

Journal of Materials Chemistry A

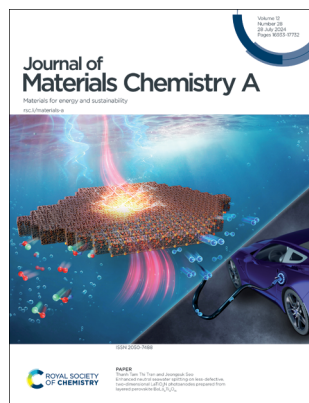
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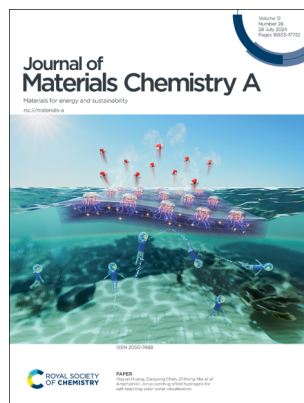
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ISSN 2050-7488 CODEN JMCAET 12(28) 16933–17732 (2024)



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Inside cover

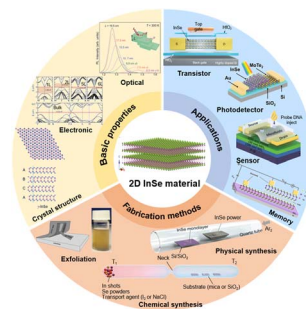
See Xiayun Huang, Daoyong Chen, Zhihong Nie et al., pp. 17142–17150. Image reproduced by permission of Jie Zhu, Zhiyuan Xiao, Feiyu Song, Xiayun Huang, Daoyong Chen, Zhihong Nie from *J. Mater. Chem. A*, 2024, 12, 17142.

REVIEWS

16952

Research progress on two-dimensional indium selenide crystals and optoelectronic devices

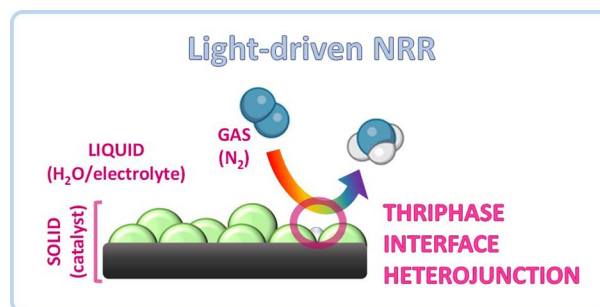
Dan Zheng, Peng Chen, Yi Liu, Xing Li, Kejing Liu, Zi'ang Yin, Riccardo Frisenda,* Qinghua Zhao* and Tao Wang*



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Smart three-phase interface heterojunctions for effective photo(electro)catalytic N₂ reduction to ammonia

Alejandro Herrero Pizarro, Javier Feroso, Miguel García-Tecedor, Mariam Barawi, Víctor A. de la Peña O'Shea* and Laura Collado*



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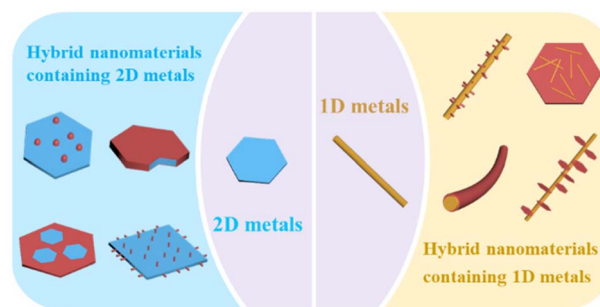
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REVIEWS

17002

Synthesis and electrocatalytic applications of hybrid nanomaterials containing low-dimensional metals

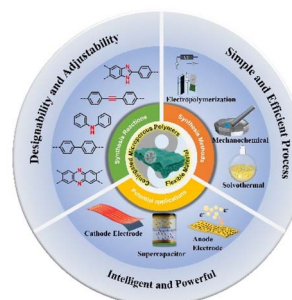
Xixi Wang, Xinran Jiao, Yunhao Wang, Fukai Feng, Zhiqi Huang* and Yiyao Ge*



17021

Conjugated microporous polymers: their synthesis and potential applications in flexible electrodes

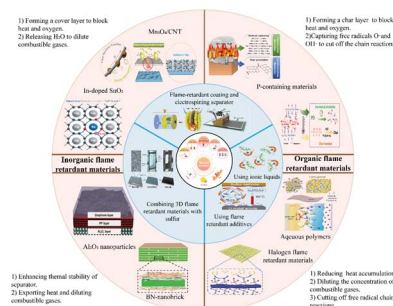
Dun Zhou, Kongqing Zhang, Shuqi Zou, Xiaobai Li* and Hongwei Ma*



17054

Advancements in flame-retardant strategies for lithium–sulfur batteries: from mechanisms to materials

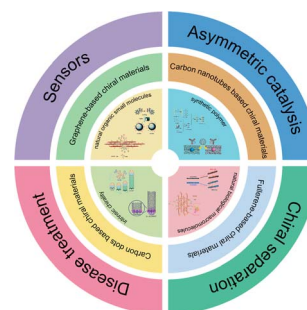
Jian Liu, Hairui Yuan, Lei Chen,* Yehui Yuan, Meltem Yanilmaz, Jin He, Yong Liu and Xiangwu Zhang



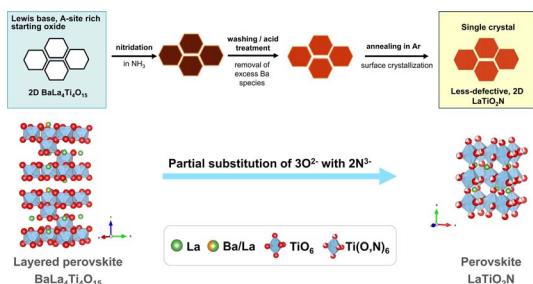
17073

Chiral carbon nanostructures: a gateway to promising chiral materials

Xiaohui Niu,* Yongqi Liu, Rui Zhao, Luhua Wang, Mei Yuan, Hongfang Zhao, Hongxia Li, Xing Yang* and Kunjie Wang*



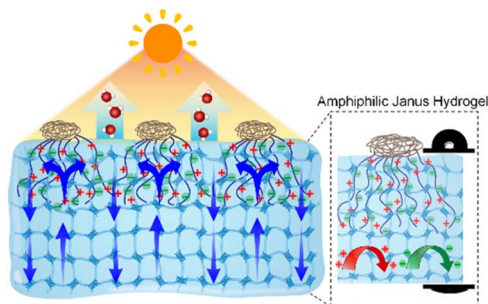
17128



Enhanced neutral seawater splitting on less-defective, two-dimensional LaTiO_2N photoanodes prepared from layered perovskite $\text{BaLa}_4\text{Ti}_4\text{O}_{15}$

Thanh Tam Thi Tran and Jeongsuk Seo*

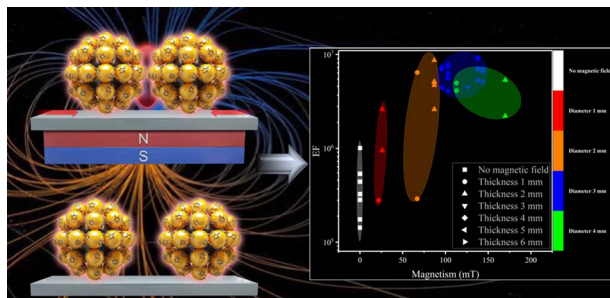
17142



Amphiphilic Janus patch-grafted hydrogels for salt-rejecting solar water desalination

Jie Zhu, Zhiyuan Xiao, Feiyu Song, Xiayun Huang,*
 Daoyong Chen* and Zhihong Nie*

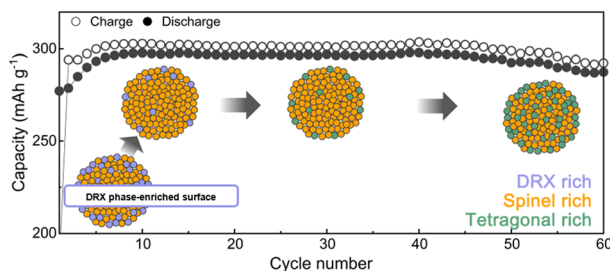
17151



SERS hotspot engineering using external field assembly of a plasmonic magnetic nanocomposite with high sensitivity and uniformity

Zhenli Sun, Ning Wang, Yiyan Zhang, Xunlong Ji,
 Zijin Hong, Dan Xie, Wentao Zhang, Wenjing Liu
 and Jingjing Du*

17158



Designing rock salt phase enriched surface in Mn-based partially disordered spinel cathode materials for mitigating degradation in Li-ion batteries

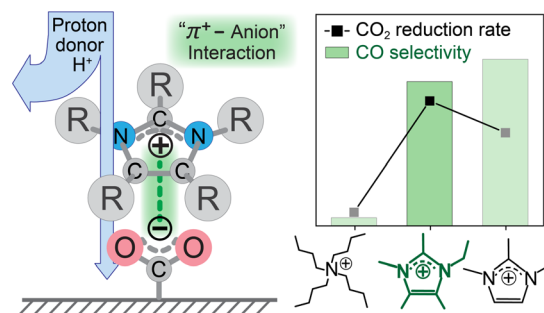
Hyoj Jo, Changju Lee, HyeongJun Nam, Jee Ho Ha,
 Nyung Joo Kong, Kyojin Ku, Seok Ju Kang
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17169

Deciphering the role of aromatic cations in electrochemical CO₂ reduction: interfacial ion assembly governs reaction pathways

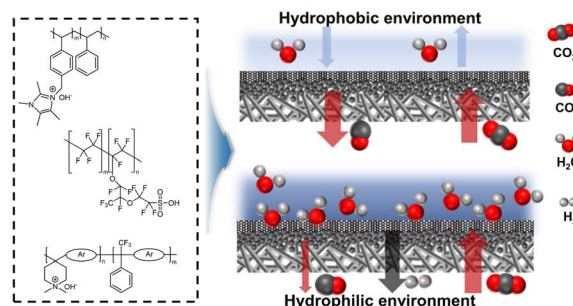
Wenxiao Guo, Beichen Liu, Seth R. Anderson, Samuel G. Johnstone and Matthew A. Gebbie*



17181

Regulating the selectivity through ionomer–catalyst interactions for high-efficiency electrocatalytic CO₂ reduction

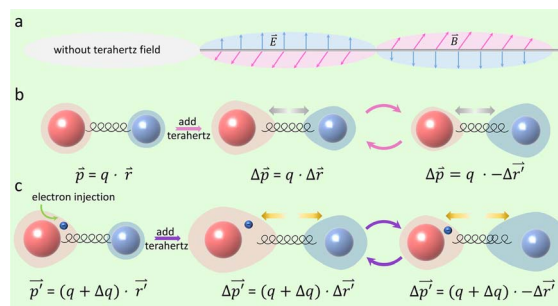
Chen Yu, Taoning Lei, Li Xu, Chuyao Jin, Jundong Yi, Shenghui Liu, Saisai Lin, Yang Yang, Hao Song, Kaige Wang, Haidong Fan, Chenghang Zheng, Xiao Zhang* and Xiang Gao*



17193

Electron-injection-induced Fe atomic valence transition for efficient terahertz shielding in α -Fe₂O₃@carbon microtubes

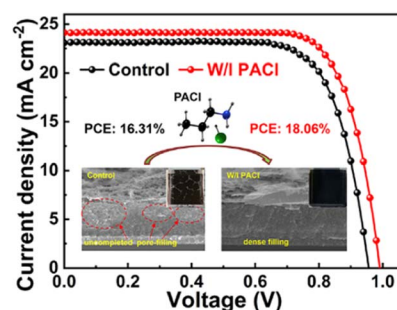
Sitao Guan, Siying Ma, Hengdong Ren, Jian Chen, Zhiyong Zhang, Pengzhan Zhang,* Xiaobing Xu* and Xinglong Wu*



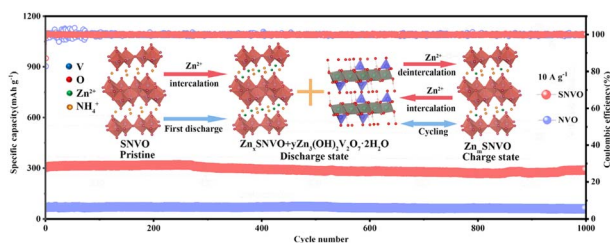
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Manipulation of Cs_{0.1}FA_{0.9}PbI₃ crystallization behavior towards efficient carbon-based printable mesoscopic perovskite solar cells

Jinjiang Wang, Dongjie Wang,* Yang Zhang, Yiwen Chen, Tianhuan Huang, Wending Zhu, Zheling Zhang, Yu Huang, Jian Xiong, Dinghan Xiang and Jian Zhang*



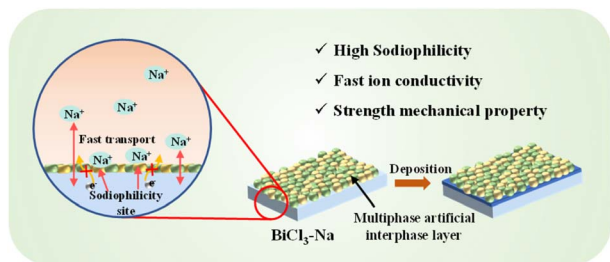
17213



Defect engineering and morphology adjustment assist $\text{NH}_4\text{V}_4\text{O}_{10}$ to be a high-performance aqueous zinc ion battery cathode

Song Yao and Yangang Sun*

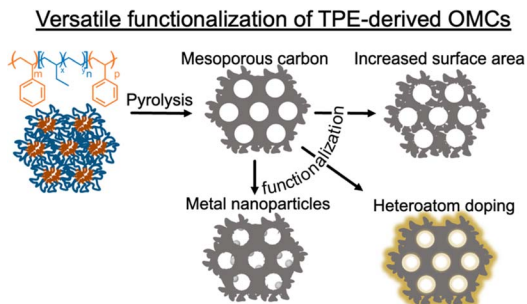
17222



Multiphase artificial interphase layer enabled long-life and dendrite-free sodium metal batteries

Li Xia, Kuangji Li, Yinggan Zhang, Hualong Wu, Ziyi Fang, Xiaolin Yan, Baisheng Sa, Laisen Wang, Liang Lin,* Jie Lin,* Guoying Wei,* Dong-Liang Peng and Qingshui Xie*

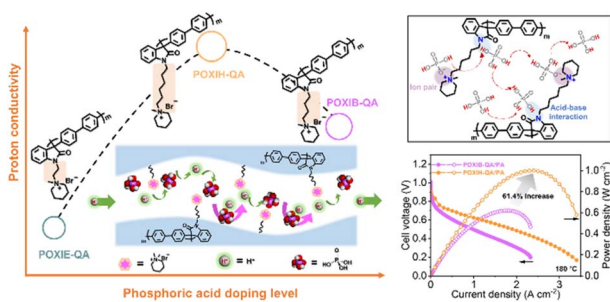
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Harnessing the power of thermoplastic elastomer-derived ordered mesoporous carbons through functionalization

Mark Robertson, Andrew Barbour, Anthony Griffin, Jeffrey Aguinaga, Derek Patton, Yizhi Xiang and Zhe Qiang*

17243



Spacer-engineering construction of continuous proton transport networks for cardo poly(biphenyl indole) high-temperature proton exchange membranes

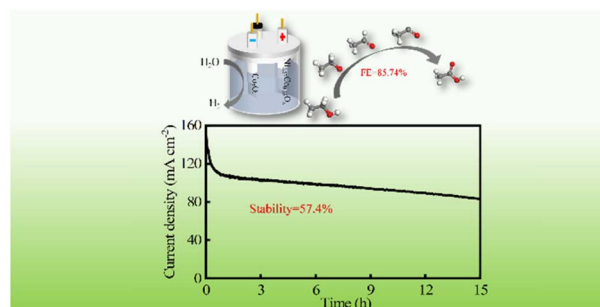
Sifan Chen, Zhuang Ma, Jialin Zhang, Jianchun Niu, Shuomeng Zhang, Qinghua Zhang,* Shiyuan Chen, Shanfu Lu,* Miao Wang and Qinggang He*



17252

Nickel–cobalt oxide nanoparticles as superior electrocatalysts for enhanced coupling hydrogen evolution and selective ethanol oxidation reaction

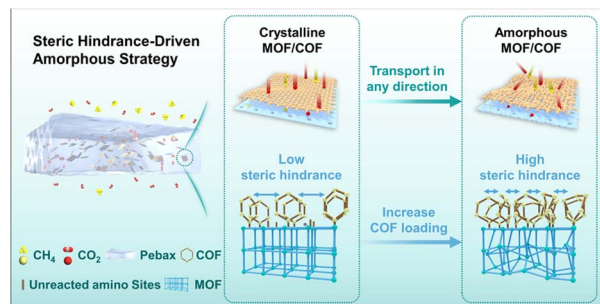
Yong Zhang, Rong Liu,* Yi Ma, Ning Jian, Huiyan Pan, Yongliang Liu, Jie Deng, Luming Li, Quan Shao, Canhuang Li and Junshan Li*



17260

A steric hindrance-driven amorphization strategy on MOF/COF for boosting CO₂ separation in mixed matrix membranes

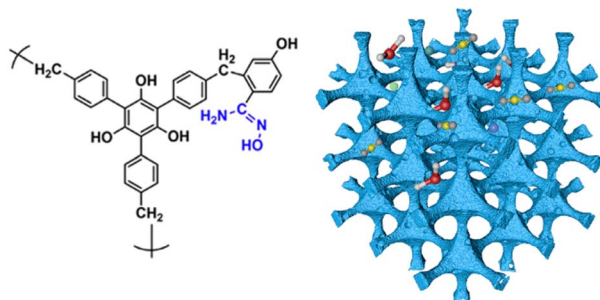
Chao Liang, Yong Zhang, Kang Li and Xueqin Li*



17270

Preparation of meso-porous aromatic frameworks for rapid ion extraction from high salt and corrosion environments

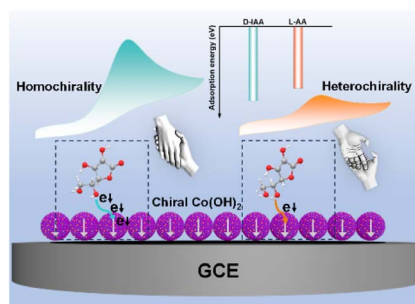
Cheng Zhang, Huanhuan Li, Doudou Cao, Yingbo Song, Yue Zheng, Jiarui Cao, Wanying Chen, Ye Yuan, Nan Gao* and Yajie Yang*



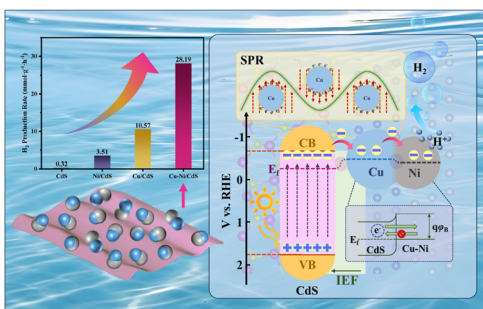
17277

Chromagnetic Co(OH)₂ nanoparticles with high asymmetry for electrochemical recognition and detection of ascorbic acid enantiomers

Dehua Tian, Juan Li, Siyun Qi, Xiaolei Liu,* Aomiao Zhi, Xuezheng Tian, Baojun Li, Zeyan Wang* and Zaizhu Lou*



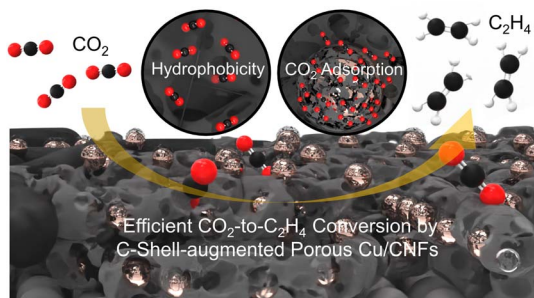
17286



Plasmonic Cu–Ni bimetal nanoparticles coupled with ultrathin CdS nanosheets for remarkably improved photocatalytic H₂ generation under visible-light irradiation

Qingru Zeng, Yining Bao, Shunyan Ning, Qingguo Yu, Yuezhou Wei and Deqian Zeng*

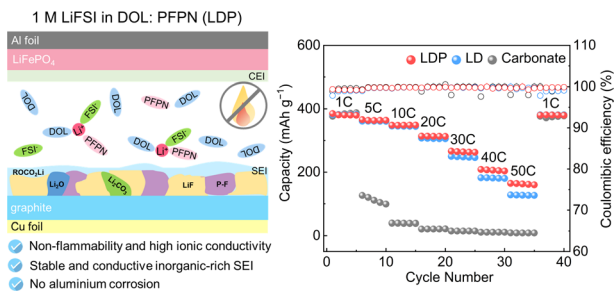
17295



Porous Cu/C nanofibers promote electrochemical CO₂-to-ethylene conversion via high CO₂ availability

Daewon Bae, Taemin Lee, Woosuck Kwon, Sang-Ho Oh and Dae-Hyun Nam*

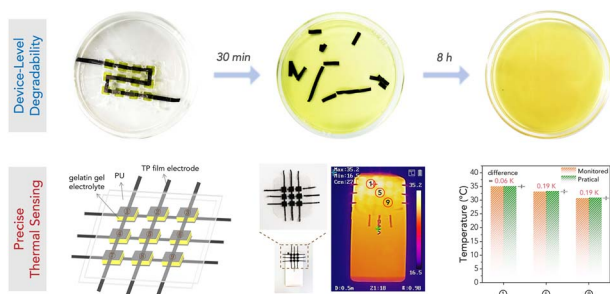
17306



A multi-functional electrolyte additive for fast-charging and flame-retardant lithium-ion batteries

Jing Long, Jiafang Huang, Yuhui Miao, Huiting Huang, Xiaochuan Chen,* Junxiong Wu,* Xiaoyan Li* and Yuming Chen*

17315



Wholly degradable quasi-solid-state thermocells for low-grade heat harvesting and precise thermal sensing

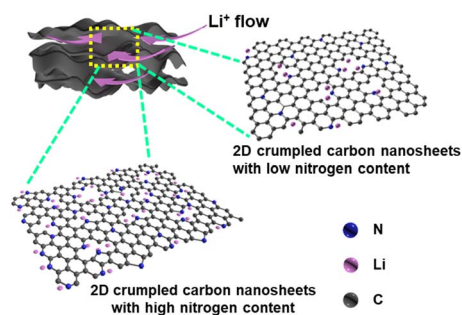
Yifeng Hu, Daibin Xie, Zhaopeng Liu, Bin Xie, Mingyu Li, Guangming Chen* and Zhuoxin Liu*



17327

2D crumpled nitrogen-doped carbon nanosheets anode with capacitive-dominated behavior for ultrafast-charging and high-energy-density Li-ion capacitors

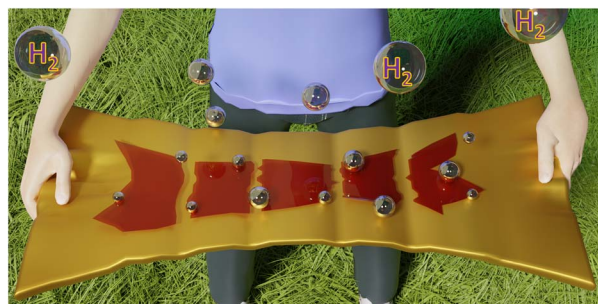
Fangyan Liu, Tong Yu, Jieqiong Qin,^{*} Liangzhu Zhang, Feng Zhou, Xiong Zhang, Yanwei Ma, Feng Li^{*} and Zhong-Shuai Wu^{*}



17338

Strain and defect-engineering on the basal plane of ultra-large MoS₂ monolayers attached onto stretchable gold electrodes

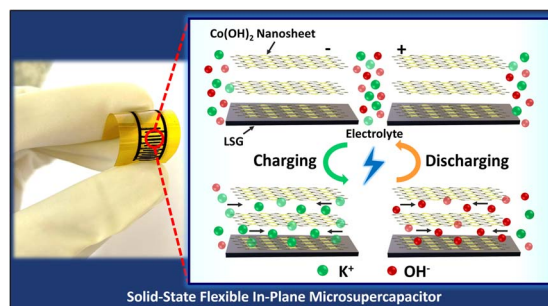
Leonardo H. Hasimoto, Ana B. S. de Araujo, Cláudia de Lourenço, Leandro Merces, Graziãni Candioto, Edson R. Leite, Rodrigo B. Capaz and Murilo Santhiago^{*}



17350

Facile and scalable fabrication of flexible micro-supercapacitor with high volumetric performance based on ultrathin Co(OH)₂ nanosheets

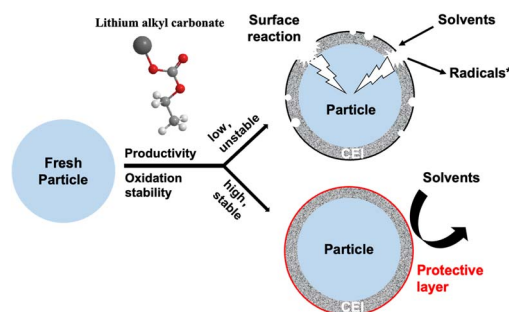
Pallavi Bhaktapralhad Jagdale, Sayali Ashok Patil, Mansi Pathak, Prangya Bhol, Amanda Sfeir, Sébastien Royer, Akshaya Kumar Samal, Chandra Sekhar Rout and Manav Saxena^{*}



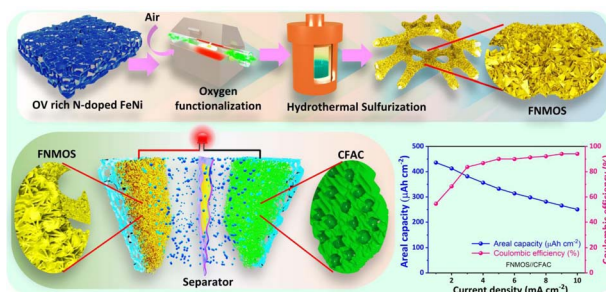
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Disparity among cyclic alkyl carbonates associated with the cathode–electrolyte interphase at high voltage

Shuaishuai Chen, YiHan Tang, Zhaoxin Lu, Shun Wu, Jiliang Wu,^{*} Zhenlian Chen^{*} and Deyu Wang^{*}



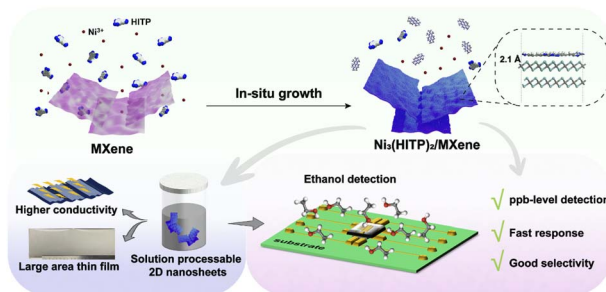
17369



Unlocking enhanced electrochemical performance through oxygen–nitrogen dual functionalization of iron–nickel–sulfide for efficient energy storage systems

Lan Nguyen, Roshan Mangal Bhattarai, Sosiawati Teke, Kisan Chhetri, Debendra Acharya, Ragu Sasikumar and Young Sun Mok*

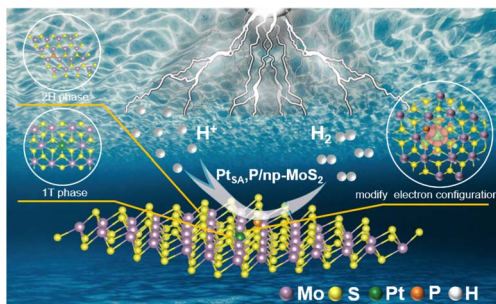
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Solution-processable Ni₃(HITP)₂/MXene heterostructures for ppb-level gas detection

Xuanhao Wu, Mengmeng Niu, Xin Tian, Xiaoyan Peng, Pio John S. Buenconsej, Xu Wu, Yeliang Wang, Wei Ji, Yi Li, Jingsi Qiao,* Jifang Tao, Mingming Zhang, Song Xiao* and Hongye Yuan*

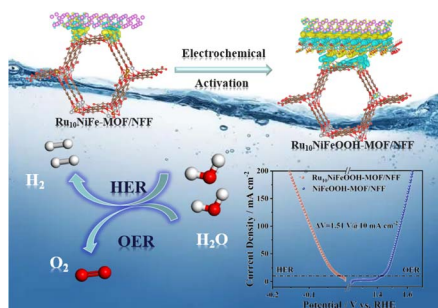
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Phosphorus dopants triggered single-atom platinum catalysis for efficient hydrogen evolution in proton exchange membrane electrolyzers

Jin Peng, Zhen Wang, Kang Jiang, Ming Peng, Nithyadharseni Palaniyandy, Jianwei Ren and Yongwen Tan*

17404



Modulating the electronic structure of Ru using a self-reconstructed MOF-NiFeOOH heterointerface for improved electrocatalytic water splitting

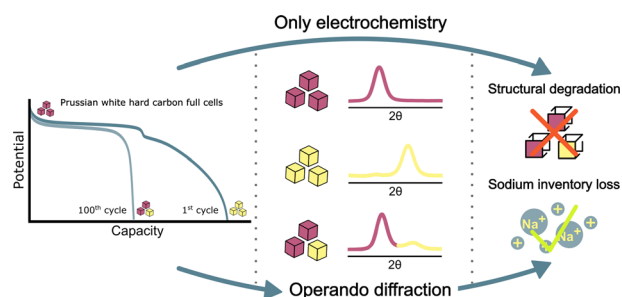
Yingkai Guan, Tingting Liu, Yuanyuan Wu, Chunwei Yang, Bo Liu, Bo Hu, Wei Jiang,* Chunbo Liu* and Guangbo Che*



17413

Unravelling the origin of capacity fade in Prussian white hard carbon full cells through *operando* X-ray diffraction

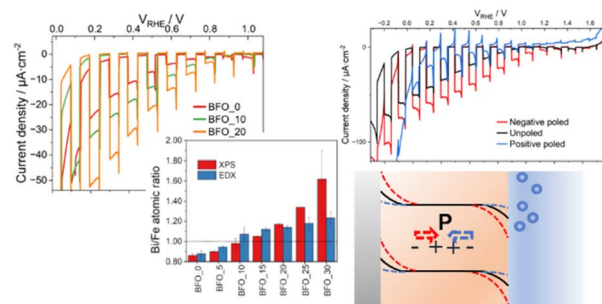
Ida Nielsen,^{*} Charles Aram Hall, Agnes-Matilda Mattsson, Reza Younesi, Alexander Buckel, Gustav Ek and William R. Brant^{*}



17422

Understanding the impact of Bi stoichiometry towards optimised BiFeO₃ photocathodes: structure, morphology, defects and ferroelectricity

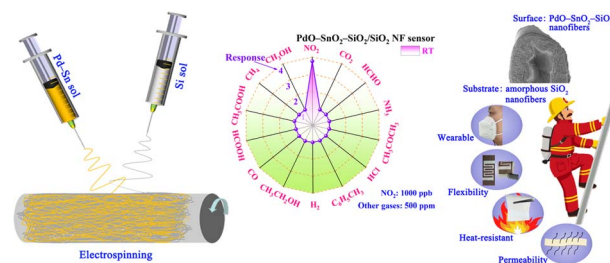
Haozhen Yuan, Subhajit Pal, Chloe Forrester, Qinrong He and Joe Briscoe^{*}



17432

Amorphous SiO₂-based all-inorganic self-supporting nanofiber membrane: a flexible and breathable sensing platform for NO₂ detection

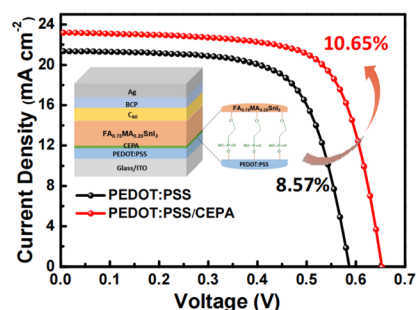
Jia Liu, Qian Yu, Yumeng Liu, Xinlei Zhang, Zhibo Yang, Xiaoqiang Yin, Hongbing Lu,^{*} Jinniu Zhang,^{*} Jianzhi Gao^{*} and Benpeng Zhu^{*}



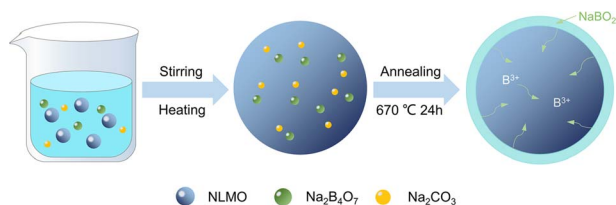
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Tailoring the buried interface with self-assembled 2-chloroethylphosphonic acid for defect reduction and improved performance of tin-based perovskite solar cells

Kun Cao, Haosong Ning, Ningyi Xu, Wentian Zuo, Yibo Zhang, Ming Yang, Junming Xia, Lihui Liu and Shufen Chen^{*}



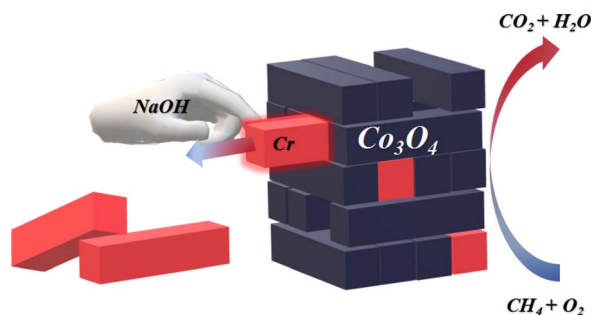
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Improving the electrochemical performance of an anionic redox P3-type layered oxide cathode by the synergistic effect by sodium metaborate coating and boron doping

Zhenxiao Ling, Langyuan Wu, Yuxuan Xiang, Wendi Dong, Lunjie Qin, Xiaodong Qi, Chaogen Hu and Xiaogang Zhang*

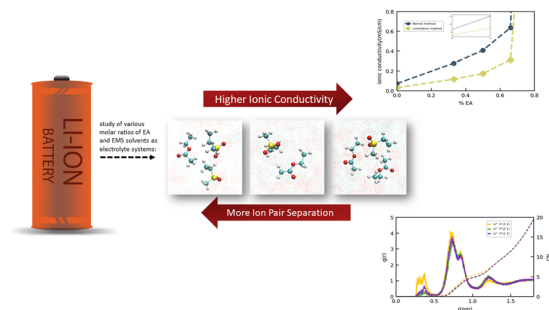
17463



A judicious injection and abstraction of a heterodopant in a Co_3O_4 catalyst for efficient methane oxidation

Shiqiang Sun, Guoling Li, Shanhui Zhu, Wenhao Meng, Leilei Xu, Jinlong Jiang,* Fagen Wang and Xingyun Li*

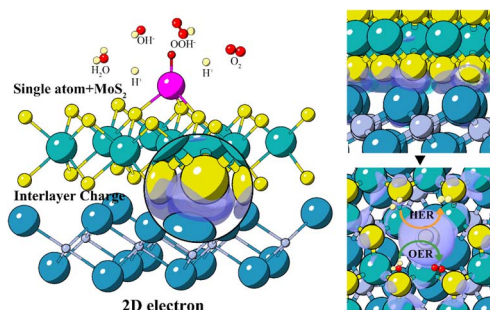
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Exploring lithium salt solution in sulfone and ethyl acetate-based electrolytes for Li-ion battery applications: a molecular dynamics simulation study

Sahar Alamdar and Mahdi Zarif*

17483



Enhancement of single-atom catalytic activity by interlayer charge transfer in electrified-based heterostructures

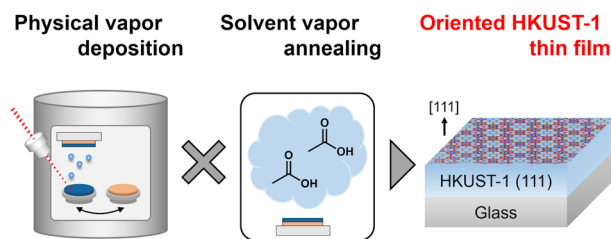
Jiahui Tang, Xiaocha Wang and Baozeng Zhou*



17492

Physical vapor deposition of an oriented metal–organic framework HKUST-1 thin film on an insulating substrate

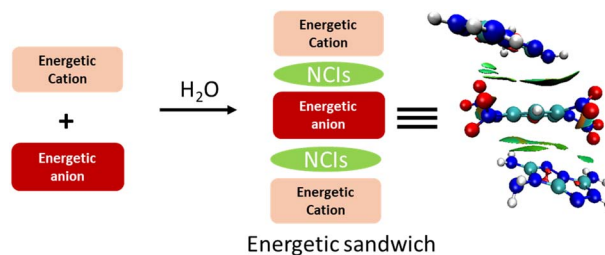
Shunta Iwamoto, Ryo Nakayama,* Seoungmin Chon, Ryota Shimizu and Taro Hitosugi



17501

Sandwiching high energy frameworks by taking advantage of π -philic molecular recognition

Jatinder Singh, Richard J. Staples, Magdalena Fabin and Jean'ne M. Shreeve*

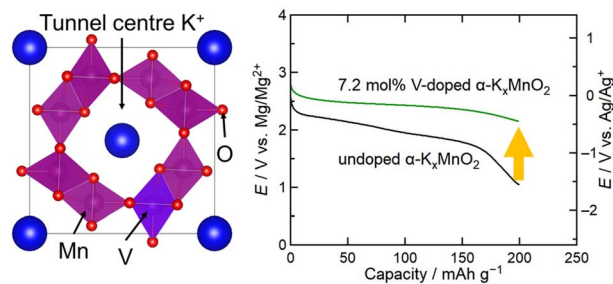


Thermostable | Insensitive | High energy density | low solubility in water

17510

Effect of vanadium doping on α - K_xMnO_2 as a positive electrode active material for rechargeable magnesium batteries

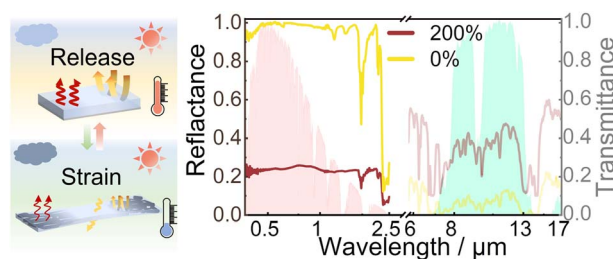
Isaac Oda-Bayliss, Shunsuke Yagi,* Masao Kamiko, Kai Shimada, Hiroaki Kobayashi and Tetsu Ichitsubo



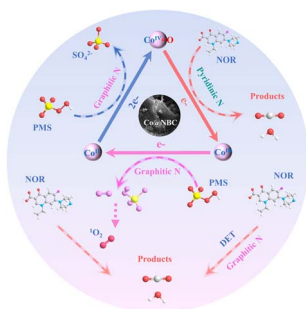
17520

A mechanical–optical coupling design on solar and thermal radiation modulation for thermoregulation

Na Guo, Changmin Shi,* Brian W. Sheldon, Hongjie Yan and Meijie Chen*



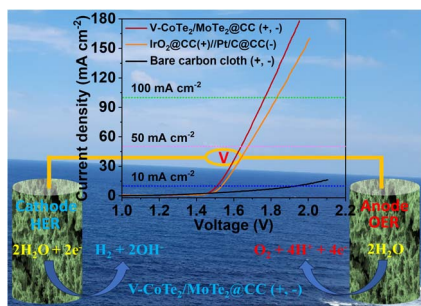
17529



High-efficiency degradation of norfloxacin by Co–N co-doped biochar synergistically activated peroxymonosulfate: experiments and DFT calculations

Mingming Ta, Tiantian Zhang, Tuo Wang,* Juan Guo, Rui Yang, Jingyu Ren, Yanzhong Zhen,* Chunming Yang, Chao Bai, Yanyan An, Yufeng Wang, Gaihui Liu and Fuchun Zhang

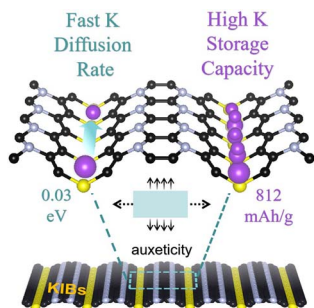
17544



Electronically modulated bimetallic telluride nanodendrites atop 2D nanosheets using a vanadium dopant enabling a bifunctional electrocatalyst for overall water splitting

Ishwor Pathak, Alagan Muthurasu, Debendra Acharya, Kisan Chhetri, Bipeen Dahal, Yagya Raj Rosyara, Taewoo Kim, Tae Hoon Ko* and Hak Yong Kim*

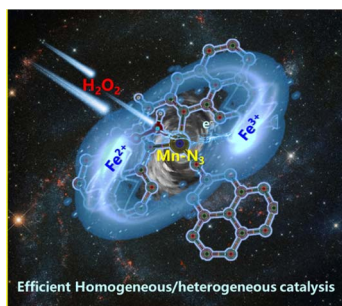
17557



C₆N₂S monolayer: an auxetic material with ultralow diffusion barrier and high storage capacity for potassium-ion batteries

Jiayu Gao, Wenyuan Zhang, Aitor Bergara and Guochun Yang*

17565



Coupling homogeneous and heterogeneous catalysis for the efficient and selective activation of H₂O₂

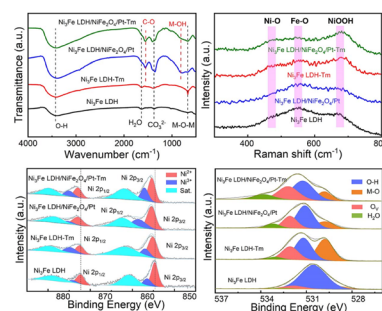
JiaWei Yan, Siyuan Wei, Yalan Lin, Yanfei Zhu, Zhiwu Zhong, Yanting Zheng, Zanyong Zhuang* and Yan Yu*



17574

Coupling thulium 4f orbitals with Ni₃Fe LDH loaded with Pt to form an electronic buffer band for catalyzing alkaline overall water splitting

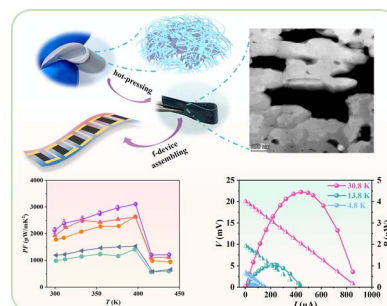
Xinping Yang, Shucheng Li, Yan Zhang, Fagui Qiu, Yanbin Sun, Weikun Ning, Qinglong Tao, Wenqing Li and Shiding Miao*



17586

Modulating carrier transport by cross-dimensional compositing of Ag₂Se/MXene for high-performance flexible thermoelectrics

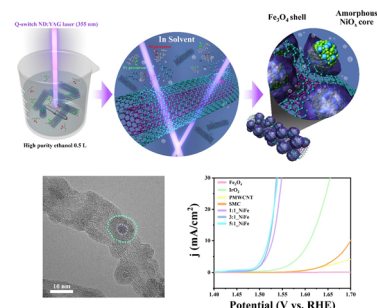
Jie Qin, Yao Lu,* Wenjing Liu, Zhangli Du, Xiang Li, Tianpeng Ding, Jianghe Feng, Yong Du,* Qinfei Ke* and Xin Wang*



17596

Unraveling the mechanism of enhanced oxygen evolution reaction using NiO_x@Fe₃O₄ decorated on surface-modified carbon nanotubes

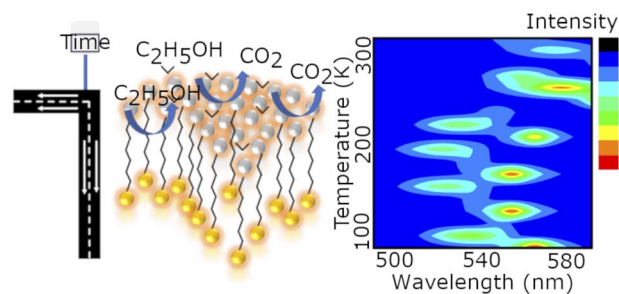
Minju Kim, HyukSu Han, Kangpyo Lee, Sukhyun Kang, Sang-Hwa Lee, Se Hun Lee, Hayun Jeon, Jeong Ho Ryu, Chan-Yeup Chung,* Kang Min Kim* and Sungwook Mhin*



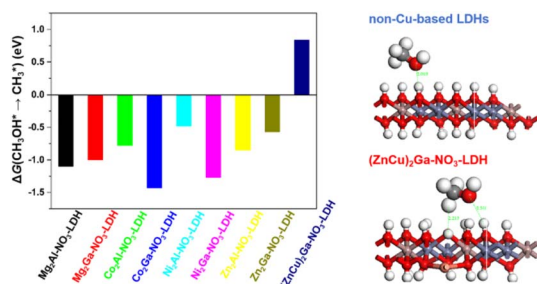
17607

Selectively activated suppressed quantum networks in self-assembled single-atom Ag catalyst-based room-temperature sensors for health monitoring

Nirman Chakraborty,* Anagha Ghosh, Subhajit Mojumder, Ajay K. Mishra and Swastik Mondal*



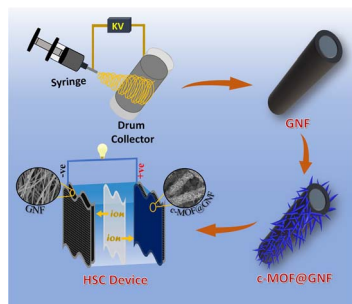
17628



Theoretical study of the mechanism for photocatalytic CO₂ reduction to methanol over layered double hydroxides

Si-Min Xu,^{*} Rui Xu, Yu-Quan Zhu, Ling Zhu and Yingtong Zong^{*}

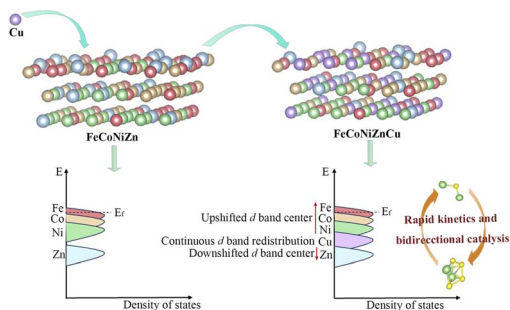
17642



Free-standing metal–organic frameworks on electrospun core–shell graphene nanofibers for flexible hybrid supercapacitors

Nissar Hussain, Zahir Abbas, Kallayi Nabeela and Shaikh M. Mobin^{*}

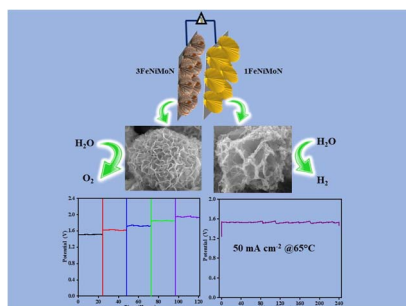
17651



Modifying the electron structure of an FeCoNiZnCu high-entropy alloy with the introduction of Cu to facilitate the catalytic effect in lithium sulfur batteries

Liping Chen, Dingding Wu, Xin Li, Yong Li, Guannan Zu, Shuyue Li, Kai Li and Juan Wang^{*}

17663



Impact of iron nitride-encapsulated bimetallic nickel molybdenum nitride on water-splitting efficiency in alkaline electrolytes

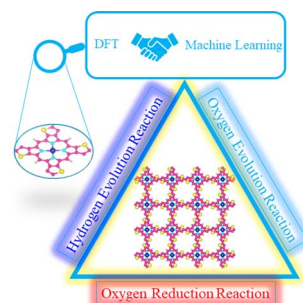
Venkatesan Jayaraman, Ganghyun Jang, Gi-Hyeok Noh, Manasi Murmu and Do-Heyoung Kim^{*}



17676

A novel thiophene-linked metalloporphyrin conjugated polymer: a highly efficient trifunctional electrocatalyst for overall water splitting and oxygen reduction

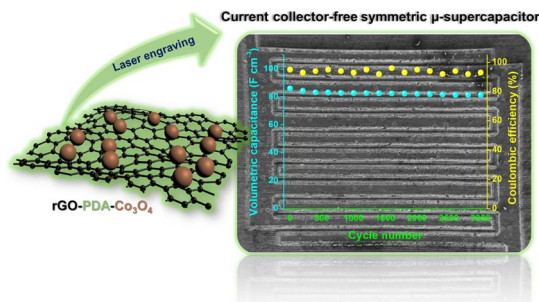
Song Lu,^{*} Jiadi Ying, Tiancun Liu, Yeqing Wang, Min Guo, Qi Shen, Qing Li,^{*} Yong Wu, Yafei Zhao and Zhixin Yu^{*}



17688

Current collector-free symmetric μ -supercapacitor based on a ternary composite of graphene, polydopamine and Co_3O_4

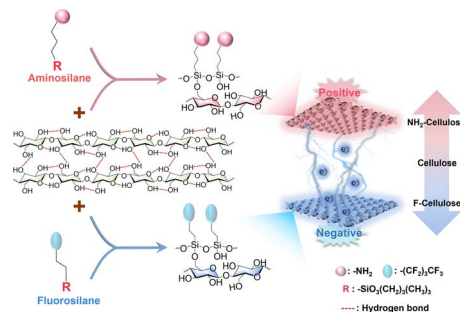
Adnane Bouzina, René Meng, Françoise Pillier, Hubert Perrot, Catherine Debiecme-Chouvy^{*} and Ozlem Sel^{*}



17702

Precise chemical regulation of polar groups to enhance the charge transfer density of cellulosic triboelectric textiles

Yuxin Ma, Chuanhui Wei, Zixun Wang, Tianmei Lv, Yingxue Tan, Jianlei He, Xiao Peng and Kai Dong^{*}



17714

Construction of a series of insensitive energetic materials starting from the condensation reaction of 3-amino-4-cyanofurazan

Yuangang Xu,^{*} Lujia Ding, Dongxue Li, Ze Xu, Pengcheng Wang, Qiuhan Lin and Ming Lu^{*}

