús Ferrando-Soria and Emilio Pardo*



24483

A thiol-modified solid electrolyte interphase enhances the stability of zinc anodes under high depths of discharge

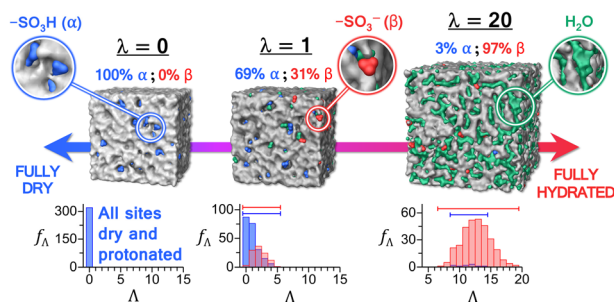
Jie Liu, Peng Wang,* Xiaoyu Yang, Zinan Wang, Hanguo Miao, Zhe Li, Wei Duan, Ying Yue, Yunpeng Liu and Yang Ju



24495

Atomistic characterization of hydration-dependent fuel cell ionomer nanostructure: validation by vibrational spectroscopy

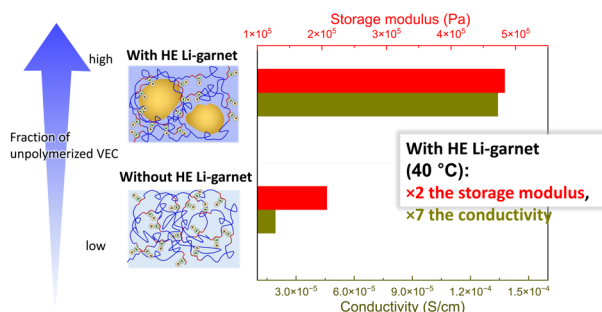
Dan J. Donnelly, III Moon Young Yang, Nicholas Dimakis,* Seung Soon Jang, William A. Goddard, III* and Eugene S. Smotkin*



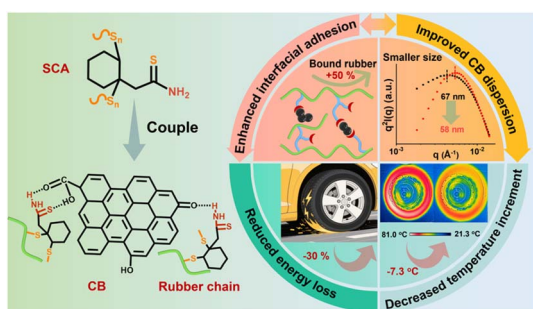
24511

A single-ion-conducting polymer and high-entropy Li-garnet composite electrolyte with simultaneous enhancement in ion transport and mechanical properties

Ji-young Ock,* Michelle Lehmann, Chang Li, Yangyang Wang, Harry M. Meyer III, Alexei P. Sokolov, Zhezhen Fu* and Xi Chelsea Chen*



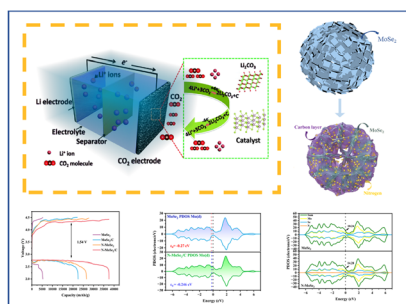
24522



Mediating the carbon black–natural rubber interface with thioamide-functionalized polysulfide for energy-saving composites

Ruoyan Huang, Dong Wang, Zhenghai Tang,^{*} Baochun Guo^{*} and Liqun Zhang^{*}

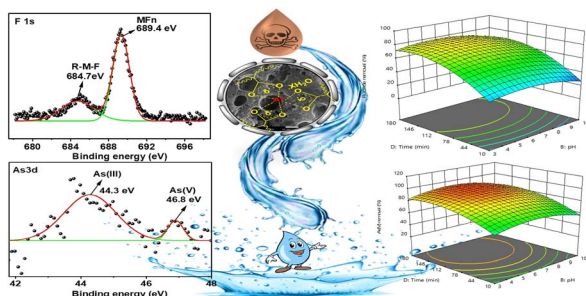
24532



Synergistic nitrogen-doping and carbon-coating in N-MoSe₂/C nanoflowers enable ultra-high discharge capacity for Li-CO₂ batteries

Dandan Zhu, Qingyang Dai, Xinyu Zhang, Jiacheng Yi and Yong Yang^{*}

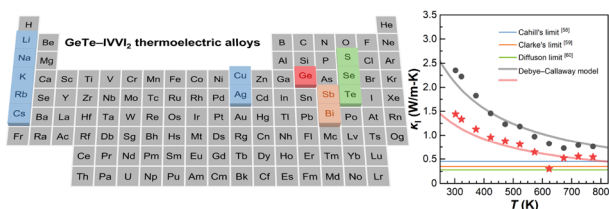
24542



A revolutionizing polymeric framework with integrated aluminium fragment for superior water decontamination empowered by a statistical modeling approach

Shraddha Shukla, Anil R. Gupta, Surjit Bhai Ratnkar, Biswajit Ganguly, Pankaj D. Indurkar^{*} and Saroj Sharma^{*}

24569



Compromise and synergy in thermoelectric GeTe–CuSbS₂ alloys

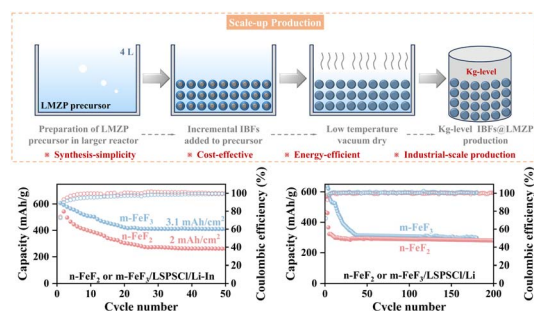
Zi-Wei Feng, Meng Li, Yongqi Chen, Siqi Liu, De-Zhuang Wang, Liang-Cao Yin, Hao Wu, Wei-Di Liu, Xiao-Lei Shi, Yifeng Wang, Zhi-Gang Chen^{*} and Qingfeng Liu^{*}



24578

High performance sulfide all-solid-state batteries enabled by $\text{Li}_{1.26}\text{Mg}_{0.12}\text{Zr}_{1.86}(\text{PO}_4)_3$ coating of iron fluoride cathodes

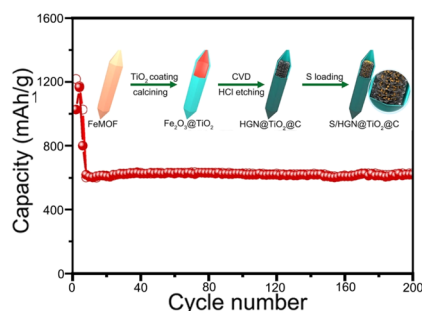
Junyu Chen, Xuedong Zhang, Feixiang Wu, Long Xie, Feng Li, Nina Wu, Zixuan Cao, Jinwen Zhao, Yuxuan Zhang, Xin He, Hongxia Gu, Jianyu Huang* and Qiao Huang*



24590

Honeycomb graphite network confined in biphasic TiO_2 homojunction nanotubes as the sulfur host for advanced lithium sulfur batteries

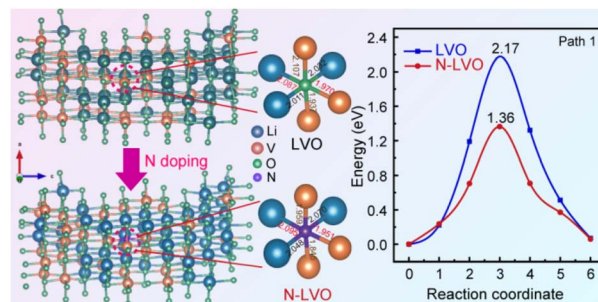
Shidi Huang,* Xuan Zhao, Zheqian Yu, Weiye Tong and Yijie Zhang



24599

Nitrogen-doped rock-salt $\text{Li}_3\text{V}_2\text{O}_5$ nanosheet arrays with improved rate capability as an anode for thin film lithium-ion microbatteries

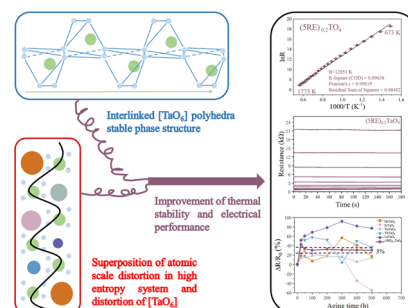
Wei Liu, Chenyang Xu, Fan Kong, Qiuying Xia,* Feng Zan, Jing Xu and Hui Xia*



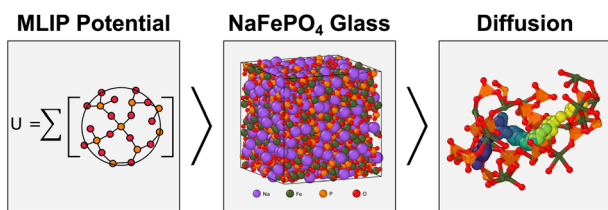
24610

Entropy-mediated stable structural evolution of $(\text{HoErTmYbLu})_{0.2}\text{TaO}_4$ for high-temperature thermosensitive applications

Jia Chen, Yafei Liu, Chaoyan Ma, Hao Sun, Yaxin Wei, Ruifeng Wu, Aimin Chang and Bo Zhang*



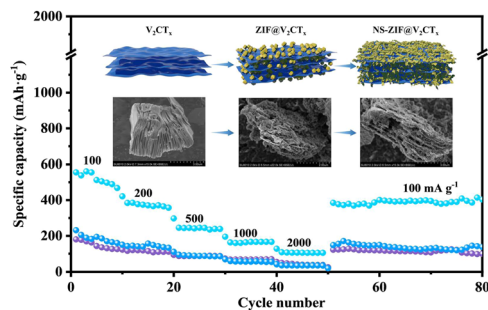
24619



Structural origin of disorder-induced ion conduction in NaFePO₄ cathode materials

Rasmus Christensen, Kristin A. Persson and Morten M. Smedskjaer*

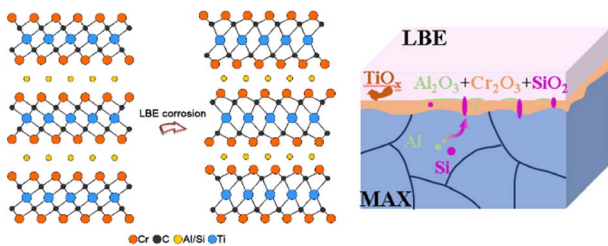
24633



Construction of waffle-like NS-ZIF@V₂CT_x heterostructures for high-performance potassium-ion batteries

Yue Qin, Weifang Zhao,* Ting Wang, Wenlong Liu, Tengfei Zhou, Xiaole Han, Yi Liu, Juncheng Hu and Qingqing Jiang*

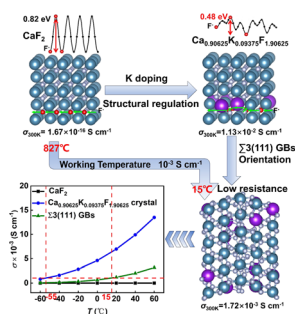
24645



Multi-element collaboration in Cr₂TiAl_{1-x}Si_xC₂ MAX for the oxide barrier formation in a 550 °C LBE environment

Cheng-Feng Du, Qingyan Zeng, Junjie Chai, Hong Yu,* Hongwei Liang, Kun Liang,* Shiyao Lei, Lili Xue and Xian-Zong Wang*

24656



Highly efficient atomic-scale design of CaF₂ for ultrafast fluoride-ion conduction

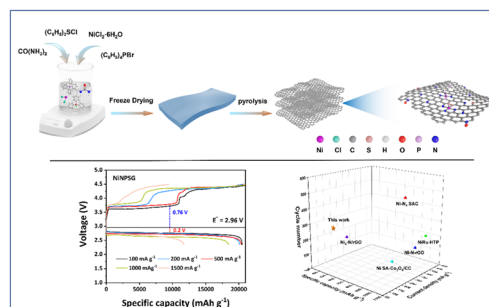
Yurong Liu, Zeyu Zhang, Xinyi Yan, Jinqun Hou, Zhiwei Liu, Wenjie Liu, Xianyou Wang, Yong Pei and Zhenhua Yang*



24665

Tuning nickel single-atom coordination in ternary N-, P-, and S-doped graphene for improved Li–O₂ batteries

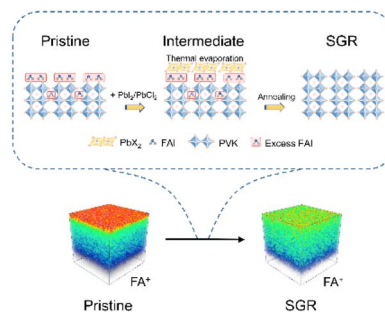
Zeinab Mohamed, Heng Zhou, Yongheng Chu, Jialin Shi, Peter Joseph Chimtali, HanChen Xu, Luyao Wen, Shuangming Chen, Changda Wang* and Li Song*



24675

Stoichiometric gradient rebalancing achieves surface reconstruction and bulk homogenization in high-performance vapor-deposited perovskite solar cells

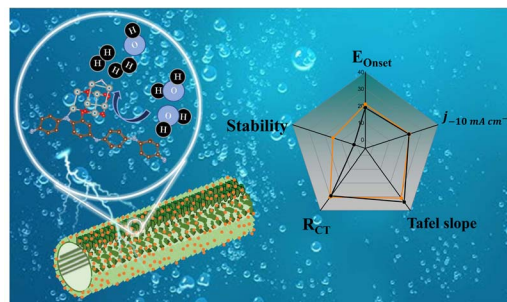
Changyu Duan, Yichen Dou, Shenghan Hu, Xinyu Deng, Meichen Liu, Mengjun Liu, Guijie Liang,* Yong Peng, Yi-Bing Cheng and Zhiliang Ku*



24685

Highly stable PdO nanostructures self-supported on conductive polyaniline nanotubes enable extensive electrochemical hydrogen evolution

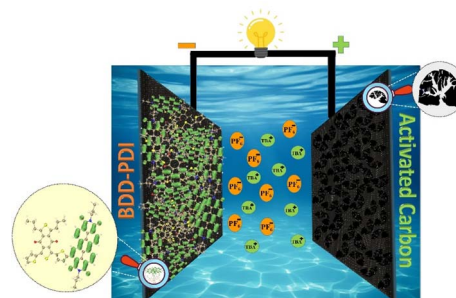
Praduman Kumar Gupta, Rajkumar Jana, Puspendu Das, Ayan Datta and Sudip Malik*



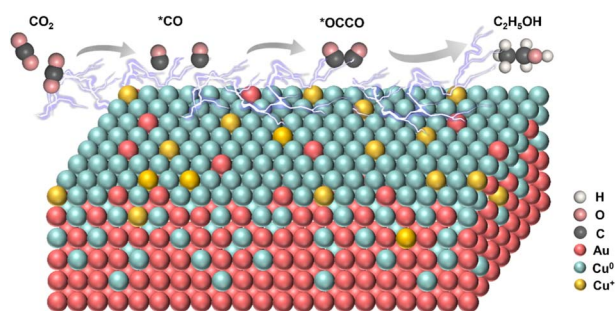
24694

Enhanced anodic charge storage in asymmetric hybrid supercapacitor featuring dione–diimide-based electron deficient conjugated polymers

Dhananjaya Patra, Subir K. Pati, Sunita Muduli, Sabyashachi Mishra, Geon-Hong Kim, Hagyoul Bae, TaeWan Kim* and Sungjune Park*



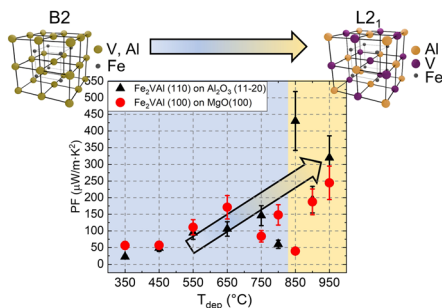
24706



Compositional gradient Au–Cu bimetallic heterostructures for efficient electroreduction of CO₂ to ethanol at low potential

You Xu, Xueqi Hu, Jiannan Zhu, Zhengyun Wang, Xiaoling Liu, Jiawei Dai, Jiang Gong, Hongfang Liu and Guangfang Li*

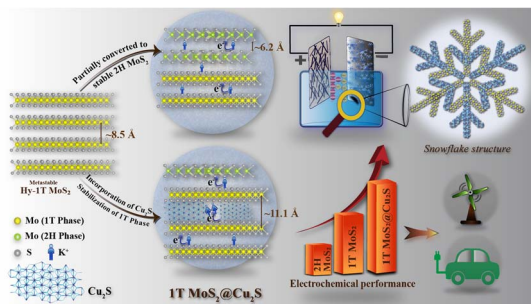
24716



Thermoelectric performance boost by chemical order in epitaxial L₂₁ (100) and (110) oriented undoped Fe₂VAI thin films: an experimental and theoretical study

José María Domínguez-Vázquez, Olga Caballero-Calero, Ketan Lohani, José J. Plata, Antonio M. Marquez, Cristina V. Manzano, Miguel Ángel Tenaguillo, Hiromichi Ohta, Alfonso Cebollada, Andres Conca* and Marisol Martín-González

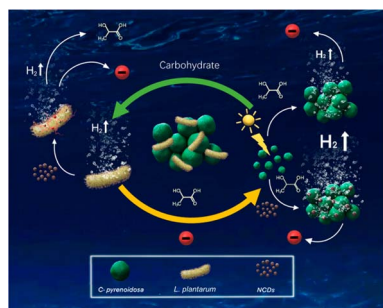
24727



A comparative electrochemical study of 2H/1T phases of MoS₂ and designing 1T-MoS₂@Cu₂S for high-performance supercapacitors

Arkapriya Das, Alakananda Paul, Ankita Mondal, Kaushik Pal and Bhanu Bhusan Khatua*

24741



Boosting biological hydrogen production by integrating functionally symbiotic bacteria/algae with engineered nitrogen-doped carbon dots

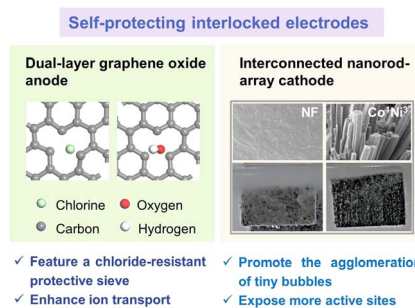
Tianchong Li, Jiaqi Wu, Xiaoxia Chen, Baosheng Du, Jian Li, Shouxin Liu, Zhijun Chen,* Shujun Li* and Chenhui Yang*



24753

Self-protecting interlocked electrodes for highly efficient and stable alkaline seawater electrolyzers

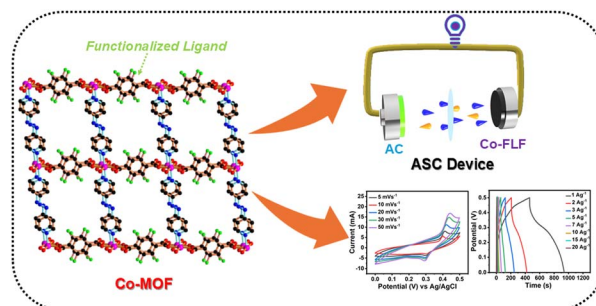
Mingming Yin, Xiongjie Jia, Yukun Sun, Zhipeng Zhan, Tianshou Zhao* and Haoran Jiang*



24764

A mixed-ligand approach to a cobalt-based electroactive framework for superior supercapacitor performance

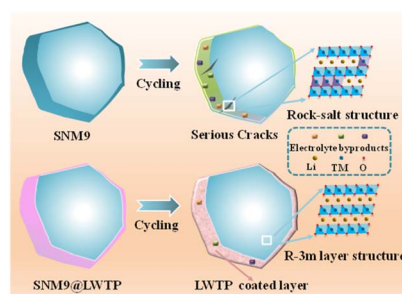
Safwana Shirin KM, Zahir Abbas and Shaikh M. Mobin*



24772

Synergistic bulk–interface stabilization of single-crystal cobalt-free high-nickel cathodes *via* a fast-ionic-conductor coating

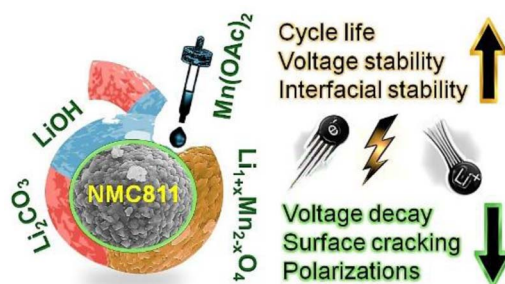
Hailan Feng, Yuxing Xu, Ying Hou, Fuchang Zhuge* and Qiangqiang Tan*



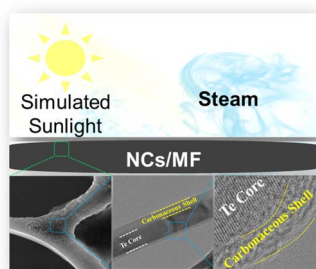
24785

Adverse to beneficial: upcycling residual lithium compounds on $\text{LiNi}_{0.8}\text{Mn}_{0.1}\text{Co}_{0.1}\text{O}_2$ into a stabilizing $\text{Li}_{1+x}\text{Mn}_{2-x}\text{O}_4$ interface

Jyotirekha Dutta, Shuvajit Ghosh, Vilas G. Pol and Surendra K. Martha*



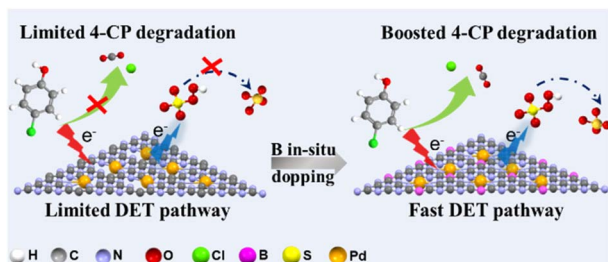
24795



A facile one-pot synthesis of advanced Te@hydrothermal carbon nanocables with broad-spectrum solar absorption and high light-to-heat conversion performance

Hossein Fattahimoghaddam, In Ho Kim, Keerthnasre Dhandapani, Yong-Wook Jeong, Se-Jun Jeon, Peerasak Paoprasert, Yong Jin Jeong* and Tae Kyu An*

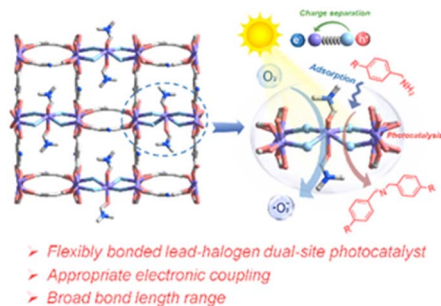
24806



Coordination engineering of Pd single-atom catalysts for non-radical organohalide degradation

Zhenjie Li, Chaohuang Chen, Kaijian Sang, Xunheng Jiang, Xinyue Wu, Jiang Xu, Kun Yang and Daohui Lin*

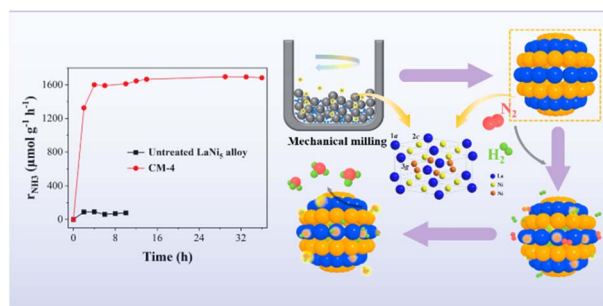
24816



Flexibly bonded lead-halogen dual sites of coordination polymers for photocatalytic C–N coupling

Hou-Rong He, Yin-Jing Shi, Qia-Chun Lin, Xiao-Xiang Zhou, Wei-Ming Liao* and Jun He*

24824



AB₅-type intermetallic compounds as catalysts for ammonia synthesis

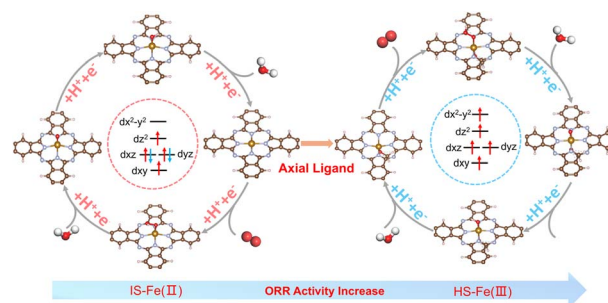
Xi Chen, Yichen Duan, Jing Wang, Xinhai Yuan,* Lili Liu, Yuhui Chen, Lijun Fu and Yuping Wu*



24831

Synergistic spin-ligand effects on the oxygen reduction activity of the FePPc electrocatalyst

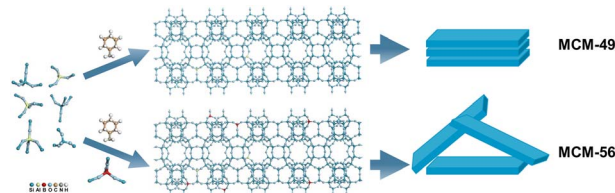
Ya Jin, Mingyuan Yu, Erjun Kan and Cheng Zhan*



24840

Direct synthesis of novel layered MCM-56 zeolite using a boron-assisted cyclohexylamine system

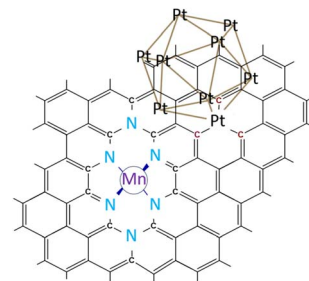
Yu Zhang, Min Yang, Yanan Wang, Weifeng Chu, Wen Liu, Junjie Li, Guangjin Hou, Kuizhi Chen,* Xiangxue Zhu* and Xiujie Li*



24849

Pt_n-Mn^(III)N_x and Pt_n-Mn^(II)N_x are both winning combinations for the durability of these hybrid catalysts in PEM fuel cells: a deep insight into synergism between Pt clusters and MnN_x/C sites

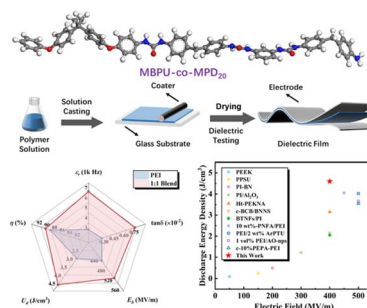
Vassili P. Glibin,* Jean-Pol Dodelet* and Gaixia Zhang*



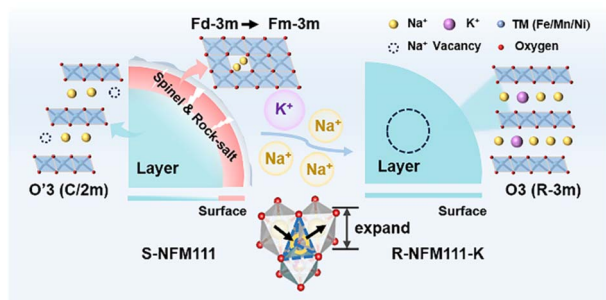
24868

Tailoring dielectric performance via dipole density and hydrogen bonding interaction towards high-temperature capacitive energy storage polymers

Feng Zhou, Chong Tian, Lei Huang, Yunfeng Jiang, Fuqi Zhao, Na Yang, Dandan Yuan and Xu-fu Cai*



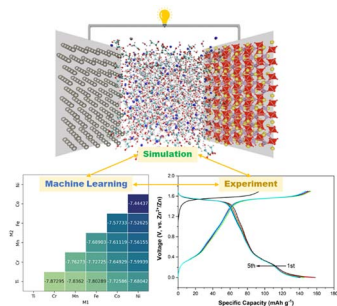
24880



Direct upcycling of spent layered oxide cathodes via a dual-functional eutectic salt for sodium-ion batteries

Shili Gan, Xin Zeng, Dongyu Liu, Tiandu Sheng, Lihua Wang* and Jian Li*

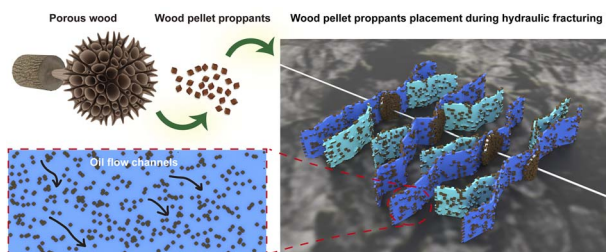
24889



An $\text{Na}_3\text{VMn}_{0.5}\text{Ti}_{0.5}(\text{PO}_4)_3$ NASICON cathode with multielectron reactions for sustainable energy storage

Adi Tiara Zikri, Muhammad Hilmy Alfaruqi, Zulkifli, Uyeong Jo, Yuri Choi, Seunggyeong Lee, Sangbin Lee, Sungjin Kim and Jaekook Kim*

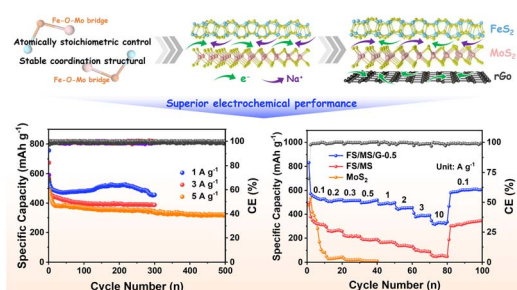
24903



Strength–density synergy of proppants via composition and structural tailoring of wood

Chao Ma, Zulin Wu, Mengyu Sun, Xiangdong Ding,* Jun Sun* and Changsheng Xiang*

24916



Anderson-typed POM-derived $\text{FeS}_2/\text{MoS}_2$ heterostructure hybridized with graphene for sodium-ion batteries anodes

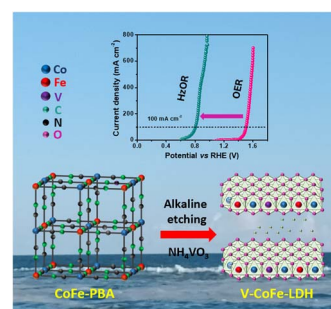
Lingling Liu, Xu Yao, Ziwei Yin, Jinlong Zhuo, Xiansen Tao, Jingwen Sun,* Jiwen Cui* and Jingquan Sha



24925

Hydrazine oxidation-assisted electrocatalytic water splitting with Prussian blue analog-derived V-doped CoFe-layered double hydroxide nanosheets

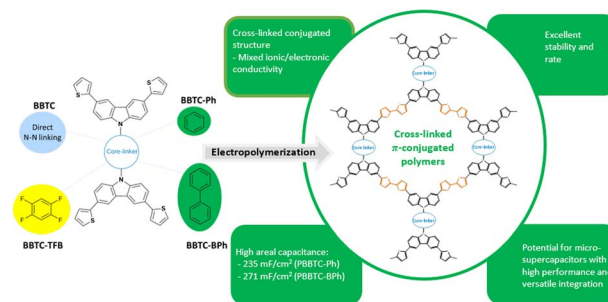
Baghendra Singh, Toufik Ansari and Arindam Indra*



24933

Cross-linked electrodeposited conjugated polymers based on bis-thiophene-carbazole bis-adducts with an aromatic core for high performance supercapacitor electrodes

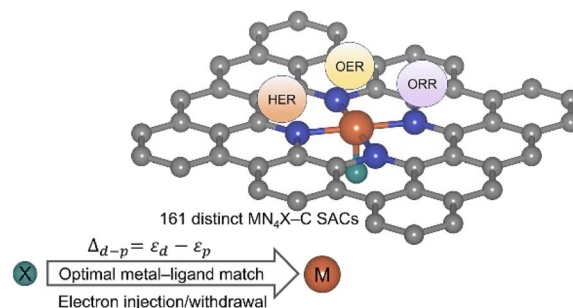
N. M. T. Tran, Vincent Lazeran, Jesus Santos-Pena and Nicolas Berton*



24948

Boosting the catalytic activity of water splitting and oxygen reduction reactions through axial coordination to MN₄-C model catalysts

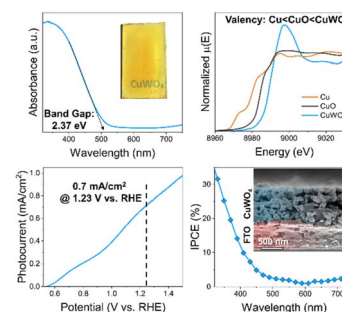
Yalei Sun, Baibiao Huang, Ying Dai* and Wei Wei*



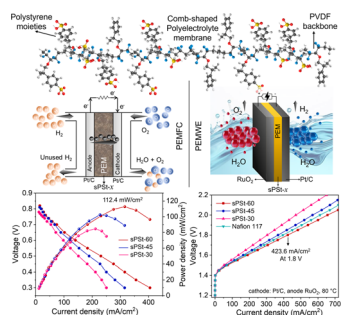
24959

Copper tungstate photoanodes with enhanced solar water splitting performance

Kanishk Arunraj, Michael Wilms, Owen Kendall, Mitchell Perrin, Triet T. H. Nguyen, Xiaoning Li, Peter C. Sherrell, Joel van Embden, Daniel E. Gómez, Rowena Yew, Noel Duffy and Enrico Della Gaspera*



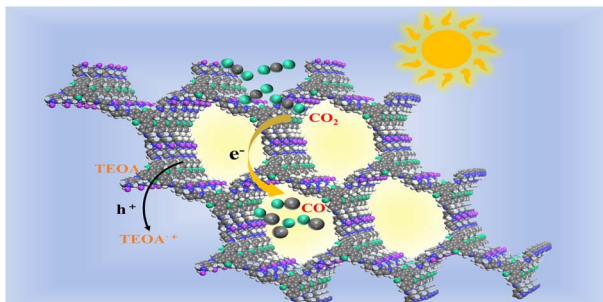
24971



Comb-shaped proton exchange membranes with dangling polystyrene grafted onto PVDF for PEM fuel cells and water electrolysis

Pratyush Patnaik, Vanshita Goyal, Sk Miraz Hossain and Uma Chatterjee*

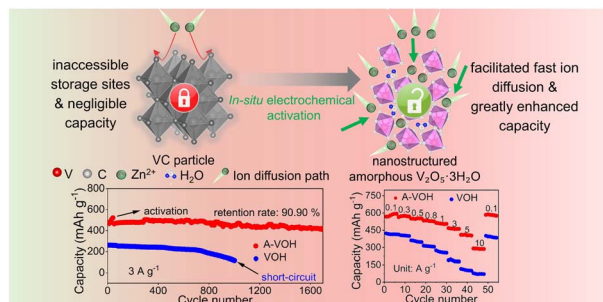
24988



Truxenone-based donor-acceptor covalent organic frameworks incorporated with metal sites for enhanced photocatalytic CO₂ reduction

Yanyan Ren, Haiping Liu, Fang Duan,* Shuanglong Lu, Xin Chen and Mingliang Du*

24997

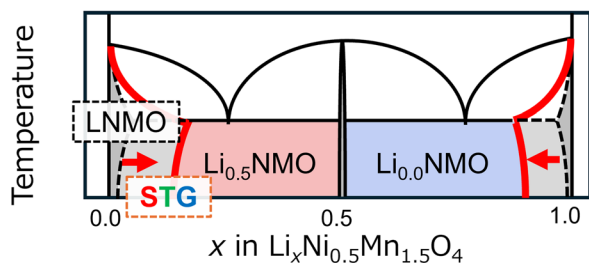


In situ electrochemical activation enabling high-performance cathodes for aqueous zinc-ion batteries

Qingpu Zeng, Shitong Zhou, Neng Yu,* Jiachen Huo, Changfang Sun and Kai Guo*

25008

Tailoring room-temperature miscibility gap



Tailoring the room-temperature miscibility gap in ordered spinel LiNi_{0.5}Mn_{1.5}O₄ cathodes by multi-element doping

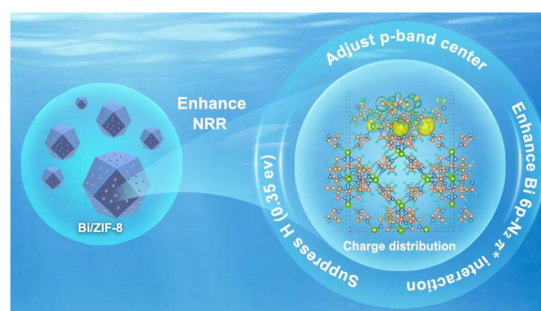
Shunsuke Narumi, H. Eugenio Otal, Tien Quang Nguyen, Michihisa Koyama and Nobuyuki Zettsu*



25022

Bi/ZIF-8 catalysts: the important role of ZIF-8 for enhanced electrochemical N_2 -to- NH_3 conversion using a neutral electrolyte

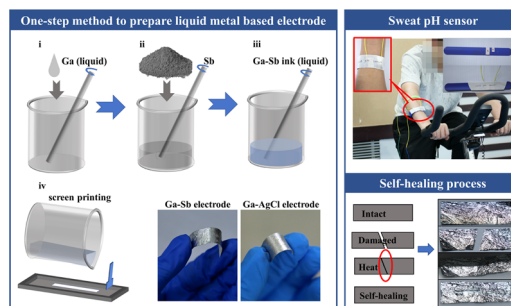
Pengju Guo, Fengxiang Yin* and Jiahui Liang



25032

Ga-Sb and Ga-AgCl liquid metal-based electrodes with self-healing for sweat pH sensors

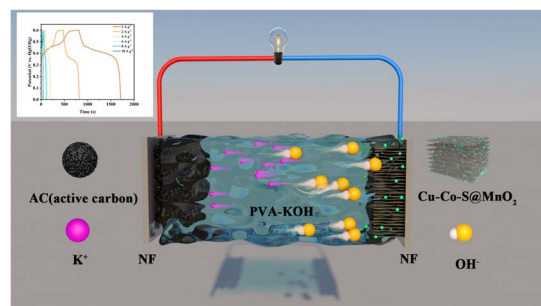
Guangxing Hu, Shuang Cui, Zhuang Li, Yan Shi* and Hongda Wang*



25042

Integrating bimetallic MOF-derived sulfides with MnO_2 : synergistic Cu-Co-S@ MnO_2 heterojunctions for flexible hybrid supercapacitors

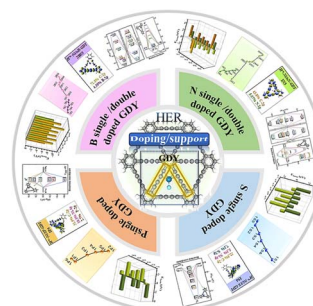
Jiale Hou, Ziheng Huang, Haofeng Lu, Cheng Chen,* Xinfeng Wu, Yonghou Xiao, Wanghui Wei, Minjie Xue, Yanyun Ma, Xinzhou Ma, Shigang Sun and Donghai Lin*



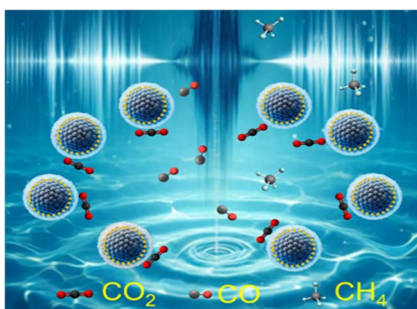
25054

Nickel single-atom catalysts anchored on heteroatom (X = B, N, P, and S)-doped graphdiyne for a highly efficient hydrogen evolution reaction

Wangdi Zhang, Xiaojun Li,* Jun Lu, Shuna Li, Yunguang Zhang, Zhongkui Zhang, Mengqi Zhang and Wenyu Xi



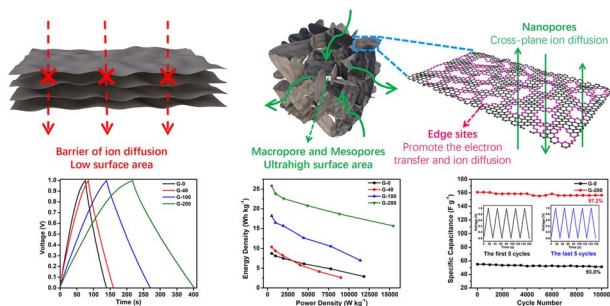
25067



Solid–liquid interface reassembly enhances surface piezoelectric properties: transition from the parallel interface O-MoS₂ to the spherical interface ZnS@O-MoS₂

Ting Li, Wenjin Hu, Changxin Tang, Longlong Shu* and Fei Li*

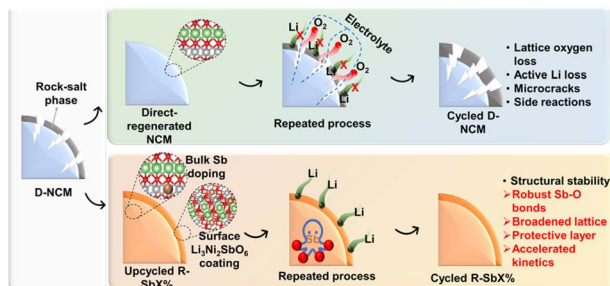
25082



Alkaline earth metal carboxylate hydrate-mediated controllable self-assembly of three-dimensional hierarchical nanoporous graphene for high-performance supercapacitors

Xiao Wu, Canyu Zhong, Lian Ying Zhang, Jianguo Lu, Qinggang He, Qinghua Zhang, Weiyong Yuan* and Chang Ming Li

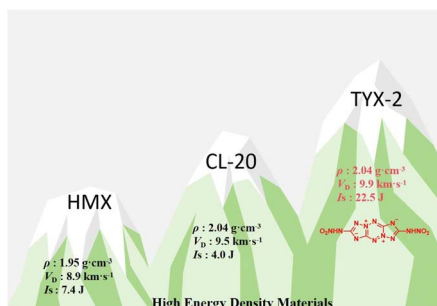
25093



Upcycling of degraded NCM cathode materials for prolonged high-rate stability: simultaneous dual modification from surface to bulk

Chao Zhu, Bin Wang, Jiexiang Li, Zihao Zeng, Hai Lei, Xiangjin Lu, Chi Zhang,* Wei Sun, Yue Yang and Peng Ge*

25103



A bistriazolotetrazine zwitterionic architecture: mitigating the pervasive energy-stability antagonism in bistable energetic matrices

Bojun Tan,* Jian Su, Jing Zhang, Changwei Tang, Jinkang Dou, Xiong Yang, Minghui Xu, Shu Zeng, Wenjie Li, Jieyu Luan, Gen Zhang,* Siwei Song, Qinghua Zhang,* Xianming Lu, Bozhou Wang and Ning Liu*

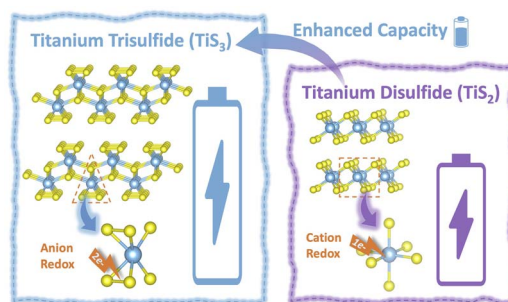


PAPERS

25110

Exploiting S_2^{2-}/S^{2-} redox chemistry in pseudo-layered chain-structured titanium trisulfide cathodes for high-energy magnesium–lithium hybrid ion batteries

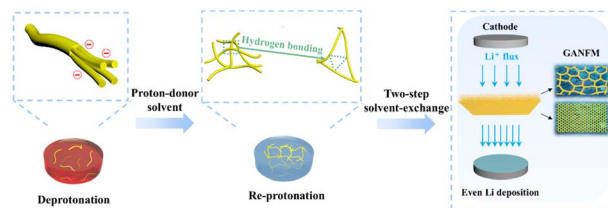
Pengcheng Jing, Atsushi Inoishi, Eiichi Kobayashi, Chengcheng Zhao, Yisong Han, Peng Ren, Isaac Abrahams and Duncan H. Gregory*



25120

Gradient architecture design of porous aramid nanofiber separators for robust and safe lithium-ion batteries

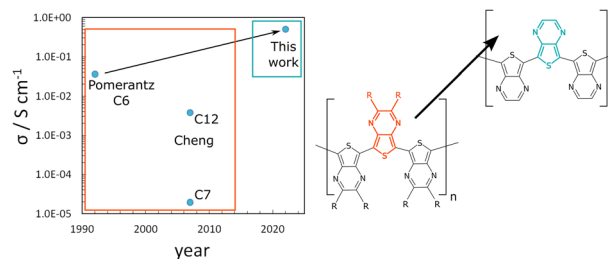
Hui Xu, Fang Wang, Shenglin Yang, Guang Li and Jingjing Zhang*



25131

Polythieno[3,4-*b*]pyrazine: pathways to metallic charge transport

Dominik Farka,* Elisabeth Leeb, Olvido Irrazabal Moreda, Theresia Greunz, Christoph Ulbricht, Jiří Duchoslav, Jaroslav Vacek, Kristian Kříž, Jindřich Fanfrlík, Cigdem Yumusak, Jakub Drnec, Jozef Kajčovič, David Stifter and Niyazi Serdar Sariciftci



CORRECTIONS

25146

Correction: Enhancing the performance of indoor organic photovoltaics through precise modulation of chlorine density in wide bandgap random copolymers

Soyoung Kim, Seon Joong Kim, Gayoung Ham, Ji-Eun Jeong, Donghwa Lee, Eunho Lee, Hyungju Ahn, Hyojung Cha,* Jae Won Shim* and Wonho Lee*



CORRECTIONS

25149

Correction: Improvement of photocatalytic antibacterial action of Mn, S_v-co-doped ZnIn₂S₄ prepared by a novel O_v-rich α -MnO₂ decomposition approach

Hui Zhang, Jie Zhang,* Zeyu Zuo, Ruiyong Zhang,* Mengmeng Sun,* Jizhou Duan, Wolfgang Sand, Bo Xiao and Baorong Hou

