

Journal of Materials Chemistry A

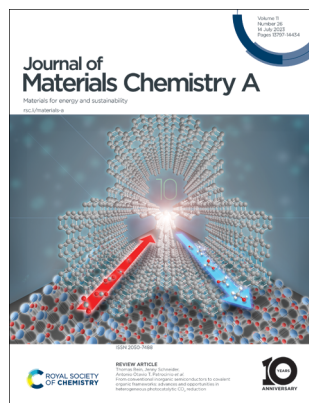
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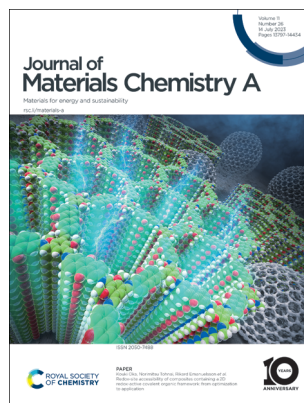
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Cover

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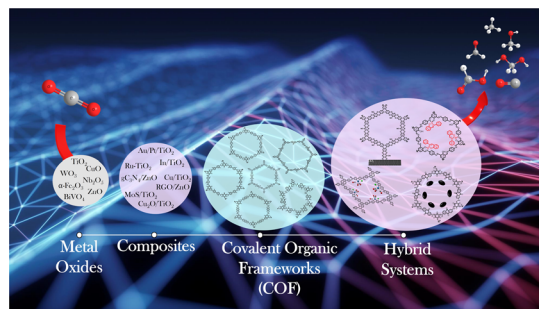
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REVIEWS

13815

From conventional inorganic semiconductors to covalent organic frameworks: advances and opportunities in heterogeneous photocatalytic CO₂ reduction

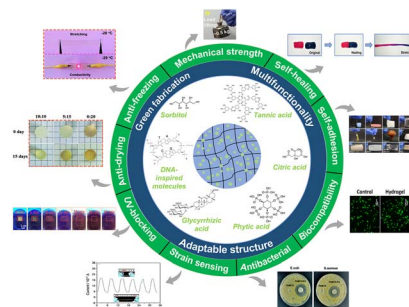
Marcos Eduardo G. Carmo, Laura Spies, Gabriela N. Silva, Osmando F. Lopes, Thomas Bein,^{*} Jenny Schneider^{*} and Antonio Otavio T. Patrocínio^{*}



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Multifunctional small biomolecules as key building blocks in the development of hydrogel-based strain sensors

Syed Farrukh Alam Zaidi, Aiman Saeed, Jun Hyuk Heo^{*} and Jung Heon Lee^{*}



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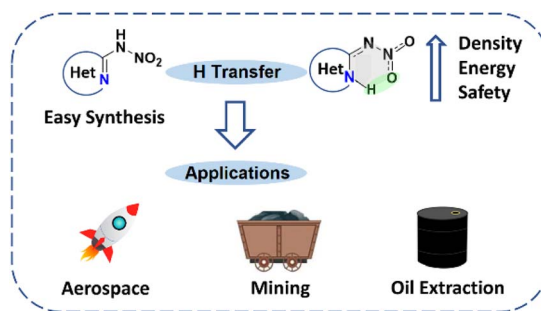


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Nitroimino as an energetic group in designing energetic materials for practical use, a tautomerism from nitroamino

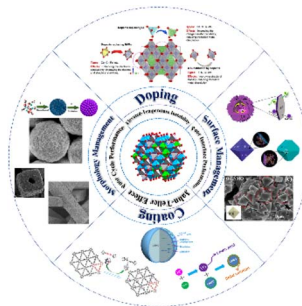
Yaxi Wang, Lu Hu,* Siping Pang* and Jean'ne M. Shreeve*



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Advances in modification methods and the future prospects of high-voltage spinel LiNi_{0.5}Mn_{1.5}O₄ — a review

Tianji Fu, Di Lu, Ziqing Yao, Yujie Li,* Chongyang Luo, Tianyan Yang, Shuangke Liu, Yufang Chen, Qingpeng Guo, Chunman Zheng and Weiwei Sun*

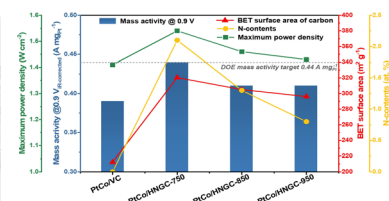
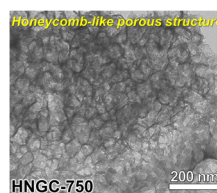


COMMUNICATION

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Self-templated synthesis of novel and robust honeycomb-like N-doped highly graphitized carbon from low-temperature carbonization

Ha-Young Lee, Caleb Gyan-Barimah, Cheol-Hwan Shin and Jong-Sung Yu*

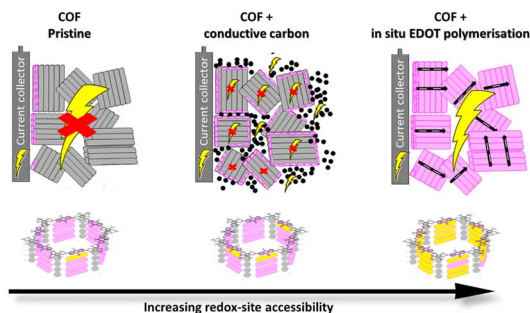


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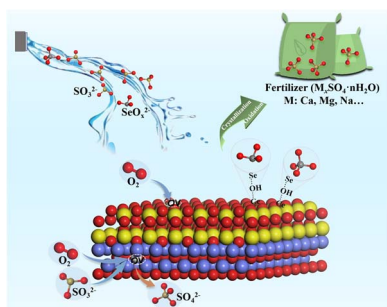
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Redox-site accessibility of composites containing a 2D redox-active covalent organic framework: from optimization to application

Tyran Günther, Kouki Oka,* Sandra Olsson, Michelle Åhlén, Norimitsu Tohnai* and Rikard Emanuelsson*



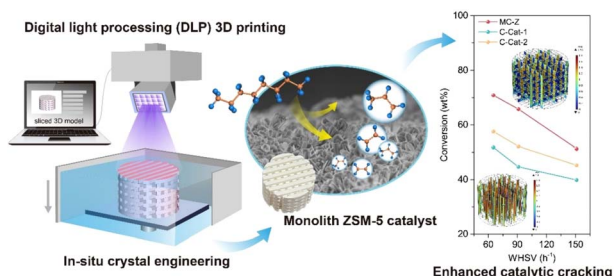
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Oxygen-vacancy enhanced CoO/CeO₂ heterojunction for synchronous regulation of sulfur resourcing and selenium adsorption separation from flue gas desulfurization wastewater

Tieyue Qi, Xi Chen, Jingzhao Zhang, Jiabin Gao, Runlong Hao* and John Crittenden

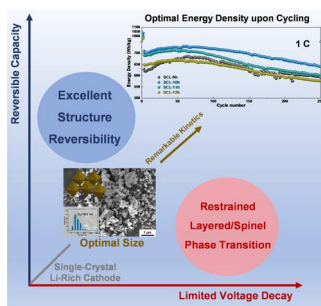
13945



In situ crystal engineering on 3D-printed woodpile scaffolds: a monolith catalyst with highly accessible active sites for enhanced catalytic cracking

Ruoyu Wang, Yixuan Gong, Peng Wang, Wenhui He, Ye Song, Mudi Xin, Qiuqiao Jiang, Yuchen Sha, Tiantian Cao, Haitao Song and Wei Lin*

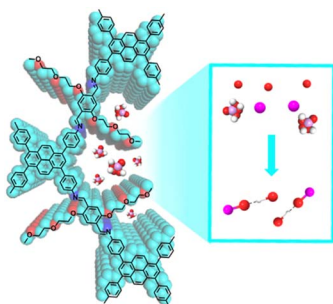
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Impact of particle size on the kinetics and structure stability of single-crystal Li-rich cathode materials

Jianming Sun, Xin Cao,* Wuhai Yang, Eunjoo Yoo* and Haoshen Zhou*

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Construction of dense H-bond acceptors in the channels of covalent organic frameworks for proton conduction

Sijia Liu, Minghao Liu, Xuewen Li, Qing Xu,* Yuhan Sun* and Gaofeng Zeng*

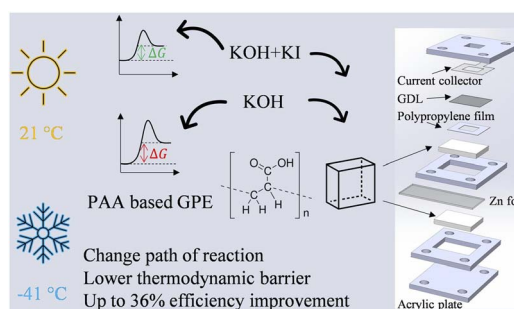


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Low-temperature tolerant poly(acrylic acid) (PAA) gel polymer electrolytes for rechargeable zinc–air batteries

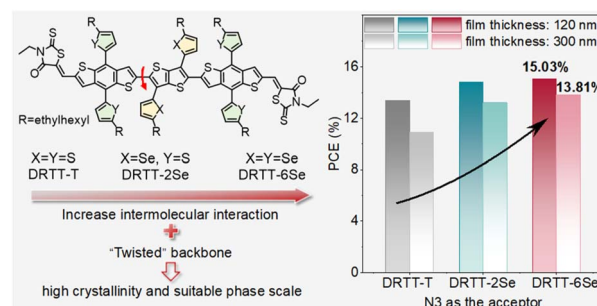
Jiayao Cui, Matthew Labbe, Hyun-Joong Chung and Douglas G. Ivey*



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"Twisted" small molecule donors with enhanced intermolecular interactions in the condensed phase towards efficient and thick-film all-small-molecule organic solar cells

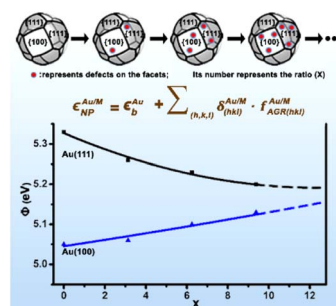
Xiafei Cheng, Ziqi Liang, Shifeng Liang, Xuwen Zhang, Jie Xu, Yan Xu, Wang Ni,* Miaomiao Li* and Yanhou Geng



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Electrocatalytic activity of gold and gold-based bimetallic nanoparticles derived from their surface topography

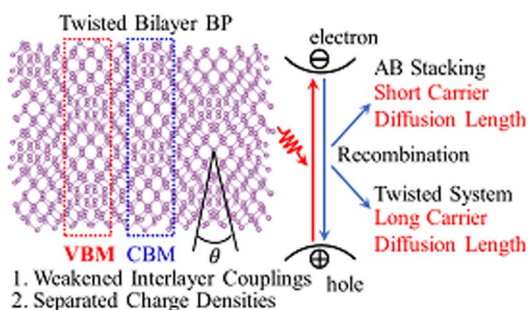
Jin Wang, Jing Wang, Hong Li, Weiliu Fan, Dayang Wang* and Haibing Xia*



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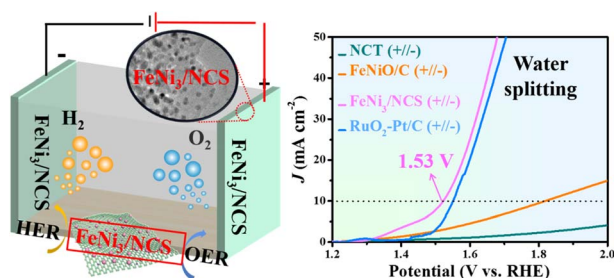
Twist angle can expand charge carrier diffusion length in bilayer black phosphorus: *ab initio* quantum dynamics

Yonghao Zhu and Run Long*



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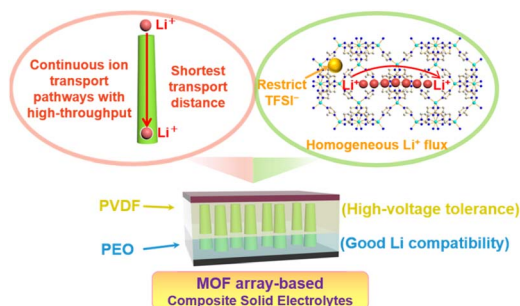
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Low-temperature pyrolysis enables FeNi₃ nanoparticle implanted N-doped carbon nanosheets as an efficient bifunctional electrocatalyst for overall water splitting

Rong Xin, Yijiang Liu,* Xuxin Li, Shicheng Yi, Mingyue Zhang, Hongbiao Chen, Huaming Li and Zhiquan Lin*

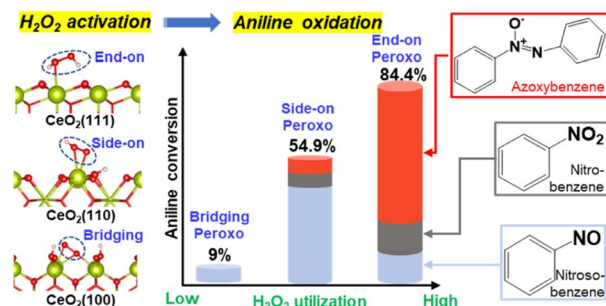
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A MOF vertical array enables continuous ion transport pathways with high throughput

Shuxian Wang, Zhongliang Li, Fangying Shen, Zhiqin Ruan, Yutong Huang, Yang Liu, Yan Liu, Luyi Chen,* Ya-Qian Lan* and Qifeng Zheng*

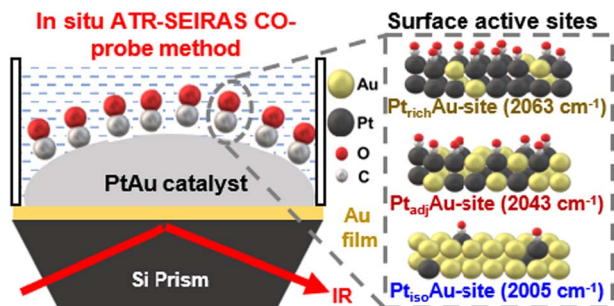
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Facet-dependent peroxy species regulate product distribution and H₂O₂ utilization in CeO₂-catalyzed aniline oxidation

Linyuan Tian, Yin-Song Liao, Jyh-Pin Chou,* Zicong Tan, Jian Lin Chen, Jung-Hoon Lee,* Tsz Woon Benedict Lo and Yung-Kang Peng*

14043



Revealing surface fine structure on PtAu catalysts by an *in situ* ATR-SEIRAS CO-probe method

Guang Li, Zheng-Chao An, Jian Yang, Jin-Hong Zheng, Li-Fei Ji, Jun-Ming Zhang, Jin-Yu Ye,* Bin-Wei Zhang,* Yan-Xia Jiang* and Shi-Gang Sun

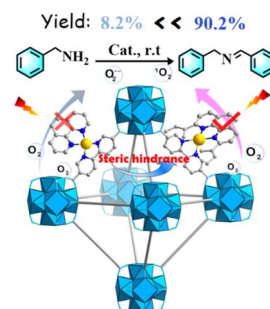


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Engineering earth-abundant copper(i) sensitizing centers in metal–organic frameworks for efficient photosynthesis

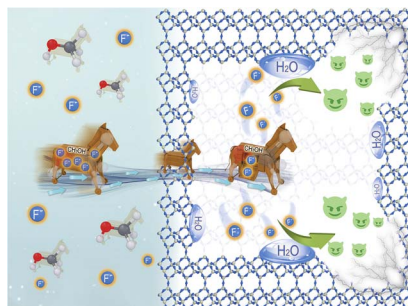
Guang-Chen Guo, Lihua Ma,* Xiao-Di Li, Song Guo,* Tong-Bu Lu and Zhi-Ming Zhang*



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In situ hierarchical pore engineering in small pore zeolite via methanol-mediated NH_4F etching

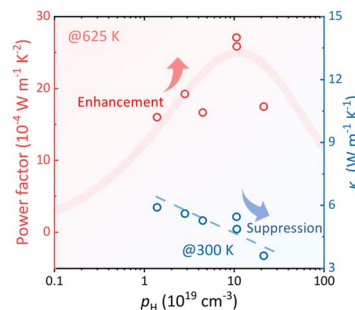
Youdong Xing, Guangchao Li,* Zezhou Lin, Zhihang Xu, Haitao Huang, Ye Zhu, Shik Chi Edman Tsang and Molly Meng-Jung Li*



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Simultaneous optimization of the electrical and thermal transport properties of LuNiSb via aliovalent doping

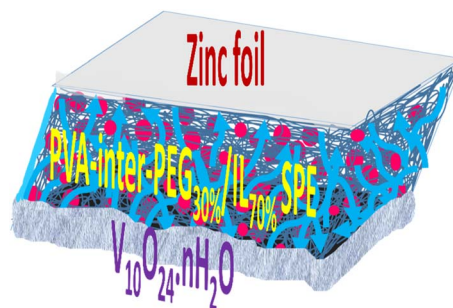
Pu Miao, Cheng Yang, Shen Han, Shengnan Dai, Airan Li, Lili Xi,* Jiong Yang, Tiejun Zhu and Chenguang Fu*



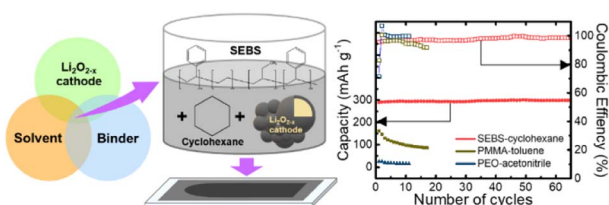
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High-performance solid-state zinc-ion batteries enabled by flexible and highly Zn^{2+} conductive solid-polymer electrolyte

Rangaswamy Puttaswamy, Zhenchuan Tian, Hyocheol Lee, Do Youb Kim, Anh Le Mong and Dukjoon Kim*



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Chemical compatibility of polymer binders with a reversible anionic redox reaction in lithia-based cathodes

Ye Yeong Hwang, Ji Hyun Han, Sol Hui Park and Yun Jung Lee*

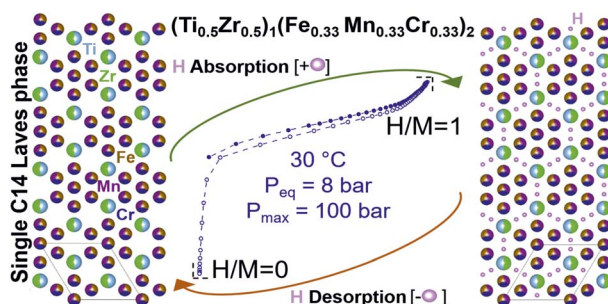
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Skin-inspired antibacterial conductive hydrogels customized for wireless flexible sensor and collaborative wound healing

Shuang Wang, Siwei Bi, Linna Zhang, Ruiqi Liu, Haibo Wang* and Jun Gu*

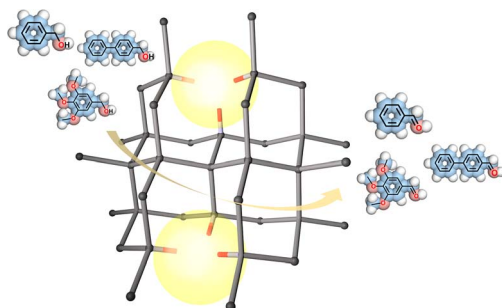
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A comprehensive investigation of the $(\text{Ti}_{0.5}\text{Zr}_{0.5})_1(\text{Fe}_{0.33}\text{Mn}_{0.33}\text{Cr}_{0.33})_2$ multicomponent alloy for room-temperature hydrogen storage designed by computational thermodynamic tools

Jéssica Bruna Ponsoni, Mateusz Balcerzak,* Walter José Botta, Michael Felderhoff and Guilherme Zepon*

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Construction of catalytic cavities in porous aromatic frameworks for effective alcohol oxidation

Yuhui Zhai, Hengtao Lei, Yue Li, Jian Song, Xiaofei Jing, Xiaoyuan Shi,* Yuyang Tian* and Guangshan Zhu

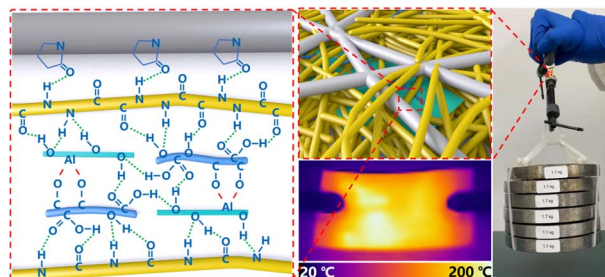


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Nacre-inspired strong nanopapers of aramid nanofiber-integrated montmorillonite nanoplates, cellulose nanofibrils, and Ag nanowires for high-performance electrical heaters

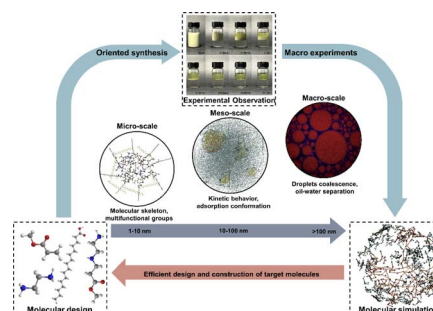
Fugang Hu, Jinsong Zeng,* Pengfei Li,* Tianguang Wang, Jinpeng Li, Bin Wang and Kefu Chen



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Cryogenic efficient phase separation of oil–water emulsions with amphiphilic hyperbranched poly(amido-amine)

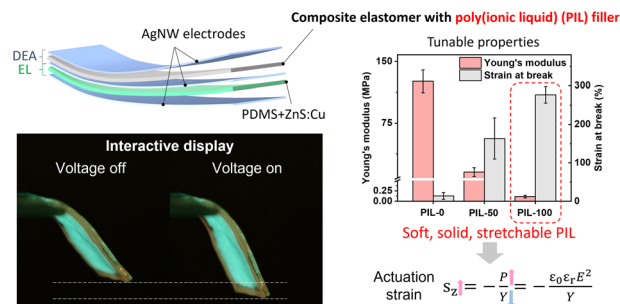
Shu Yan, Pengfei Jiang, Xinghong Zhang, Yongsheng Guo* and Wenjun Fang*



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A highly stretchable, self-healable, transparent and solid-state poly(ionic liquid) filler for high-performance dielectric elastomer actuators

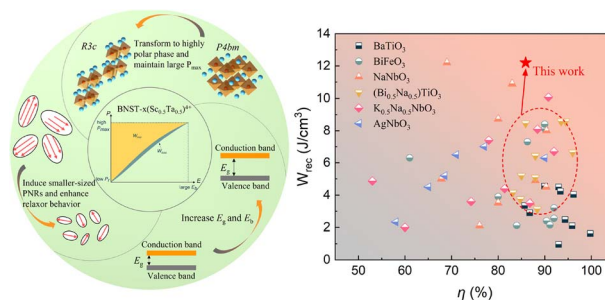
Hui Wang, Matthew Wei Ming Tan, Wei Church Poh, Dace Gao, Wenting Wu and Pooi See Lee*



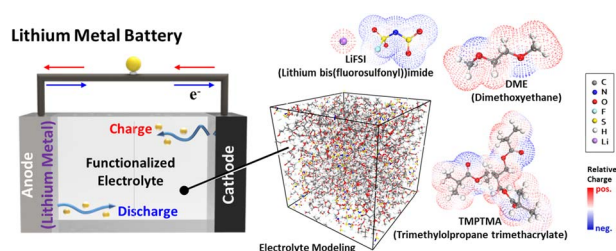
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Excellent energy storage performance of (Sc_{0.5}Ta_{0.5})⁴⁺ modified (Bi_{0.5}Na_{0.5})TiO₃-based ceramics modulated by the evolution of polar phases

Bin He, Tumentsereg Ochirkhuyag, Wuwei Feng,* Meitang Liu, Shuo Liu, Zhidi Bao, Cheng Hu, Yi Zhong and Dorj Odkhuu*



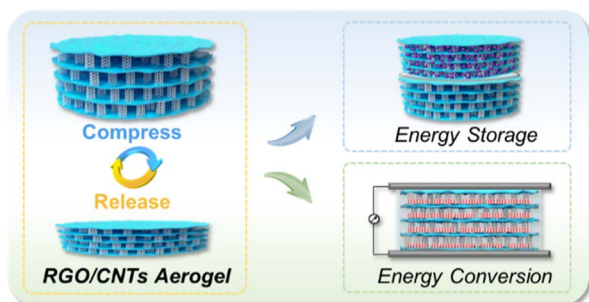
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Improving the oxidative stability of gel polymer electrolytes for lithium metal batteries

JinHyeok Cha,* Kyungju Nam, Jihye Baek,* Samuel Seo, Kyuju Kwak, Ji-Wan Kim, Wonkeun Kim, Kyoung Han Ryu, Dong-Won Kim and Eunji Kwon*

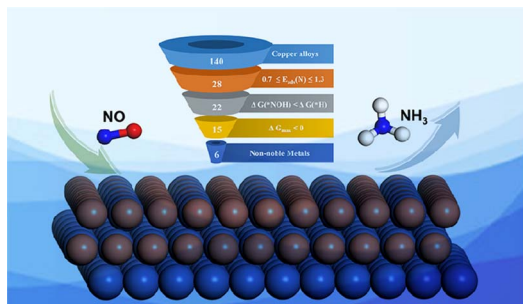
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Designing free-standing 3D lamellar/pillared RGO/CNTs aerogels with ultra-high conductivity and compressive strength for elastic energy devices

Zilin Chen, Yunlong Yang, Tian Lv, Yanan Liu, Yunlong Qi, Keyi Dong, Shaokui Cao and Tao Chen*

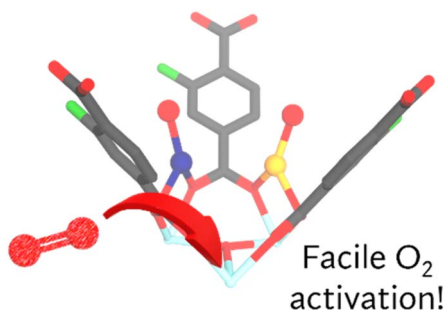
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In silico design of copper-based alloys for ammonia synthesis from nitric oxide reduction accelerated by machine learning

Jie Feng, Yujin Ji* and Youyong Li*

14204



Controlled synthesis of Cu,Fe dual-atom catalysts restrained on metal-organic frameworks for efficient O₂ activation

Qi Xue, Ching Kit Tommy Wun, Tianxiang Chen, Shogo Kawaguchi, Sarah Day, Chiu Tang, Tai-Sing Wu, Yun-Liang Soo, Cong Lin, Yung-Kang Peng, Jun Yin* and Tsz Woon Benedict Lo*

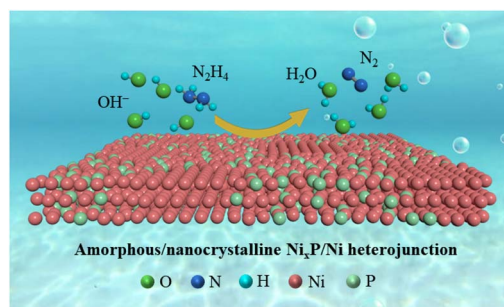


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14213

An amorphous/nanocrystalline $\text{Ni}_x\text{P}/\text{Ni}$ heterojunction for electrooxidation of hydrazine

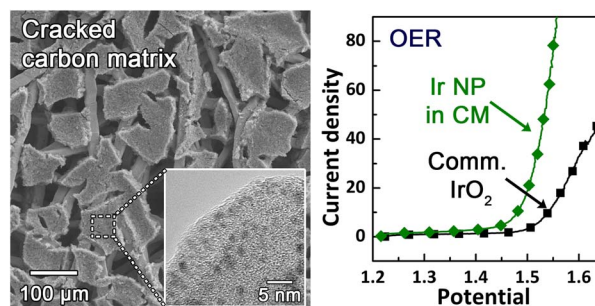
Jia-Fu Liu, He Wen, Zeng-Yao Zhang and Ping Wang*



14221

A cracked carbon matrix decorated with amorphous IrO_x for boosting the oxygen evolution reaction in electrochemical water splitting

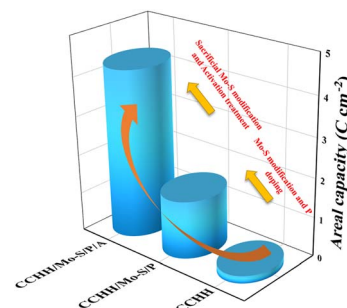
T. B. Ngoc Huynh, Dohyeon Lee, Soo-Kil Kim, Myung Jun Kim* and Oh Joong Kwon*



14232

Sacrificial Mo–S modification and P-doping co-assisted activation strategy to enhance the electrochemical performance of cobalt carbonate hydroxide hydrate

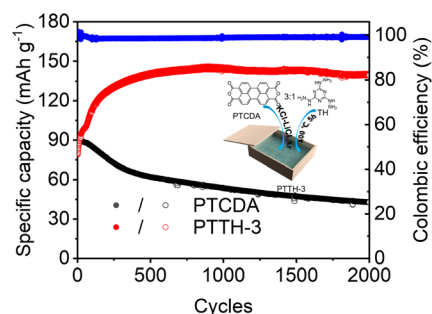
Ting Xiao,* Zhixin Wang, Tao Jiang, Yushuai Yao, Lihua Jiang, Peng Xiang, Shibing Ni, Weifeng Chen, Fujun Tao and Xinyu Tan*



14240

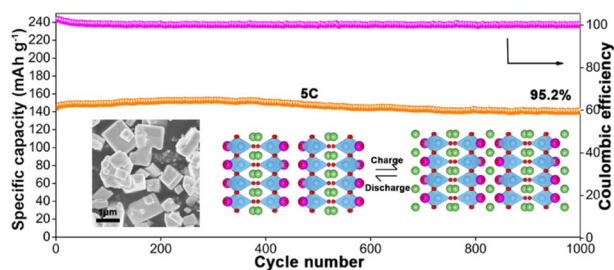
***In situ* ionothermally synthesized redox-active carbon nitride-confined organic small molecule cathodes for ultrastable lithium-ion batteries**

Mingsheng Yang, Rui Li, Huige Ma, Xiaoran Zhu, Yan Wang, Yuxin Hao, Bei Wang, Yucheng Dong, Mingjun Hu* and Jun Yang*



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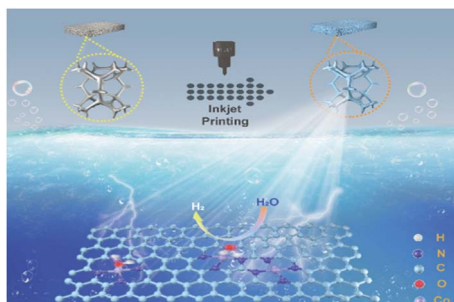
14249



Introducing large-radius elements in layered perovskite for low-voltage lithium storage

Xiao Li, Diming Xu, Di Zhou,* Hu Nan, Shengzhao Pang, Moustafa Adel Darwish, Tao Zhou and Shi-Kuan Sun

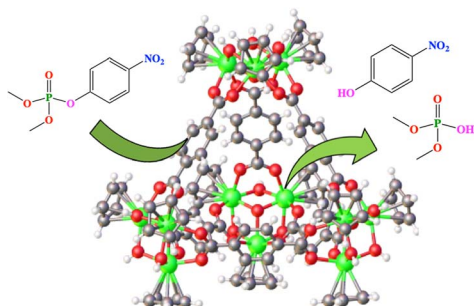
14257



Adjacent atomic cobalt sites anchored on carbon foam as a self-supporting electrode for efficient hydrogen evolution

Yingxue Wang, Jing Yu,* Jiahui Zhu,* Qi Liu, Jingyuan Liu, Rongrong Chen, Rumin Li and Jun Wang

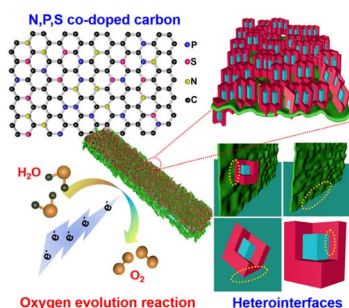
14265



Instantaneous degradation of nerve agent simulants using zirconium-based metal-organic polyhedra

Kimia Kiaei, Kieran Brunson, Andrzej Gładysiak, Kyle Smith, Kye Hunter, Ava Thomas, Delaney Radke, Tim Zuehlsdorff and Kyriakos C. Stylianou*

14272



A phase and interface co-engineered MoP_xS_y@NiFeP_xS_y@NPS-C hierarchical heterostructure for sustainable oxygen evolution reaction

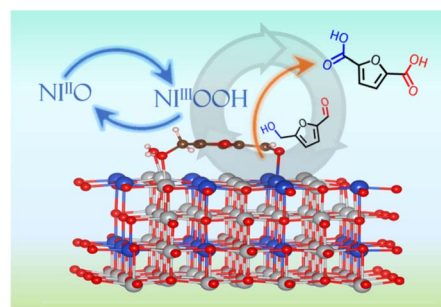
Xiaojun Zeng,* Haiqi Zhang, Ronghai Yu, Galen D. Stucky and Jieshan Qiu*



14284

Tuning the adsorption behaviors of non-noble electrocatalysts to boost valorization of 5-hydroxymethylfurfural

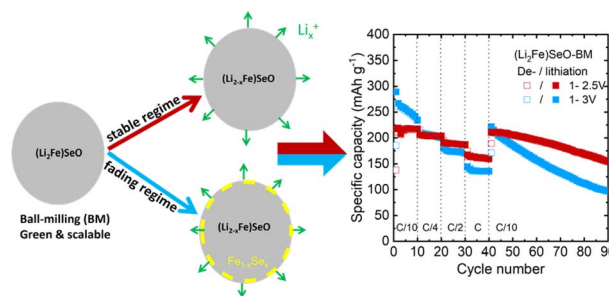
Yunpeng He, Botao Zhu,* Feng Wang, Jie Xiong, Muhammad Awais Akram and Lai Feng*



14294

Elucidating the electrochemical reaction mechanism of lithium-rich antiperovskite cathodes for lithium-ion batteries as exemplified by $(\text{Li}_2\text{Fe})\text{SeO}$

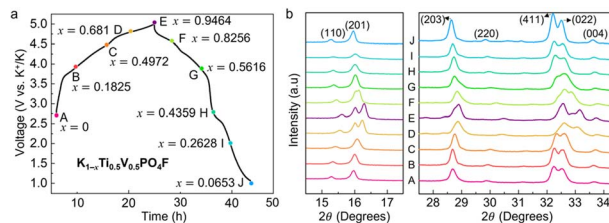
Lennart Singer, M. A. A. Mohamed, Henrik Hahn, Ignacio G. Gonzalez-Martinez, Martin Hantusch, Karolina Wenelska, Ewa Mijowska, Bernd Büchner, Silke Hampel, Nico Gräßler* and Rüdiger Klingeler*



14304

Electrochemical properties of a titanium-substituted KVPO_4F cathode for K-ion batteries

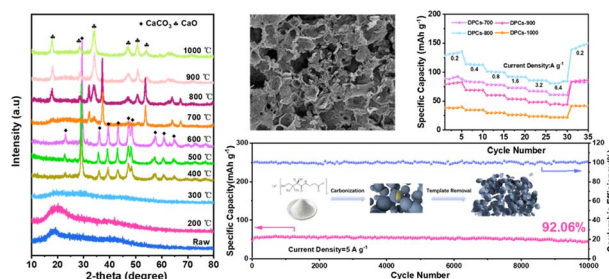
Xiaoran Yang, Danna Yan, Tsengming Chou and Jae Chul Kim*



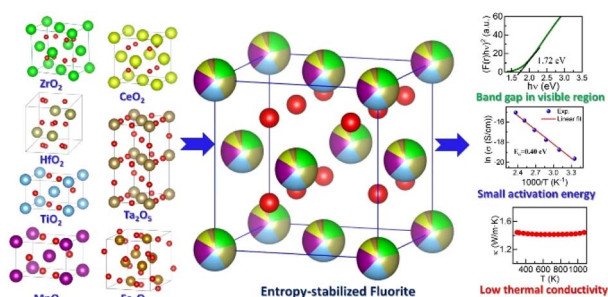
14311

D-Calcium pantothenate-derived porous carbon: carbonization mechanism and application in aqueous Zn-ion hybrid capacitors

Lantao Liu, Ziyu Sun, Yaping Lu, Jiapeng Zhang, Yiming Li, Gaixia Zhang,* Xiaohong Chen,* Sasha Omanovic, Shuhui Sun* and Huaihe Song*



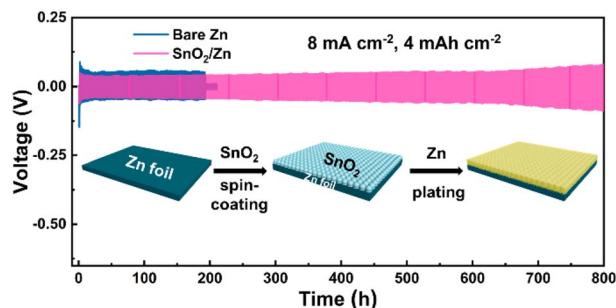
14320



Novel entropy-stabilized fluorite oxides with multifunctional properties

Ashutosh Kumar, David Bérardan, Francois Brisset, Diana Dragoie and Nita Dragoie*

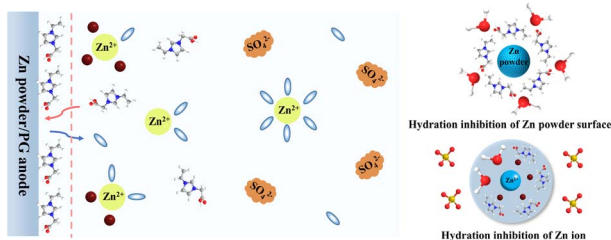
14333



Highly reversible, dendrite-free and low-polarization Zn metal anodes enabled by a thin SnO₂ layer for aqueous Zn-ion batteries

Yuejuan Zhang, Penghui Chen, Mingming Li, Shaoqing Li, Ying Yue, Yanchun Wang, Sishen Xie and Weiya Zhou*

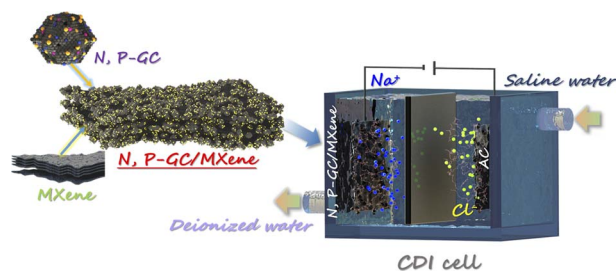
14345



Designing multidimensional hydration inhibitor towards the long cycling performance of zinc powder anode

Chuheng Cao, Wencheng Du,* Cheng Chao Li,* Minghui Ye, Yufei Zhang, Yongchao Tang and Xiaoqing Liu

14356



Core-shell 2D nanoarchitectures: engineering N, P-doped graphitic carbon/MXene heterostructures for superior capacitive deionization

Ying Zhang, Haolin Li, Qian Yang, Shuaihua Zhang,* Bin Zhao, Jingyu Wu, Ningzhao Shang, Xiaoxian Zhao, Zhichang Xiao, Xiaohuan Zang, Jeonghun Kim, Xingtao Xu* and Yusuke Yamauchi*

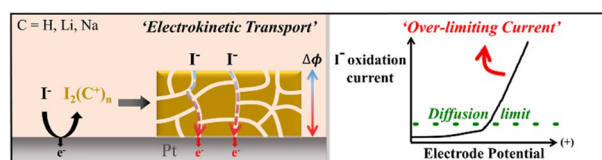


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14366

Overlimiting current by iodide electrode oxidation in aqueous media: an electrogenerated iodine interphase with positively charged channels stimulating *in situ* electrokinetic iodide transport

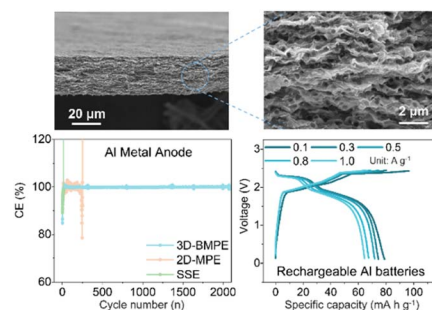
Sehyeok Ki, Anseong Park, Won Bo Lee, YongJoo Kim* and Jinho Chang*



14380

3D-structured bifunctional MXene paper electrodes for protection and activation of Al metal anodes

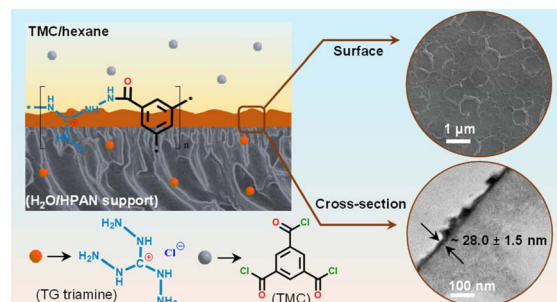
Yeong Hoon Heo, Juyun Lee, Son Ha, Jong Chan Hyun, Dong Hyuk Kang, Juhee Yoon, Hyun Soo Kim, Yeonhwa Choi, Yun Chan Kang, Hyoung-Joon Jin, Seon Joon Kim* and Young Soo Yun*



14390

Microporous poly(triaminoguanidinium-amide) nanofilms with sub-nm precision for ultra-low molecular weight cut-off in nanofiltration

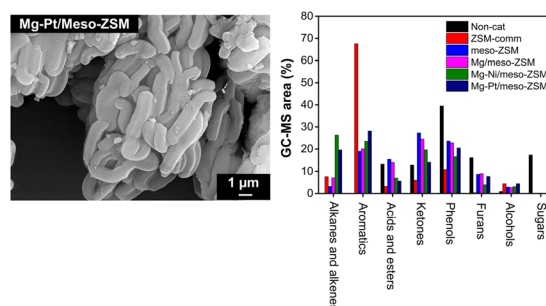
Pulak Sarkar, Tapashi Sarkar, Harwinder Singh, Bhaumik Sutariya, Santanu Ray, Amitava Das,* Sumit Kumar Pramanik* and Santanu Karan*



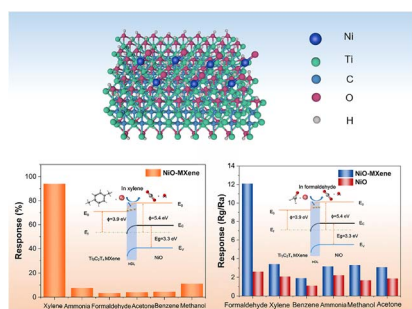
14404

Design of trifunctional catalysts for promoting sequential condensation, deoxygenation, and aromatization of pyrolyzed mixed waste

Mohamed H. M. Ahmed, Nuno Batalha, Mohammad Rezaul Karim, Ibrahim Abdullah Alnaser, Yusuke Yamauchi, Yusuf Valentino Kaneti* and Muxina Konarova*



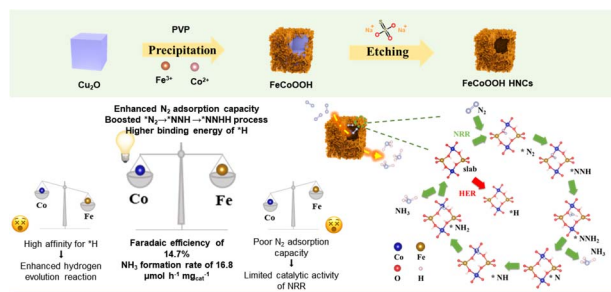
14416



In situ fabrication of a NiO nanoparticles/single-layered MXene nanosheet Schottky heterojunction toward sensing xylene and formaldehyde

Xueying Song, Kuikun Gu, Qinwei Zhang, Linhu Jin, Chunfeng He* and Mingzhe Zhang*

14424



Unveiling the role of cobalt doping in optimizing ammonia electrosynthesis on iron–cobalt oxyhydroxide hollow nanocages

Xinxin Han, Cheng Liu, Yuan Tang, Qiangguo Meng, Weizhen Zhou, Shixia Chen,* Shuguang Deng and Jun Wang*

