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**Trace carbon anchored/stabilized Pt NCs/TiO₂
towards high-activity CO oxidation catalyst**

Thin carbon layers

Trace carbon

Thick carbon layers

Provided by Prof. Xue-Feng Guo's group



COMMUNICATION

Weixin Huang et al.
Thermal-, photo- and electron-induced
reactivity of hydrogen species on rutile
TiO₂(110) surface: Role of oxygen vacancy

COMMUNICATION

Bo Wang et al.
Porous nanocomposite derived from Zn,
Ni-bimetallic metal-organic framework as an
anode material for lithium-ion batteries

ISSN 1001-8417



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Chinese Chemical Society

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Graphical Abstracts/Chin Chem Lett 29 (2018) iii–xviii

Special Column: Surface chemistry connecting heterogeneous catalysis, photocatalysis and plasmonic catalysis

Editorial

Surface chemistry connecting heterogeneous catalysis, photocatalysis and plasmonic catalysis

Chinese Chemical Letters 29 (2018) 725

Weixin Huang^a, Zili Wu^b, Junwang Tang^c, Wei David Wei^d, Xuefeng Guo^e^a Hefei National Laboratory for Physical Sciences at the Microscale, CAS Key Laboratory of Materials for Energy Conversion and Department of Chemical Physics, University of Science and Technology of China, China^b Chemical Science Division and Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, United States^c Department of Chemical Engineering, University College London, United Kingdom^d Department of Chemistry, University of Florida, United States^e College of Chemistry and Chemical Engineering, Nanjing University, China

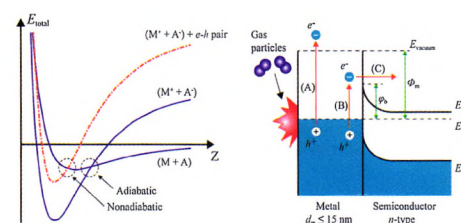
Reviews

Hot electron generation on metal catalysts under surface reaction: Principles, devices, and application

Chinese Chemical Letters 29 (2018) 727

Ievgen I. Nedryailov^a, Hyosun Lee^a, Si Woo Lee^{a,b}, Jeong Young Park^{a,b}^a Center for Nanomaterials and Chemical Reactions, Institute for Basic Science, Daejeon 305-701, Republic of Korea^b Graduate School of EEWS, Korea Advanced Institute of Science and Technology (KAIST), Daejeon 305-701, Republic of Korea

Transfer of charge through metal-support interfaces leads to an increase in the activity of mixed catalysts. In this review, we consider the main aspects of research aimed at studying processes that create and allow interphase transfer of highly excited (hot) charge carriers in supported catalysts, and discuss the effect of these phenomena on catalytic activity.

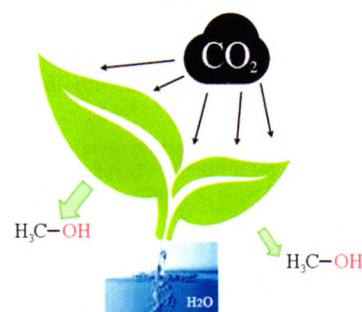


Photocatalytic carbon dioxide reduction by photocatalyst innovation

Chinese Chemical Letters 29 (2018) 734

Angie Davina Tjandra^a, Jun Huang^b^a School of Chemical and Biomolecular Engineering, The University of Sydney, New South Wales 2006, Australia^b Laboratory for Catalysis Engineering, School of Chemical and Biomolecular Engineering, The University of Sydney, New South Wales 2006, Australia

The photocatalytic conversion of carbon dioxide into sustainable fuel methanol using carbon quantum dots is highlighted in this paper. The multifaceted roles of carbon quantum dots in photocatalytic reactions and future directions of CQD materials are outlined.



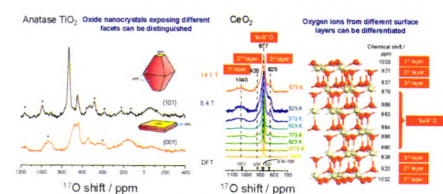
Recent progress in investigations of surface structure and properties of solid oxide materials with nuclear magnetic resonance spectroscopy

Jia-Huan Du, Luming Peng

Key Laboratory of Mesoscopic Chemistry of Ministry of Education, School of Chemistry and Chemical Engineering, Nanjing University, Nanjing 210023, China

In this review, some of the latest research developments on the characterization of the structure and properties of oxide materials by applying solid-state nuclear magnetic resonance spectroscopy (NMR), including the use of dynamic nuclear polarization (DNP) NMR, ^{17}O NMR combined with surface selective labeling and ^{31}P NMR coupled with phosphorous-containing probe molecules, are discussed.

Chinese Chemical Letters 29 (2018) 747



Communications

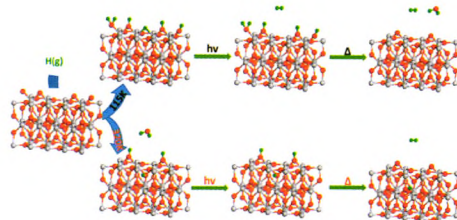
Thermal-, photo- and electron-induced reactivity of hydrogen species on rutile $\text{TiO}_2(110)$ surface: Role of oxygen vacancy

Zongfang Wu, Feng Xiong, Zhengming Wang, Weixin Huang

Hefei National Laboratory for Physical Sciences at the Microscale, CAS Key Laboratory of Materials for Energy Conversion and Department of Chemical Physics, University of Science and Technology of China, Hefei 230026, China

The formation and reactivity of various types of hydrogen species on rutile $\text{TiO}_2(110)$, including surface hydroxyl group, surface hydride species and bulk hydrogen species sensitively depend on the oxygen vacancy concentration and structure.

Chinese Chemical Letters 29 (2018) 752



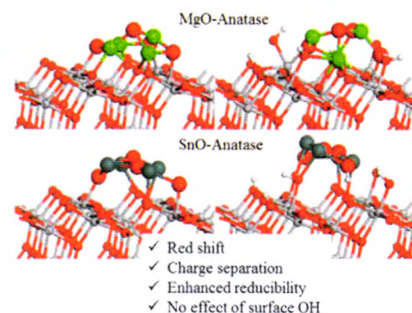
Impact of surface hydroxylation in MgO-/SnO-nanocluster modified TiO_2 anatase (101) composites on visible light absorption, charge separation and reducibility

Stephen Rhatigan, Michael Nolan

Tyndall National Institute, University College Cork, Lee Maltings, Cork T12 R5CP, Ireland

Anatase TiO_2 surfaces, whether oxidised or hydroxylated, can be modified by nanoclusters of SnO and MgO to give a red shift in light absorption, enhanced charge separation and high reducibility.

Chinese Chemical Letters 29 (2018) 757



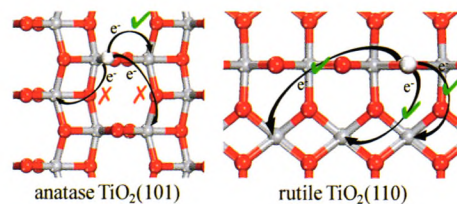
Unique adsorption behaviors of NO and O_2 at hydrogenated anatase $\text{TiO}_2(101)$

Fei Li, Wen-Hao Huang, Xue-Qing Gong

Key Laboratory for Advanced Materials, Centre for Computational Chemistry and Research Institute of Industrial Catalysis, School of Chemistry and Molecular Engineering, East China University of Science and Technology, Shanghai 200237, China

The extra electron on the hydrogenated anatase $\text{TiO}_2(101)$ is localized at the nearest Ti_{sc} only, and the charge-transfer promoted NO and O_2 adsorptions are also site-selective. These results are totally different from those at hydrogenated rutile $\text{TiO}_2(110)$.

Chinese Chemical Letters 29 (2018) 765



Nature of surface oxygen intermediates on TiO₂ during photocatalytic splitting of water

Charles A. Roberts^{a,b}, Somphonh P. Phivilay^{a,c}, Israel E. Wachs^a

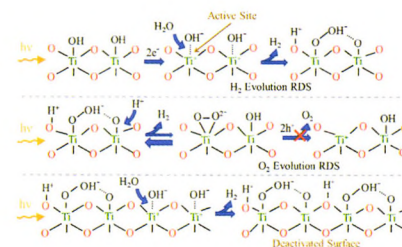
^a Operando Molecular Spectroscopy & Catalysis Laboratory, Department of Chemical Engineering, Lehigh University, Bethlehem, PA 18015, United States

^b Toyota Research Institute – North America, Ann Arbor, MI 48105, United States

^c Department of Chemistry, University of Wisconsin-Madison, Madison, WI 53706, United States

The surface oxygenated intermediates present on TiO₂ during photocatalytic water splitting have been identified and their accumulation on the titania surface is responsible for the deactivation of H₂ evolution rate during photocatalysis.

Chinese Chemical Letters 29 (2018) 769



Photocatalytic OH radical formation and quantification over TiO₂ P25: Producing a robust and optimised screening method

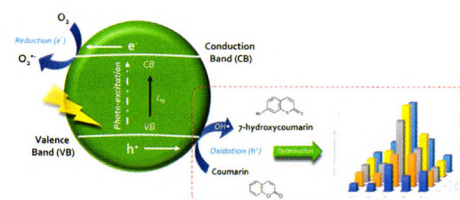
Caitlin Buck^a, Nathan Skillen^a, Jeanette Robertson^b, Peter K.J. Robertson^a

^a School of Chemistry and Chemical Engineering, Queen's University Belfast, Belfast BT9 5AG, United Kingdom

^b School of Biological Sciences, Queen's University Belfast, Medical Biology Centre, Belfast BT9 7BL, United Kingdom

Photocatalytic oxidation of coumarin to 7-hydroxycoumarin was used in order to identify the optimum conditions and the potential limitations of a photocatalytic screening method.

Chinese Chemical Letters 29 (2018) 773



A pH-responsive TiO₂-based Pickering emulsion system for *in situ* catalyst recycling

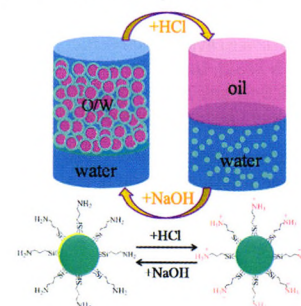
Yajuan Hao^a, Yanfang Liu^a, Rui Yang^a, Xiaoming Zhang^a, Jian Liu^b, Hengquan Yang^a

^a School of Chemistry and Chemical Engineering, Shanxi University, Taiyuan 030006, China

^b Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China

Through tuning the surface wettability of interfacially active TiO₂ particles, a pH-responsive Pickering emulsion system is formed, as *in situ* separation and recycling of the nano-catalysts system.

Chinese Chemical Letters 29 (2018) 778



The effect of surface electronic structures of Au/TiO₂ on sonophotochemical reactions

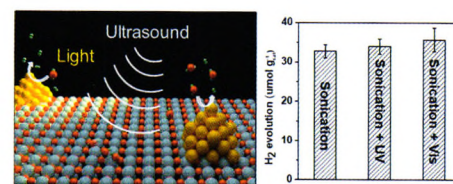
Kun Qian^{a,b}, Evan Wenbo Zhao^a, Shuai He^a, Wei David Wei^a

^a Department of Chemistry and Center for Catalysis, University of Florida, Gainesville, FL 32611, United States

^b Department of Chemical Physics, University of Science and Technology of China, Hefei 230026, China

The photo-excited surface charges do not play the primary roles in enhancing the sonophotochemical reduction of water.

Chinese Chemical Letters 29 (2018) 783



Pt nanocrystallines/TiO₂ with thickness-controlled carbon layers: Preparation and activities in CO oxidation

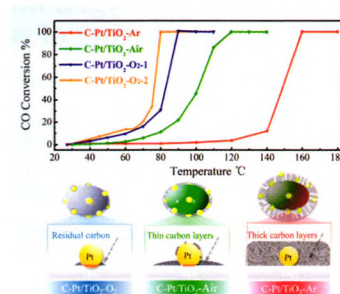
Man Zhou^{a,b}, Muhong Li^a, Chujun Hou^b, Zhongyu Li^b, Yongzheng Wang^a, Kun Xiang^a, Xuefeng Guo^a

^a Key Laboratory of Mesoscopic Chemistry of MOE, School of Chemistry and Chemical Engineering, Nanjing University, Nanjing 210093, China

^b School of Petrochemical Engineering, Changzhou University, Changzhou 213164, China

Pt nanocrystallines (~3 nm) covered with controllable carbon layers were synthesized by photochemical reduction method which exhibited extraordinary anti-sintering properties and different CO oxidation activities.

Chinese Chemical Letters 29 (2018) 787



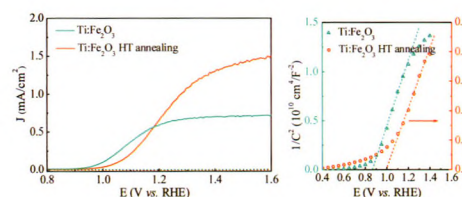
Insight into the influence of high temperature annealing on the onset potential of Ti-doped hematite photoanodes for solar water splitting

Yaodong Zhu, Qinfeng Qian, Guozheng Fan, Zhili Zhu, Xin Wang, Zhaosheng Li, Zhigang Zou

Collaborative Innovation Center of Advanced Microstructures, National Laboratory of Solid State Microstructures, and College of Engineering and Applied Sciences, Nanjing University, Nanjing 210093, China

The unfavorable onset potential shift of Ti:Fe₂O₃ photoanode induced by high temperature post-annealing was studied. The underlying mechanism is the surface Ti/Fe atomic ratio increase, leading to adsorption capacity change of surface hydroxide ions and the positive shift of flatband potential (i.e., theoretical onset potential).

Chinese Chemical Letters 29 (2018) 791



CO oxidation over ceria supported Au₂₂ nanoclusters: Shape effect of the support

Zili Wu^a, David R. Mullins^a, Lawrence F. Allard^b, Qianfan Zhang^c, Laisheng Wang^c

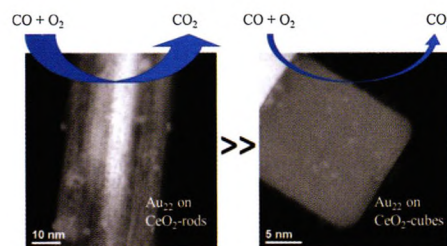
^a Chemical Science Division and Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge TN 37831, United States

^b Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge TN 37831, United States

^c Department of Chemistry, Brown University, Providence RI 02912, United States

CO oxidation over ceria-supported Au₂₂ nanoclusters shows strong dependence on the support shape: the lattice oxygen in CeO₂ rods is more reactive than in the cubes and thus make rods a superior support for Au nanoclusters in catalyzing low temperature CO oxidation.

Chinese Chemical Letters 29 (2018) 795



Comparable electrocatalytic performances of carbon- and Rh-loaded SrTiO₃ nanoparticles

Hee Jung Yoon^a, Seog K. Kim^a, Weixin Huang^b, Youngku Sohn^{a,c}

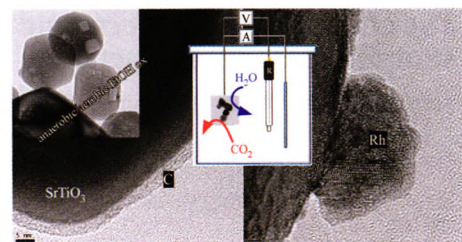
^a Department of Chemistry, Yeungnam University, Gyeongsan 38541, Republic of Korea

^b Hefei National Laboratory for Physical Sciences at the Microscale, CAS Key Laboratory of Materials for Energy Conversion, Department of Chemical Physics, University of Science and Technology of China, Hefei 230026, China

^c Department of Chemistry, Chungnam National University, Daejeon 34134, Republic of Korea

Both metallic Rh and nonmetallic carbon modifications can highly improve the electrocatalytic activity of SrTiO₃ nanoparticles. Carbon modifications was achieved by aerobic and anaerobic ethanol oxidation methods.

Chinese Chemical Letters 29 (2018) 800



Enhanced photocatalytic performance of carbon quantum dots/BiOBr composite and mechanism investigation

Mengxia Ji^a, Zhiyong Zhang^b, Jiexiang Xia^{a,c}, Jun Di^a, Yiling Liu^a, Rong Chen^a, Sheng Yin^a, Sen Zhang^b, Huaming Li^a

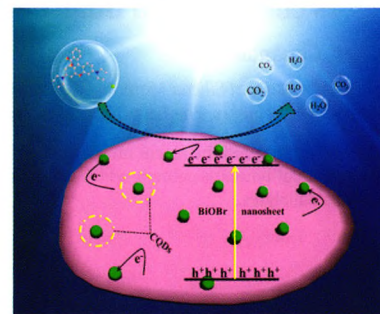
^a School of Chemistry and Chemical Engineering, Institute for Energy Research, Jiangsu University, Zhenjiang 212013, China

^b Department of Chemistry, University of Virginia, Charlottesville, VA 22904, United States

^c Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge 37830, United States

Novel CQDs/BiOBr composite photocatalysts are constructed via a simple hydrothermal synthesis and show superior activity in photocatalytic degradation of organic pollutants.

Chinese Chemical Letters 29 (2018) 805



Rationally designed/constructed MnO_x/WO₃ anode for photoelectrochemical water oxidation

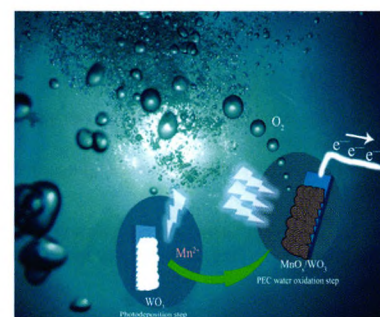
Xiaohu Cao^a, Xiangyu Zang^a, Xichen Zhou^a, Mindong Chen^b, Yong Ding^{a,b}

^a State Key Laboratory of Applied Organic Chemistry, Key Laboratory of Nonferrous Metal Chemistry and Resources Utilization of Gansu Province, College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou 730000, China

^b Collaborative Innovation Center of Atmospheric Environment and Equipment Technology, Jiangsu Key Laboratory of Atmospheric Environment Monitoring and Pollution Control (AEMPC), Nanjing University of Information Science & Technology, Nanjing 210044, China

The activity of WO₃ photoanode could be improved efficiently after loading MnO_x by photodeposition. The maximum photocurrent density of composite photoanode is achieved with a deposition time of 3 min, which is higher than that of pristine WO₃ photoanode around 40%.

Chinese Chemical Letters 29 (2018) 811



Chemoselective hydrogenation of phenol to cyclohexanol using heterogenized cobalt oxide catalysts

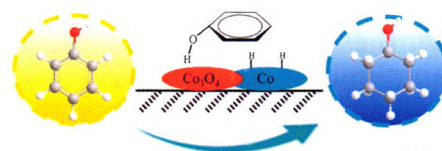
Zhongzhe Wei^a, Yi Li^b, Jing Wang^b, Haoran Li^b, Yong Wang^b

^a Institute of Industrial Catalysis, College of Chemical Engineering, State Key Laboratory Breeding Base of Green-Chemical Synthesis Technology, Zhejiang University of Technology, Hangzhou 310014, China

^b Advanced Materials and Catalysis Group, ZJU-NHU United R&D Center, Department of Chemistry, Zhejiang University, Hangzhou 310028, China

Cobalt oxide nanoparticles (NPs) supported on porous carbon (CoO_x@CN) were fabricated by one-pot method and the hybrids could efficiently and selectively hydrogenate phenol to cyclohexanol with a high yield of 98%.

Chinese Chemical Letters 29 (2018) 815



Special Column: Functional open framework materials

Reviews

Synthetic strategies for chiral metal-organic frameworks

Zongsu Han, Wei Shi, Peng Cheng

College of Chemistry, Key Laboratory of Advanced Energy Materials Chemistry (MOE), Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Nankai University, Tianjin 300071, China

By direct synthesis route, chiral metal-organic frameworks are synthesized with enantiopure ligands or spontaneous resolution; by indirect method, post-synthetic method and chiral induction are introduced to construct chiral metal-organic frameworks.

Chinese Chemical Letters 29 (2018) 819



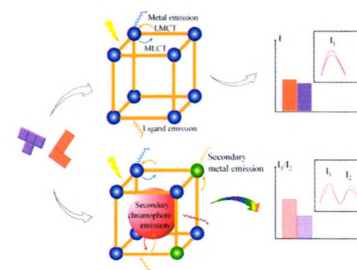
Chinese Chemical Letters 29 (2018) 823

Development of photoluminescence metal-organic framework sensors consisting of dual-emission centers

Kai Chen, Chuande Wu

State Key Laboratory of Silicon Materials, Center for Chemistry of High-Performance & Novel Materials, Department of Chemistry, Zhejiang University, Hangzhou 310027, China

This review summarized the recent progress on photoluminescence metal-organic framework sensors consisting of dual-emission centers, which can amplify and self-calibrate the emission signals for probing various small analytes.

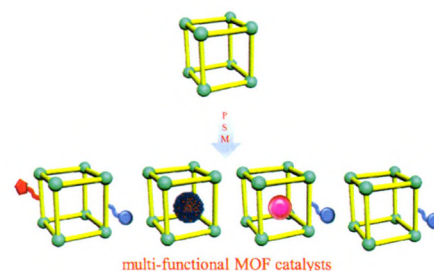


Chinese Chemical Letters 29 (2018) 827

Multi-functional sites catalysts based on post-synthetic modification of metal-organic frameworks

Dingxuan Ma^{a,b}, Baiyan Li^a, Zhan Shi^a^a State Key Laboratory of Inorganic Synthesis and Preparative Chemistry, College of Chemistry, Jilin University, Changchun 130012, China^b College of Chemistry and Molecular Engineering, Qingdao University of Science and Technology, Qingdao 266042, China

Multi-functional sites MOFs have been explored as a new type of heterogeneous catalytic materials, which can be constructed by various post-synthetic modifications.



Communications

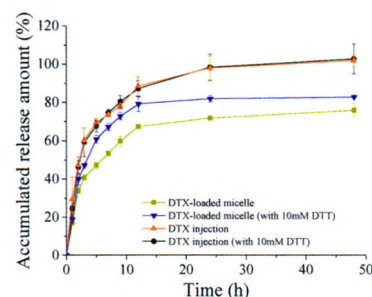
Chinese Chemical Letters 29 (2018) 831

Synthesis of a reduction-sensitive *Bletilla striata* polysaccharide amphiphilic copolymer

Dandan Sun, Miao Wang, Danyang Ji, Jin Qiao, Tong He, Xin Liu, Qingxiang Guan

School of Pharmacy, Jilin University, Changchun 130021, China

A reduction-sensitive stearic acid modified-*Bletilla striata* polysaccharide amphiphilic copolymer is synthesized. The copolymer enabled to spontaneously form micelles which display faster docetaxel release rates under reduction condition and enhanced anticancer activity *in vitro* after incorporating docetaxel into micelles.

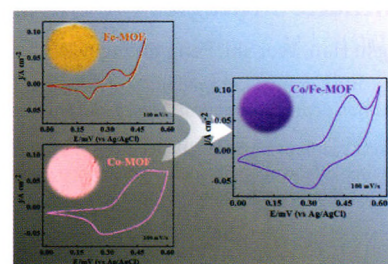


Chinese Chemical Letters 29 (2018) 834

Fabrication of Fe-doped Co-MOF with mesoporous structure for the optimization of supercapacitor performances

Huanan Yu^a, Huicong Xia^a, Jianan Zhang^{a,b}, Jing He^a, Shiyu Guo^a, Qun Xu^a^a College of Materials Science and Engineering, Zhengzhou University, Zhengzhou 450001, China^b Key Laboratory of Advanced Energy Materials Chemistry (Ministry of Education), Nankai University, Tianjin 300071, China

We fabricated mesoporous hybrid dual-metal Co and Fe containing metallic organic framework (Co/Fe-MOF), Fe-MOF, and Co-MOF in the ionic liquid (IL)/supercritical CO₂ (SC)/surfactant emulsion system, and then studied the electrochemical properties of the three MOFs systematically.

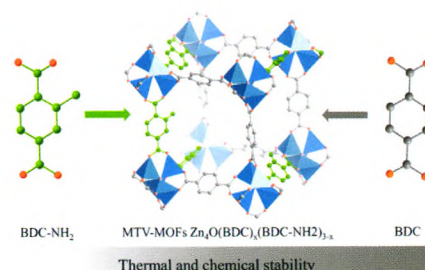


Functionality proportion and corresponding stability study of multivariate metal-organic frameworks

Chinese Chemical Letters 29 (2018) 837

Jie Li^a, Yecheng Wang^b, Yan Yu^c, Qiaowei Li^a^a Department of Chemistry, iChEM (Collaborative Innovation Center of Chemistry for Energy Materials), Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, Fudan University, Shanghai 200433, China^b State Key Laboratory of Coordination Chemistry, School of Chemistry and Chemical Engineering, Nanjing University, Nanjing 210023, China^c School of Physical Science and Technology, ShanghaiTech University, Shanghai 201210, China

Zn-based multivariate metal-organic frameworks (MTV-MOFs) with different functionality proportions and with different thermal and chemical stabilities can be obtained by employing the appropriate synthesis method.

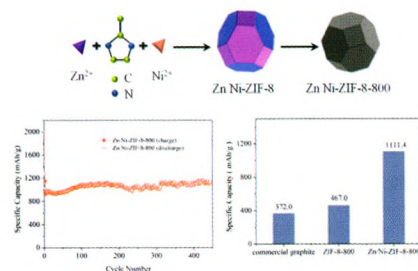


Porous nanocomposite derived from Zn, Ni-bimetallic metal-organic framework as an anode material for lithium-ion batteries

Chinese Chemical Letters 29 (2018) 842

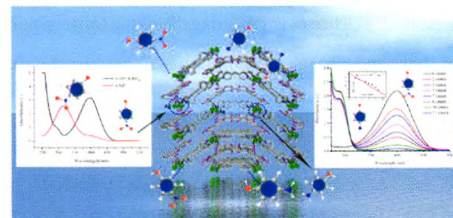
Haoyang Yang^a, Wenhong Cui^a, Yuzhen Han^b, Bo Wang^b^a The High School Affiliated to Renmin University of China, Beijing 100080, China^b Key Laboratory of Cluster Science Ministry, Ministry of Education of China, School of Chemistry and Chemical Engineering, Beijing Institute of Technology, Beijing 100081, China

A highly stable and Zn, Ni-bimetallic porous composite was synthesized via a one-step pyrolysis of a bimetal-organic framework as an efficient anode material for lithium-ion batteries. Remarkably the obtained composite shows 1105.2 mAh/g at a current density of 5000 mA/g after 400 cycles which makes it a promising candidate to improve the volumetric energy density.



Assembling of a novel 3D Ag(I)-MOFs with mixed ligands tactics: Syntheses, crystal structure and catalytic degradation of nitrophenol

Chinese Chemical Letters 29 (2018) 845

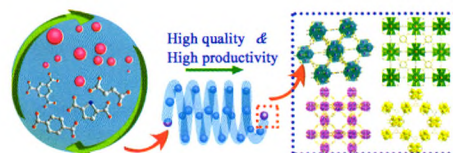
Dandan Huang^a, Xueqian Wu^a, Junwu Tian^a, Xiaokun Wang^a, Zhihang Zhou^a, Dongsheng Li^{a,b}^a College of Materials and Chemical Engineering, Key Laboratory of Inorganic Nonmetallic Crystalline and Energy Conversion Materials, Hubei Provincial Collaborative Innovation Center for New Energy Microgrid, China Three Gorges University, Yichang 443002, China^b State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou 350002, ChinaA novel 3D Ag(I)-MOFs, [Ag₂(H₂ddcba)(dpp)₂] (**1**), which features pcu (4¹²-6³) topology were successfully synthesized. Complex **1** exhibits predominant catalytic activity towards the degradation of *o*-nitrophenol (2-NP), *m*-nitrophenol (3-NP) and *p*-nitrophenol (4-NP) in aqueous solution.

Continuous synthesis for zirconium metal-organic frameworks with high quality and productivity via microdroplet flow reaction

Chinese Chemical Letters 29 (2018) 849

Ying Wang^{a,b}, Liangjun Li^a, Liting Yan^{a,b}, Lei Cao^a, Pengcheng Dai^a, Xin Gu^a, Xuebo Zhao^a^a Research Center of New Energy Science and Technology, Research Institute of Unconventional Oil & Gas and Renewable Energy, China University of Petroleum (East China), Qingdao 266580, China^b College of Science, China University of Petroleum (East China), Qingdao 266580, China

A series of Zr-based metal-organic frameworks were continuously synthesized with high quality and high productivity through microdroplet flow reaction.



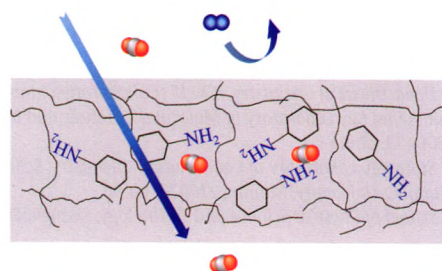
Efficient CO₂/N₂ separation by mixed matrix membrane with amide functionalized porous coordination polymer filler

Qianqian Li, Jingui Duan, Wanqin Jin

State Key Laboratory of Materials-Oriented Chemical Engineering, College of Chemical Engineering, Nanjing Tech University, Nanjing 210009, China

A new Pebax-based mixed matrix membrane with amide functionalized PCP filler shows promising CO₂/N₂ separation at ambient temperature.

Chinese Chemical Letters 29 (2018) 854



A cationic metal-organic framework based on {Zn4} cluster for rapid and selective adsorption of dyes

Weiwei He^a, Na Li^b, Xi Wang^b, Tongliang Hu^{b,c}, Xianhe Bu^{a,b,c}

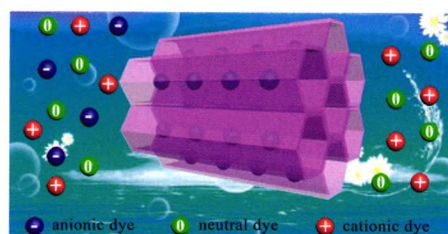
^a Department of Chemistry, Nankai University, Tianjin 300071, China

^b School of Materials Science and Engineering, National Institute for Advanced Materials, Nankai University, Tianjin 300350, China

^c Tianjin Key Laboratory of Metal and Molecule-Based Material Chemistry, Key Laboratory of Advanced Energy Materials Chemistry (Ministry of Education), and Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Nankai University, Tianjin 300071, China

A unique cluster-based cationic framework was successfully constructed by a mixed-ligand strategy. Due to the cationic network and guest anionic molecules in 1D open channels, the MOF can rapidly and selectively adsorb anionic dyes in ethanol solution and release dyes easily based on chargeexclusive effect.

Chinese Chemical Letters 29 (2018) 857



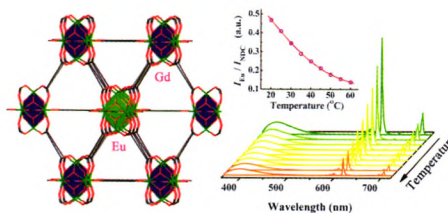
A Eu/Gd-mixed metal-organic framework for ultrasensitive physiological temperature sensing

Tifeng Xia, Jintong Wang, Ke Jiang, Yuanjing Cui, Yu Yang, Guodong Qian

State Key Laboratory of Silicon Materials, Cyrus Tang Center for Sensor Materials and Applications, School of Materials Science & Engineering, Zhejiang University, Hangzhou 310027, China

A stable and biocompatible MOF-based thermometer utilizing back energy transfer has been developed, which exhibits ultrasensitive temperature sensing performance in the physiological temperature range.

Chinese Chemical Letters 29 (2018) 861



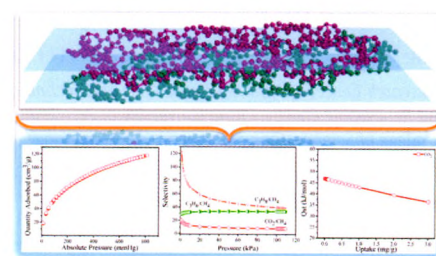
Two-dimensional cobalt metal-organic frameworks for efficient C₃H₆/CH₄ and C₃H₈/CH₄ hydrocarbon separation

Weidong Fan, Yutong Wang, Zhenyu Xiao, Zhaodi Huang, Fangna Dai, Rongming Wang, Daofeng Sun

State Key Laboratory of Heavy Oil Processing, College of Science, China University of Petroleum (East China), Qingdao 266580, China

A Co-based two-dimensional (2D) microporous metal-organic frameworks (UPC-32) with narrow distance between layers and layers (3.8 Å) exhibits high selectivity of C₃H₆/CH₄ (31.46) and C₃H₈/CH₄ (28.04) at 298 K and 1 bar. It is the first 2D Co-MOF that showed selective separation of C3 hydrocarbon from CH₄.

Chinese Chemical Letters 29 (2018) 865



Covalent organic nanosheets with large lateral size and high aspect ratio synthesized by Langmuir-Blodgett method

Youdong Cheng^a, Sai Kishore Ravi^b, Yuxiang Wang^a, Jifang Tao^c, Yuandong Gu^c, Swee Ching Tan^b, Dan Zhao^a

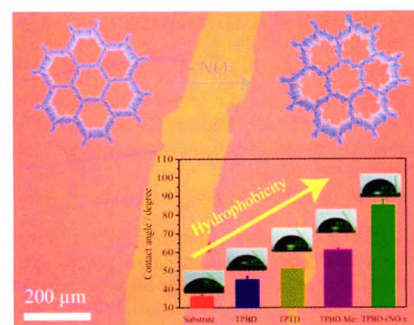
^a Department of Chemical & Biomolecular Engineering, National University of Singapore, Singapore 117585, Singapore

^b Department of Materials Science and Engineering, National University of Singapore, Singapore 117575, Singapore

^c Institute of Microelectronics, A*STAR (Agency for Science, Technology and Research), Singapore 138634, Singapore

Four chemically stable covalent organic nanosheets are successfully synthesized at the air-water interface with large lateral size and tunable hydrophobicity, with potential applications as functional coating and membrane materials.

Chinese Chemical Letters 29 (2018) 869



Review

Recent progress in copper catalyzed asymmetric Henry reaction

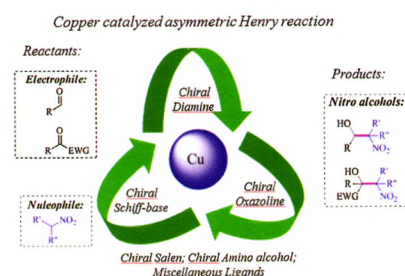
Sheng Zhang^{a,b}, Yanan Li^a, Youguo Xu^a, Zhiyong Wang^a

^a Hefei National Laboratory for Physical Sciences at Microscale, CAS Key Laboratory of Soft Matter Chemistry & Collaborative Innovation Center of Suzhou Nano Science and Technology, Department of Chemistry, University of Science and Technology of China, Hefei 230026, China

^b College of Chemistry and Pharmaceutical Engineering, Nanyang Normal University, Nanyang 473061, China

Henry reaction is one of the most classical reactions to construct synthetically useful product nitro alcohol, which as a privileged skeleton is widely distributed in various pharmaceuticals. This review summarizes the recent progress of copper-catalyzed asymmetric Henry reaction from 2011 to 2016. The significant progress that has been made in this area will be highlighted and some of challenges that the author believes may be hindering further progress will be revealed.

Chinese Chemical Letters 29 (2018) 873



Communications

Honeycomb-shaped PtSnNa/ γ -Al₂O₃/cordierite monolithic catalyst with improved stability and selectivity for propane dehydrogenation

Shiyong Zhao^a, Bolian Xu^{a,b}, Lei Yu^{a,b,c}, Yining Fan^{a,b}

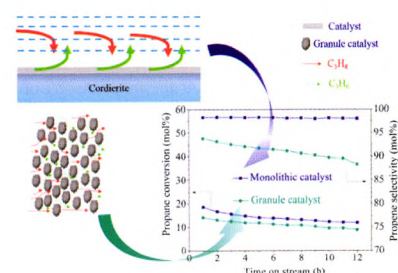
^a Key Laboratory of Mesoscopic Chemistry of Ministry of Education, School of Chemistry and Chemical Engineering, Nanjing University, Nanjing 210093, China

^b Nanjing University-Yangzhou Chemistry and Chemical Engineering Institute, Yangzhou 211400, China

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

A novel honeycomb-shaped PtSnNa/ γ -Al₂O₃/cordierite monolithic catalyst was developed. It was found that, the unique structure of the material led to the improved catalyst performances versus the conventional granule catalyst.

Chinese Chemical Letters 29 (2018) 884



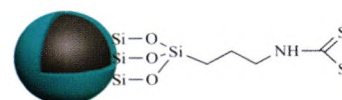
Preparation of core-shell magnetic Fe₃O₄@SiO₂-dithiocarbamate nanoparticle and its application for the Ni²⁺, Cu²⁺ removal

Yimin Dai, Lanli Niu, Jiaqi Zou, Tianxiao Chen, Hui Liu, Yi Zhou

School of Chemistry and Biological Engineering, Hunan Provincial Key Laboratory of Materials Protection for Electric Power and Transportation, Changsha University of Science and Technology, Changsha 410114, China

A typical superparamagnetic nanoparticles-based dithiocarbamate absorbent (Fe₃O₄@SiO₂-DTC) with core-shell structure was applied for aqueous solution heavy metal ions Ni²⁺, Cu²⁺ removal.

Chinese Chemical Letters 29 (2018) 887



Fe₃O₄@SiO₂-DTC

Highly rectified ion transport through 2D WSe₂/MoS₂ bi-layered membranes

Yaping Feng^{a,c}, Liping Ding^b, Danyan Ji^{a,b}, Lili Wang^a, Wei Guo^a

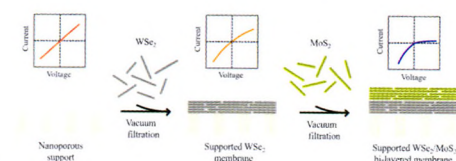
^a CAS Key Laboratory of Bio-inspired Materials and Interfacial Science, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing 100190, China

^b Center for Physicochemical Analysis and Measurement, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China

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

Through a two-step vacuum-filtration process, WSe₂ and MoS₂ nanosheets were sequentially deposited onto a polymeric nanoporous support, forming WSe₂/MoS₂ bi-layered heterostructure. Highly rectified ion transport phenomenon is observed through the heterogeneous 2D layered membranes.

Chinese Chemical Letters 29 (2018) 892



Toxicity and bio-distribution of carbon dots after single inhalation exposure *in vivo*

Yue Yang^{a,c}, Xiangling Ren^b, Zhenning Sun^c, Changhui Fu^b, Tianlong Liu^c, Xianwei Meng^b, Zili Wang^a

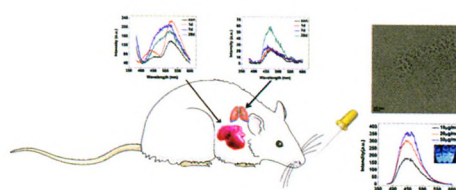
^a College of Animal Science and Technology, Southwest University, Chongqing 400716, China

^b Laboratory of Controllable Preparation and Application of Nanomaterials, CAS Key Laboratory of Cryogenics, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing 100190, China

^c College of Veterinary Medicine, China Agricultural University, Beijing 100193, China

CDs caused the injury in the lung and liver after single inhalation exposure at 5 mg/kg dosages in mice.

Chinese Chemical Letters 29 (2018) 895



First identification of isatin- β -thiosemicarbazones as novel inhibitors of New Delhi metallo- β -lactamase-1: Chemical synthesis, biological evaluation and molecular simulation

Guo-Qing Song^a, Wei-Min Wang^{a,c}, Zai-Shun Li^a, Ying Wang^b, Jian-Guo Wang^a

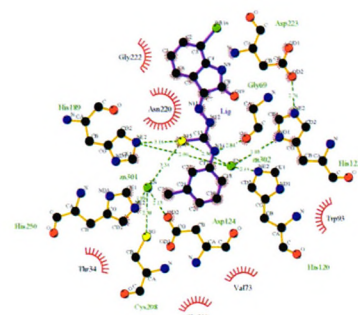
^a State-Key Laboratory and Research Institute of Elemento-Organic Chemistry, National Pesticide Engineering Research Center, College of Chemistry, Nankai University, Tianjin 300071, China

^b Tianjin International Joint Academy of Biotechnology and Medicine, Tianjin 300457, China

^c Patent Examination Cooperation Jiangsu Center of the Patent Office, SIPO, Suzhou 215163, China

A series of isatin- β -thiosemicarbazone compounds were identified as novel inhibitors of New Delhi metallo- β -lactamase-1. The structure-activity relationship and possible binding mode were also established for further rational design of new inhibitors.

Chinese Chemical Letters 29 (2018) 899



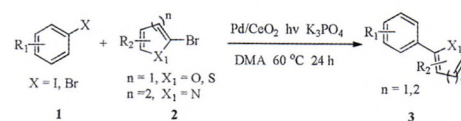
Visible light induced cross-coupling synthesis of asymmetrical heterobiaryls using Pd/CeO₂ nanocomposite photocatalyst

Yanqin Ge, Pinhui Diao, Chen Xu, Nannan Zhang, Cheng Guo

College of Chemistry and Molecular Engineering, Nanjing Tech University, Nanjing 211816, China

A simple, mild and green approach has been developed for the synthesis of asymmetrical heterobiaryls under the irradiation of visible light without any oxidants and promoting reagents through using Pd/CeO₂ nanocomposite photocatalyst. This method tolerates considerable functional groups such as electron-donating groups and electron-withdrawing groups through C-C cross-coupling.

Chinese Chemical Letters 29 (2018) 903



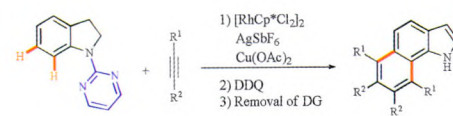
Rhodium-catalyzed oxidative homologation of *N*-pyrimidyl indolines with alkynes via dual C—H activation: Facile synthesis of benzo[g]indolines

Lianhui Wang, Dan Xiong, Lianghua Jie, Chudan Yu, Xiuling Cui

Engineering Research Center of Molecular Medicine, Ministry of Education, Key Laboratory of Fujian Molecular Medicine, Key Laboratory of Xiamen Marine and Gene Drugs, School of Biomedical Sciences, Huaqiao University, Xiamen 361021, China

An efficient route to benzo[g]indolines by a rhodium-catalyzed C6- and C7—H functionalization of indolines with alkynes was achieved, which is potentially applicable to the synthesis of benzo[g]indoles through oxidation/removal of the directing group.

Chinese Chemical Letters 29 (2018) 907



Synthesis, nematicidal activity and docking study of novel chromone derivatives containing substituted pyrazole

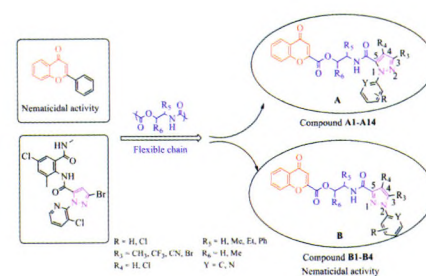
Wei Li^a, Jiuhui Li^a, Hongfeng Shen^a, Jiagao Cheng^{a,b}, Zhong Li^{a,b}, Xiaoyong Xu^{a,b}

^a Shanghai Key Laboratory of Chemical Biology, School of Pharmacy, East China University of Science and Technology, Shanghai 200237, China

^b Shanghai Collaborative Innovation Center for Biomaneufacturing Technology, Shanghai 200237, China

A series of chromone derivatives containing substituted pyrazole were designed and synthesized. Preliminary bioassays showed that most of the synthesized compounds exhibited good nematicidal activity *in vivo* against *Meloidogyne incognita* at 10 mg/L.

Chinese Chemical Letters 29 (2018) 911



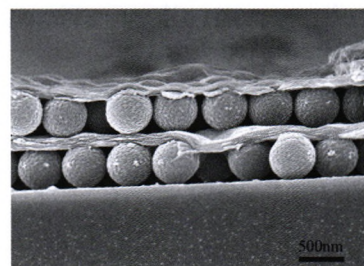
Reduced graphene oxide/2D colloidal array composite membrane fabricated layer-by-layer

Dan Yan, Lili Qiu, Yanfeng Wang, Zihui Meng, Min Xue, Fenglian Qi

School of Chemistry and Chemical Engineering, Beijing Institute of Technology, Beijing 100081, China

A layer-by-layer composite membrane based on reduced graphene oxide (RGO) and two-dimensional (2D) colloidal crystal array (CCA) was fabricated, which showed promising potential for the applications as sensors and optoelectronic devices.

Chinese Chemical Letters 29 (2018) 922



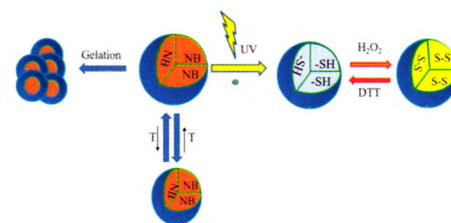
Quadruple thermo-photo-redox-responsive random copolypeptide nanogel and hydrogel

Yuanfeng Gao, Chang-Ming Dong

School of Chemistry and Chemical Engineering, Shanghai Key Laboratory of Electrical Insulation and Thermal Aging, Shanghai Jiao Tong University, Shanghai 200240, China

Quadruple stimuli-responsive random copolypeptide of poly(methoxydiethyleneglycol-L-glutamate)-co-poly(S-(o-nitrobenzyl)-L-cysteine) was synthesized by ring-opening copolymerization, simultaneously presenting thermo-photo-redox-responsive self-assembly behavior and forming nanogel and hydrogel in water.

Chinese Chemical Letters 29 (2018) 927



Self-assembly of graphene oxide nanosheets in *t*-butanol/water medium under gamma-ray radiation

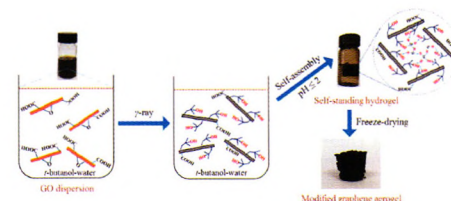
Weikang Wang^a, Yihu Wu^a, Zhiwen Jiang^a, Mozhen Wang^a, Qichao Wu^b, Xiao Zhou^b, Xuewu Ge^a

^a CAS Key Laboratory of Soft Matter Chemistry, Department of Polymer Science and Engineering, University of Science and Technology of China, Hefei 230026, China

^b Guangdong Tianan New Material Co., Ltd., Foshan 528000, China

Graphene oxide (GO) nanosheets dispersed in strong acidic *t*-butanol/water medium can be reduced and self-assembled into a self-standing graphene hydrogel under γ -ray radiation, providing a facile and economical preparation method for hydroxylalkylated graphene-based aerogel.

Chinese Chemical Letters 29 (2018) 931



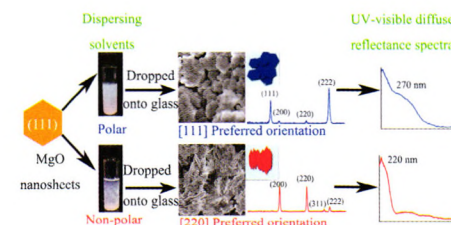
Synthesis and orientational assemblies of MgO nanosheets with exposed (111) facets

Min Tang, Yuanhang Ren, Yichen Hu, Lin Ye, Bin Yue, Heyong He

Department of Chemistry and Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, Collaborative Innovation Center of Chemistry for Energy Materials, Fudan University, Shanghai 200433, China

Two different orientational assemblies of MgO nanosheets were obtained by tuning the polarity of solvents during the drop deposition method. Different UV-visible diffuse reflectance spectra were recorded and are related to the orientations of the exposed facets.

Chinese Chemical Letters 29 (2018) 935



Exploring BH_2CN -based hydrophobic hypergolic fuels and effective fuel “additives”: Imidazolylidene cyanoborane complexes

Xingye Li^a, Jiayu Nan^a, Tian Lu^a, Hongyu Huo^a, Yanqiang Zhang^b, Haibo Li^c, Fude Nie^c, Hongquan Yin^a, Fu-Xue Chen^a

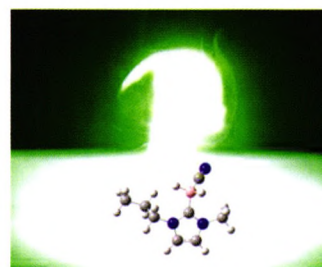
^a School of Chemistry and Chemical Engineering, Beijing Institute of Technology, Beijing 100081, China

^b Division of Ionic Liquids and Green Engineering, Institute of Process Engineering, Chinese Academy of Sciences, Beijing 100190, China

^c Institute of Chemical Materials, China Academy of Engineering Physics, Mianyang 621050, China

Hydrophobic BH_2CN -based imidazolylidene cyanoborane complexes showed good fuel potential applications, such as water immiscibility, wide liquid range, short ignition delay time (13 ms), high density and good density impulse.

Chinese Chemical Letters 29 (2018) 939



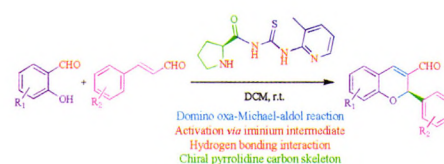
Enantioselective organocatalytic synthesis of the chiral chromenes by domino oxa-Michael-aldol reaction

Shrikant S. Pendalwar, Avinash V. Chakrawar, Sudhakar R. Bhusare

Department of Chemistry, Dnyanopasak College, Parbhani 431 401, MS, India

The proline based chiral organocatalyst has been found to be an efficient catalyst for enantioselective domino oxa-Michael-aldol reaction. This catalytic system provided the synthesis of substituted 2-aryl-2H-chromenes-3-carbaldehyde in good to high yields (73%–97%) with excellent enantioselectivity (up to 97%) and reasonable reaction times. The atom economy, high yield and mild reaction conditions are some of the important features of this protocol.

Chinese Chemical Letters 29 (2018) 942



Research on controllable alkaline soil degradation of 5-substituted chlorsulfuron

Shaa Zhou^a, Xuwen Hua^b, Wei Wei^a, Minggui Chen^a, Yucheng Gu^c, Sha Zhou^a, Haibin Song^a, Zhengming Li^a

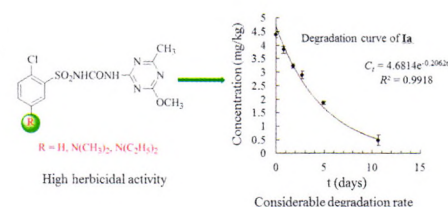
^a State Key Laboratory of Elemento-Organic Chemistry, Collaborative Innovation Centre of Chemical Science and Engineering (Tianjin), College of Chemistry, Nankai University, Tianjin 300071, China

^b College of Agriculture, Liaocheng University, Liaocheng 252000, China

^c Syngenta Jealott's Hill International Research Centre, RG42 6EY, United Kingdom

Structural modification on the 5th position of the benzene ring in chlorsulfuron was proved to be an efficient practice to accelerate its degradation in alkaline soil which can resolve the disadvantages of traditional sulfonylurea herbicides. Meanwhile, it could retain high biological activity.

Chinese Chemical Letters 29 (2018) 945



Iron(II) hydrides bearing a tetradentate PSNP ligand

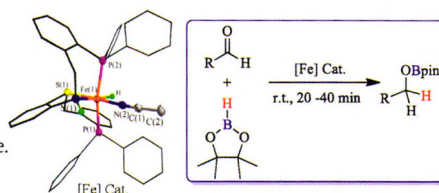
Jianguo Liu^{a,b}, Ailing Zhang^a, Heng Song^a, Qingxiao Tong^b, Chen-Ho Tung^a, Wenguang Wang^a

^a School of Chemistry and Chemical Engineering, Shandong University, Jinan 250100, China

^b Department of Chemistry, Shantou University, Shantou 515063, China

Iron(II) hydrides bearing PSNP tetradentate ligand were synthesized and well characterized. The hydrido iron complex $[\text{2H}(\text{NCMe})](\text{BF}_4)$ is an extremely efficient catalyst for the hydroboration of aldehydes at room temperature.

Chinese Chemical Letters 29 (2018) 949



Boron-assisted growth of silica nanowire arrays and silica microflowers for bendable capacitor application

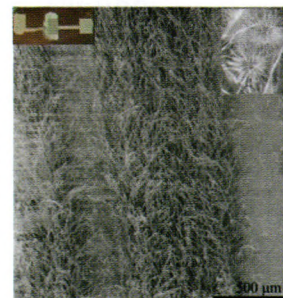
Cuicui Zhuang^a, Ling Li^{a,b}, Yang Liu^a, Chuncheng Ban^a, Xiaowei Liu^a

^a MEMS Center, Harbin Institute of Technology, Harbin 150001, China

^b State Key Laboratory of Urban Water Resource and Environment, Harbin Institute of Technology, Harbin 150001, China

Aligned-long silica nanowire arrays and microflowers were synthesized with boron as catalyst. Besides that parallel plate capacitors were fabricated using the silica nanowire mat as a dielectric. Their frequency response and mechanical properties were investigated.

Chinese Chemical Letters 29 (2018) 954



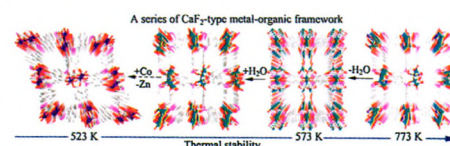
A rare porous zinc phosphonocarboxylate framework with high thermal stability and interesting structural transformation

Yan-Jie Qi, Jin-Hua Liu, Wen-Xu Zheng, Xin-Xiong Li, Shou-Tian Zheng

State Key Laboratory of Photocatalysis on Energy and Environment, College of Chemistry, Fuzhou University, Fuzhou 350108, China

A rare porous metal-phosphonocarboxylate framework with ultrahigh thermal stability over 500 °C was obtained, which can be transformed into three different cluster-based frameworks with the same CaF_2 -type topology.

Chinese Chemical Letters 29 (2018) 959



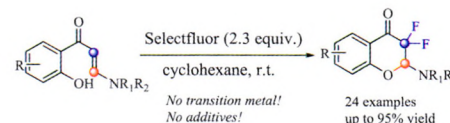
Expedient chemoselective and catalyst-free synthesis of 3,3-difluorochroman-4-ones from o-hydroxyarylenaminones and Selectfluor

Jian Xu, Zhijie Kuang, Qiuling Song

Institute of Next Generation Matter Transformation, College of Chemical Engineering at Huaqiao University, Xiamen 361021, China

An expedient and mild strategy for the synthesis of unconventional 2-(dimethylamino)-3,3-difluorochroman-4-one derivatives from o-hydroxyarylenaminones and Selectfluor was developed at room temperature under catalyst-free conditions. This method showed excellent chemoselectivity and great functional groups tolerance.

Chinese Chemical Letters 29 (2018) 963



Sierpiński triangles formed by molecules with linear backbones on Au(111)

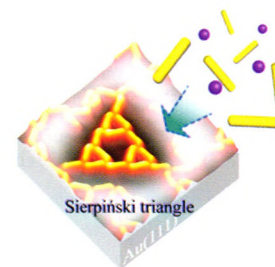
Xue Zhang^a, Ruoning Li^a, Na Li^a, Gaochen Gu^a, Yajie Zhang^a, Shimin Hou^a, Yongfeng Wang^{a,b}

^a Key laboratory for the Physics and Chemistry of Nanodevices, Department of Electronics, Peking University, Beijing 100871, China

^b Peking University Information Technology Institute Tianjin Binhai, Tianjin 300450, China

Sierpiński triangle fractal crystals are formed by Co and molecules with linear backbones on Au(111).

Chinese Chemical Letters 29 (2018) 967



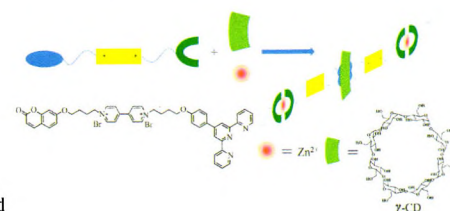
A linear supramolecular polymer based on host-guest recognition and metal-ligand coordination

Chao Xu, Lei Xu, Xiang Ma

Key Laboratory for Advanced Materials and Institute of Fine Chemicals, School of Chemistry and Molecular Engineering, East China University of Science and Technology, Shanghai 200237, China

A linear main-chain supramolecular polymer was constructed in aqueous solution via γ -CD host recognition with coumarin unit as well as metalligand coordination between terpyridine unit and Zn^{2+} . Besides, the self-assembly behavior and morphological property of this supramolecular polymer system were characterized by DLS and TEM experiments.

Chinese Chemical Letters 29 (2018) 970



A simple and sensitive assay for apurinic/apyrimidinic endonuclease 1 activity based on host-guest interaction of β -cyclodextrin polymer and pyrene

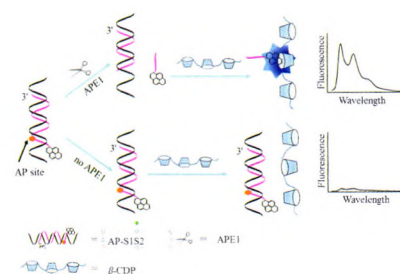
Maogui Zhou^a, Shiyi Qin^a, Zhenzhen Feng^a, Chunxia Song^b, Hua Zhang^a, Wenshan Li^a, Qing Wang^a, Jianbo Liu^a, Jin Huang^a, Xiaohai Yang^a, Kemin Wang^a

^a State Key Laboratory of Chemo/Biosensing and Chemometrics, College of Chemistry and Chemical Engineering, Key Laboratory for Bio-Nanotechnology and Molecular Engineering of Hunan Province, Hunan University, Changsha 410082, China

^b School of Science, Anhui Agricultural University, Hefei 230036, China

A simple and sensitive method for APE1 activity detection was developed based on fluorescence enhancement of pyrene in the presence of β -cyclodextrin polymer.

Chinese Chemical Letters 29 (2018) 973



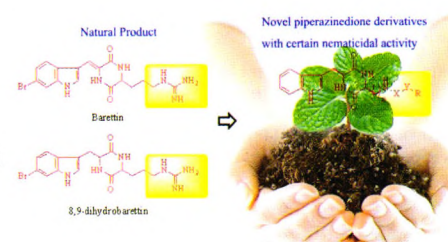
Synthesis and nematocidal activity of piperazinedione derivatives based on the natural product Baretin

Haiyang Sun, Hui Li, Jiayi Wang, Gonghua Song

Shanghai Key Laboratory of Chemical Biology, School of Pharmacy, East China University of Science and Technology, Shanghai 200237, China

More than 70 diketopiperazine derivatives based on the structure of Baretin have been synthesized and evaluated for the bioactivity against root-knot nematode *M. incognita*. The most active compound showed a nematocidal activity of 75% at 2.4 μ mol/L.

Chinese Chemical Letters 29 (2018) 977



Rapid determination of illegal additives chrysoidin and malachite green by surface-enhanced Raman scattering with silanized support based substrate

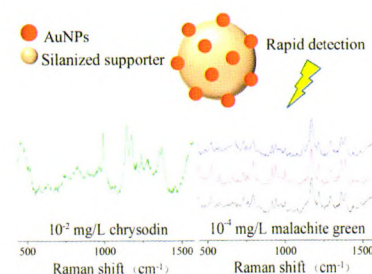
Han Zhang^a, Lin Sun^a, Yuan Zhang^a, Yan Kang^a, Huilian Hu^a, Jibran Iqbal^b, Yiping Du^a

^a Shanghai Key Laboratory of Functional Materials Chemistry & Research Centre of Analysis and Test, East China University of Science and Technology, Shanghai 200237, China

^b College of Natural and Health Sciences, Zayed University, Abu Dhabi 144534, United Arab Emirates

Silanized support based SERS substrate is applied to detect chrysoidin in Sprite at 0.01 mg/L and malachite green in fish pond water at 0.0001 mg/L. The SERS method is sensitive, cost-effective and convenient, which has great potential in detection of illegal additives and harmful substances.

Chinese Chemical Letters 29 (2018) 981



Concise synthesis of xanthenes by the tandem etherification—Acylation of diaryliodonium salts with salicylates

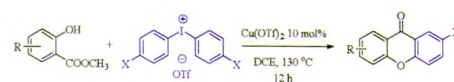
Gaoxiaozheng Liu^{a,b}, Chao Wu^{a,b}, Bifeng Chen^a, Ru He^a, Chao Chen^{a,b}

^a MOE Key Laboratory of Bioorganic Phosphorus Chemistry & Chemical Biology, Department of Chemistry, Tsinghua University, Beijing 100084, China

^b The Graduate School at Shenzhen, Tsinghua University, Beijing 100084, China

An efficient synthetic method for multi-substituted xanthenes was developed. The reaction of diaryliodonium salts and salicylates was employed for the preparation of the xanthenes. This method proceeded through an intermolecular etherification-acylation to give target heterocycle in good yields (up to 91%). Multi-substituted xanthenes were gained by shifting the substituent of salicylates or diaryliodonium salts.

Chinese Chemical Letters 29 (2018) 985



Cyclodextrin/polyethylenimine-based supramolecular nanoparticles for loading and sustained release of ATP

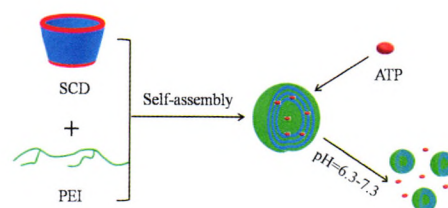
Lu Liang^a, Yong Chen^a, Xu-Man Chen^a, Yi Zhang^a, Yu Liu^{a,b}

^a College of Chemistry, State Key Laboratory of Elemento-Organic Chemistry, Nankai University, Tianjin 300071, China

^b Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Nankai University, Tianjin 300071, China

A new supramolecular nanoparticle PEI/SCD was successfully constructed, showing the loading/sustained release abilities towards ATP.

Chinese Chemical Letters 29 (2018) 989



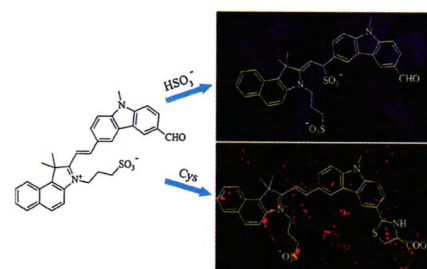
Dual-site fluorescent probe for highly selective and sensitive detection of sulfite and biothiols

Mengyang Li, Pengcheng Cui, Kun Li, Jiahui Feng, Mingming Zou, Xiaoqi Yu

Key Laboratory of Green Chemistry and Technology, Ministry of Education, College of Chemistry, Sichuan University, Chengdu 610064, China

A dual-site fluorescent probe that could discriminatively respond to Cys and HSO_3^- through two emission channels was reported, and it could further applied in imaging biothiols in living cells.

Chinese Chemical Letters 29 (2018) 992



Semisynthesis of new ethers from furyl-ring-based acylation derivatives of fraxinellone as insecticidal agents against *Mythimna separata* Walker in vivo

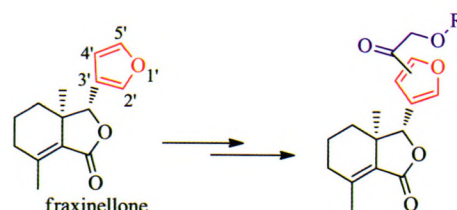
Ruige Yang^a, Yong Guo^a, Yuanyuan Zhang^a, Hui Xu^{a,b}

^a Research Institute of Pesticidal Design & Synthesis, and Shaanxi Key Laboratory of Natural Products & Chemical Biology, College of Chemistry & Pharmacy, Northwest A&F University, Yangling 712100, China

^b College of Plant Protection, Northwest A&F University, Yangling 712100, China.

A series of new ethers from furyl-ring-based acylation derivatives were obtained by structural modification of fraxinellone. Among them, two compounds exhibited more potent insecticidal activity than toosendanin with the final mortality rates greater than 60%.

Chinese Chemical Letters 29 (2018) 995



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