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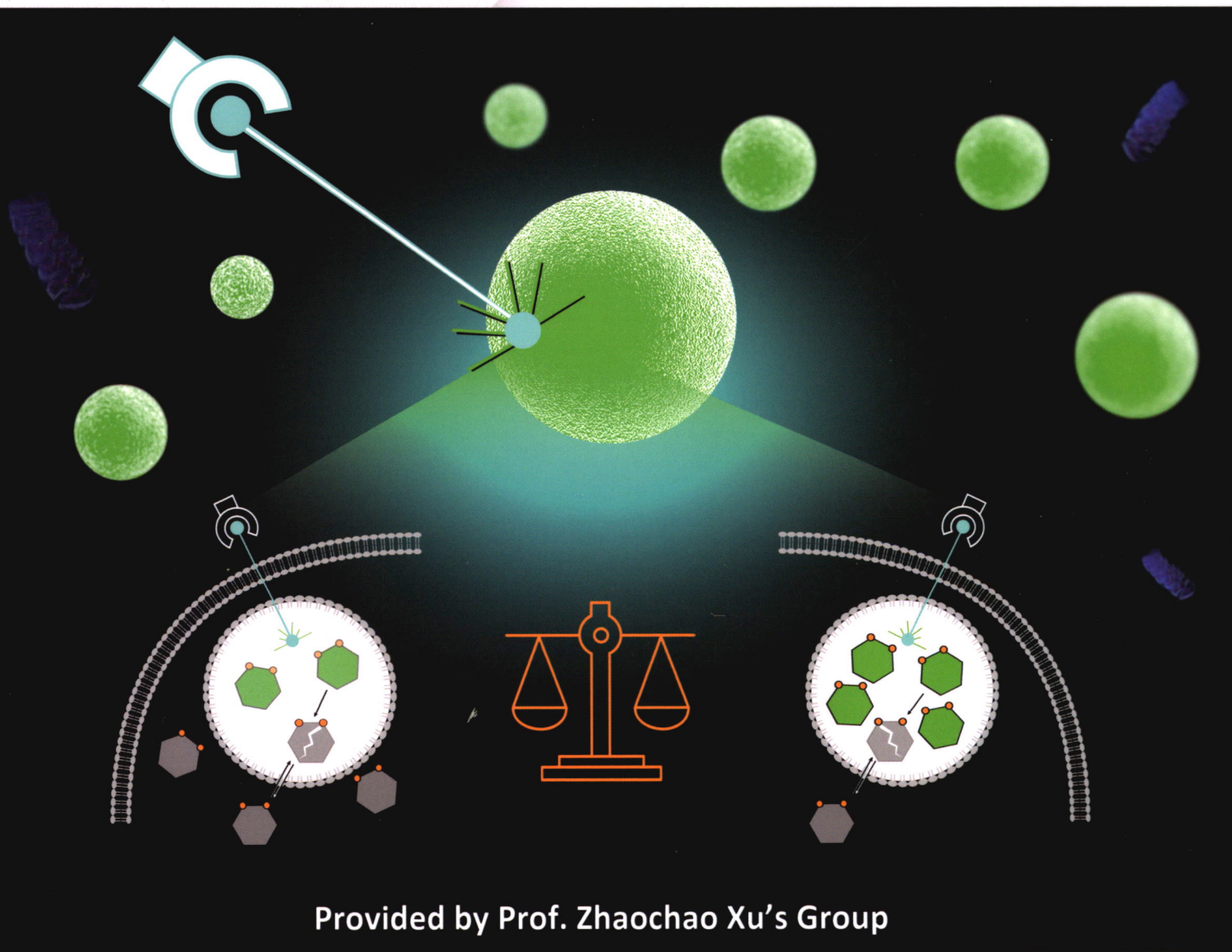
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## Chinese Chemical Letters (中国化学快报)

| Volume 33 | Number 12 | DECEMBER 2022



### REVIEW

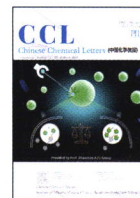
Qiuling Zheng, Ya Ding et al.  
Unmodified methodologies in target discovery  
for small molecule drugs: A rising star

### COMMUNICATION

Qihang Wu, Jie Fu et al.  
An insight into aggregation kinetics of  
polystyrene nanoplastics interaction with  
metal cations

Chinese Chemical Society

万方数据 Institute of Materia Medica, Chinese Academy of Medical Sciences



## Graphical Abstracts/Chin Chem Lett 33 (2022) iii–xiv

## Reviews

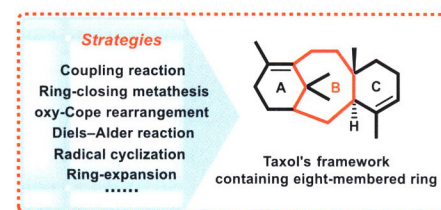
Diverse strategic approaches *en route* to Taxol total synthesis

Zexian Li, Jianfeng Zheng, Wei-Dong Z. Li

Sichuan Engineering Research Center for Biomimetic Synthesis of Natural Drugs, School of Life Science and Engineering, Southwest Jiaotong University, Chengdu 610031, China

A range of strategic approaches *en route* to the total synthesis of Taxol since 1995 have been summarized in this mini-review, focusing on the biomimetic designs and various creative methods for the challenging 6–8–6 core ring system construction.

Chinese Chemical Letters 33 (2022) 4957



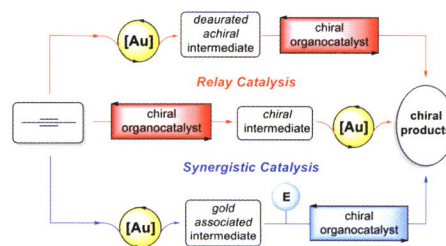
## Recent advances in gold-complex and chiral organocatalyst cooperative catalysis for asymmetric alkyne functionalization

Ming Bao, Su Zhou, Wenhao Hu, Xinfang Xu

Guangdong Key Laboratory of Chiral Molecule and Drug Discovery, School of Pharmaceutical Sciences, Sun Yat-sen University, Guangzhou 510006, China

This review will cover two general protocols in gold-complex and chiral organocatalyst cooperative catalysis for asymmetric alkyne functionalization, including relay catalysis and synergistic catalysis, with emphasis on the detailed cooperative catalysis patterns for the asymmetric induction to illustrate the roles of the two catalysts.

Chinese Chemical Letters 33 (2022) 4969

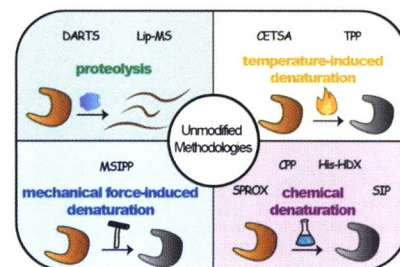


## Unmodified methodologies in target discovery for small molecule drugs: A rising star

Jiayue Tang<sup>a</sup>, Meng Ou<sup>a</sup>, Qjuling Zheng<sup>b</sup>, Ya Ding<sup>a</sup><sup>a</sup>Key Laboratory of Drug Quality Control and Pharmacovigilance, Ministry of Education, China Pharmaceutical University, Nanjing 210009, China<sup>b</sup>State Key Laboratory of Natural Medicines, Department of Pharmaceutical Analysis, College of Pharmacy, China Pharmaceutical University, Nanjing 210009, China

In this review, we discuss unmodified methodology advances for the target discovery of active molecules and highlight their achievements and limitations in drug development. According to the protein properties applied by various methods, we divide them into four classes.

Chinese Chemical Letters 33 (2022) 4980





## Recent advances in single-crystalline two-dimensional polymers: Synthesis, characterization and challenges

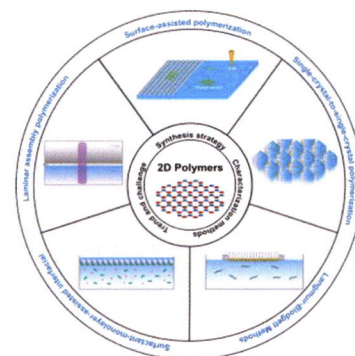
Haoyong Yang<sup>a,b</sup>, Tao Zhang<sup>a</sup>, Qunji Xue<sup>a</sup>

<sup>a</sup> Key Laboratory of Marine Materials and Related Technologies, Zhejiang Key Laboratory of Marine Materials and Protective Technologies, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo 315201, China

<sup>b</sup> School of Chemical Sciences, University of Chinese Academy of Sciences, Beijing 100049, China

This mini-review focuses on recent emerging strategies for the synthesis of single-crystalline two-dimensional polymers (2DPs). Meanwhile, the characterization methods and challenges regarding single-crystalline 2DPs are also discussed.

Chinese Chemical Letters 33 (2022) 4989



## Environmental applications of graphene oxide composite membranes

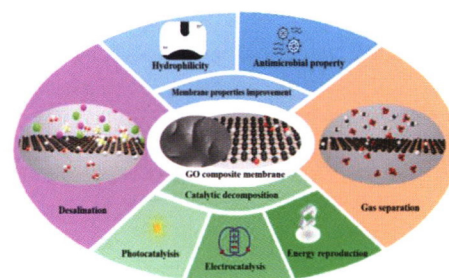
Yihua Li<sup>a</sup>, Jiao Jiao<sup>a</sup>, Qidong Wu<sup>b</sup>, Qi Song<sup>a</sup>, Wancen Xie<sup>b</sup>, Baicang Liu<sup>b</sup>

<sup>a</sup> Key Laboratory of Pollution Control Chemistry and Environmental Functional Materials for Qinghai-Tibet Plateau of the National Ethnic Affairs Commission, School of Chemistry and Environment, Southwest Minzu University, Chengdu 610041, China

<sup>b</sup> Key Laboratory of Deep Earth Science and Engineering (Ministry of Education), College of Architecture and Environment, Institute of New Energy and Low-Carbon Technology, Institute for Disaster Management and Reconstruction, Sichuan University, Chengdu 610207, China

A comprehensive communication was reviewed towards the environmental applications of GO composite membranes in three highlighted areas: Desalination, gas separation and wastewater treatment, with challenges discussed faced with GO composite membranes.

Chinese Chemical Letters 33 (2022) 5001



## Recent advances in the application of metal organic frameworks using in advanced oxidation progresses for pollutants degradation

Heshan Zheng<sup>a</sup>, Yunning Hou<sup>a</sup>, Shuo Li<sup>a,b,c</sup>, Jun Ma<sup>b,c</sup>, Jun Nan<sup>b,c</sup>, Tong Li<sup>d</sup>

<sup>a</sup> College of Chemistry and Chemical Engineering, Qiqihar University, Qiqihar 161006, China

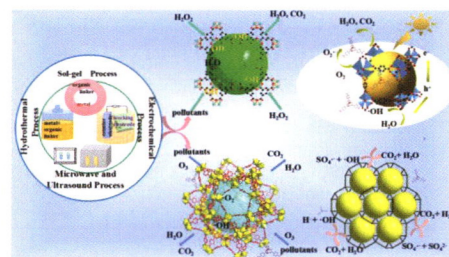
<sup>b</sup> Urban Water Resources Development and Northern National Engineering Research Center, Harbin 150090, China

<sup>c</sup> School of Environment, Harbin Institute of Technology, Harbin 150090, China

<sup>d</sup> School of Energy and Environmental Engineering, University of Science and Technology Beijing, Beijing 100083, China

Application and mechanism of MOFs in emerging AOPs such as Fenton-like, photocatalysis, catalytic ozonation and persulfate catalysis are reviewed in detail.

Chinese Chemical Letters 33 (2022) 5013



## Recent progress on two-dimensional materials confining single atoms for CO<sub>2</sub> photoreduction

Xianjin Shi<sup>a,b,c</sup>, Leo N.Y. Cao<sup>d,e</sup>, Meijuan Chen<sup>f</sup>, Yu Huang<sup>a,b</sup>

<sup>a</sup> Key Laboratory of Aerosol Chemistry and Physics, State Key Laboratory of Loess and Quaternary Geology (SKLLQG), Institute of Earth Environment, Chinese Academy of Sciences, Xi'an 710061, China

<sup>b</sup> Center of Excellence in Quaternary Science and Global Change, Chinese Academy of Sciences, Xi'an 710061, China

<sup>c</sup> University of Chinese Academy of Sciences, Beijing 100049, China

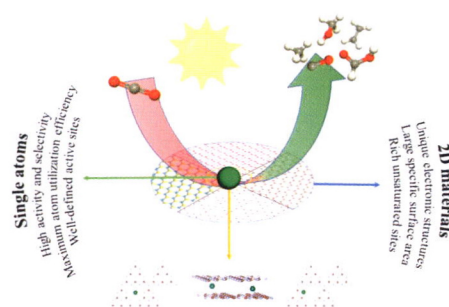
<sup>d</sup> CAS Center for Excellence in Nanoscience, Beijing Key Laboratory of Micro-nano Energy and Sensor, Beijing Institute of Nanoeenergy and Nanosystems, Chinese Academy of Sciences, Beijing 101400, China

<sup>e</sup> School of Nanoscience and Technology, University of Chinese Academy of Sciences, Beijing 100049, China

<sup>f</sup> School of Human Settlements and Civil Engineering, Xi'an Jiaotong University, Xi'an 710049, China

In this review, we summarized the design and application, and proposed challenges and opportunities for further research and application of 2D materials confining single atoms (SACs@2D) for CO<sub>2</sub> photoreduction.

Chinese Chemical Letters 33 (2022) 5023



## Communications

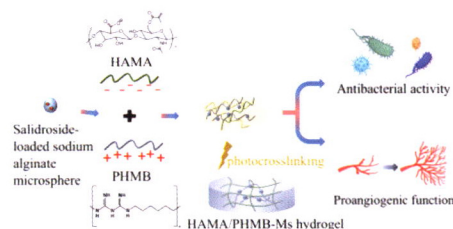
### Hyaluronic acid-methacrylic anhydride/polyhexamethylene biguanide hybrid hydrogel with antibacterial and proangiogenic functions for diabetic wound repair

Yike Li, Huiyu Zheng, Yaxian Liang, Ming Xuan, Guiting Liu, Huixu Xie

State Key Laboratory of Oral Diseases, National Clinical Research Center for Oral Diseases, West China Hospital of Stomatology, State Key Laboratory of Polymer Materials Engineering, Sichuan University, Chengdu 610041, China

In this case, we prepared a hybrid hydrogel composed of hyaluronic acid-methacrylic anhydride, antibacterial component polyhexamethylene biguanide, and proangiogenic sodium alginate/solidoside composite microspheres. *In vivo* and *in vitro* experiments have been conducted to verify its promising performance in treating diabetic wounds.

Chinese Chemical Letters 33 (2022) 5030



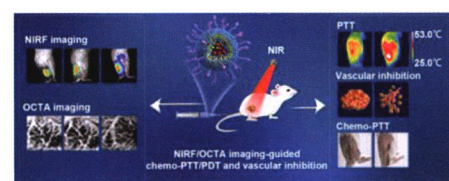
### Folate-targeted co-delivery polymersomes for efficient photo-chemo-antiangiogenic therapy against breast cancer and *in vivo* evaluation via OCTA/NIRF dual-modal imaging

Hongjun Wu, Chenlu Huang, Liwei Wang, Qinghua Li, Yuejie Li, Linhua Zhang, Dunwan Zhu

Tianjin Key Laboratory of Biomedical Materials, Key Laboratory of Biomaterials and Nanotechnology for Cancer Immunotherapy, Institute of Biomedical Engineering, Chinese Academy of Medical Sciences & Peking Union Medical College, Tianjin 300192, China

Intelligent nano-sized polymersomes was designed to achieve synergistic PTT/PDT/chemo/antiangiogenic and *in vivo* evaluation via OCTA/NIRF dual-modal imaging.

Chinese Chemical Letters 33 (2022) 5035



### BODIPY 493 acts as a bright buffering fluorogenic probe for super-resolution imaging of lipid droplet dynamics

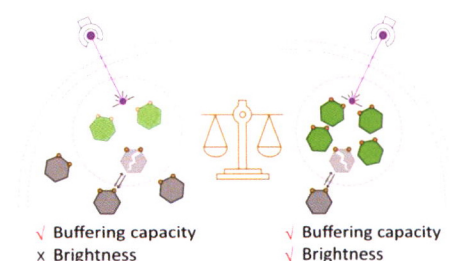
Jie Chen<sup>a,b</sup>, Wenjuan Liu<sup>a,b</sup>, Xiangning Fang<sup>a,b</sup>, Qinglong Qiao<sup>a</sup>, Zhaochao Xu<sup>a</sup>

<sup>a</sup> CAS Key Laboratory of Separation Science for Analytical Chemistry, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China

<sup>b</sup> University of Chinese Academy of Sciences, Beijing 100049, China

BODIPY 493 has high fluorescence brightness and buffering fluorogenic recognition performance, enabling high spatiotemporal resolution for super-resolution imaging of lipid droplet dynamics.

Chinese Chemical Letters 33 (2022) 5042



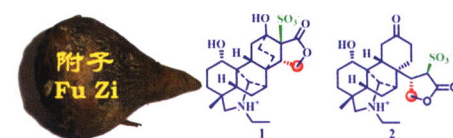
### Two unique C<sub>21</sub>-diterpenoid alkaloids from *Aconitum carmichaelii*

Jingfang Zhang, Xiaoqiang Lei, Yazhi Wei, Hui Liu, Qinglan Guo, Tiantai Zhang, Jiangong Shi

State Key Laboratory of Bioactive Substance and Function of Natural Medicines, Institute of Materia Medica, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100050, China

Two diterpenoid alkaloids having unique twenty-one skeletal carbons were isolated as minor chemical constituents of the lateral root of *Aconitum carmichaelii* "Fu Zi"

Chinese Chemical Letters 33 (2022) 5047



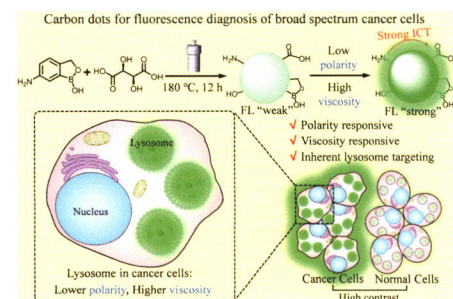
### Dual microenvironmental parameter-responsive lysosome-targeting carbon dots for the high contrast discrimination of a broad spectrum of cancer cells

Yue Xiao, Xiaohui Yin, Pengjuan Sun, Yuanqiang Sun, Lingbo Qu, Zhaohui Li

College of Chemistry, Institute of Analytical Chemistry for Life Science, Henan Joint International Research Laboratory of Green Construction of Functional Molecules and Their Bioanalytical Applications, Zhengzhou University, Zhengzhou 450001, China

By taking advantage of lower polarity and higher viscosity of cancerous lysosomes, polarity and viscosity dual microenvironmental parameter-responsive lysosome-targeting CDs were rationally prepared and showed great potential in high contrast discrimination of a broad spectrum of cancer cells from normal cells.

Chinese Chemical Letters 33 (2022) 5051





## Diastereodivergent [4 + 2] annulation of biphenylenes with enones via nickel(0)-catalyzed C–C bond activation

Junyan Chen<sup>a</sup>, Dachang Bai<sup>a,b</sup>, Xiuli Guo<sup>a</sup>, Yiyao Wang<sup>a</sup>, Xingwei Li<sup>a,c</sup>

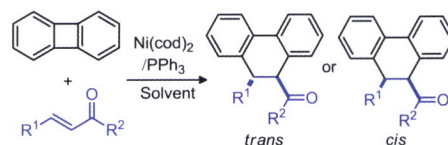
<sup>a</sup>NMPA Key Laboratory for Research and Evaluation of Innovative Drug, Collaborative Innovation Center of Henan Province for Green Manufacturing of Fine Chemicals, Key Laboratory of Green Chemical Media and Reactions, Ministry of Education, School of Chemistry and Chemical Engineering, Henan Normal University, Xinxiang 453007, China

<sup>b</sup>State Key Laboratory of Organometallic Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai 200032, China

<sup>c</sup>School of Chemistry and Chemical Engineering, Shaanxi Normal University (SNNU), Xi'an 710062, China

Ni(cod)<sub>2</sub>(0)-catalyzed [4 + 2] annulation of biphenylenes with enones via C–C activation has been realized, providing an efficient and general synthesis route for *trans* or *cis* diastereoisomers of 9,10-dihydrophenanthrene derivatives.

Chinese Chemical Letters 33 (2022) 5056



## Mn-mediated reductive C(sp<sup>3</sup>)-Si coupling of activated secondary alkyl bromides with chlorosilanes

Liangliang Qi<sup>a</sup>, Xiaobo Pang<sup>a</sup>, Kai Yin<sup>b,c</sup>, Qiu-Quan Pan<sup>a</sup>, Xiao-Xue Wei<sup>a</sup>, Xing-Zhong Shu<sup>a</sup>

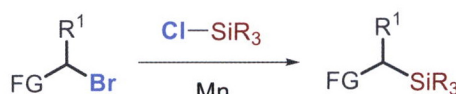
<sup>a</sup>State Key Laboratory of Applied Organic Chemistry (SKLAOC), College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou 730000, China

<sup>b</sup>School of Chemistry and Chemical Engineering, Southeast University, Jiangsu Optoelectronic Functional Materials and Engineering Laboratory, Nanjing 211189, China

<sup>c</sup>Zhejiang Nanjiao Chemistry Co., Ltd., Shangyu Economic and Technological Development Zone, Shangyu 312369, China

We report here an Mn-mediated reductive C(sp<sup>3</sup>)-Si bond-forming reaction of alkyl and silyl halides. The reaction proceeds under mild conditions and works with various common chlorosilanes. This method offers a new approach for the synthesis of  $\alpha$ -silylated organophosphorus and sulfones with a scope that is complementary to those obtained from the established methods.

Chinese Chemical Letters 33 (2022) 5061



FG = Phosphonyl and Sulfonyl

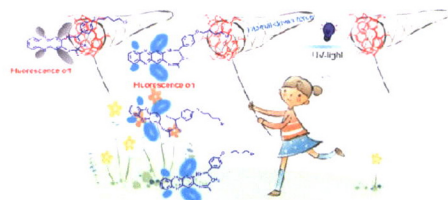
## Fabricating a novel supramolecular light-activated platform based on internal-driven forces induced by the UV-light

Xiaoni Qi, Weichun Li, Bingbing Shi, Youming Zhang, Hong Yao, Qi Lin, Taibao Wei

Key Laboratory of Eco-Environmental Polymer Materials of Gansu Province, College of Chemistry and Chemical Engineering, Northwest Normal University, Lanzhou 730070, China

We fabricated a novel supramolecular light-activated platform based on the internal-driven forces induced by the UV-light.

Chinese Chemical Letters 33 (2022) 5065



## Visible-light-induced novel cyclization of 2-(2-(arylethynyl)benzylidene)-malononitrile derivatives with 2,6-di(*tert*-butyl)-4-methylphenol to bridged spirocyclic compounds

Xiaofei Xie<sup>a</sup>, Lei Wang<sup>a,c</sup>, Quan Zhou<sup>a</sup>, Yongmin Ma<sup>a</sup>, Zhi-Ming Wang<sup>a</sup>, Pinhua Li<sup>b,c</sup>

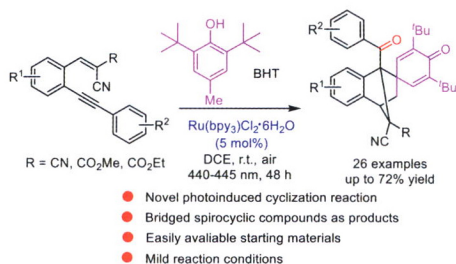
<sup>a</sup>Advanced Research Institute and Department of Chemistry, Taizhou University, Taizhou 318000, China

<sup>b</sup>Department of Chemistry, Anhui Polytechnic University, Wuhu 241000, China

<sup>c</sup>State Key Laboratory of Organometallic Chemistry, Shanghai Institute of Organic Chemistry, Shanghai 200032, China

An efficient strategy for the preparation of bridged spirocyclic compounds via visible-light-induced cyclization of 2-(2-(arylethynyl)benzylidene)malononitrile derivatives with 2,6-di(*tert*-butyl)-4-methylphenol (BHT) was developed.

Chinese Chemical Letters 33 (2022) 5069



## Direct benzylation reactions from benzyl halides enabled by transition-metal-free photocatalysis

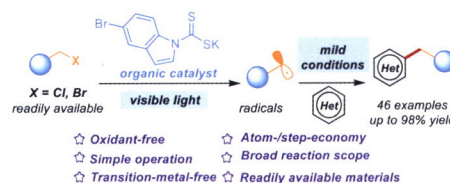
Panjie Xiang<sup>a</sup>, Kai Sun<sup>a</sup>, Shuang Wang<sup>b</sup>, Xiaolan Chen<sup>a</sup>, Lingbo Qu<sup>a</sup>, Bing Yu<sup>a</sup>

<sup>a</sup>Green Catalysis Center, College of Chemistry, Zhengzhou University, Zhengzhou 450001, China

<sup>b</sup>Zhengzhou Tobacco Research Institute of CNTC, Zhengzhou 450001, China

An S<sub>N</sub>2-based photochemical strategy using dithiocarbamate anion as catalyst was developed for the activation of benzyl halides, and the benzylation (or cyanomethylation) of various heterocycles could be realized.

Chinese Chemical Letters 33 (2022) 5074



## Concise syntheses of 13-methylprotoberberine and 13-methyltetrahydroprotoberberine alkaloids

Wenchang Chen<sup>a</sup>, Xiaofen Yi<sup>a</sup>, Hongmin Qu<sup>a</sup>, Yu Chen<sup>a</sup>, Pei Tang<sup>a</sup>, Fener Chen<sup>a,b,c</sup>

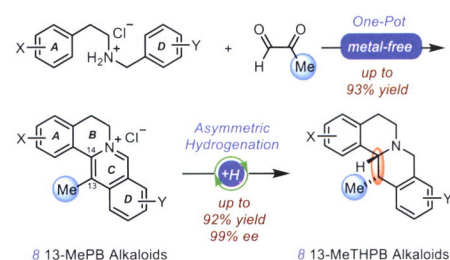
<sup>a</sup>Sichuan Research Center for Drug Precision Industrial Technology, West China School of Pharmacy, Sichuan University, Chengdu 610041, China

<sup>b</sup>Engineering Center of Catalysis and Synthesis for Chiral Molecules, Department of Chemistry, Fudan University, Shanghai 200433, China

<sup>c</sup>Shanghai Engineering Center of Industrial Asymmetric Catalysis for Chiral Drugs, Shanghai 200433, China

The concise syntheses of 13-methylprotoberberine (13-MePB) and enantioenriched 13-methyltetrahydroprotoberberine (13-MeTHPB) alkaloids are described. The syntheses rely on a one-pot metal-free Pictet-Spengler/Friedel-Crafts hydroxyalkylation/dehydration/oxidation cascade and a highly challenging Ir-catalyzed asymmetric hydrogenation.

Chinese Chemical Letters 33 (2022) 5080



## Rhodium catalyzed asymmetric synthesis of Chiraphos derivatives

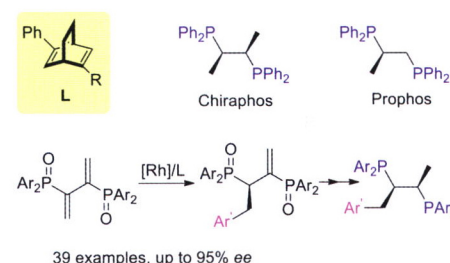
Ying-Ying Sun<sup>a</sup>, Bin Zhang<sup>a</sup>, Liangbin Yu<sup>b</sup>, Ranran Cui<sup>a</sup>, Qingyang Zhao<sup>b</sup>, Qing-Wei Zhang<sup>a</sup>

<sup>a</sup>Department of Chemistry, University of Science and Technology of China, Hefei 230026, China

<sup>b</sup>School of Pharmaceutical Sciences (Shenzhen), Shenzhen Campus of Sun Yat-sen University, Shenzhen 518107, China

A Rh/Ph-bod catalyzed asymmetric addition of aryl boronic acids to phosphinyl dienes has been developed for the synthesis of Chiraphos derivatives with modifications at both the skeleton and phosphine substituents.

Chinese Chemical Letters 33 (2022) 5084



## Atropisomer-based construction of a new perylene diimide macrocycle as visible-light photocatalyst for selective sulfide oxidation

Fei Yang<sup>a</sup>, Miaomiao Zhen<sup>a</sup>, Shanshan Wang<sup>a,c</sup>, Wei Wei<sup>b</sup>, Huan He<sup>a</sup>, Yanqing Xu<sup>a</sup>

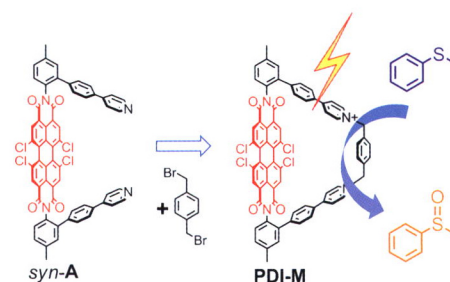
<sup>a</sup>Key Laboratory of Cluster Science, Ministry of Education of China, Beijing Key Laboratory of Photoelectronic/Electrophotonic Conversion Materials, School of Chemistry and Chemical Engineering, Beijing Institute of Technology, Beijing 100081, China

<sup>b</sup>Department of Chemistry, Capital Normal University, Beijing 100048, China

<sup>c</sup>Test & Analysis Center of Shougang Technical Research Institute, Beijing 100043, China

A visible-light-active organic macrocycle was successfully constructed from a perylene diimide syn-atropisomer as highly preorganized precursor. As a photocatalyst, the macrocycle exhibits excellent activity on aerobic oxidation of sulfide into sulfoxide under visible light irradiation at room temperature.

Chinese Chemical Letters 33 (2022) 5088





## Facile access to chiral 1-pyrrolines through Rh-catalyzed enantioselective partial hydrogenation of unprotected simple pyrroles

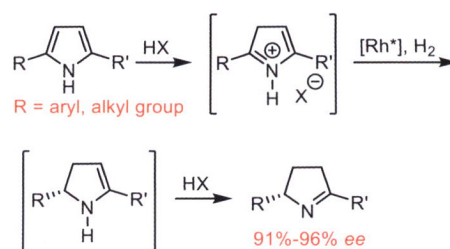
Kui Tian<sup>a</sup>, Gongyi Liu<sup>a</sup>, Xiu-Qin Dong<sup>a,b</sup>

<sup>a</sup>Engineering Research Centre of Organosilicon Compounds & Materials, Ministry of Education, College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, China

<sup>b</sup>Suzhou Institute of Wuhan University, Suzhou 215123, China

Highly enantioselective Rh-catalyzed partial hydrogenation of unprotected simple 2-alkyl-5-aryl-disubstituted pyrroles has been successfully developed, generating a series of chiral 1-pyrroline derivatives generally with excellent results (95%-99% yields, 91%-96% *ee*). Moreover, 2,5-aryl-1*H*-pyrroles were hydrogenated well in high yields and good enantioselectivities. This efficient protocol features easily accessible substrates, wide substrate scope, well functional group compatibility, commercially available rhodium precursor and chiral ligand. It provides a versatile route to access chiral 1-pyrroline derivatives that are of great importance in organic synthesis and pharmaceutical chemistry.

Chinese Chemical Letters 33 (2022) 5092



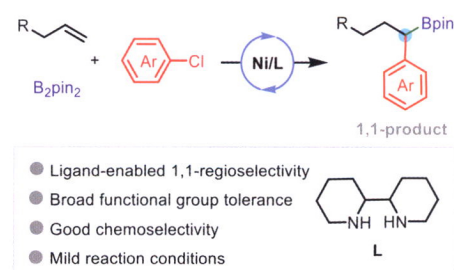
## Integrating aryl chlorides into nickel-catalyzed 1,1-difunctionalization of alkenes

Caocao Sun, Guoyin Yin

The Institute for Advanced Studies, Wuhan University, Wuhan 430072, China

The first aryl chlorides participated 1,1-functionalization of undirected, unactivated alkenes is reported. The success is predominantly ascribed to the judicious selection of 1,2-diamine ligand. This study provides an efficient protocol for the synthesis of secondary benzyl boronates from cheap, abundant starting materials.

Chinese Chemical Letters 33 (2022) 5096



## Boron-promoted reductive deoxygenation coupling reaction of sulfonyl chlorides for the C(sp<sup>3</sup>)-S bond construction

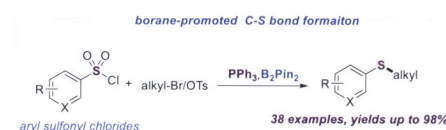
Shuo Chen<sup>a</sup>, Qingru Wen<sup>a</sup>, Yanqing Zhu<sup>a</sup>, Yanru Ji<sup>b</sup>, Yu Pu<sup>b</sup>, Zhengli Liu<sup>a</sup>, Yun He<sup>a</sup>, Zhang Feng<sup>a,b</sup>

<sup>a</sup>Chongqing Key Laboratory of Natural Product Synthesis and Drug Research, School of Pharmaceutical Sciences, Chongqing University, Chongqing 401331, China

<sup>b</sup>Medical Imaging Key Laboratory of Sichuan Province, North Sichuan Medical College, Nanchong 637000, China

Since most mercaptans with unpleasant odors are not commercially available and highly toxic, developing alternative sulfurating agents for the C-S bond formation is highly demanded. Herein, we report a borane-promoted reductive deoxygenation coupling reaction to synthesize sulfides. This reaction features excellent functional group compatibility, high efficiency, broad substrate scope, and application in late-stage functionalization of biomolecules. Preliminary mechanistic studies suggest diaryl sulfides are the intermediates of this reaction. Moreover, the real active aryl sulfide anions may be generated *in situ* with the aid of PPh<sub>3</sub> and B<sub>2</sub>pin<sub>2</sub>.

Chinese Chemical Letters 33 (2022) 5101



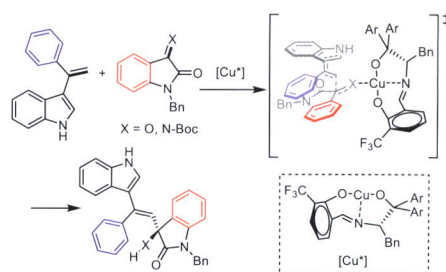
## Construction of chiral 3-alkenyl-3-substituted oxindoles by stereoselective direct alkenylation of isatin derivatives and 3-vinylindoles

Xiang Sun, Kuiliang Li, Shuangshuang Zhao, Zhenggen Zha, Zhiyong Wang

Hefei National Research Center for Physical Sciences at the Microscale, Center for Excellence in Molecular Synthesis of Chinese Academy of Sciences, School of Chemistry and Materials Science, University of Science and Technology of China, Hefei 230026, China

We developed an alkenylation reaction of isatin derivatives and 3-vinylindoles. A series of chiral 3-alkenyl-3-substituted oxindole derivatives were obtained with excellent yields (up to 99%) and stereoselectivities (up to 99% *ee*, >20:1 *dr*). Scaling up the reaction to gram quantities, the desired product **4b** could be obtained with a good yield (88%) and a great *ee* value (87%, >20:1 *dr*). Also, the reaction transition state with a  $\pi$ - $\pi$  interaction was proposed, which was supported by DFT calculations. Notably, the products are rich in functional group conversion and have great potential application for the synthesis of some natural products and drug molecules.

Chinese Chemical Letters 33 (2022) 5106



## Multistimuli responsive supramolecular polymer networks via host-guest complexation of pillararene-containing polymers and sulfonium salts

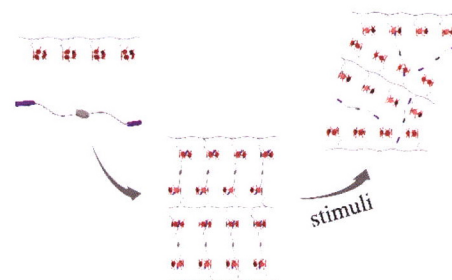
Feihong Lu<sup>a</sup>, Yi Chen<sup>a</sup>, Boqiao Fu<sup>b</sup>, Shigui Chen<sup>a</sup>, Lu Wang<sup>a</sup>

<sup>a</sup>The Institute for Advanced Studies, Hubei Clinical Center & Key Lab of Intestinal & Colorectal Diseases, Wuhan University, Wuhan 430072, China

<sup>b</sup>Institute of Biomedical Materials Industry Technology, Hubei co-Innovation Center for Utilization of Biomass Waste, College of Chemistry and Materials Science, Hubei Engineering University, Xiaogan 432000, China

Supramolecular polymer networks based on the host-guest interactions between pillar[5]arenes and sulfonium salts have been constructed, which could be dissociated by external stimuli including temperature and competing reagents.

Chinese Chemical Letters 33 (2022) 5111



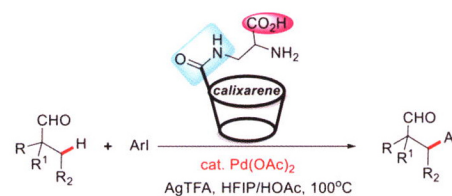
## Supramolecular interaction controlled and calix[4]arene ligand assisted Pd-catalyzed C(sp<sup>3</sup>)-H arylation of aliphatic aldehydes

Yao Wu, Zhiyan Ma, Jing Shi, Xiaoqiang Sun, Ke Yang, Zheng-Yi Li

Jiangsu Key Laboratory of Advanced Catalytic Materials and Technology, School of Petrochemical Engineering, Changzhou University, Changzhou 213164, China

A calix[4]arene ligand assisted direct  $\beta$ -C-H arylation of tertiary aliphatic aldehydes has been developed via a Pd-catalyzed C(sp<sup>3</sup>)-H functionalization process.

Chinese Chemical Letters 33 (2022) 5116



## A multiple-function fluorescent pillar[5]arene: Fe<sup>3+</sup>/Ag<sup>+</sup> detection and light-harvesting system

Yang Luo, Wei Zhang, Qian Ren, Guo-Rong Chen, Jiang-Lian Ran, Xin Xiao

Key Laboratory of Macrocyclic and Supramolecular Chemistry of Guizhou Province, Guizhou University, Guiyang 550025, China

A novel pillar[5]arene not only shows good selectivity for coordination to Ag<sup>+</sup> and Fe<sup>3+</sup> but also satisfies the conditions for the construction of an energy transfer system with the commonly used Rhodamine B dye.

Chinese Chemical Letters 33 (2022) 5120



## Photodimerization of azaanthracene derivatives mediated by cucurbit[10]uril

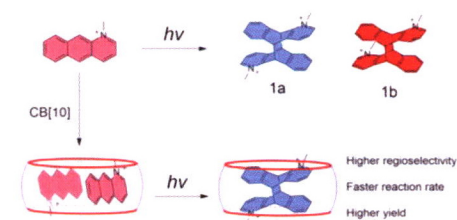
Huaxing Li<sup>a</sup>, Xianchen Hu<sup>a</sup>, Fengbo Liu<sup>a</sup>, Dongdong Sun<sup>a</sup>, Yong Wu<sup>a</sup>, Simin Liu<sup>a,b</sup>

<sup>a</sup>School of Chemistry and Chemical Engineering, Wuhan University of Science and Technology, Wuhan 430081, China

<sup>b</sup>The State Key Laboratory of Refractories and Metallurgy, Institute of Advanced Materials and Nanotechnology, Wuhan University of Science and Technology, Wuhan 430081, China

Photodimerization of four azaanthracene derivatives **1-4** were regulated by cucurbit[10]uril (CB[10]). Specifically, photodimerization of the CB[10]·(1)<sub>2</sub> complex yielded a single head-to-tail (*anti*-HT) photodimer (CB[10]·**1a**) with fast reaction rate and high regioselectivity.

Chinese Chemical Letters 33 (2022) 5124



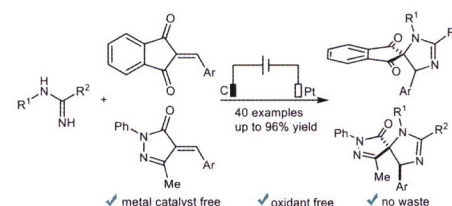
## Electrooxidative [3 + 2] annulation of amidines with alkenes for the synthesis of spiroimidazolines

Sai Zhang, Gaochen Xu, Huan Yan, Qinghuan Wu, Jingjing Meng, Jindian Duan, Kai Guo

College of Biotechnology and Pharmaceutical Engineering, State Key Laboratory of Materials-Oriented Chemical Engineering, Nanjing Tech University, Nanjing 211816, China

An environmentally benign and efficient electrooxidative [3 + 2] annulation of amidines with 2-arylideneindane-1,3-diones or 4-alkylidene pyrazolones for the synthesis of spiroimidazolines is reported.

Chinese Chemical Letters 33 (2022) 5128





## Illuminations for constructions of scintillating lanthanide-organic complexes in sensitive X-ray detection and high-resolution radiative imaging

Juan Gao<sup>a,b,c</sup>, Jian Lu<sup>a,b,d</sup>, Baoyi Li<sup>a,b</sup>, Wenfei Wang<sup>a,b,c</sup>, Meijuan Xie<sup>a,b</sup>, Shuaihua Wang<sup>a,b</sup>, Fakun Zheng<sup>a,b</sup>, Guocong Guo<sup>a,b</sup>

<sup>a</sup>State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou 350002, China

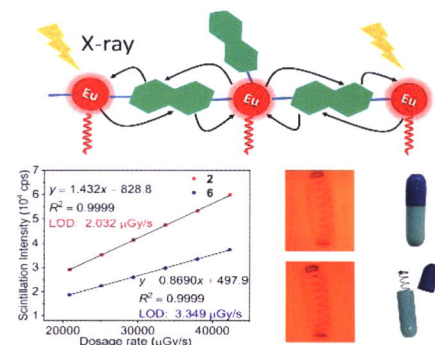
<sup>b</sup>Fujian Science and Technology Innovation Laboratory for Optoelectronic Information of China, Fuzhou 350108, China

<sup>c</sup>University of Chinese Academy of Sciences, Beijing 100039, China

<sup>d</sup>State Key Laboratory of Quality Research in Chinese Medicine, Institute of Chinese Medical Sciences, University of Macau, Macau SAR 999078, China

The naphthalene constructed Eu(III)-MOFs can be applied in the sensitive X-ray detection and high-resolution X-ray imaging via its characteristic red emissions.

Chinese Chemical Letters 33 (2022) 5132



## Universal 4-qualifiable fluorene-based building blocks for potential optoelectronic applications

Xiang An<sup>a</sup>, Jinghao Yang<sup>a</sup>, Man Xu<sup>b</sup>, Lili Sun<sup>a</sup>, Lubing Bai<sup>a</sup>, Kai Wang<sup>a</sup>, Zhiqiang Zhuo<sup>a</sup>, Yingying Zheng<sup>a</sup>, Jinyi Lin<sup>a</sup>, Xuehua Ding<sup>a</sup>, Yuyu Liu<sup>d</sup>, Linghai Xie<sup>b</sup>, Chengrong Yin<sup>a</sup>, Wei Huang<sup>a,b,c</sup>

<sup>a</sup>Key Laboratory of Flexible Electronics (KLOFE) & Institute of Advanced Materials (IAM), Nanjing Tech University (NanjingTech), Nanjing 211816, China

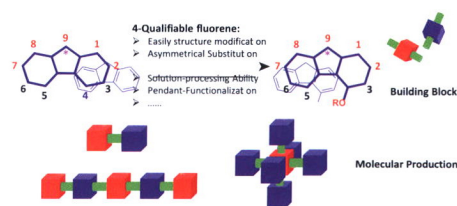
<sup>b</sup>State Key Laboratory of Organic Electronics and Information Displays & Institute of Advanced Materials (IAM), Nanjing University of Posts & Telecommunications, Nanjing 210023, China

<sup>c</sup>Frontiers Science Center for Flexible Electronics (FSCFE), MIIT Key Laboratory of Flexible Electronics (KLOFE), Northwestern Polytechnical University, Xi'an 710072, China

<sup>d</sup>Electrical Engineering College, Nanjing Vocational University of Industry Technology, Nanjing 210023, China

The fluorene based building block with 4-site substituent provides an exciting blueprint to not only tune electronic structure and excited state, but also allow for optimizing intermolecular arrangement and obtaining solution-processing ability.

Chinese Chemical Letters 33 (2022) 5137



## Chiral structures of 6,12-dibromochrysene on Au(111) and Cu(111) surfaces

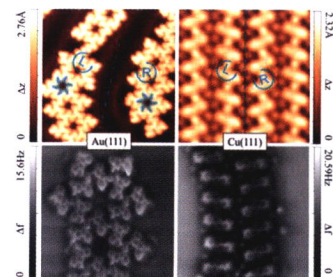
Shijie Sun<sup>a</sup>, Baijin Li<sup>a</sup>, Boyu Fu<sup>a</sup>, Zilin Ruan<sup>a</sup>, Hui Zhang<sup>a</sup>, Wei Xiong<sup>a</sup>, Yong Zhang<sup>a</sup>, Gefei Niu<sup>a</sup>, Jianchen Lu<sup>a</sup>, Xiaoqing Zuo<sup>a</sup>, Lei Gao<sup>b</sup>, Jinming Cai<sup>a</sup>

<sup>a</sup>Faculty of Materials Science and Engineering, Kunming University of Science and Technology, Kunming 650000, China

<sup>b</sup>Faculty of Science, Kunming University of Science and Technology, Kunming 650000, China

Using a 6,12-dibromochrysene organic molecule to prepare two-dimensional chiral networks and one-dimensional chiral chains on different substrates under ultra-high vacuum conditions, we realized ultra-high-resolution characterization of chiral structures by scanning tunneling microscopy and revealed the adsorption behavior of molecules through density functional theory calculations.

Chinese Chemical Letters 33 (2022) 5142



## Ligand-field regulated superalkali behavior of the aluminum-based clusters with distinct shell occupancy

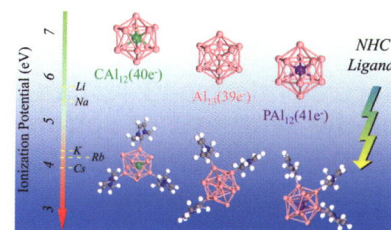
Jun Li<sup>a</sup>, Mingwei Cui<sup>a</sup>, Huan Yang<sup>b</sup>, Jing Chen<sup>a</sup>, Shibo Cheng<sup>a</sup>

<sup>a</sup>School of Chemistry and Chemical Engineering, Shandong University, Ji'nan 250100, China

<sup>b</sup>School of Physics, Shandong University, Ji'nan 250100, China

A novel ligand-field strategy, different from conventional superatom design models, was proposed to regulate the electronic property of the aluminum-based clusters leading to the formation of novel superalkalis, which is regardless of their shell occupancy.

Chinese Chemical Letters 33 (2022) 5147



## N, O-coupling towards the selectively electrochemical production of H<sub>2</sub>O<sub>2</sub>

Shuaishuai Xu<sup>a,b</sup>, Yang Gao<sup>b</sup>, Tao Liang<sup>b</sup>, Lipeng Zhang<sup>c</sup>, Bin Wang<sup>b</sup>

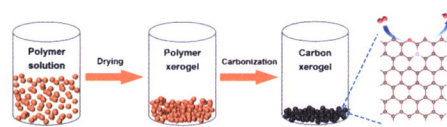
<sup>a</sup> State Key Laboratory of Organic-Inorganic Composites, Beijing Advanced Innovation Center for Soft Matter Science and Engineering, College of Materials Science and Engineering, Beijing University of Chemical Technology, Beijing 100029, China

<sup>b</sup> CAS Key Laboratory of Nanosystem and Hierarchical Fabrication, CAS Center for Excellence in Nanoscience, National Center for Nanoscience and Technology, Beijing 100190, China

<sup>c</sup> State Key Laboratory of Organic-Inorganic Composites, Beijing Advanced Innovation Center for Soft Matter Science and Engineering, College of Chemical Engineering, Beijing University of Chemical Technology, Beijing 100029, China

A N, O co-doped carbon xerogel-based electrocatalyst (NO-CX) was prepared by a simple and economical method and the catalyst exhibited a high H<sub>2</sub>O<sub>2</sub> selectivity and a high H<sub>2</sub>O<sub>2</sub> production rate.

Chinese Chemical Letters 33 (2022) 5152



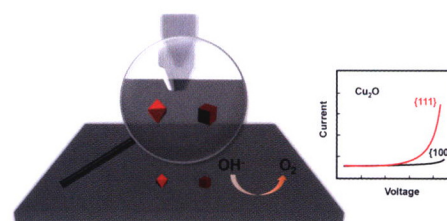
## Surface facets dependent oxygen evolution reaction of single Cu<sub>2</sub>O nanoparticles

Yun Shan, Xiaoli Deng, Xiaoxi Lu, Cong Gao, Yingjian Li, Qianjin Chen

State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Chemistry, Chemical Engineering and Biotechnology, Donghua University, Shanghai 201620, China

We endeavor to directly establish the correlation between nanoparticle surface facets with the intrinsic electrocatalytic OER activity from electrochemical measurement at single Cu<sub>2</sub>O nanoparticles using a combination of SECCM and SEM.

Chinese Chemical Letters 33 (2022) 5158



## Boosting the photocatalytic nitrogen reduction to ammonia through adsorption-plasmonic synergistic effects

Yunni Liu<sup>b</sup>, Xingyu Ye<sup>a</sup>, Ruping Li<sup>a</sup>, Ying Tao<sup>b</sup>, Chi Zhang<sup>b</sup>, Zichao Lian<sup>c</sup>, Dieqing Zhang<sup>a</sup>, Guisheng Li<sup>a,b,c</sup>

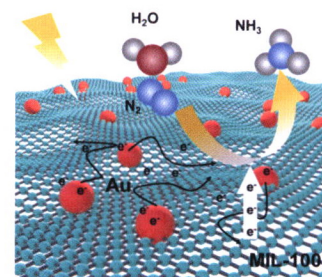
<sup>a</sup> The Education Ministry Key Lab of Resource Chemistry, Shanghai Key Laboratory of Rare Earth Functional Materials, College of Chemistry and Materials Science, Shanghai Normal University, Shanghai 200234, China

<sup>b</sup> School of Environmental and Geographical Sciences, Shanghai Normal University, Shanghai 200234, China

<sup>c</sup> School of Materials Science and Engineering, University of Shanghai for Science and Technology, Shanghai 200093, China

The adsorption-plasmonic synergistic effects of the MIL-100(Cr) and Au NPs were proposed to promote Au/MIL-100(Cr) photocatalyst to capture, adsorb and activate N<sub>2</sub> molecules and achieve efficient nitrogen reduction to ammonia under visible light irradiation.

Chinese Chemical Letters 33 (2022) 5162



## Engineering large-scaled electrochromic semiconductor films as reproductive SERS substrates for operando investigation at the solid/liquid interfaces

Lingling Yang<sup>a</sup>, Jiuju Feng<sup>c</sup>, Jia-Ning Wang<sup>b</sup>, Zhida Gao<sup>a</sup>, Jingwen Xu<sup>a</sup>, Ye Mei<sup>b,c,d</sup>, Yan-Yan Song<sup>a</sup>

<sup>a</sup> College of Sciences, Northeastern University, Shenyang 110004, China

<sup>b</sup> State Key Laboratory of Precision Spectroscopy, School of Physics and Electronic Science, East China Normal University, Shanghai 200062, China

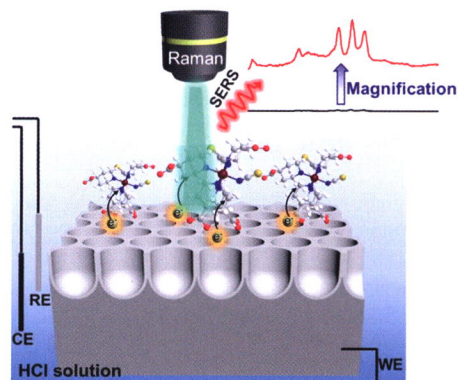
<sup>c</sup> NYU-ECNU Center for Computational Chemistry at NYU Shanghai, Shanghai 200062, China

<sup>d</sup> Collaborative Innovation Center of Extreme Optics, Shanxi University, Taiyuan 030006, China

<sup>e</sup> College of Chemistry and Life Sciences, Zhejiang Normal University, Jinhua 321004, China

A large-scaled semiconductor films with multi-walled (TiO<sub>2</sub>/WO<sub>3</sub>/TiO<sub>2</sub>) nanopore distribution is developed for gaining enhanced Raman signals at the solid/liquid surface. Benefiting from the remarkably improved electrochromic property of the multi-walled nanopore films, the SERS substrate can be controllably filled with oxygen vacancies (V<sub>O</sub>) via a simple electrochemical approach, which enables us to achieve a remarkably increased Raman signal even in the solution.

Chinese Chemical Letters 33 (2022) 5169





## Copper(II) ions-immobilized virus-like hollow covalent organic frameworks for highly efficient capture and sensitive analysis of amyloid beta-peptide 1–42 by MALDI-MS

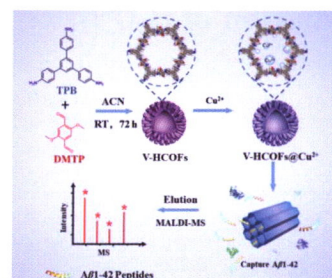
Wende Ma<sup>a</sup>, Chao Zhong<sup>a</sup>, Juan Lin<sup>b</sup>, Zhuling Chen<sup>a</sup>, Guorong Li<sup>a</sup>, Wei Tong<sup>a</sup>, Yijing Wu<sup>a</sup>, Lan Zhang<sup>a</sup>, Zian Lin<sup>a</sup>

<sup>a</sup> Ministry of Education Key Laboratory of Analytical Science for Food Safety and Biology, Fujian Provincial Key Laboratory of Analysis and Detection Technology for Food Safety, College of Chemistry, Fuzhou University, Fuzhou 350108, China

<sup>b</sup> Department of Cardiology, Fujian Provincial Governmental Hospital, Fuzhou 350003, China

V-HCOFs@Cu<sup>2+</sup> were synthesized via a facile approach at room temperature and applied as an adsorption probe for selective capture and quantitative analysis of Aβ1–42 from human serum by MALDI-MS.

Chinese Chemical Letters 33 (2022) 5174



## Rapidly SO<sub>2</sub>-responsive vesicles with intrinsic fluorescent indicators for membrane structure evolution

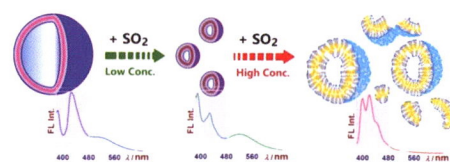
Yuan Zhu<sup>a,b</sup>, Yuanmei Hu<sup>a,b</sup>, Juanmei Zeng<sup>a,b</sup>, Chaoxiang Chen<sup>a,b</sup>, Shunhua Li<sup>a,b</sup>, Yunbao Jiang<sup>a,b</sup>

<sup>a</sup> Department of Chemistry and the MOE Key Laboratory of Spectrochemical Analysis & Instrumentation, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, China

<sup>b</sup> Xiamen Key Laboratory of Analytical Molecular Nanotechnology, Xiamen University, Xiamen 361005, China

A new mode of stimuli-responsive vesicles with fluorescent auto-recording function is reported. The sensory vesicles, which can be facilely fabricated via modular self-assembly, rapidly display hierarchical membrane reconstitution with definable fluorescence response upon SO<sub>2</sub> stimulation.

Chinese Chemical Letters 33 (2022) 5180



## Application of machine learning algorithms to screen potential biomarkers under cadmium exposure based on human urine metabolic profiles

Ting Zeng<sup>a,b</sup>, Yanshan Liang<sup>a,b</sup>, Qingyuan Dai<sup>a,b</sup>, Jinglin Tian<sup>a,b</sup>, Jinyao Chen<sup>c</sup>, Bo Lei<sup>a</sup>, Zhu Yang<sup>b</sup>, Zongwei Cai<sup>b</sup>

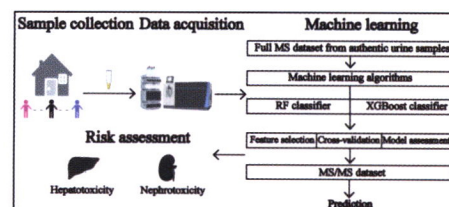
<sup>a</sup> Food Science and Technology Program, Beijing Normal University-Hong Kong Baptist University United International College, Zhuhai 519087, China

<sup>b</sup> State Key Laboratory of Environmental and Biological Analysis, Department of Chemistry, Hong Kong Baptist University, Hong Kong, China

<sup>c</sup> Department of Nutrition, Food Safety and Toxicology, West China School of Public Health, Sichuan University, Chengdu 610041, China

On a cohort of 403 volunteers who had been exposed to cadmium, high-resolution mass spectrometry-based urine metabolic detection was conducted, seven machine learning algorithms on the LC-HRMS data set were compared, and a biomarker panel based on the selected machine learning mode were identified. The extreme gradient boosting and random forest classifiers showed better accuracy and predictive performance than others which indicates this study has added a new reference for selecting data-driven machine learning algorithms for a metabolic analysis of urine under cadmium exposure.

Chinese Chemical Letters 33 (2022) 5184



## CdBiO<sub>2</sub>Br nanosheets *in situ* strong coupling to carbonized polymer dots and improved photocatalytic activity for organic pollutants degradation

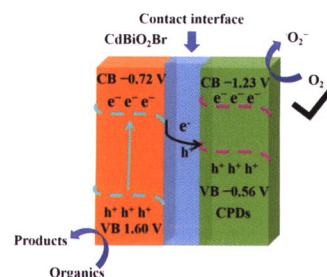
Zhiyuan Pang<sup>a</sup>, Bin Wang<sup>a</sup>, Xingwang Yan<sup>a</sup>, Chongtai Wang<sup>b</sup>, Sheng Yin<sup>a</sup>, Huaming Li<sup>a</sup>, Jiexiang Xia<sup>a</sup>

<sup>a</sup> School of Chemistry and Chemical Engineering, Institute for Energy Research, Jiangsu University, Zhenjiang 212013, China

<sup>b</sup> School of Chemistry and Chemical Engineering, the Key Laboratory of Electrochemical Energy Storage and Energy Conversion of Hainan Province, Hainan Normal University, Haikou 571158, China

A novel Z-scheme composite semiconductor photocatalytic system CPDs/CdBiO<sub>2</sub>Br enhances the migration and separation of photogenerated carriers and contributes to the generation of reactive oxygen species.

Chinese Chemical Letters 33 (2022) 5189



## Electrocatalytic degradation of pesticide micropollutants in water by high energy pulse magnetron sputtered Pt/Ti anode

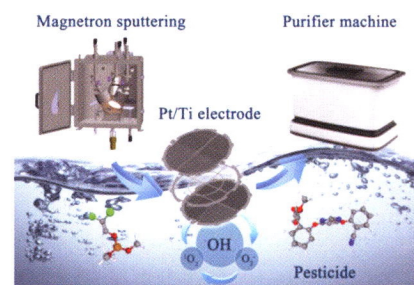
Yuxin Zeng<sup>a</sup>, Siyao Zhang<sup>a</sup>, Lifeng Yin<sup>a</sup>, Yunrong Dai<sup>b</sup>

<sup>a</sup>School of Environment, Beijing Normal University, Beijing 100875, China

<sup>b</sup>School of Water Resources and Environment, China University of Geosciences (Beijing), Beijing 100083, China

The high energy pulse magnetron sputtering embedded Pt atoms into the TiO<sub>2</sub> lattice on the surface of Ti plate and produced the optimized Pt/Ti electrode. Based on the Pt/Ti electrocatalysis we designed a purifier machine to generate more ·OH and destroyed dichlorvos and azoxystrobin in water efficiently.

Chinese Chemical Letters 33 (2022) 5196



## Novel organic/inorganic PDI-Urea/BiOBr S-scheme heterojunction for improved photocatalytic antibiotic degradation and H<sub>2</sub>O<sub>2</sub> production

Weiwei Wang<sup>a</sup>, Xibao Li<sup>a,b</sup>, Fang Deng<sup>b</sup>, Jiyou Liu<sup>a</sup>, Xiaoming Gao<sup>c</sup>, Juntong Huang<sup>a</sup>, Jilin Xu<sup>a</sup>, Zhijun Feng<sup>a</sup>, Zhi Chen<sup>a</sup>, Lu Han<sup>d</sup>

<sup>a</sup>School of Materials Science and Engineering, Nanchang Hangkong University, Nanchang 330063, China

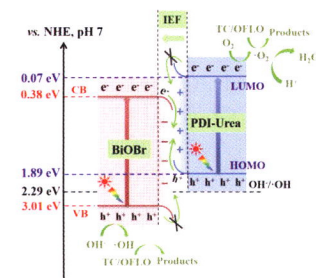
<sup>b</sup>Key Laboratory of Jiangxi Province for Persistent Pollutants Control and Resources Recycle, Nanchang Hangkong University, Nanchang 330063, China

<sup>c</sup>Department of Chemistry and Chemical Engineering, Shaanxi Key Laboratory of Chemical Reaction Engineering, Yan'an University, Yan'an 716000, China

<sup>d</sup>School of Materials and Metallurgy, University of Science and Technology Liaoning, Anshan 114051, China

A novel organic/inorganic S-scheme heterojunction PDI-Urea/BiOBr composite photocatalyst showed higher photocatalytic activity for the degradation of tetracycline (TC), ofloxacin (OFLO) and the production of H<sub>2</sub>O<sub>2</sub> in the spectral range of 400–800 nm.

Chinese Chemical Letters 33 (2022) 5200



## Hydroxyl radical induced from hydrogen peroxide by cobalt manganese oxides for ciprofloxacin degradation

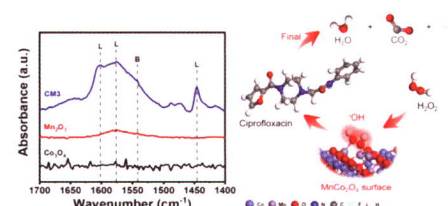
Shuandi Wang<sup>a</sup>, Xiaodong Zhang<sup>a</sup>, Guozhu Chen<sup>a</sup>, Bao Liu<sup>a</sup>, Hongmei Li<sup>a</sup>, Junhua Hu<sup>b</sup>, Junwei Fu<sup>a</sup>, Min Liu<sup>a</sup>

<sup>a</sup>Hunan Joint International Research Center for Carbon Dioxide Resource Utilization, School of Physics and Electronics, State Key Laboratory of Powder Metallurgy, Hunan Provincial Key Laboratory of Chemical Power Sources, Central South University, Changsha 410083, China

<sup>b</sup>School of Materials Science and Engineering, Zhengzhou University, Zhengzhou 450002, China

MnCo<sub>2</sub>O<sub>4</sub> has more Lewis acid sites due to the synergistic effect of Co and Mn. H<sub>2</sub>O<sub>2</sub> is a Lewis base that is strongly absorbed by Lewis acid sites to generate abundant hydroxyl (·OH). As a result, MnCo<sub>2</sub>O<sub>4</sub> has excellent performance for activating H<sub>2</sub>O<sub>2</sub> to decompose the typical ciprofloxacin pollutant.

Chinese Chemical Letters 33 (2022) 5208



## An insight into aggregation kinetics of polystyrene nanoplastics interaction with metal cations

Yucheng Zhang<sup>a</sup>, Xiaotong Su<sup>a</sup>, Nora F.Y. Tam<sup>b,c</sup>, Xiaolan Lao<sup>a</sup>, Meiling Zhong<sup>a</sup>, Qihang Wu<sup>a</sup>, Huifang Lei<sup>a</sup>, Zihui Chen<sup>a</sup>, Zhang Li<sup>d</sup>, Jie Fu<sup>d</sup>

<sup>a</sup>Key Laboratory for Water Quality and Conservation of the Pearl Stream Delta, Ministry of Education, School of Environmental Science and Engineering, Guangzhou University, Guangzhou 510006, China

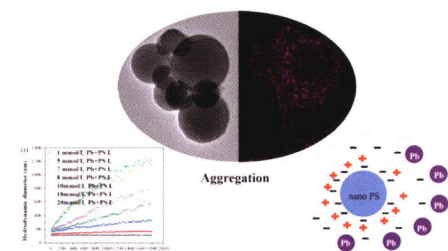
<sup>b</sup>State Key Laboratory of Marine Pollution and Department of Chemistry, City University of Hong Kong, Hong Kong, China

<sup>c</sup>School of Science and Technology, Open University of Hong Kong, Hong Kong, China

<sup>d</sup>School of Environmental Science and Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

The aggregation kinetics of different sizes of polystyrene nanoplastics with metal cations at different solution pH were investigated. The adsorption behavior of cations onto nanoplastics was determined by TEM and EDX, which demonstrated the adherence of cations onto the surface of nanoplastics with the effect of charge neutralization.

Chinese Chemical Letters 33 (2022) 5213





## Tetracycline sensitizes $\text{TiO}_2$ for visible light photocatalytic degradation via ligand-to-metal charge transfer

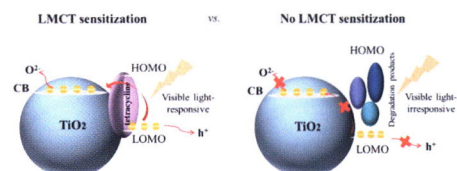
Caidie Qin<sup>a,b</sup>, Juanjuan Tang<sup>a,b</sup>, Ruxia Qiao<sup>a,b</sup>, Sijie Lin<sup>a,b</sup>

<sup>a</sup> College of Environmental Science and Engineering, Biomedical Multidisciplinary Innovation Research Institute, Shanghai East Hospital, Tongji University, Shanghai 200092, China

<sup>b</sup> Key Laboratory of Yangtze River Water Environment, Shanghai Institute of Pollution Control and Ecological Security, Tongji University, Shanghai 200092, China

Tetracycline sensitized pure  $\text{TiO}_2$  for visible light photocatalytic degradation via ligand-to-metal charge transfer mechanism. The intermediate degradation products of TC, however, did not sensitize  $\text{TiO}_2$ .

Chinese Chemical Letters 33 (2022) 5218



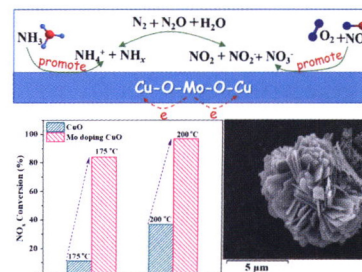
## Investigation of the promotion effect of Mo doped CuO catalysts for the low-temperature performance of $\text{NH}_3$ -SCR reaction

Hui Wang, Ting Zhu, Yujie Qiao, Shicheng Dong, Zhenping Qu

Key Laboratory of Industrial Ecology and Environmental Engineering (MOE), School of Environmental Science and Technology, Dalian University of Technology, Dalian 116024, China

The doping of Mo into CuO lattice leads to the formation of Cu-O-Mo system with strong electron interaction between Cu and Mo, providing more Lewis and Brønsted acid sites, which is beneficial to the adsorption of  $\text{NH}_3$  and  $\text{NO}_x$  and thereby enhancing the low-temperature activity with above 80%  $\text{NO}_x$  conversion at 175 °C.

Chinese Chemical Letters 33 (2022) 5223



**Chinese Chemical Letters (中国化学快报)**

**Responsible Institution:** China Association for Science and Technology

**Sponsor:** Chinese Chemical Society

**Editor-in-Chief:** Institute of Materia Medica, Chinese Academy of Medical Sciences

**Address:** Xuhong Qian

**Tel:** Institute of Materia Medica, Chinese Academy of Medical Sciences

**E-mail:** 1 Xian Nong Tan Street, Beijing 100050, China

**Website:** 86-10-63165638

**Online Submission:** cclbj@imm.ac.cn

**Publisher:** www.chinchemlett.com.cn

**Printer:** www.ees.elsevier.com/cclet

**Date:** Editorial Office of Chinese Chemical Letters

**ELSEVIER B.V.**

**Beijing Kexin Printing Co., Ltd.**

**15 December 2022**

国内发行: 全国各地邮局

邮发代号: 2-915

定价: 50元/本; 600元/年

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ISSN 1001-8417



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