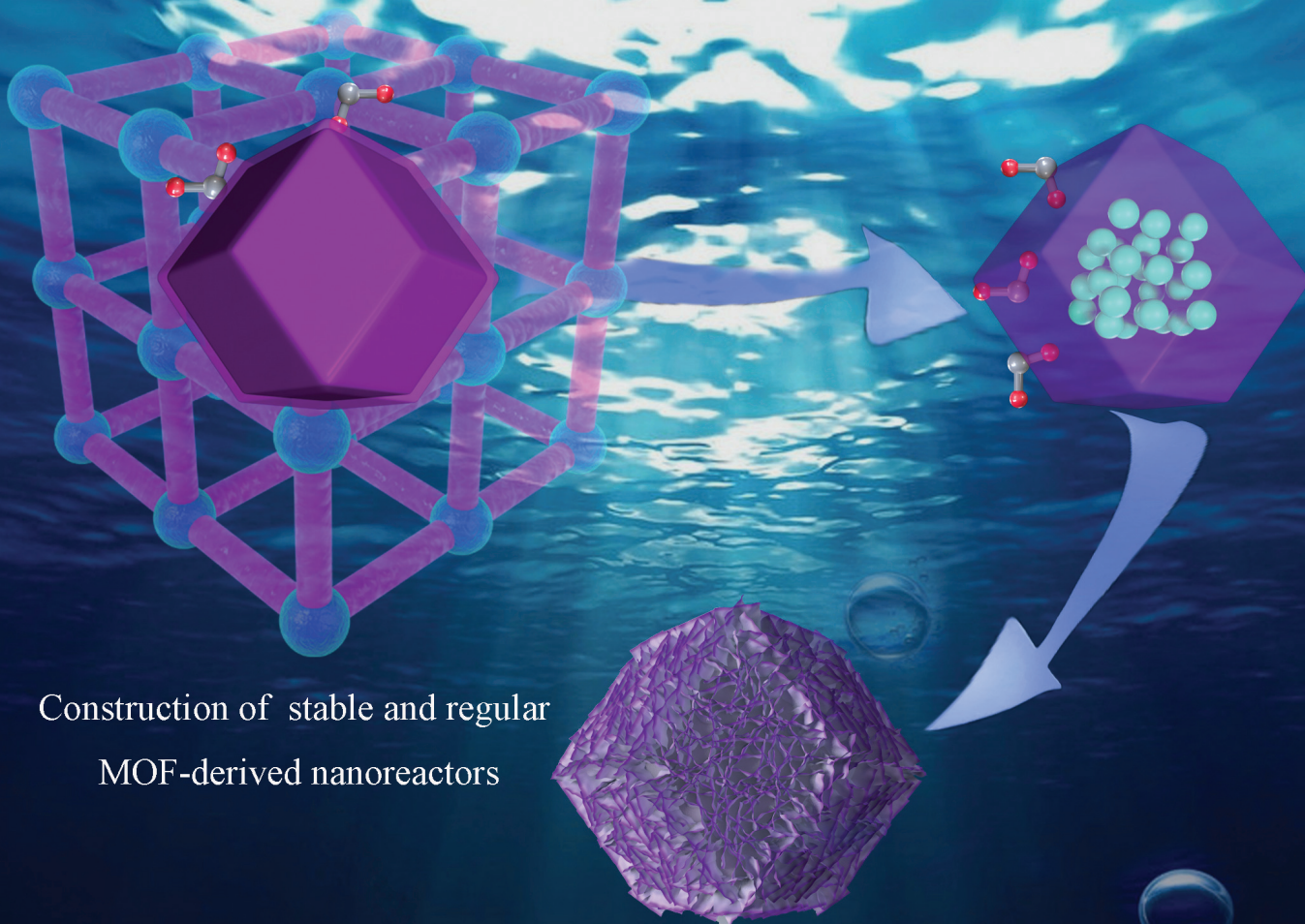


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Graphical Abstracts/Chin Chem Lett 31 (2020) iii–xviii

Special Column: Advanced Chemistry of Energy Material

Reviews

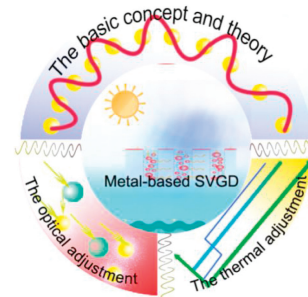
Novel advances in metal-based solar absorber for photothermal vapor generation

Chinese Chemical Letters 31 (2020) 2159

Zhengtong Li, Chengbing Wang

School of Materials Science & Engineering, Shaanxi Key Laboratory of Green Preparation and Functionalization for Inorganic Material, Shaanxi University of Science & Technology, Xi'an 710021, China

This review mainly elaborates the novel progress in metal-based solar absorber for photothermal vapor generation, including the basic concept and theory of metal-based solar absorber, localized evaporation by precise optical adjustment, and selective absorption surface for the thermal adjustment.



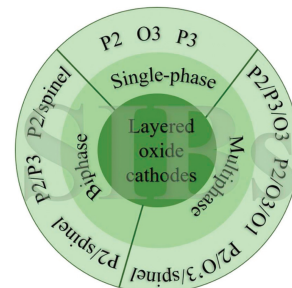
Progress on multiphase layered transition metal oxide cathodes of sodium ion batteries

Chinese Chemical Letters 31 (2020) 2167

Qi Wang, Shiyong Chu, Shaohua Guo

Center of Energy Storage Materials & Technology, College of Engineering and Applied Sciences, Jiangsu Key Laboratory of Artificial Functional Materials, National Laboratory of Solid State Microstructures, and Collaborative Innovation Center of Advanced Microstructure, Nanjing University, Nanjing 210093, China

Since single phase transition metal layered oxide materials have been deeply discussed, multiphase materials that integrate the superiority of single P2, P3, O3 or other phases through synergetic effect have not been well researched. In this review, we summarized the recent progress of transition metal layered oxide multiphase cathode materials of sodium ion batteries, analyzed the mechanism and specified the future research direction.



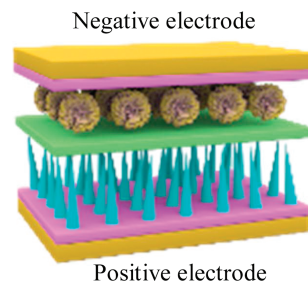
Research progress on transition metal oxide based electrode materials for asymmetric hybrid capacitors

Chinese Chemical Letters 31 (2020) 2177

Meizhen Dai, Depeng Zhao, Xiang Wu

School of Materials Science and Engineering, Shenyang University of Technology, Shenyang 110870, China

In this review, we summarized recent progresses in transition metal oxide based electrode materials for hybrid capacitors. Different synthesis routes and electrochemical performances of electrode materials and storage mechanisms of capacitor devices have been presented in details.



Metal-organic framework membranes: From synthesis to electrocatalytic applications

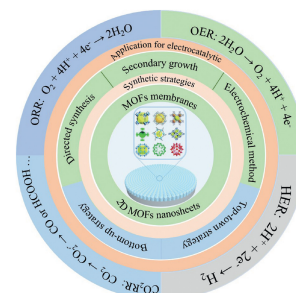
Xiaobang Liu^a, Ting Yue^a, Kai Qi^a, Yubing Qiu^a, Bao Yu Xia^a, Xingpeng Guo^b

^a Key Laboratory of Material Chemistry for Energy Conversion and Storage (Ministry of Education), Hubei Key Laboratory of Material Chemistry and Service Failure, School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology (HUST), Wuhan 430074, China

^b School of Chemistry and Chemical Engineering, Guangzhou University, Guangzhou 510006, China

This mini-review summarizes a brief introduction to various methods for fabrication of MOF membranes and focuses on their promising performance in electrocatalytic applications.

Chinese Chemical Letters 31 (2020) 2189



Communications

Hierarchical porous nanofibers of carbon@nickel oxide nanoparticles derived from polymer/block copolymer system

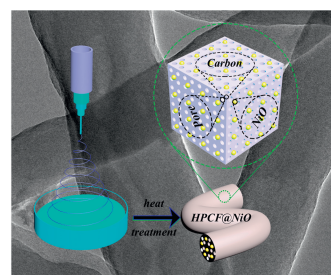
Wen Shang^{a,b}, Huanzhou Du^a, Yage Wu^a, Jianlin Xu^{a,b}, Fen Ran^{a,b}

^a State Key Laboratory of Advanced Processing and Recycling of Non-ferrous Metals, School of Material Science and Engineering, Lanzhou University of Technology, Lanzhou 730050, China

^b BaiYin Research Institute of Novel Materials, Lanzhou University of Technology, Lanzhou 730050, China

A composite material of hierarchical porous nanofibers and nickel oxide nanoparticles is prepared by electrospinning combined with high-temperature carbonization.

Chinese Chemical Letters 31 (2020) 2202



Nanoreactors derived from silica-protection-assisted metal-organic framework

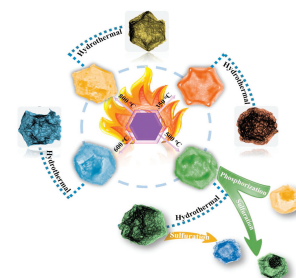
Ling Jin^a, Xiaxia Li^a, Chunsen Liu^b, Huan Pang^a

^a School of Chemistry and Chemical Engineering, Guangling College, Yangzhou University, Yangzhou 225009, China

^b Henan Provincial Key Laboratory of Surface & Interface Science, Zhengzhou University of Light Industry, Zhengzhou 450002, China

Core-shell nanoreactors are synthesized through calcining silica-protected ZIF-67, and the nanomaterials with optimized structure exhibit excellent electrochemical performance. New nanoreactors are designed by combining sulfides and phosphides with $\text{Co}_3\text{O}_4/\text{SiO}_2$.

Chinese Chemical Letters 31 (2020) 2207



A highly stable, luminescent and layered zinc(II)-MOF: Iron(III)/copper (II) dual sensing and guest-assisted exfoliation

Xiu Qian^a, Siyu Deng^a, Xiang Chen^a, Qiang Gao^a, Yun-Long Hou^{a,b}, Aiwu Wang^c, Lizhuang Chen^a

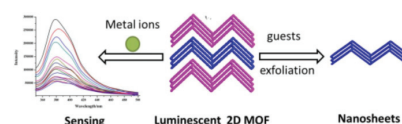
^a School of Environmental and Chemical Engineering, Jiangsu University of Science and Technology, Zhenjiang 212003, China

^b Department of Materials Science and Engineering, City University of Hong Kong, Hong Kong SAR, China

^c Center for Advanced material Diagnostic Technology, Shenzhen Technology University, Shenzhen 518118, China

A blue-light emitting MOF with high stability and layered structure was studied for $\text{Cu}^{2+}/\text{Fe}^{3+}$ sensing and guest-assisted chemical exfoliation.

Chinese Chemical Letters 31 (2020) 2211



One-step synthesis of biomass derived O, N-codoped hierarchical porous carbon with high surface area for supercapacitors

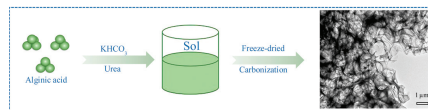
Shuxian Sun^a, Fuqin Han^a, Xiaoliang Wu^a, Zhuangjun Fan^b

^a College of Chemistry, Chemical Engineering and Resource Utilization, Northeast Forestry University, Harbin 150040, China

^b College of Material Science and Engineering, China University of Petroleum, Qingdao 266580, China

Oxygen and nitrogen codoped hierarchical porous carbon with ultrahigh specific surface area and rich heteroatom was synthesized by one-step carbonization of the mixture of KHCO_3 , urea and alginic acid.

Chinese Chemical Letters 31 (2020) 2235



Nitrogen-doped carbon nanotubes by multistep pyrolysis process as a promising anode material for lithium ion hybrid capacitors

Juan Yang^{a,b}, Dan Xu^a, Ruilin Hou^b, Junwei Lang^b, Zhaoli Wang^c, Zhengping Dong^a, Jiantai Ma^a

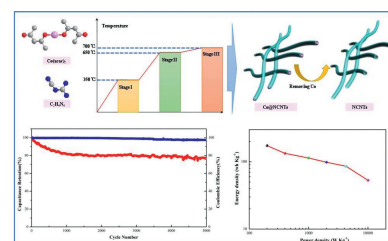
^a College of Chemistry and Chemical Engineering, Gansu Provincial Engineering Laboratory for Chemical Catalysis, Laboratory of Special Function Materials and Structure Design of the Ministry of Education, Lanzhou University, Lanzhou 730000, China

^b Laboratory of Clean Energy Chemistry and Materials, State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, China

^c College of Physical Science and Technology, Lanzhou University, Lanzhou 730000, China

NCNTs have been prepared by multistep pyrolysis method. LIHCs used NCNTs as anode and APDC as cathode exhibits high energy and power density, as well as excellent cycling stability.

Chinese Chemical Letters 31 (2020) 2239



Melamine sponge derived porous carbon monoliths with NiMn oxides for high performance supercapacitor

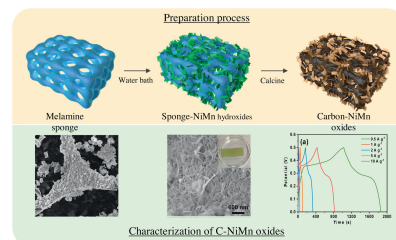
Qianyuan Shan^a, Wangchen Huo^a, Man Shen^a, Chuan Jing^a, Yan Peng^b, Huayan Pu^a, Yuxin Zhang^a

^a State Key Laboratory of Mechanical Transmission, College of Materials Science and Engineering, Chongqing University, Chongqing 400044, China

^b Research Institute of USV Engineering, Shanghai University, Shanghai 200444, China

The porous carbon with nickel-manganese oxides is prepared by hydrothermal method and calcination. The morphology and electrochemical performances were tested, and test results showed ordered structure and large specific capacitance. Porous carbon with NiMn oxides is a flexible electrode material with great potential in supercapacitor.

Chinese Chemical Letters 31 (2020) 2245



Bulk heterojunction perovskite solar cells incorporated with solution-processed TiOx nanoparticles as the electron acceptors

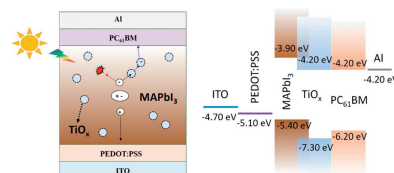
Tao Zhu^a, Yongrui Yang^a, Suyuan Zhou^a, Xiang Yao^b, Lei Liu^a, Wenping Hu^b, Xiong Gong^a

^a Department of Polymer Engineering, College of Polymer Science and Polymer Engineering, The University of Akron, Akron, OH 44325, United States

^b Institute of Molecular Plus, Tianjin Key Laboratory of Molecular Optoelectronic Sciences, School of Science, Tianjin University and Collaborative Innovation Centre of Chemical Science and Engineering, Tianjin 300072, China

In this study, $\text{CH}_3\text{NH}_3\text{PbI}_3$ is blended with solution-processed n-type TiO_x nanoparticle as the photoactive layer to balance charge carrier transporting properties for addressing the intrinsic electronic properties of perovskite materials. We found that the $\text{CH}_3\text{NH}_3\text{PbI}_3:\text{TiO}_x$ bulk heterojunction thin film possesses enhanced and balanced charge carrier mobilities, superior film morphology with enlarged crystal sizes. Moreover, bulk heterojunction perovskite solar cells possess suppressed trap-induced charge recombination as compared with that of planar heterojunction perovskite solar cells.

Chinese Chemical Letters 31 (2020) 2249



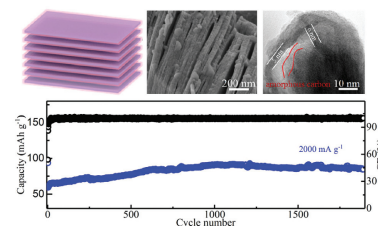
In-situ growth of hybrid $\text{NaTi}_8\text{O}_{13}/\text{NaTiO}_2$ nanoribbons on layered MXene Ti_3C_2 as a competitive anode for high-performance sodium-ion batteries

Xuan Sun, Ke Tan, Yang Liu, Jinyang Zhang, Linrui Hou, Changzhou Yuan

School of Material Science & Engineering, University of Jinan, Ji'nan 250022, China

Two dimensional sodium titanates/ Ti_3C_2 hybrids were smartly synthesized and exhibited superior sodium storage properties towards sodium ion batteries as competitive anodes.

Chinese Chemical Letters 31 (2020) 2254



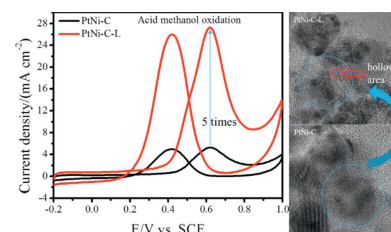
Unstable Ni leaching in MOF-derived PtNi-C catalyst with improved performance for alcohols fuel electro-oxidation

Bo Fang, Zong Liu, Yufei Bao, Ligang Feng

School of Chemistry and Chemical Engineering, Yangzhou University, Yangzhou 225002, China

Unstable assistant promoter removal for the MOF derived catalysts was found significant for the performance improvement.

Chinese Chemical Letters 31 (2020) 2259



Morphology and size controlled synthesis of Co-doped MIL-96 by different alkaline modulators for sensitively detecting alphafetoprotein

Chaonan Gu^a, Jingjing Li^c, Guang Yang^a, Liming Zhang^a, Chun-Sen Liu^a, Huan Pang^b

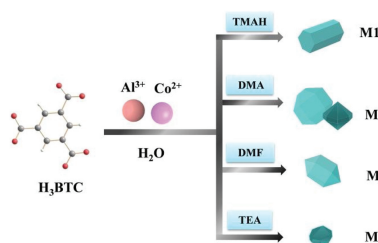
^a Henan Provincial Key Laboratory of Surface & Interface Science, Zhengzhou University of Light Industry, Zhengzhou 450002, China

^b School of Chemistry and Chemical Engineering, Guangling College, Yangzhou University, Yangzhou 225009, China

^c School of Chemistry and Chemical Engineering, Henan University of Technology, Zhengzhou 450001, China

Co-doped MIL-96 with different morphologies was successfully prepared via a simple coordination modulation strategy using four different alkaline reagents as cosolvents. Among these, nano-sized Co-doped MIL-96 with an ellipsoid morphology exhibited the highest electroactive surface area and the best electrochemical sensing performance towards α -fetoprotein.

Chinese Chemical Letters 31 (2020) 2263



High-performance $\text{Na}_{1.25}\text{V}_3\text{O}_8$ nanosheets for aqueous zinc-ion battery by electrochemical induced de-sodium at high voltage

Di Xie^a, Fang Hu^a, Xin Yu^a, Fuhua Cui^a, Guihong Song^a, Kai Zhu^{b,c}

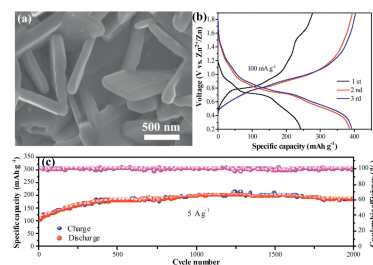
^a School of Materials Science and Engineering, Shenyang University of Technology, Shenyang 110870, China

^b Key Laboratory of Superlight Materials and Surface Technology of Ministry of Education, College of Materials Science and Chemical Engineering, Harbin Engineering University, Harbin 150010, China

^c Department of Mechanical Engineering, The Hong Kong Polytechnic University, Hong Kong, China

$\text{Na}_{1.25}\text{V}_3\text{O}_8$ nanosheets are used as a cathode material in aqueous Zn ion energy storage applications. After high-voltage electrochemical de-sodium, the cathode can maintain a high reversible capacity of 179 mAh/g at a high current density of 4 A/g after 2000 cycles, and the capacity retention rate is about 85%. In addition, a high specific energy of 416.9 Wh/kg can be obtained at a power energy of 143.6 W/kg, showing great potential as an electrode for aqueous batteries.

Chinese Chemical Letters 31 (2020) 2268



Synthesis of nickel selenide thin films for high performance all-solid-state asymmetric supercapacitors

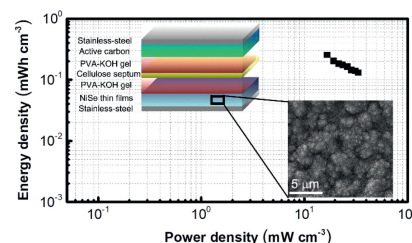
Hao Li^a, Jiangfeng Gong^a, Jing-Chang Li^a, Xincheng Zhang^a, Chunmei Tang^a, Hongbing Yao^a, Qingping Ding^b

^a College of Science, Hohai University, Nanjing 210098, China

^b Ames Laboratory, US DOE, Ames, IA 50011, United States

Nickel selenide thin films were synthesized using electrodeposition technique. The phases of the as-deposited films can be well controlled by adjusting the electrolyte concentration. NiSe/active carbon based all-solid-state asymmetric supercapacitors exhibit high areal capacitances with well flexibility.

Chinese Chemical Letters 31 (2020) 2275



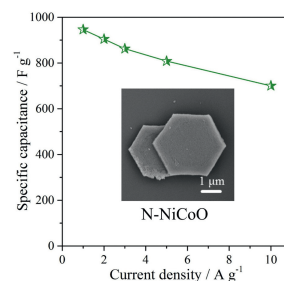
Design and synthesis of nitrogen-doped hexagonal NiCoO nanoplates derived from Ni-Co-MOF for high-performance electrochemical energy storage

Yan Li, Yuying Shan, Huan Pang

School of Chemistry and Chemical Engineering, Institute for Innovative Materials and Energy, Yangzhou University, Yangzhou 225009, China

Using MOF precursor as a template, N-NiCoO with a certain Ni/Co molar ratio obtained by one-step calcination has high and stable electrochemical activity.

Chinese Chemical Letters 31 (2020) 2280



Construction of SiO₂-TiO₂/g-C₃N₄ composite photocatalyst for hydrogen production and pollutant degradation: Insight into the effect of SiO₂

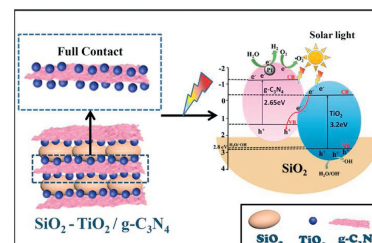
Sijia Sun^a, Hao Ding^a, Lefu Mei^a, Ying Chen^a, Qiang Hao^b, Wanting Chen^a, Zhuoqun Xu^a, Daimei Chen^a

^a Beijing Key Laboratory of Materials Utilization of Nonmetallic Minerals and Solid Wastes, National Laboratory of Mineral Materials, School of Materials Science and Technology, China University of Geosciences, Beijing 100083, China

^b Centre for Technology in Water and Wastewater (CTWW), School of Civil and Environmental Engineering, University of Technology Sydney (UTS), Ultimo, NSW 2007, Australia

Based on the carrier effect of SiO₂, monodisperse TiO₂ quantum dots are fully contacted with highly dispersed g-C₃N₄ to form heterostructure, which can promote the separation of photogenerated electron-hole pairs.

Chinese Chemical Letters 31 (2020) 2287



Metal-organic framework derived Co₃O₄/PPy bifunctional electrocatalysts for efficient overall water splitting

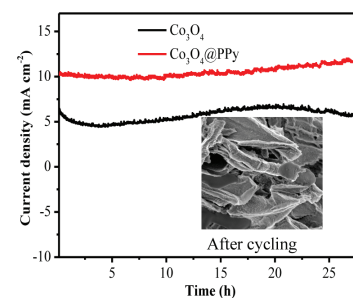
Yongli Tong^{a,b}, Hengqi Liu^a, Meizhen Dai^a, Li Xiao^a, Xiang Wu^a

^a School of Materials Science and Engineering, Shenyang University of Technology, Shenyang 110870, China

^b School of Science, Shenyang Ligong University, Shenyang 110159, China

Herein, we report Co₃O₄/PPy hierarchical structures as electrode materials grown on nickel foam by a facile strategy. The as-obtained Co₃O₄/PPy products show high catalytic performances.

Chinese Chemical Letters 31 (2020) 2295



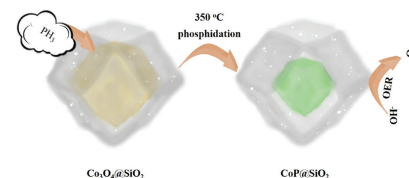
CoP@SiO₂ nanoreactors: A core-shell structure for efficient electrocatalytic oxygen evolution reaction

Ling Jin, Huan Pang

School of Chemistry and Chemical Engineering, Yangzhou University, Yangzhou 225009, China

Using Co₃O₄@SiO₂ as precursor, the core-shell structural CoP@SiO₂ nanoreactors obtained by one-step calcination exhibits high electrochemical activity.

Chinese Chemical Letters 31 (2020) 2300



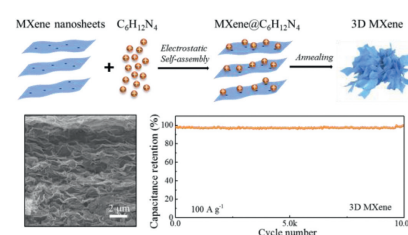
3D crumbled MXene for high-performance supercapacitors

Xin Zhang, Jiawei Miao, Peng Zhang, Qizhen Zhu, Mingchi Jiang, Bin Xu

State Key Laboratory of Organic-Inorganic Composites, Beijing Key Laboratory of Electrochemical Process and Technology for Materials, Beijing University of Chemical Technology, Beijing 100029, China

3D Ti₃C₂T_x MXene with crumbled and porous structure was fabricated with the aid of hexamethylenetetramine by electrostatic self-assembly and thermal annealing, which provides substantial active sites and promotes fast ion transport, leading to excellent rate performance as an electrode material for supercapacitors.

Chinese Chemical Letters 31 (2020) 2305



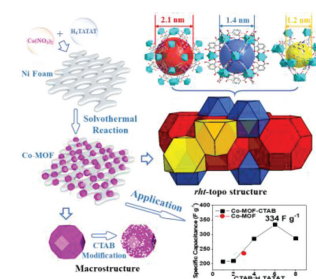
A conductive anionic Co-MOF cage with zeolite framework for supercapacitors

Wei Du, Yue-Ling Bai, Zhen Yang, Runlong Li, Dan Zhang, Zhiheng Ma, Anbao Yuan, Jiaqiang Xu

College of Science, Shanghai University, Shanghai 200444, China

A conductive anionic Co-MOF with zeolite framework can be directly fabricated as electrode without any other conductive additives and additive binders for supercapacitors, and CTAB could modify the morphology of Co-MOF to further increase the energy storage performance.

Chinese Chemical Letters 31 (2020) 2309



Sodium-based dual-ion batteries via coupling high-capacity selenium/graphene anode with high-voltage graphite cathode

Xiankun Hou^a, Wenhao Li^a, Yingying Wang^b, Shaofang Li^a, Yunfeng Meng^a, Haiyue Yu^a, Baokuan Chen^c, Xinglong Wu^{a,b}

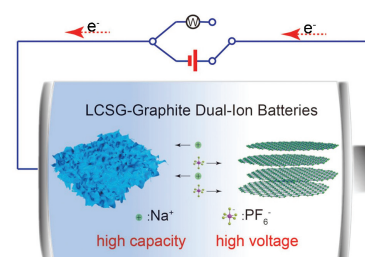
^a National & Local United Engineering Lab for Power Battery, Department of Chemistry, Northeast Normal University, Changchun 130024, China

^b Key Laboratory for UV Light-Emitting Materials and Technology of Ministry of Education, Northeast Normal University, Changchun 130024, China

^c College of Chemistry, Chemical Engineering and Environmental Engineering, Liaoning Shihua University, Fushun 113001, China

In this study, a dual ion full battery (DIFB) is designed via coupling the high-capacity Se/graphene composite anode with high-voltage graphite cathode. The fabricated DIFB delivers good electrochemical properties in terms of high capacity and high output voltage. Such a battery system is enlightening for the design of future low-cost energy storage devices.

Chinese Chemical Letters 31 (2020) 2314



Insights into the photocatalytic mechanism of the C₄N/MoS₂ heterostructure: A first-principle study

Rui Zhang^a, Wei Jian^b, Zhao-Di Yang^a, Fu-Quan Bai^{b,c}

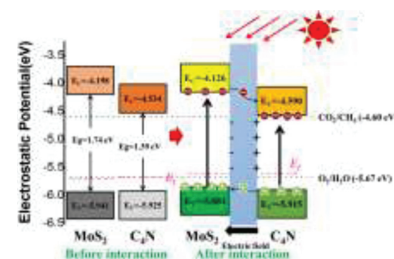
^a College of Chemical and Environmental Engineering, Harbin University of Science and Technology, Harbin 150080, China

^b Laboratory of Theoretical and Computational Chemistry, Institute of Theoretical Chemistry and College of Chemistry, Jilin University, Changchun 130023, China

^c Beijing National Laboratory for Molecular Sciences (BNLMS), Beijing 100190, China

Constructing heterostructures by combining MoS₂ and C₄N as effective strategy to design efficient photocatalysts for CO₂ reduction reaction (CO₂RR) are investigated theoretically in this work. The optical absorption coefficient of the C₄N/MoS₂ heterostructure is significantly higher and the built-in electric field could separate the photogenerated electrons and holes efficiently which produce active sites for photocatalytic reaction and enhance photocatalytic activity.

Chinese Chemical Letters 31 (2020) 2319



Two-dimensional 1T-PS₂ as a promising anode material for sodium-ion batteries with ultra-high capacity, low average voltage and appropriate mobility

Dawei Zhou^a, Chunping Li^b, Furong Yin^a, Xin Tang^d, Chunying Pu^a, Chaozheng He^c

^a College of Physics and Electronic Engineering, Nanyang Normal University, Nanyang 473061, China

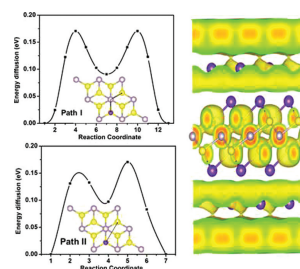
^b Fundamental Department, Aviation University of Air Force, Changchun 130022, China

^c Institute of Environmental and Energy Catalysis, School of Materials Science and Chemical Engineering, Xi'an Technological University, Xi'an 710021, China

^d College of Material Science and Engineering, Guilin University of Technology, Guilin 541004, China

We identified a new anode material for sodium-ion battery, two dimensional PS₂. It possesses a high theoretical capacity, a small diffusion barrier and a low average open-circuit voltage.

Chinese Chemical Letters 31 (2020) 2325



CeO₂ quantum dots doped Ni-Co hydroxide nanosheets for ultrahigh energy density asymmetric supercapacitors

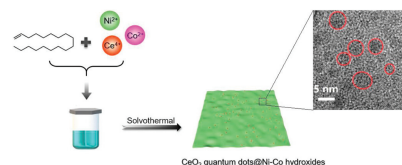
Huiyu Duan^{a,b}, Tong Wang^a, Xinyi Wu^a, Ziyun Su^a, Jing Zhuang^a, Suli Liu^a, Rongmei Zhu^b, Changyun Chen^a, Huan Pang^b

^a Key Laboratory of Advanced Functional Materials of Nanjing, School of Environmental Science, Nanjing Xiaozhuang University, Nanjing 211171, China

^b School of Chemistry and Chemical Engineering, Institute for Innovative Materials and Energy, Yangzhou University, Yangzhou 225009, China

CeO₂ quantum dots doped Ni-Co hydroxide nanosheets for ultrahigh energy density asymmetric supercapacitors. CeO₂ quantum dots doped ultrathin layered Ni-Co transition metal hydroxides were firstly fabricated via a convenient method. The materials exhibited an excellent electrochemical energy storage performance, including ultrahigh energy density and good cyclic stability.

Chinese Chemical Letters 31 (2020) 2330



Multilayered structure of N-carbonenveloped iron oxide/graphene nanocomposites as an improved anode for Li-ion battery

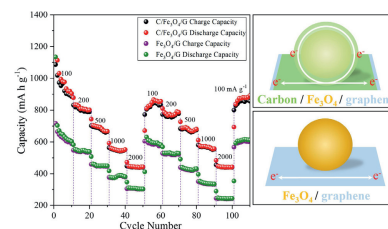
Li Sun^a, Kai Wang^a, Ningning Li^a, Jun Zhang^{a,b}, Xiangxin Guo^a, Xianghong Liu^{a,b}

^a College of Physics, Qingdao University, Qingdao 266071, China

^b Key Laboratory of Advanced Energy Materials Chemistry (Ministry of Education), Nankai University, Tianjin 300071, China

A carbon confinement strategy is proposed to suppress the volume change and electrode pulverization of Fe₃O₄/graphene negative materials during cycling to achieve high capacity and long cycle life for lithium storage.

Chinese Chemical Letters 31 (2020) 2333



Integrated lithium metal anode protected by composite solid electrolyte film enables stable *quasi*-solid-state lithium metal batteries

Junfan Ding^{a,b}, Rui Xu^{a,b}, Chong Yan^{a,b}, Ye Xiao^{a,b}, Yeru Liang^c, Hong Yuan^{a,b}, Jiaqi Huang^{a,b}

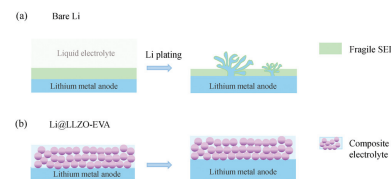
^a School of Materials Science & Engineering, Beijing Institute of Technology, Beijing 100081, China

^b Advanced Research Institute of Multidisciplinary Science, Beijing Institute of Technology, Beijing 100081, China

^c College of Materials and Energy, South China Agricultural University, Guangzhou 510642, China

By incorporating Li@composite solid electrolyte integrated electrode and a limited amount of liquid electrolyte (7.5 $\mu\text{L}/\text{cm}^2$), a *quasi*-solid battery enables superior interfacial stability as well as excellent interfacial contact.

Chinese Chemical Letters 31 (2020) 2339



MnO₂-directed synthesis of NiFe-LDH@FeOOH nanosheet arrays for supercapacitor negative electrode

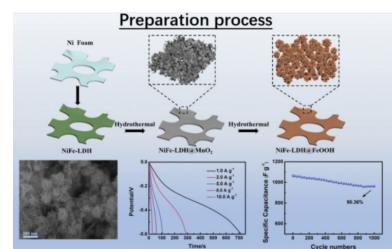
Qing Sun^a, Kexin Yao^a, Yuxin Zhang^b

^a Multi-scale Porous Materials Center, Institute of Advanced Interdisciplinary Studies, College of Chemistry and Chemical Engineering, Chongqing University, Chongqing 400044, China

^b State Key Laboratory of Mechanical Transmission, College of Materials Science and Engineering, Chongqing University, Chongqing 400044, China

The NiFe-LDH@FeOOH negative material on nickel foam was first prepared by simple two-step hydrothermal method. The porous nanostructures of FeOOH nanosheets can provide a large number of electroactive sites, and the two-dimensional layered structure of NiFe-LDH nanosheets have a high specific surface area and open spatial structure, which can enhance the diffusion of ions in the active material. By combining the advantages of the two materials, the high electrochemical properties were demonstrated.

Chinese Chemical Letters 31 (2020) 2343



Bimetal-organic frameworks derived Co/N-doped carbons for lithium-sulfur batteries

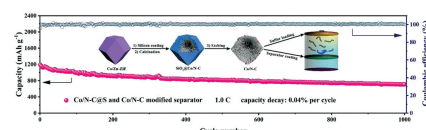
Shifang Jiang^a, Shuo Huang^a, Minjie Yao^a, Jiakai Zhu^a, Lili Liu^b, Zhiqiang Niu^a

^a Key Laboratory of Advanced Energy Materials Chemistry (Ministry of Education), Renewable Energy Conversion and Storage Center, College of Chemistry, Nankai University, Tianjin 300071, China

^b Tianjin Key Laboratory for Photoelectric Materials and Devices, School of Materials Science and Engineering, Tianjin University of Technology, Tianjin 300384, China

Co/N-C derived from Co/Zn-ZIF was utilized to encapsulate sulfur and modify separator in Li-S batteries. Lithium polysulfides are chemically bonded with the nitrogen atoms and cobalt nanoparticles can accelerate the conversion of polysulfides.

Chinese Chemical Letters 31 (2020) 2347



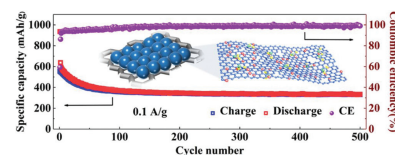
S-O bond chemically constrained NiS₂/rGO nanocomposite with enhanced Na-ion storage capacity

Shuyu Zhou, Xiaozhe Jin, Shengming Zhu, Qian Luo, Zhiwen Qiu, Aimin Wu, Hao Huang

Key Laboratory of Energy Materials and Devices (Liaoning Province), School of Materials Science and Engineering, Dalian University of Technology, Dalian 116024, China

Nickel disulfide decorated with reduced graphene oxide (NiS₂/rGO) nanocomposite electrode was prepared by modified L-cys assisted hydrothermal method and shows good cycle performance and rate performance.

Chinese Chemical Letters 31 (2020) 2353



Synergetic ternary metal oxide nanodots-graphene cathode for high performance zinc energy storage

Lijun Su^{a,b,d}, Lingyang Liu^{a,b,d}, Yue Wang^{c,d}, Yulan Lu^{c,d}, Xingbin Yan^{a,b,c,d}

^a Laboratory of Clean Energy Chemistry and Materials, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, China

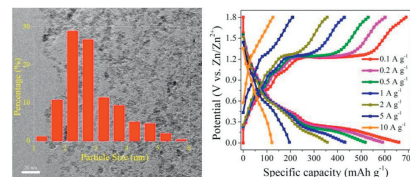
^b Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing 100049, China

^c School of Physical Science and Technology, Lanzhou University, Lanzhou 730000, China

^d Dalian National Laboratory for Clean Energy, Chinese Academy of Sciences, Dalian 116023, China

MnFe₂Co₃O₈ NDs/FGS is designed and used for constructing an aqueous hybrid Zn battery with wide electrochemical window and high specific capacity.

Chinese Chemical Letters 31 (2020) 2358



Reviews

Chemical protein synthesis-assisted high-throughput screening strategies for D-peptides in drug discovery

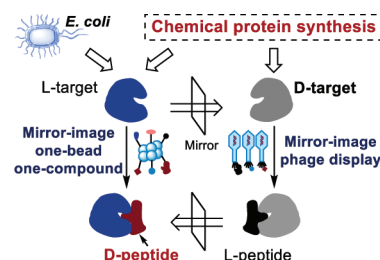
Ying Li^a, Xiuxiu Cao^b, Changlin Tian^{a,b}, Ji-Shen Zheng^a

^a Department of Chemistry, School of Life Sciences, Hefei National Laboratory for Physical Sciences at the Microscale, University of Science and Technology of China, Hefei 230027, China

^b High Magnetic Field Laboratory, Chinese Academy of Sciences, Hefei 230031, China

Chemical protein synthesis-assisted highthroughput screening strategies (e.g., mirror-image phage display, mirror-image one-bead one-compound approaches) for D-peptide ligands were reviewed.

Chinese Chemical Letters 31 (2020) 2365



Energetic materials based on poly furazan and furoxan structures

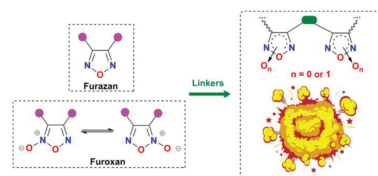
Junlin Zhang^{a,b}, Jing Zhou^a, Fuqiang Bi^a, Bozhou Wang^a

^a Xi'an Modern Chemistry Research Institute, Xi'an 710065, China

^b Department of Chemistry, Technische Universität München, Garching bei München 85748, Germany

A large variety of new structures with good energetic performances have been achieved based on the combination of furazan and furoxan moieties with different kinds of linkers and this review provides an overview of the development of energetic materials based on poly furazan and furoxan structures during the past decades.

Chinese Chemical Letters 31 (2020) 2375



Continuous-flow photochemistry: An expanding horizon of sustainable technology

Jingli Xie^{a,b,c,d}, Dongyuan Zhao^e

^a College of Biological, Chemical Science and Engineering, Jiaxing University, Jiaxing 314001, China

^b Chemistry and Chemical Engineering Guangdong Laboratory, Guangdong Technion – Israel Institute of Technology (GTIIT), Shantou 515031, China

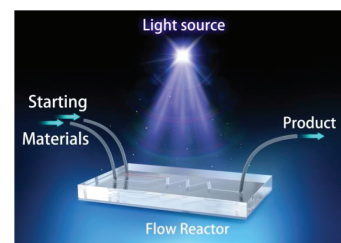
^c State Key Laboratory of Inorganic Synthesis and Preparative Chemistry, College of Chemistry, Jilin University, Changchun 130012, China

^d State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou 350002, China

^e Department of Chemistry and Laboratory of Advanced Materials, Shanghai Key Lab of Molecular Catalysis and Innovative Materials, iChEM and State Key Laboratory of Molecular Engineering of Polymers, Fudan University, Shanghai 200433, China

As a sustainable and promising technology, recent progresses made using continuous-flow photochemistry in dealing with environmental/societal issues are summarized in this review.

Chinese Chemical Letters 31 (2020) 2395



Fluorine-containing drugs approved by the FDA in 2019

Haibo Mei^a, Attila Márió Remete^b, Yupiao Zou^a, Hiroki Moriaki^c, Santos Fustero^d, Lorand Kiss^b, Vadim A. Soloshonok^{e,f}, Jianlin Han^a

^a Jiangsu Co-Innovation Center of Efficient Processing and Utilization of Forest Resources, College of Chemical Engineering, Nanjing Forestry University, Nanjing 210037, China

^b University of Szeged, Institute of Pharmaceutical Chemistry, 6720 Szeged, Eötvös u. 6, Hungary

^c Hamari Chemicals Ltd., 1-4-29 Kunijima, Higashi-Yodogawa-ku, Osaka 533-0024, Japan

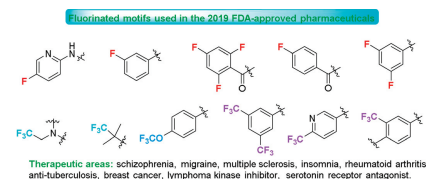
^d Departamento de Química Orgánica, Universidad de Valencia, 46100 Burjassot, Valencia, Spain

^e Department of Organic Chemistry I, Faculty of Chemistry, University of the Basque Country UPV/EHU, Paseo Manuel Lardizábal 3, 20018 San Sebastián, Spain

^f IKERBASQUE, Basque Foundation for Science, María Díaz de Haro 3, Plaza Bizkaia, 48013 Bilbao, Spain

Eleven new fluorine-containing FDA-approved pharmaceuticals are discussed. Therapeutic areas of these newly developed fluorinated pharmaceuticals include schizophrenia, migraine, multiple sclerosis, insomnia, rheumatoid arthritis, anti-tuberculosis, breast cancer, lymphoma kinase inhibitor and serotonin receptor antagonist.

Chinese Chemical Letters 31 (2020) 2401



Ionic current rectification in asymmetric nanofluidic devices

Yue Zhou^b, Xuewei Liao^c, Jing Han^a, Tingting Chen^d, Chen Wang^{a,b}

^a Department of Chemistry, School of Science, China Pharmaceutical University, Nanjing 211198, China

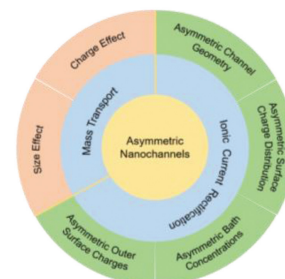
^b State Key Laboratory of Analytical Chemistry for Life Science, School of Chemistry and Chemical Engineering, Nanjing University, Nanjing 210023, China

^c Testing & Analysis Center, Nanjing Normal University, Nanjing 210046, China

^d School of Chemistry and Chemical Engineering, Nantong University, Nantong 226019, China

In asymmetric nanochannels, the unique non-linear mass transport property appears owing to the charge effect and size effect, which is called as ionic current rectification (ICR). In this review, the ICR property, underlying mechanism, and influencing factors are systematically demonstrated.

Chinese Chemical Letters 31 (2020) 2414



Communications

Screening of amino acids in dried blood spots by stable isotope derivatization-liquid chromatography-electrospray ionization mass spectrometry

Huaming Xiao^{a,b}, Ping Liu^c, Shujian Zheng^a, Xian Wang^b, Jun Ding^a, Yuqi Feng^a

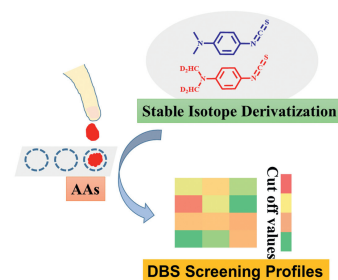
^a Key Laboratory of Analytical Chemistry for Biology and Medicine (Ministry of Education), Department of Chemistry, Wuhan University, Wuhan 430072, China

^b Key Laboratory of Analytical Chemistry of State Ethnic Affairs Commission, College of Chemistry and Materials Science, South-Central University for Nationalities, Wuhan 430074, China

^c Pharmaceutical College, Guangxi Medical University, Nanning 530021, China

Twelve diagnostically important amino acids in DBS were screened by stable isotope derivatization reagents assisted LC-MS.

Chinese Chemical Letters 31 (2020) 2423



Visual sensing of picric acid in 100% aqueous media based on supramolecular polythiophene assemblies with colorimetric and fluorescent dual response

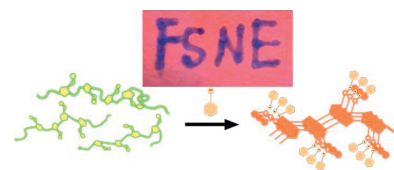
Li Zhang^a, Yanan Sun^a, Yanping Jiang^a, Yining Li^a, Gang Song^b, Kunlun Huang^a, Zhiyi Yao^a

^a College of Food Science and Nutritional Engineering, China Agricultural University and Key Laboratory of Safety Assessment of Genetically Modified Organism (Food Safety), Ministry of Agriculture, Beijing 100083, China

^b Guangdong Provincial Key Laboratory of Radionuclides Pollution Control and Resources, Guangzhou University, Guangzhou 510006, China

A colorimetric and fluorometric dual probe based on a water-soluble polythiophene derivative (PMTBPA) was designed and synthesized. It can be applied to determination of picric acid (PA) in 100% aqueous solution.

Chinese Chemical Letters 31 (2020) 2428



Polycyclic polyprenylated acylphloroglucinol with an unprecedented spirocyclic core from *Hypericum patulum*

Yansong Ye^{a,c}, Nana Jiang^{a,c}, Xianwen Yang^b, Gang Xu^a

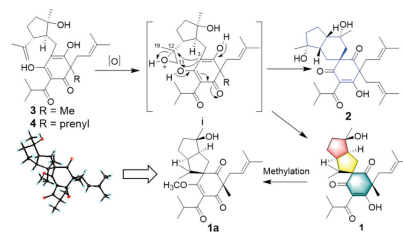
^a State Key Laboratory of Phytochemistry and Plant Resources in West China and Yunnan Key Laboratory of Natural Medicinal Chemistry, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650201, China

^b Key Laboratory of Marine Biogenetic Resources, Third Institute of Oceanography, Xiamen 361005, China

^c University of Chinese Academy of Sciences, Beijing 100049, China

A new type of cytotoxic spirocyclic PPAP possessing an unprecedented spirocyclic core was discovered from *Hypericum patulum*.

Chinese Chemical Letters 31 (2020) 2433



Synthesis of highly-branched Au@AgPd core/shell nanoflowers for *in situ* SERS monitoring of catalytic reactions

Yujian Lai^{a,b}, Lijie Dong^{a,b}, Rui Liu^a, Shaoyu Lu^{a,b}, Zuoliang He^{a,b}, Wanyu Shan^{a,b}, Fanglan Geng^a, Yaqi Cai^{a,b}, Jingfu Liu^{a,b,c}

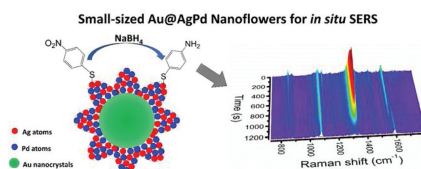
^a State Key Laboratory of Environmental Chemistry and Ecotoxicology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing 100085, China

^b University of Chinese Academy of Sciences, Beijing 100049, China

^c School of Environment, Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, Hangzhou 310024, China

Small-sized Au@AgPd nanoflower with highly-branched alloy shell showed excellent SERS and catalytic activity, and was successfully applied to *in situ* monitor catalytic reaction process.

Chinese Chemical Letters 31 (2020) 2437



Evolution of single nanobubbles through multi-state dynamics

Huihui Wang^{a,b}, Ting He^b, Ying Du^b, Wenhui Wang^b, Yangbin Shen^c, Shuping Li^b, Xiaochun Zhou^{a,b}, Feng Yang^d

^a School of Nano-Tech and Nano-Bionics, University of Science and Technology of China, Hefei 230026, China

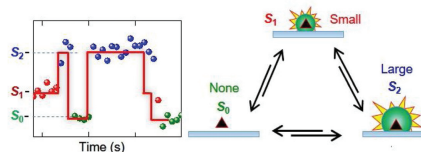
^b Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences (CAS), Suzhou 215123, China

^c Institute of Materials Science and Devices, Suzhou University of Science and Technology, Suzhou 215009, China

^d Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM 87544, United States

The evolution process of single nanobubbles from formic acid dehydrogenation on single Pd-Ag nanoplates exists multi-states which can transform between each other, and the complicated mechanisms behind the evolution of single nanobubbles was revealed by further kinetic analysis.

Chinese Chemical Letters 31 (2020) 2442



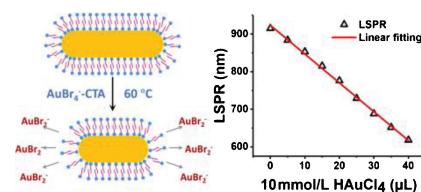
Rapid and fine tailoring longitudinal surface plasmon resonances of gold nanorods by end-selective oxidation

Wenhan Li, Zhirui Guo, Qiuyuan Tai, Yawen Li, Yefei Zhu, Tingting Bai

The Second Affiliated Hospital, Nanjing Medical University, Nanjing 210011, China

We report a rapid but robust approach for precisely shortening gold nanorods with constant width at mild temperature.

Chinese Chemical Letters 31 (2020) 2447



A novel A_H-D-A-type phase junction material to improve photovoltaic performance and device stability in fullerene OSCs

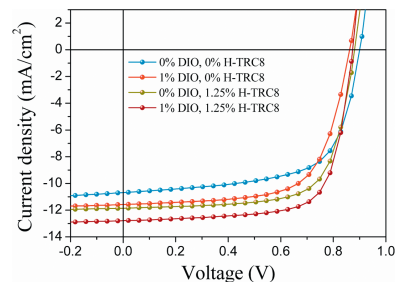
Lin Shao^{a,b}, Fei Tong^b, Mengbing Zhu^b, Hao Xia^b, Wenhong Peng^b, Hua Tan^b, Bin Zhang^b, Yu Liu^b, Weiguo Zhu^{a,b}

^a College of Chemistry, Xiangtan University, Xiangtan 411105, China

^b School of Materials Science and Engineering, Jiangsu Collaborative Innovation Center of Photovoltaic Science and Engineering, Jiangsu Engineering Laboratory of Light-Electricity-Heat Energy-Converting Materials and Applications, National Experimental Demonstration Center for Materials Science and Engineering, Changzhou University, Changzhou 213164, China

A new idea of photovoltaic phase junction materials (PJM) used as photoactive layer component is proposed to boost power conversion efficiency (PCE) and operation stability of organic solar cells (OSCs). As a result, the conjugated A_H-D-A type PJM of H-TRC8 with rhodanine unit is primarily designed and exhibits a good carrier transporting ability, definite hydrogen-bond and D-A interaction with donor/acceptor materials in photoactive layer. Furthermore, the PBDB-T/PC₆₀BM based OSCs exhibit a significantly improved PCE of 8.06% and device stability at a weight ratio of 1.25 wt% for H-TRC8.

Chinese Chemical Letters 31 (2020) 2452



Enhancement the photovoltaic performance of conjugated polymer based on simple head-to-head alkylthio side chains engineered bithiophene

Zuoji Liu^b, Chengjia Bao^a, Guangjun Zhang^c, Kai Zhang^a, Gangtie Lei^b, Qiang Zhang^a, Qiang Peng^c, Yu Liu^{a,b}

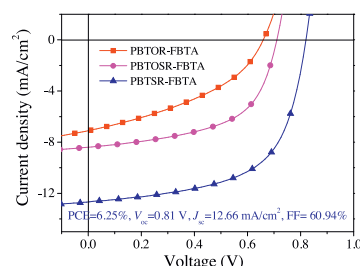
^a School of Materials Science and Engineering, Jiangsu Engineering Laboratory of Light-Electricity-Heat Energy-Converting Materials and Applications, Jiangsu Collaborative Innovation Center of Photovoltaic Science and Engineering, National Experimental Demonstration Center for Materials Science and Engineering, Changzhou University, Changzhou 213164, China

^b College of Chemistry, Key Lab of Environment-Friendly Chemistry and Application in the Ministry of Education, Xiangtan University, Xiangtan 411105, China

^c Key Laboratory of Green Chemistry and Technology of Ministry of Education, College of Chemistry, and State Key Laboratory of Polymer Materials Engineering, Sichuan University, Chengdu 610065, China

Three copolymers based on simple alkoxy and/or alkylthio side-chains engineered bithiophene as donors were synthesized and developed. Introduction of alkylthio side-chains on bithiophene is an effective strategy to enhance the photovoltaic performance of copolymers.

Chinese Chemical Letters 31 (2020) 2459



HFIP-promoted catalyst-free cascade reactions for the synthesis of biologically relevant 3,3-di(indolyl)indolin-2-ones from indoles and isatins

Xiaohan Yuan^a, Shuai Wang^{a,b}, Jialing Cheng^a, Bin Yu^{a,c}, Hong-Min Liu^a

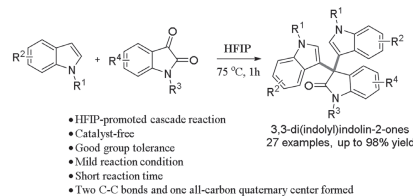
^a School of Pharmaceutical Sciences, Zhengzhou University, Zhengzhou 450001, China

^b Gordon Center for Medical Imaging, Massachusetts General Hospital and Harvard Medical School, Boston, MA 02129, United States

^c State Key Laboratory of Natural Medicines, China Pharmaceutical University, Nanjing 210009, China

HFIP could promote the catalyst-free cascade reactions for the synthesis of biologically relevant 3,3-di(indolyl)indolin-2-ones from indoles and isatins under mild conditions. Two C—C bonds and one all-carbon quaternary center are formed in this process.

Chinese Chemical Letters 31 (2020) 2465



Nickel-iron borate coated nickel-iron boride hybrid for highly stable and active oxygen evolution electrocatalysis

Pengyu Han^a, Tan Tan^a, Fei Wu^b, Ping Cai^a, Gongzhen Cheng^a, Wei Luo^{a,c}

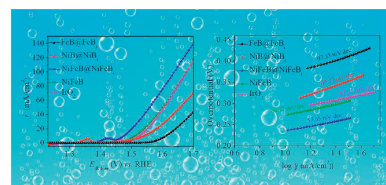
^a College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, China

^b Department of Orthopaedic Surgery, Renmin Hospital of Wuhan University, Wuhan 430060, China

^c Suzhou Institute of Wuhan University, Suzhou 215123, China

We developed an efficient hybrid electrocatalyst (denoted as NiFeB@NiFeB₂) with nickel boride (NiFeB) as core and amorphous nickel-iron borate (NiFeB₂) as shell via a simple NaBH₄ reduction reaction. The obtained electrocatalyst exhibits a small overpotential of 237 mV at 10 mA/cm² and Tafel slope of 57.65 mV/dec in 1.0 mol/L KOH, which also shows excellent stability toward the oxygen evolution reaction (OER).

Chinese Chemical Letters 31 (2020) 2469



Rapid pattern recognition of different types of sulphur-containing species as well as serum and bacteria discrimination using Au NCs-Cu²⁺ complexes

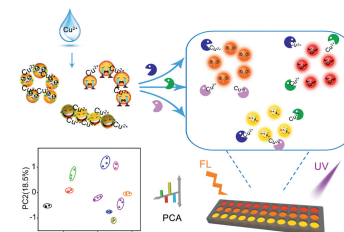
Wentao Li^a, Xiaomei Sun^b, Xuan Zhao^a, Wei Wang^a, Shenghao Xu^a, Xiliang Luo^a

^a Key Laboratory of Optic-electric Sensing and Analytical Chemistry for Life Science, MOE, College of Chemistry and Molecular Engineering, Qingdao University of Science and Technology, Qingdao 266042, China

^b The Affiliated Hospital of Qingdao University, Qingdao 266003, China

We developed a triple-channel sensor array for rapidly discriminating ten different types of sulfur-containing species (including organic sulphur, inorganic sulphur and biothiols) on the basis of fingerprint-like fluorescence responses produced by competitive binding between three kinds of Au NCs-Cu²⁺ complexes and different sulfur-containing species.

Chinese Chemical Letters 31 (2020) 2473



Pt nanodendrites with (111) crystalline facet as an efficient, stable and pH-universal catalyst for electrochemical hydrogen production

Huifang Sun^{a,b}, Qi Zeng^c, Chen Ye^{b,d}, Yangguang Zhu^{b,e}, Feiyue Chen^{b,f}, Mingyang Yang^{b,d}, Li Fu^g, Shiyu Du^h, Jinhong Yu^{b,d}, Nan Jiang^{b,d}, Jianxiong Liu^a, Tianzhun Wu^c, Cheng-Te Lin^{b,d}

^a Faculty of Materials Science and Engineering, Kunming University of Science and Technology, Kunming 650093, China

^b Key Laboratory of Marine Materials and Related Technologies, Zhejiang Key Laboratory of Marine Materials and Protective Technologies, Ningbo Institute of Materials Technology and Engineering (NIMTE), Chinese Academy of Sciences, Ningbo 315201, China

^c Shenzhen Institutes of Advanced Technology, Chinese Academy of Science, Shenzhen 518055, China

^d Center of Material Science and Optoelectronic Technology, University of Chinese Academy of Sciences, Beijing 100049, China

^e Laboratory of Environmental Biotechnology, School of Environmental and Civil Engineering, Jiangnan University, Wuxi 214122, China

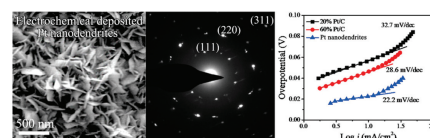
^f College of Science, Henan University of Technology, Zhengzhou 10463, China

^g College of Materials and Environmental Engineering, Hangzhou Dianzi University, Hangzhou 310018, China

^h Ningbo Institute of Materials Technology and Engineering (NIMTE), Chinese Academy of Sciences, Ningbo 315201, China

Pt nanodendrites were electrodeposited at activated carbon as a catalyst for electrochemical hydrogen production. The fabricated Pt nanodendrites exposed numerous highly active atoms at (111) facet, which contribute to a low Tafel slope of 22.2 mV/dec and improvement of hydrogen production efficiency.

Chinese Chemical Letters 31 (2020) 2478



Synthesis, structure and electrocatalytic H₂-evolving activity of a dinickel model complex related to the active site of [NiFe]-hydrogenases

Dengmeng Song^a, Xuyun Gao^a, Bo Li^b, Jun Li^a, Xuzhuo Sun^b, Chengbo Li^a, Jiale Zhao^a, Lin Chen^c, Ning Wang^a

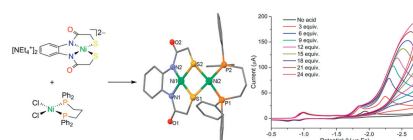
^a Key Laboratory of Synthetic and Natural Functional Molecule Chemistry of the Ministry of Education, College of Chemistry & Materials Science, Northwest University, Xi'an 710069, China

^b College of Chemistry, Chemical and Environmental Engineering, Henan University of Technology, Zhengzhou 450001, China

^c State Key Laboratory of Environment-Friendly Energy Material, Southwest University of Science and Technology, Mianyang 621010, China

The synthetic dinickel complex [Ni(phma)(μ-S,S')Ni(dppp)] not only possess the principal feature of [NiFe]-H₂ases, but also reappear their fascinating catalytic abilities for H₂-evolution.

Chinese Chemical Letters 31 (2020) 2483



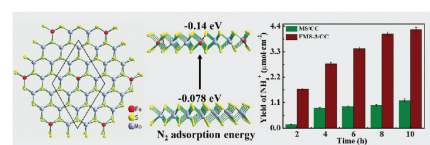
Fe doping promoted electrocatalytic N₂ reduction reaction of 2H MoS₂

Jiaojiao Guo, Tsegaye Tadesse Tsega, Ibrahim Ul Islam, Asma Iqbal, Jiantao Zai, Xuefeng Qian

School of Chemistry and Chemical Engineering and State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University, Shanghai 200240, China

Electrocatalytic N₂ reduction to ammonia is a fascinating alternative to Haber-Bosch process and also considered as an energy storage method. This work, Fe doped MoS₂/carbon cloth (CC) has been studied on the electro-catalysis fix nitrogen indicating the doped Fe can indeed enhance the MoS₂ material ability. Compared with MoS₂/CC, Fe-MoS₂/CC not only increases 10 times in the rate of production ammonia, but also 5 times in Faraday efficiency.

Chinese Chemical Letters 31 (2020) 2487



High stability three-dimensional porous PtSn nano-catalyst for ethanol electro-oxidation reaction

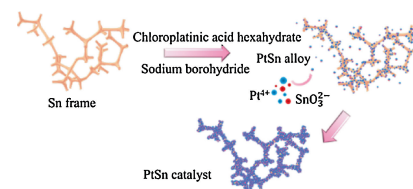
Yue Sun^a, Haiyan Xiang^a, Huimin Li^a, Gang Yu^a, Hong Chen^b, Song Liu^a

^a Institute of Chemical Biology and Nanomedicine (ICBN), State Key Laboratory of Chemo/Biosensing and Chemometrics, College of Chemistry and Chemical Engineering, Hunan University, Changsha 410082, China

^b School of Materials Science and Energy Engineering, Foshan University, Foshan 528000, China

Three-dimensional porous PtSn nano-catalyst composed of self-supported Sn skeleton were obtained through liquid phase reduction including two steps, which exhibited high electrocatalytic performance toward ethanol electrooxidation.

Chinese Chemical Letters 31 (2020) 2491



Covalent organic frameworks functionalized carbon fiber paper for the capture and detection of hydroxyl radical in the atmosphere

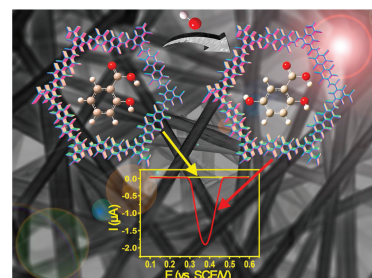
Zhiling Huang^a, Qin Xu^a, Xiaoya Hu^{a,b}

^a School of Chemistry and Chemical Engineering, Yangzhou University, Yangzhou 225002, China

^b Guangling College, Yangzhou University, Yangzhou 225002, China

Covalent organic frameworks functionalized carbon fiber paper was developed as a simple and sensitive platform for determining atmospheric $\cdot\text{OH}$ quickly.

Chinese Chemical Letters 31 (2020) 2495



Enhanced photoluminescence and stability of ZnSe microspheres/Cs₄PbBr₆ microcrystals/CsPbBr₃ nanocrystals composites

Chao Zhang^{a,b,c}, Tingting Li^{a,c}, Lei Pu^{a,c}, Weijia Wen^a, Xiangdong Luo^b, Lijuan Zhao^{a,c}

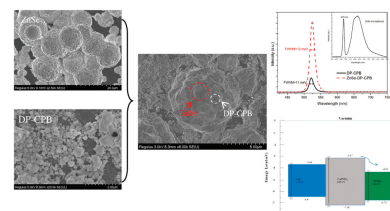
^a Materials Genome Institute, Shanghai University, Shanghai 200444, China

^b Jiangsu Key Laboratory of ASIC Design, Nantong University, Nantong 226019, China

^c State Key Laboratory of Transducer Technology, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, Shanghai 200050, China

Perovskite-semiconductor composites formed by in-situ dual-phase Cs₄PbBr₆ microcrystals/CsPbBr₃ nanocrystals (DP-CPB) embedded in ZnSe microsphere were firstly prepared. The ternary complex showed highly enhanced photoluminescence and stability compared with DP-CPB composites. The good band alignment between these three components as well as the passivation of ZnSe resulted in the enhanced PL of composites.

Chinese Chemical Letters 31 (2020) 2499



Synthesis, structure and magnetic properties of a decanuclear Fe(III)/oxo cluster

Waseem Muhammad^a, Jie Ni^a, Zvonko Jagličić^d, Ping Cui^{a,b,c}, Linna Gao^e, Di Sun^{a,f}

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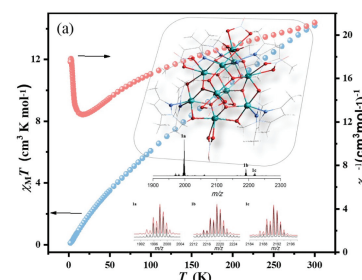
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A decanuclear Fe(III)/oxo cluster, $[\text{Fe}_{10}(\mu_3\text{-O})_9\text{L}_9(\text{NO}_3)_6]$ (**1**, HL = 3,5-dimethyl-1-(hydroxymethyl)-pyrazole), has been isolated and structurally characterized, which show high stability in solution revealed by ESI-MS, and an antiferromagnetic interaction between Fe^{III} centers confirmed by magnetic susceptibility studies.

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A dense graphene monolith with poloxamer prefunctionalization enabling aqueous redispersion to obtain solubilized graphene sheets

Chen Ye^{a,b}, Fan Zhang^{a,c}, Xue Tan^{a,b}, Huifang Sun^{a,c}, Wen Dai^{a,b}, Ke Yang^{a,b}, Minghui Yang^d, Shiyu Du^e, Dan Dai^{a,b}, Jinhong Yu^{a,b}, Nan Jiang^{a,b}, Weitao Su^f, Li Fu^f, He Li^{a,b}, Jing Kong^g, Cheng-Te Lin^{a,b}

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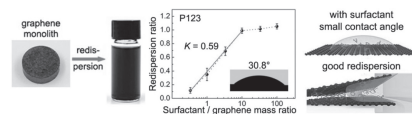
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In this work, water-soluble dense graphene monoliths were prepared as a potential graphene-based product for downstream applications, which possesses good aqueous redispersibility ($\approx 100\%$), high density ($1,500 \text{ kg/m}^3$), and high graphene content ($\approx 10 \text{ wt}\%$). The redispersibility of dense graphene monoliths is implemented by functionalization with poloxamer surfactants, such as Pluronic P123. Moreover, we developed a simple empirical method to predict the redispersion capability of graphene monoliths using different poloxamers by contact angle measurements.

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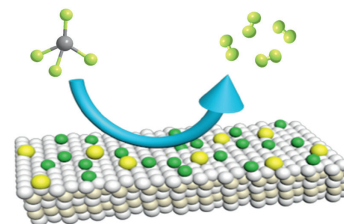
Highly dispersed Ru/Co catalyst with enhanced activity for catalyzing NaBH_4 hydrolysis in alkaline solutions

Jiapeng Zhang, Fanzhen Lin, Lijing Yang, Hua Dong

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A TiO_2 supported Ru/Co complex catalyst which was highly active for catalyzing NaBH_4 hydrolysis in alkaline solution was fabricated. The Ru efficiency of the fabricated catalyst was higher than most of the recently reported Ru-based catalysts.

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Photosensitizer conjugate-functionalized poly(hexamethylene guanidine) for potentiated broad-spectrum bacterial inhibition and enhanced biocompatibility

Fengfeng Xiao^{a,b,c}, Bing Cao^{a,b}, Liewei Wen^c, Yanhong Su^c, Meixiao Zhan^c, Ligong Lu^c, Xianglong Hu^{a,b}

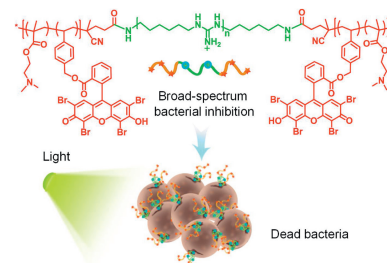
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A broad-spectrum polymeric antimicrobial, PEOs-PHMG, was developed to achieve dualmodality bacterial inhibition via photodynamic inactivation and physical damage. Compared with native PHMG, current photosensitizer conjugate-functionalized PHMG exhibited excellent bacterial inhibition and enhanced biocompatibility with minimal cytotoxicity toward mammalian cells.

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Monitoring casein kinase II at subcellular level via bio-bar-code-based electrochemiluminescence biosensing method

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A highly sensitive electrochemiluminescence biosensing method was developed for monitoring casein kinase II at subcellular level via bio-bar-code assay.

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