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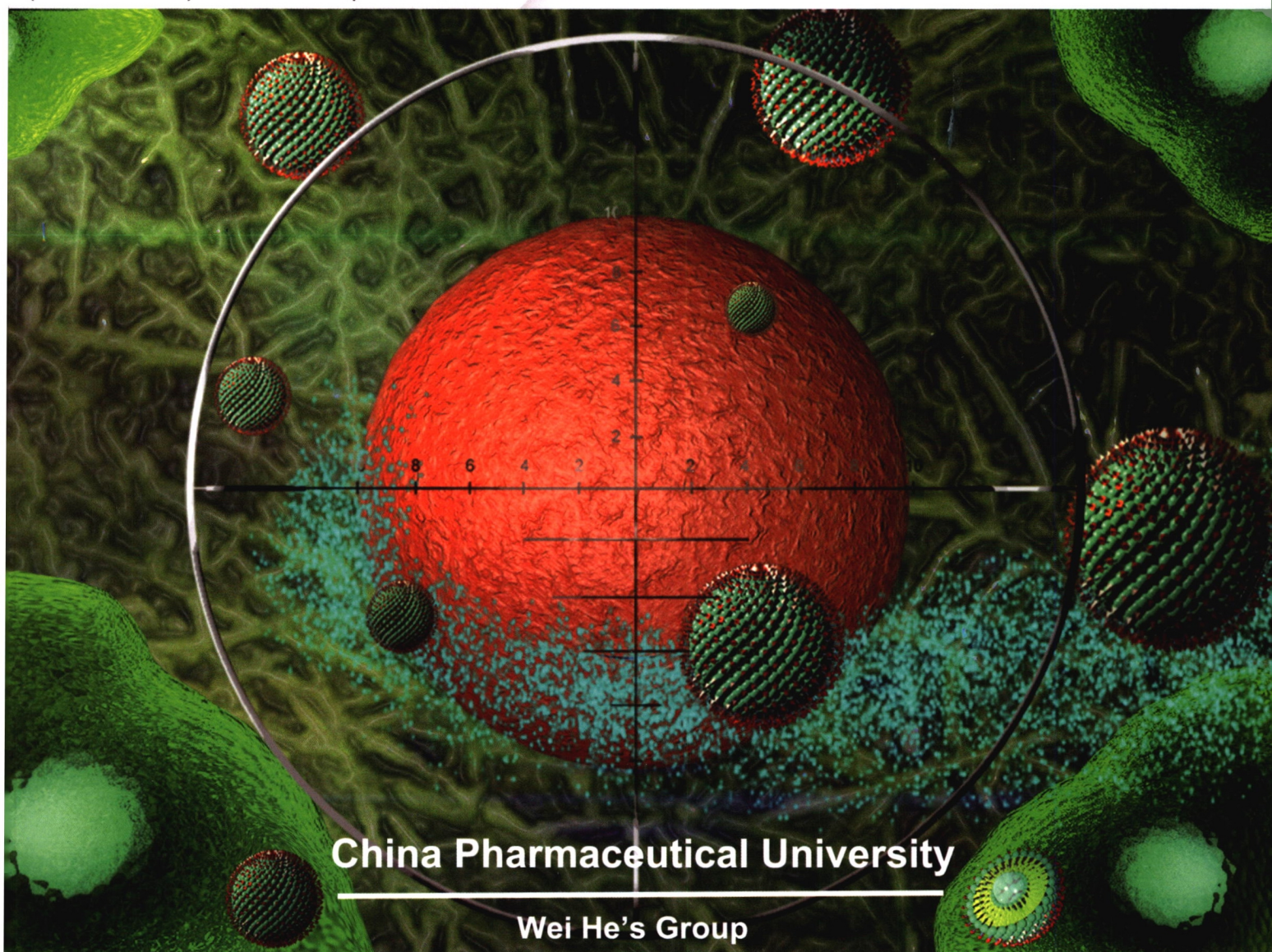


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Chinese Chemical Letters (中国化学快报)

| Volume 33 | Number 10 | OCTOBER 2022



China Pharmaceutical University

Wei He's Group



COMMUNICATION

Liubing Dong, Xinwen Peng et al.
Reversible aqueous zinc-ion battery based on
ferric vanadate cathode

COMMUNICATION

Yuan Yao, Yang Liu et al.
Amorphous core/shell Ti-doped SnO₂ with
synergistically improved N₂
adsorption/activation and electrical
conductivity for electrochemical N₂ reduction

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

Perspective

An odyssey of lithium metal anode in liquid lithium–sulfur batteries

Xiao-Zhong Fan^a, Meng Liu^a, Ruiqi Zhang^a, Yuezhou Zhang^{a,b}, Songcan Wang^{a,b}, Haoxiong Nan^c, Yunhu Han^a, Long Kong^a

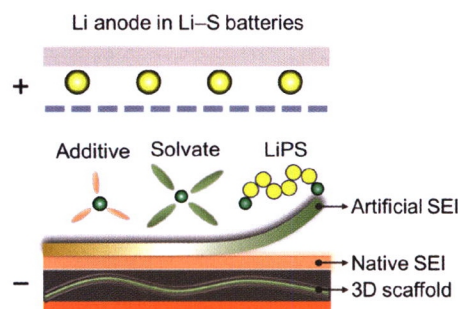
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^bNingbo Institute of Northwestern Polytechnical University, Ningbo 315103, China

^cSchool of Science, Hainan University, Haikou 570228, China

Challenges and possible strategies of lithium metal anodes in lithium–sulfur batteries are discussed, and the importance of pouch cell is emphasized to evaluate practical battery performances.

Chinese Chemical Letters 33 (2022) 4421



Reviews

Recent progress on preparation and applications of layered double hydroxides

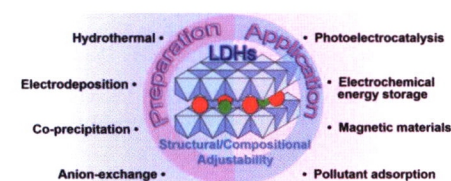
Mengting Duan^a, Shanjing Liu^a, Qiming Jiang^a, Xingmei Guo^a, Junhao Zhang^a, Shenglin Xiong^b

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

^bKey Laboratory of Colloid and Interface Chemistry, Ministry of Education, and School of Chemistry and Chemical Engineering, Shandong University, Ji'nan 250100, China

Recent advances on different synthetic methods and applications of layered double hydroxides are summarized, focusing on analyzing the structural/compositional adjustments in preparation processes and how these unique features take effect in performance optimization of various applications.

Chinese Chemical Letters 33 (2022) 4428

**Two-dimensional transition metal chalcogenide nanomaterials for cancer diagnosis and treatment**

Jingjing Wu^{a,b}, Tingting Hu^a, Guoping Zhao^c, Anran Li^b, Ruizheng Liang^a

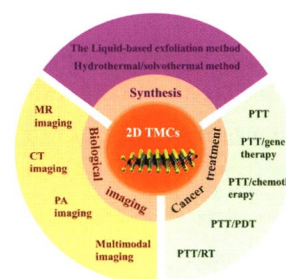
^aState Key Laboratory of Chemical Resource Engineering, Beijing Advanced Innovation Center for Soft Matter Science and Engineering, Beijing University of Chemical Technology, Beijing 100029, China

^bBeijing Advanced Innovation Center for Big Data-Based Precision Medicine, School of Engineering Medicine, Beihang University, Beijing 100191, China

^cDepartment of Orthopedics, Guilin People's Hospital, Guilin 541002, China

2D transition metal chalcogenides (TMCs) have received growing attention in biomedical imaging and cancer treatment because of their large specific surface area, strong near-infrared (NIR) absorption and abundant chemical element composition.

Chinese Chemical Letters 33 (2022) 4437



Emerging nanomedicine and prodrug delivery strategies for the treatment of inflammatory bowel disease

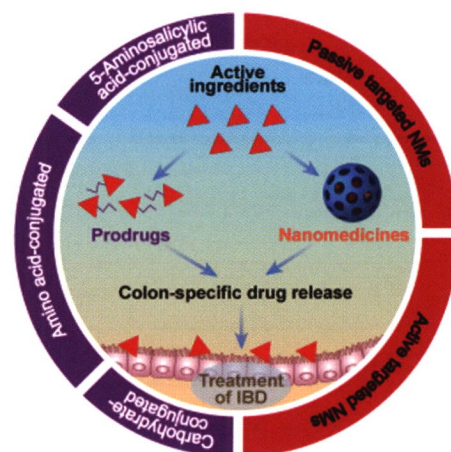
Mengchi Sun^a, Weiyue Ban^a, Hao Ling^a, Xiang Yu^b, Zhonggui He^a, Qikun Jiang^a, Jin Sun^a

^a Wuya College of Innovation, Shenyang Pharmaceutical University, Shenyang 110016, China

^b Huzhou Central Hospital, Affiliated Huzhou Hospital, Zhejiang University School of Medicine, Affiliated Central Hospital Huzhou University, Huzhou 110016, China

Schematic representation of nanotherapeutics via passive targeted and active targeted nanomedicines and prodrug-based therapeutics developed to treat the inflammatory bowel disease.

Chinese Chemical Letters 33 (2022) 4449



Recent advances in persulfate-based advanced oxidation processes for organic wastewater treatment

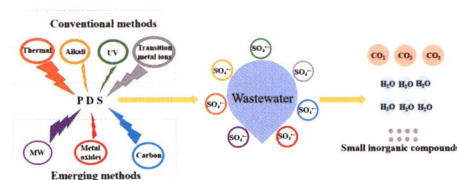
Ke Tian^a, Limin Hu^b, Letian Li^a, Qingzhu Zheng^a, Yanjun Xin^a, Guangshan Zhang^a

^a College of Resource and Environment, Qingdao Engineering Research Center for Rural Environment, Qingdao Agricultural University, Qingdao 266109, China

^b School of Ecology and Environment, Zhengzhou University, Zhengzhou 450001, China

The approaches of the generated sulfate radicals under PDS based-AOPs and their applications in organic wastewater remediation are summarized.

Chinese Chemical Letters 33 (2022) 4461



Recent advance of fluorescent probes for detection of drug-induced liver injury markers

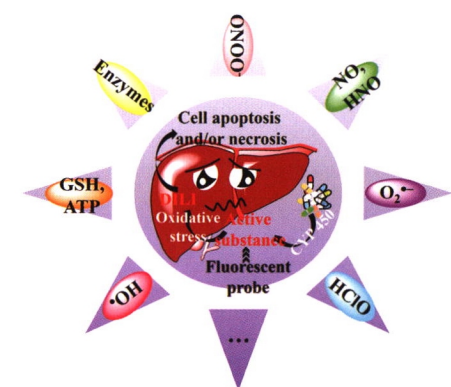
Dongqin Sun^a, Zhenzhen Chen^a, Jiali Hu^a, Huajin Zeng^a, Lingbo Qu^b, Ran Yang^b

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

^b The College of Chemistry, Zhengzhou University, Zhengzhou 450001, China

When drug-induced liver injury (DILI) occurs, various biochemical reactions will generate in the liver, resulting in many markers that can react with specific fluorescence probes, so as to realize the real time diagnosis of DILI.

Chinese Chemical Letters 33 (2022) 4478



A review on treatment of disinfection byproduct precursors by biological activated carbon process

Jie Fu^a, Ching-Hua Huang^b, Chenyuan Dang^a, Qilin Wang^c

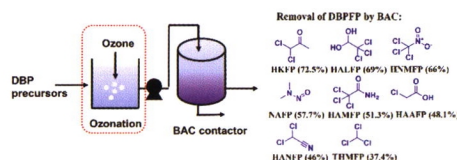
^a School of Environmental Science and Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

^b School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA 30332, United States

^c Center for Technology in Water and Wastewater, School of Civil and Environmental Engineering, University of Technology Sydney, Sydney, New South Wales 2007, Australia

This paper presents a thorough overview to summarize the recent developments and breakthroughs in the removal of disinfection by-products (DBP) precursors using biological activated carbon (BAC) process, including the fundamental knowledge of BAC process, selection of BAC process for treatment of DBP precursors from the perspective of removal mechanisms, the comprehensive performance of BAC process in applications, and discussion of the current knowledge gaps and further evolution of BAC process for the treatment of DBP precursors.

Chinese Chemical Letters 33 (2022) 4495



Fluorescence resonance energy transfer-based nanomaterials for the sensing in biological systems

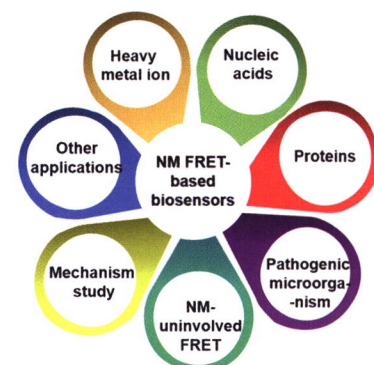
Xiaotong Shen^{a,b}, Wei Xu^a, Jin Ouyang^b, Na Na^b

^aSchool of Life Science, Beijing Institute of Technology, Beijing 100081, China

^bKey Laboratory of Radiopharmaceuticals, Ministry of Education, College of Chemistry, Beijing Normal University, Beijing 100875, China

This review gives an insight into the development of FRET-based nanomaterials for biological detections. Different FRET-based nanomaterials are reviewed for detecting nucleic acids, pathogenic microorganisms, proteins and heavy metal ions.

Chinese Chemical Letters 33 (2022) 4505



Recent advances in the synthesis of fluoroalkylated compounds using fluoroalkyl anhydrides

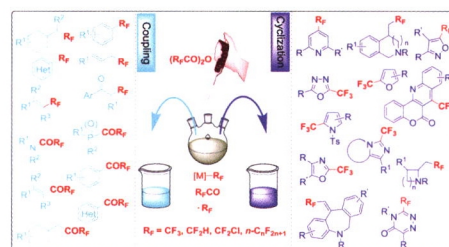
Wei Wu^a, Yi You^b, Zhiqiang Weng^{a,b}

^aFujian Engineering Research Center of New Chinese lacquer Material, College of Materials and Chemical Engineering, Minjiang University, Fuzhou 350108, China

^bKey Laboratory of Molecule Synthesis and Function Discovery, and Fujian Provincial Key Laboratory of Electrochemical Energy Storage Materials, College of Chemistry, Fuzhou University, Fuzhou 350108, China

Trifluoroacetic anhydride and its fluoroalkyl anhydride analogues have emerged as readily available and inexpensive reagents for the synthesis of fluoroalkylated compounds through the coupling and cyclization reactions. This review compiles the recent research progresses that have been made using these reagents. Their application in the synthesis of biologically active molecules may provide alternatives for the large-scale synthesis of fluoroalkylated molecules in medicinal chemistry.

Chinese Chemical Letters 33 (2022) 4517



Communications

Copper-catalyzed decarboxylative Se insertion coupling of indoles and propiolic acids

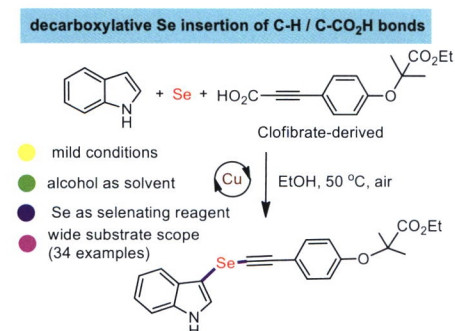
Ge Wu^{a,b}, Xueying Zhou^a, Caihong Wang^a

^aSchool of Pharmaceutical Sciences, Wenzhou Medical University, Wenzhou 325035, China

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

The outstanding advantages of this protocol not only nicely avoid the use of prefabricated arylselenation reagent and address the facile over-selenation issues, but also enrich the chemistry of selenium powder. Importantly, this reaction could be extended to pyrrole, and the practical utility of this transformation has been demonstrated in gram-scale synthesis and late-stage indolylselenation of Clofibrate-derived propiolic acid.

Chinese Chemical Letters 33 (2022) 4531



Remarkable mechanochromism and force-induced thermally activated delayed fluorescence enhancement from white-light-emitting organic luminogens with aggregation-induced emission

Yitao Zheng^a, Lingqi Zuo^a, Letian Zhang^a, Zihao Huang^a, Shufeng Li^a, Zhan Yang^c, Zhu Mao^d, Suilian Luo^a, Cong Liu^a, Fengqiang Sun^a, Guang Shi^a, Zhenguo Chi^{b,c}, Bingjia Xu^a

^aKey Laboratory of Theoretical Chemistry of Environment, Ministry of Education; School of Chemistry, South China Normal University, Guangzhou 510006, China

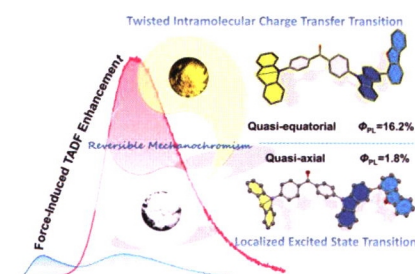
^bState Key Laboratory of Optoelectronic Materials and Technologies (Sun Yat-sen University), Guangzhou 510275, China

^cSchool of Chemistry, Sun Yat-sen University, Guangzhou 510275, China

^dShenzhen Institute of Advanced Electronic Materials, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen 518055, China

A series of white-light-emitting organic luminogens have been developed and are found to show aggregation-induced delayed fluorescence characteristics. Upon grinding, the compounds present linearly tunable luminescence colors and force-induced thermally activated delayed fluorescence enhancement.

Chinese Chemical Letters 33 (2022) 4536



An improved Hummers method to synthesize graphene oxide using much less concentrated sulfuric acid

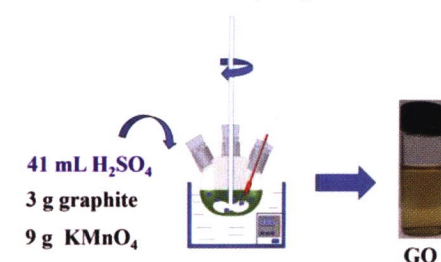
Yanbin Zhu^a, Gang Kong^a, Yuling Pan^a, Lian Liu^a, Bo Yang^b, Shuanghong Zhang^b, Delin Lai^a, Chunshan Che^a

^aSchool of Materials Science and Engineering, South China University of Technology, Guangzhou 510641, China

^bGuangzhou Special Pressure Equipment Inspection and Research Institute, Guangzhou 510663, China

Graphene oxide was synthesized by using much less concentrated sulfuric acid. The graphite can be completely oxidized into graphite oxide, with lowering the production of high-concentration aqueous waste acid (> 1 mol/L, decrease ~40%).

Chinese Chemical Letters 33 (2022) 4541



Nitrogen-bridged Ni(II) porphyrinoid trimers with a central quinodiimine unit

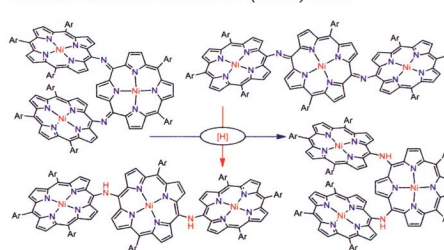
Kaisheng Wang^a, Boyu Xiao^a, Ling Xu^a, Mingbo Zhou^a, Takayuki Tanaka^b, Atsuhiko Osuka^a, Jianxin Song^a

^aCollege of Chemistry and Chemical Engineering, Key Laboratory of Chemical Biology and Traditional Chinese Medicine Research (Ministry of Education of China), Key Laboratory of the Assembly and Application of Organic Functional Molecules of Hunan Province, Hunan Normal University, Changsha 410081, China

^bDepartment of Chemistry, Graduate School of Science Kyoto University, Kyoto 606-8502, Japan

N-Bridged porphyrin trimers **4Ni** and **5Ni** were synthesized through Buchwald-Hartwig amination, and the NH-bridged porphyrin trimers **4Ni-2H** and **5Ni-2H** were quantitatively obtained by reductions of **4Ni** and **5Ni**, respectively.

Chinese Chemical Letters 33 (2022) 4545



Transition-metal-catalyzed switchable divergent cycloaddition of *para*-quinone methides and vinyl ethylene carbonates: Access to different sized medium-sized heterocycles

Junwei Wang^a, Lei Zhao^a, Chen Zhu^b, Ben Ma^a, Xiaolong Xie^a, Jian Liu^a, Shiyun He^a, Magnus Rueping^b, Kun Zhao^c, Lihong Hu^a

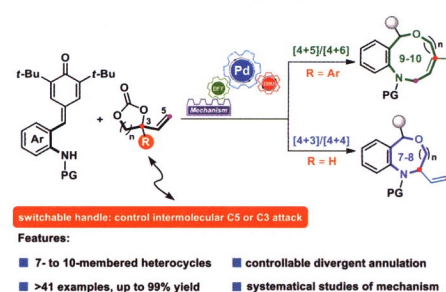
^aJiangsu Key Laboratory for Functional Substances of Chinese Medicine, School of Pharmacy, Nanjing University of Chinese Medicine, Nanjing 210023, China

^bKAUST Catalysis Center (KCC), King Abdullah University of Science and Technology (KAUST), Thuwal 23955-6900, Saudi Arabia

^cDepartment of Medicinal Chemistry, Key Laboratory of Chemical Biology, School of Pharmacy, Cheeloo College of Medicine, Shandong University, Ji'nan 250012, China

Transition-metal-catalyzed switchable divergent cycloaddition of *para*-quinone methides and vinyl ethylene carbonates by controlling the steric hindrance of substituent: access to different sized medium-sized heterocycles.

Chinese Chemical Letters 33 (2022) 4549



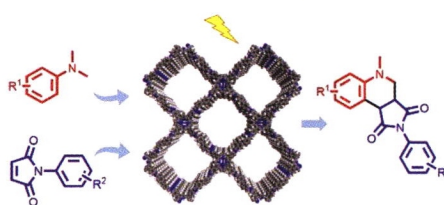
Porphyrin covalent organic framework for photocatalytic synthesis of tetrahydroquinolines

Chengjuan Wu, Xinyu Li, Mingzhen Shao, Jinglan Kan, Guangbo Wang, Yan Geng, Yu-Bin Dong

College of Chemistry, Chemical Engineering and Materials Science, Collaborative Innovation Center of Functionalized Probes for Chemical Imaging in Universities of Shandong, Key Laboratory of Molecular and Nano Probes, Ministry of Education, Shandong Normal University, Ji'nan 250014, China

A metal-free porphyrin COF promoted photocatalytic aerobic annulation reaction for tetrahydroquinolines synthesis is reported.

Chinese Chemical Letters 33 (2022) 4559



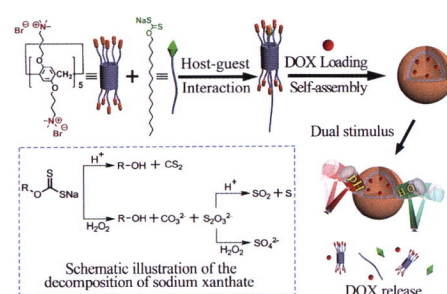
pH- and H₂O₂-sensitive drug delivery system based on sodium xanthate: Dual-responsive supramolecular vesicles from one functional group

Ziyan Shen, Ning Ma, Feng Wang, Jiaming Ren, Chenxi Hou, Shuang Chao, Yuxin Pei, Zhichao Pei

Shaanxi Key Laboratory of Natural Products & Chemical Biology, College of Chemistry & Pharmacy, Northwest A&F University, Yangling 712100, China

A novel pH-ROS responsive supramolecular drug delivery system formed by host-guest interaction between quaternary ammonium capped pillar[5]arene (QAP5) and sodium xanthate derivative (SXD) was reported, which can achieve dual-responsiveness in the tumor microenvironment from one functional group.

Chinese Chemical Letters 33 (2022) 4563



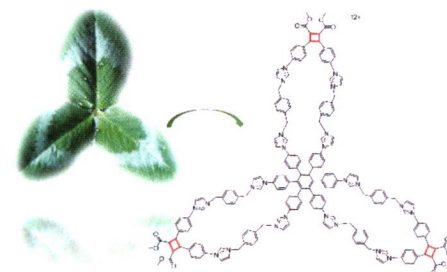
A trefoil-shaped macrocycle with [12]-imidazolium cations

Le Zhang, Li-Ying Sun, Jin-Ping Chang, Hui-Yu Xie, Ya-Wen Zhang, Yi-Fan Zhang, Ying-Feng Han

Key Laboratory of Synthetic and Natural Functional Molecule of the Ministry of Education, College of Chemistry and Materials Science, Northwest University, Xi'an 710127, China

A new trefoil-shaped molecular architecture consisting of three macrocyclic tetrakis-imidazolium subunits surrounding a phenyl ring was constructed.

Chinese Chemical Letters 33 (2022) 4567



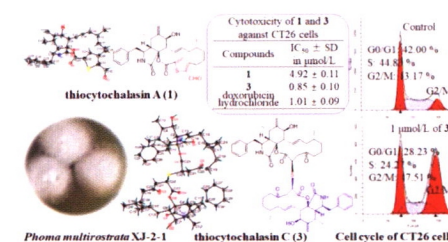
Thiocytochalasins A–D, four sulfur-containing cytochalasins from an endophytic fungus *Phoma multirostrata* XJ-2-1

Xiaogang Peng, Jinling Chang, Ying Gao, Fangfang Duan, Hanli Ruan

School of Pharmacy, Tongji Medical College, Huazhong University of Science and Technology, Hubei Key Laboratory of Natural Medicinal Chemistry and Resource Evaluation, Wuhan 430030, China

Four unprecedented sulfur-containing cytochalasins, thiocytochalasins A–D (1–4), were isolated from an endophytic fungus *Phoma multirostrata* XJ-2-1. Thiocytochalasins A (1) and B (2) feature a novel 5/6/14/5 tetracyclic scaffold, which are the first examples of cytochalasins that contain a thiophene moiety, and thiocytochalasins C (3) and D (4) are epimeric cytochalasan homodimers formed via a thioether bridge.

Chinese Chemical Letters 33 (2022) 4572



Carbon dots enhanced gelatin/chitosan bio-nanocomposite packaging film for perishable foods

Bofei Fu^{a,d}, Qiaoling Liu^b, Minghuan Liu^a, Xiaofang Chen^b, Hetong Lin^d, Zongping Zheng^c, Junqiu Zhu^a, Congjie Dai^c, Xiaochen Dong^e, Da-Peng Yang^{a,b}

^a Key Laboratory of Chemical Materials and Green Nanotechnology, College of Chemical Engineering and Materials Science, Quanzhou Normal University, Quanzhou 362000, China

^b Department of Clinical Laboratory, The Second Affiliated Hospital of Fujian Medical University, Quanzhou 362000, China

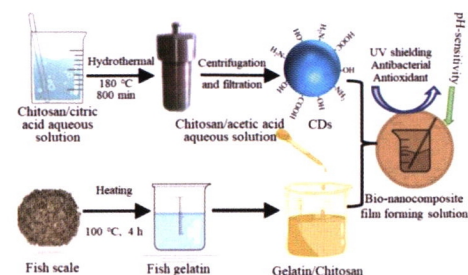
^c Fujian Province Key Laboratory for Preparation and Function Development of Active Substances from Marine Algae, College of Oceanology and Food Science, Quanzhou Normal University, Quanzhou 362000, China

^d College of Food Science, Fujian Agriculture and Forestry University, Fuzhou 350002, China

^e School of Physical and Mathematical Sciences, Nanjing Tech University, Nanjing 211800, China

The prepared CDs have antibacterial, antioxidant, pH-sensitive properties and UV shielding, which are combined with Chitosan/Gelatin films to form a bio-nanocomposite film solution. The composite solution can effectively prolong the shelf life of fish meat, and a thin film with intelligent indicating function can be produced by using the composite solution.

Chinese Chemical Letters 33 (2022) 4577



A glutathione activatable pro-drug-photosensitizer for combined chemotherapy and photodynamic therapy

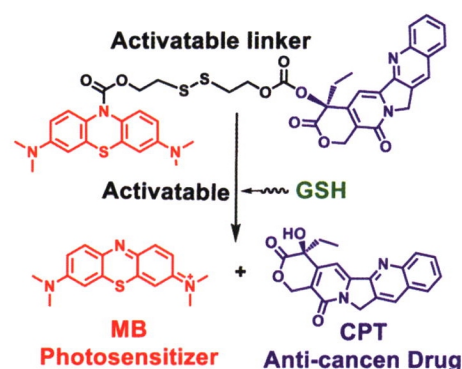
Yanjun Yang^a, Yifeng Zhang^a, Ran Wang^a, Xiang Rong^a, Ting Liu^a, Xiang Xia^a, Jiangli Fan^{a,b}, Wen Sun^{a,b}, Xiaojun Peng^a

^aState Key Laboratory of Fine Chemicals, Dalian University of Technology, Dalian 116024, China

^bNingbo Institute of Dalian University of Technology, Ningbo 315016, China

We presented a "pro-drug-photosensitizer" agent, LMB-S-CPT. LMB-S-CPT can be selectively activated by GSH to release activated drug, camptothecin (CPT), and activated photosensitizer, methylene blue (MB). It offers a new strategy for chemo-photodynamic therapy and displays excellent antitumor effect.

Chinese Chemical Letters 33 (2022) 4583



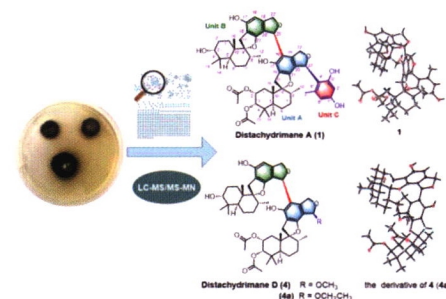
Distachydrimanes A–F, phenylspirodrimane dimers and hybrids with cytotoxic activity from the coral-derived fungus *Stachybotrys chartarum*

Shuang Lin, Jianzheng Huang, Hanxiao Zeng, Qingyi Tong, Xueke Zhang, Beiye Yang, Ying Ye, Jianping Wang, Zhengxi Hu, Yonghui Zhang

Hubei Key Laboratory of Natural Medicinal Chemistry and Resource Evaluation, School of Pharmacy, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, China

Distachydrimanes AF (1–6), six novel phenylspirodrimane dimers and hybrids representing two types of unprecedented terpenoid-polyketide hybrid skeletons, were isolated from *Stachybotrys chartarum*. The bioactivity assay demonstrated their potentials as a new category of anticancer agents.

Chinese Chemical Letters 33 (2022) 4587



A GSH-depleted platinum(IV) prodrug triggers ferroptotic cell death in breast cancer

Dachuan Qi^a, Lei Xing^b, Lijun Shen^b, Wenshuang Sun^d, Cheng Cai^a, Chunhua Xue^a, Xuwei Song^a, Hua Yu^a, Hulin Jiang^b, Chengjun Li^d, Qingri Jin^c, Zhiqi Zhang^a

^aDepartment of General Surgery, Shanghai Fourth People's Hospital, School of Medicine, Tongji University, Shanghai 200434, China

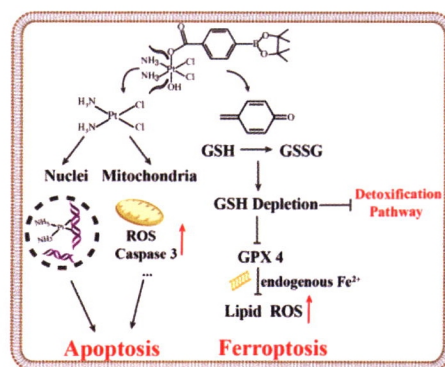
^bDepartment of Pharmaceutics, China Pharmaceutical University, Nanjing 210009, China

^cKey Laboratory of Applied Technology on Green-Eco-Healthy Animal Husbandry of Zhejiang Province, College of Animal Science and Technology, College of Veterinary Medicine, Zhejiang A & F University, Lin'an 311300, China

^dDepartment of Orthopedics, Jinling Hospital, School of Medicine, Nanjing University, Nanjing 210002, China

A GSH-depleted platinum(IV) prodrug was successfully synthesized by oxidation and esterification reaction, which exerts an efficient tumor ferroptosis therapy.

Chinese Chemical Letters 33 (2022) 4595



Targeted co-delivery of daunorubicin and cytarabine based on the hyaluronic acid prodrug modified liposomes

George Frimpong Bofo^{a,b}, Yejiào Shi^c, Qingqing Xiao^b, Kosheli Thapar Magar^b, Makhlofi Zoulikha^b, Xuyang Xing^a, Chao Teng^b, Emmanuel Brobbey^b, Xiaotong Li^b, Xiaohong Jiang^b, Xiaochun Wang^b, Yi Yang^b, Samuel Kesse^c, Wei He^{a,b}

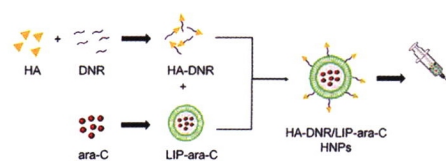
^aShanghai Skin Disease Hospital, Tongji University School of Medicine, Shanghai 200443, China

^bDepartment of Pharmaceutics, School of Pharmacy, China Pharmaceutical University, Nanjing 211198, China

^cInstitute of Translation Medicine, Shanghai University, Shanghai 200444, China

A targeted daunorubicin (DNR) and cytarabine (ara-C) co-delivery system was developed by modifying the ara-C loaded liposomes (LIP-ara-C) with the hyaluronic acid-DNR (HA-DNR) prodrugs.

Chinese Chemical Letters 33 (2022) 4600



A hybrid nano-assembly with synergistically promoting photothermal and catalytic radical activity for antibacterial therapy

Yunxia Wang^a, Chuangxin Zhang^a, Hui Zhang^a, Liheng Feng^a, Libing Liu^{b,c}

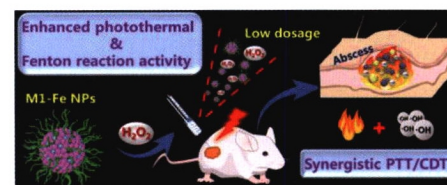
^aSchool of Chemistry and Chemical Engineering, Shanxi University, Taiyuan 030006, China

^bDepartment of Nutrition and Health, China Agricultural University, Beijing 100193, China

^cBeijing National Laboratory for Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China

A hybrid nano-assembly comprised of conjugated oligomer and ferrous ion is engineered with enhanced photothermal effect and Fenton reaction activity for synergetic photothermal therapy and catalytic chemodynamic therapy of drug resistant bacterial infection.

Chinese Chemical Letters 33 (2022) 4605



Nanoparticles targeting at methylases with high correlation to N⁶-methyladenosine-related lncRNA signatures as potential therapy of kidney clear cell carcinoma

Ruixuan Chen^a, Ping Ouyang^b, Licong Su^a, Xi Xu^c, Penghu Lian^d, Yanqin Li^a, Qi Gao^a, Yifan Zhang^e, Sheng Nie^a, Fan Luo^a, Ruqi Xu^a, Xiaodong Zhang^a, Xiaoxi Li^b, Yue Cao^a, Peiyan Gao^a, Juanjuan Kang^f, Jun Wu^g, Lu Li^h

^aNational Clinical Research Center for Kidney Disease, State Key Laboratory of Organ Failure Research, Guangdong Provincial Clinical Research Center for Kidney Disease, Nanfang Hospital, Southern Medical University, Guangzhou 510000, China

^bDepartment of Health Management, Nanfang Hospital, Southern Medical University, Guangzhou 510000, China

^cDepartment of Hematology, Nanfang Hospital, Southern Medical University, Guangzhou 510000, China

^dDepartment of Urology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College (CAMS & PUMC), Beijing 100730, China

^eDepartment of Urology, Nanfang Hospital, Southern Medical University, Guangzhou 510000, China

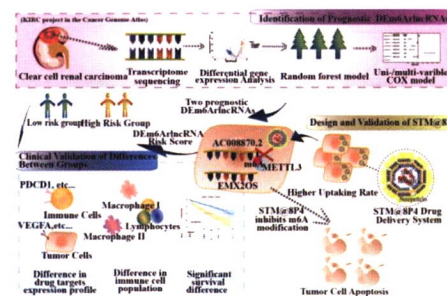
^fAffiliated Foshan Maternity & Child Healthcare Hospital, Southern Medical University, Foshan 528000, China

^gSchool of Biomedical Engineering, Sun Yat-sen University, Shenzhen 518107, China

^hDepartment of Radiation Oncology, Nanfang Hospital, Southern Medical University, Guangzhou 510000, China

This paper was constructed by three major parts including identification of prognostic DEM⁶ArIncRNA, clinical validation of differences between the two risk groups and design and validation of STM@8P4 NPs.

Chinese Chemical Letters 33 (2022) 4610



Oral delivery of superoxide dismutase by lipid polymer hybrid nanoparticles for the treatment of ulcerative colitis

Yaxin Cui, Tianyu Zhu, Xueyan Zhang, Jicong Chen, Fengying Sun, Youxin Li, Lesheng Teng

School of Life Sciences, Jilin University, Changchun 130012, China

We report a membrane-penetrating peptide and PEG-modified lipid polymer hybrid nanoparticles that can orally deliver superoxide dismutase (SOD) for the treatment of ulcerative colitis.

Chinese Chemical Letters 33 (2022) 4617



Computational prediction of Mo₂@g-C₆N₆ monolayer as an efficient electrocatalyst for N₂ reduction

Jiajun Wang^a, Mengyao Shi^a, Guolin Yi^a, Lu Wang^a, Shulai Lei^b, Ke Xu^b, Shujuan Li^{b,c}, Jianshuai Mu^a

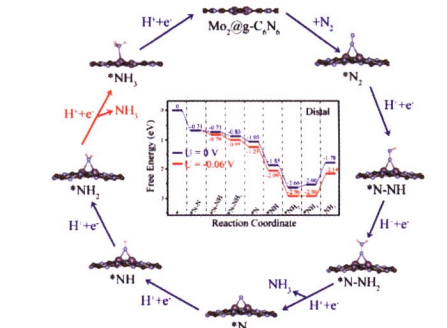
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^bHubei Key Laboratory of Low Dimensional Optoelectronic Materials and Devices, Hubei University of Arts and Science, Xiangyang 441053, China

^cInstitute of Mathematics, Free University of Berlin, Berlin D-14195, Germany

Based on the stability, activity and selectivity analysis, Mo₂@g-C₆N₆ monolayer is screened out as a promising catalyst for electrocatalytic N₂ reduction with a particularly low limiting potential of -0.06 V.

Chinese Chemical Letters 33 (2022) 4623



Reversible aqueous zinc-ion battery based on ferric vanadate cathode

Wang Yang^a, Wu Yang^a, Yongfeng Huang^b, Chengjun Xu^b, Liubing Dong^c, Xinwen Peng^a

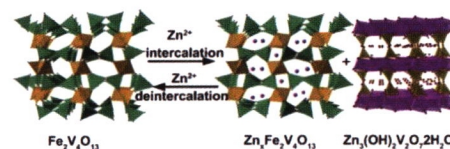
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^bTsinghua Shenzhen International Graduate School, Tsinghua University, Shenzhen 518055, China

^cCollege of Chemistry and Materials Science, Jinan University, Guangzhou 511443, China

Ferric vanadate ($\text{Fe}_2\text{V}_4\text{O}_{13}$) is developed as cathode material for aqueous zinc-ion batteries. It combines two zinc ion storage mechanism: classical intercalation/deintercalation storage mechanism in the tunnel structure of $\text{Fe}_2\text{V}_4\text{O}_{13}$, and reversible phase transformation from ferric vanadate to zinc vanadate.

Chinese Chemical Letters 33 (2022) 4628



Enabling ultrafast lithium-ion conductivity of Li_2ZrCl_6 by indium doping

Shuai Chen^{a,b}, Chuang Yu^a, Shaoqing Chen^c, Linfeng Peng^a, Cong Liao^a, Chaochao Wei^a, Zhongkai Wu^a, Shijie Cheng^a, Jia Xie^a

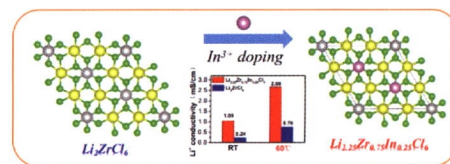
^aState Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

^bSchool of Materials Science and Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

^cDepartment of Materials Science and Engineering, Southern University of Science and Technology, Shenzhen 518055, China

Herein, a small amount of In^{3+} is introduced in Li_2ZrCl_6 to synthesize $\text{Li}_{2.25}\text{Zr}_{0.75}\text{In}_{0.25}\text{Cl}_6$ electrolytes with a high room temperature and Li-ion conductivity of 1.08 mS/cm. This work provides an effective strategy for enhancing the conductivity of Li_2ZrCl_6 electrolytes, promoting their applications in solid-state batteries.

Chinese Chemical Letters 33 (2022) 4635



Covalent carbene modification of 2D black phosphorus

Lei Zhang^{a,b}, Zhe-Ji Wang^a, Bo Ma^a, Xiang-Yang Li^a, Yu-Chi Dai^a, Guowen Hu^a, Yong Peng^c, Qiang Wang^{a,b}, Hao-Li Zhang^{a,d}

^aState Key Laboratory of Applied Organic Chemistry (SKLAOC), Key Laboratory of Special Function Materials and Structure Design (MOE), College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou 730000, China

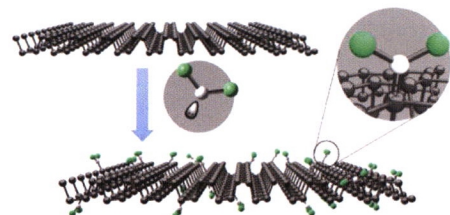
^bOffice of Laboratory and Equipment Management, Lanzhou University, Lanzhou 73000, China

^cKey Laboratory of Magnetism and Magnetic Materials of Ministry of Education, School of Physical Science and Technology, Lanzhou University, Lanzhou 730000, China

^dTianjin Key Laboratory of Molecular Optoelectronic Sciences, Department of Chemistry, Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin University, Tianjin 300072, China

Liquid-phase exfoliated BP nanosheets were covalently modified with dichlorocarbene for the first time.

Chinese Chemical Letters 33 (2022) 4640



Nearly 100% exciton utilization in highly efficient red OLEDs based on dibenzothioxanthone acceptor

Xiaoxiao Hu^{a,b}, Yuanyuan Qin^{a,b}, Zhiyi Li^{a,b}, Honglei Gao^{a,b}, Teng Gao^{a,b}, Guanhao Liu^{a,b}, Xiangyu Dong^{a,b}, Naxi Tian^{a,b}, Xiuxian Gu^{a,b}, Chun-Sing Lee^c, Pengfei Wang^{a,b}, Ying Wang^{a,b}

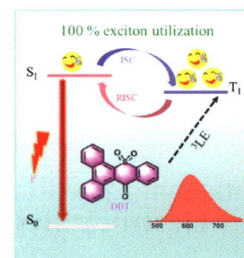
^aKey Laboratory of Photochemical Conversion and Optoelectronic Materials and CityU-CAS Joint Laboratory of Functional Materials and Devices, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing 100190, China

^bUniversity of Chinese Academy of Sciences, Beijing 100049, China

^cCenter of Super-Diamond and Advanced Films (COSDAF), City University of Hong Kong, Hong Kong, China

Constructing thermally activated delayed fluorescence materials based on DBT acceptor to stabilize the locally excited triplet state is demonstrated as a new perspective toward highly efficient red organic light-emitting diodes with 100% exciton utilization.

Chinese Chemical Letters 33 (2022) 4645



Single molecular insight into steric effect on C-terminal amino acids with various hydrogen bonding sites

Yunzhi Xie^a, Chunhua Liu^c, Linxiu Cheng^b, Yulan Fan^c, Huifang Li^c, Wei Liu^c, Lei Zhu^c, Xun Li^c, Ke Deng^d, Qingdao Zeng^d, Shoufa Han^a

^aState Key Laboratory for Physical Chemistry of Solid Surfaces, Department of Chemical Biology, College of Chemistry and Chemical Engineering, The Key Laboratory for Chemical Biology of Fujian Province, The MOE Key Laboratory of Spectrochemical Analysis & Instrumentation, and Innovation Center for Cell Signaling Network, Xiamen University, Xiamen 361005, China

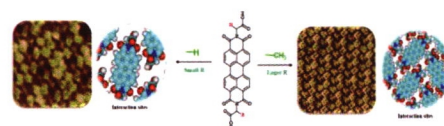
^bJiangxi Provincial Key Laboratory of Low-Carbon Solid Waste Recycling, School of Geography and Environmental Engineering, Gannan Normal University, Ganzhou 341000, China

^cJiangxi Key Laboratory of Organo-Pharmaceutical Chemistry, Chemistry and Chemical Engineering College, Gannan Normal University, Ganzhou 341000, China

^dCAS Key Laboratory of Standardization and Measurement for Nanotechnology, CAS Center for Excellence in Nanoscience, National Center for Nanoscience and Technology (NCNST), Beijing 100190, China

The steric effect has profound impacts on adsorption behaviors of C-terminal amino acid derivatives **GP**, **AP**, **LP** and **PP** by altering interaction sites at liquid/solid interface.

Chinese Chemical Letters 33 (2022) 4649



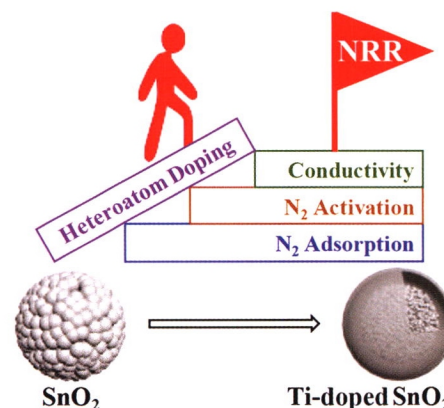
Amorphous core/shell Ti-doped SnO₂ with synergistically improved N₂ adsorption/activation and electrical conductivity for electrochemical N₂ reduction

Yu Yan, Hongjiao Qu, Xiaonan Zheng, Kexin Zhao, Xiaoxiao Li, Yuan Yao, Yang Liu

School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin 150080, China

A heteroatom doping strategy is demonstrated to synergistically enhance N₂ adsorption/activation and electrical conductivity for boosting electrochemical NRR performance.

Chinese Chemical Letters 33 (2022) 4655



Effects of subtle change in side chains on the photovoltaic performance of small molecular donors for solar cells

Xiang Gao^a, Kuibao Yu^b, Yanjiao Zhao^a, Tao Zhang^a, Jing Wen^a, Zifeng Liu^a, Zhihao Liu^a, Guofeng Ye^a, Jianhong Gao^a, Ziyi Ge^{b,c}, Zhitian Liu^a

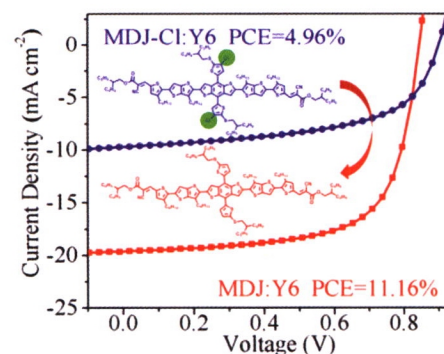
^aHubei Engineering Technology Research Center of Optoelectronic and New Energy Materials, Hubei Key Laboratory of Plasma Chemistry and Advanced Materials, School of Materials Science and Engineering, Wuhan Institute of Technology, Wuhan 430205, China

^bNingbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo 315201, China

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

Two small-molecule donors consisting with chlorinated and/or alkythio substitutions were designed and synthesized. Compared with chlorinated molecule MDJ-Cl, the non-chlorinated analogue MDJ exhibits decreased miscibility with the non-fullerene acceptor Y6, can more efficiently quench the excitons of Y6. The device based on MDJ revealed an improved PCE of 11.16%.

Chinese Chemical Letters 33 (2022) 4659



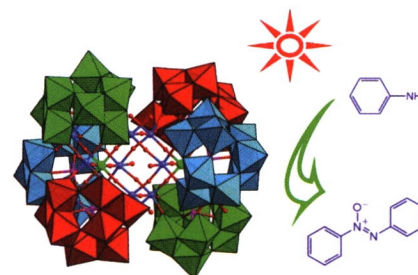
Construction of one Ru₂W₁₂-cluster and six lacunary Keggin tungstoarsenate leading to the larger Ru-containing polyoxometalate photocatalyst

Huafeng Li, Mengnan Yang, Zelong Yuan, Yahao Sun, Pengtao Ma, Jingyang Niu, Jingping Wang

Henan Key Laboratory of Polyoxometalate Chemistry, College of Chemistry and Chemical Engineering, Henan University, Kaifeng 475004, China

Synergistic directing roles of one Ru₂W₁₂-cluster and six lacunary Keggin fragments resulted in a novel Ru₂W₁₂-cluster bridged polyoxometalate represent the largest cluster in all the Ru-containing polyoxometalates to date. The oxidation of anilines can be realized with higher selectivity afford various azoxybenzene compounds and the durability test shows that Ru-doping catalyst displays excellent chemical stability during the photocatalytic process.

Chinese Chemical Letters 33 (2022) 4664



In situ localization of BiVO₄ onto two-dimensional MXene promoting photoelectrochemical nitrogen reduction to ammonia

Demei Zhang^a, Shiyu Yang^a, Xiaoyu Fang^a, Huifeng Li^a, Xuebo Chen^{b,c}, Dongpeng Yan^{a,b,c}

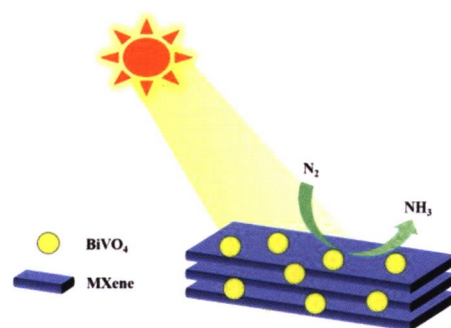
^aBeijing Key Laboratory of Energy Conversion and Storage Materials, Key Laboratory of Radiopharmaceuticals, Ministry of Education, College of Chemistry, Beijing Normal University, Beijing 100875, China

^bKey Laboratory of Theoretical and Computational Photochemistry, Ministry of Education, College of Chemistry, Beijing Normal University, Beijing 100875, China

^cGreen Catalysis Center, College of Chemistry, Zhengzhou University, Zhengzhou 450001, China

Formation of Schottky junctions at BiVO₄@MXene interface adjusts the conductive band position of BiVO₄ and improves the light response capability to effectively promotes electron-hole separation and electron transfer, significantly improving the efficiency of nitrogen reduction.

Chinese Chemical Letters 33 (2022) 4669



Synthesis, structure and properties of three novel transition-metal-containing tantalum-phosphate clusters

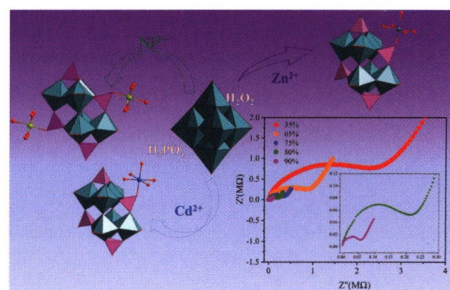
Xue Li, Hui Zhao, Yuyan Li, Yuanyuan Yang, Mingyang Zhang, Suyi Liu, Pengtao Ma, Jingping Wang, Jingyang Niu

Henan Key Laboratory of Polyoxometalate Chemistry, College of Chemistry and Chemical Engineering, Henan University, Kaifeng 475004, China

Three novel transition-metal-containing phosphorus-incorporated hexatantalates

[Ni₂(H₂O)₁₀{P₄Ta₆(O₂)₆O₂₄}]⁶⁻, [Zn(H₂O)₄{P₄Ta₆(O₂)₆O₂₄}]⁸⁻, [Cd(H₂O)₄{P₄Ta₆(O₂)₆O₂₄}]⁸⁻ which regard [P₄Ta₆(O₂)₆O₂₄]¹⁰⁻ as second building block were synthesized by a one-pot synthetic assembly method.

Chinese Chemical Letters 33 (2022) 4675



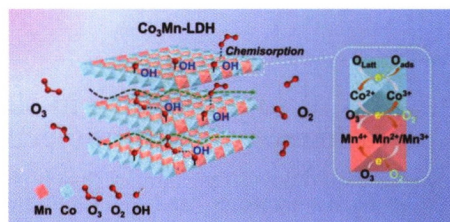
Efficient ozone decomposition over bifunctional Co₃Mn-layered double hydroxide with strong electronic interaction

Bin Liu, Minxian Zhang, Jingling Yang, Mingshan Zhu

Guangdong Key Laboratory of Environmental Pollution and Health, School of Environment, Jinan University, Guangzhou 511443, China

A Co₃Mn-Layered double hydroxide nanosheet was constructed to realize efficient and stable ozone decomposition through the surface enrichment of ozone by its surface hydroxyl groups and continuous ozone decomposition via the dynamic electron replenishment between internal Co/Mn and lattice oxygen.

Chinese Chemical Letters 33 (2022) 4679



Bimetallic AuRu aerogel with enzyme-like activity for colorimetric detection of Fe²⁺ and glucose

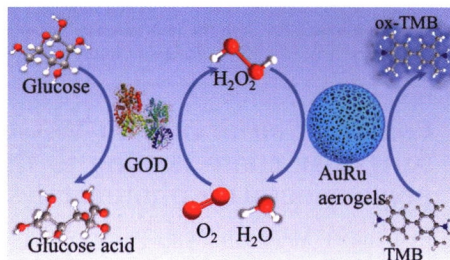
Rongxin Xu^{a,b}, Ziyu Wang^a, Siqian Liu^b, He Li^a

^aCollege of Optoelectronics Technology, Chengdu University of Information Technology, Chengdu 610225, China

^bSchool of Chemistry and Chemical Engineering, University of Jinan, Ji'nan 250022, China

The tandem application of AuRu aerogels and glucose oxidase (GOx) constructs a glucose cascade reaction detection platform with high stability and reliability.

Chinese Chemical Letters 33 (2022) 4683



Low temperature conversion of methane to syngas using lattice oxygen over NiO-MgO

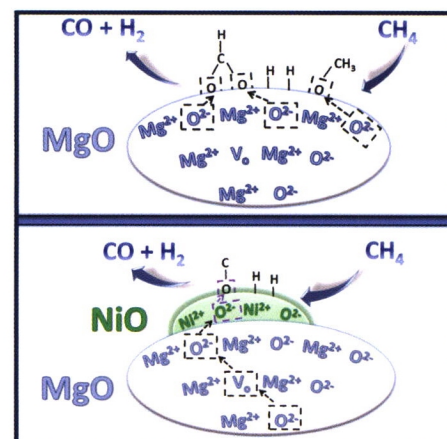
Junbu Wang^{a,b}, Zeai Huang^{a,b}, Ying Wang^b, Jundao Wu^b, Zhiqiang Rao^b, Fang Wang^b, Ying Zhou^{a,b}

^aState Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Southwest Petroleum University, Chengdu 610500, China

^bInstitute of Carbon neutrality & School of New Energy and Materials, Southwest Petroleum University, Chengdu 610500, China

The highly efficient catalytic conversion of methane (CH_4) to syngas ($\text{H}_2 + \text{CO}$) in the absence of gaseous oxidants was achieved over NiO-MgO at low temperature of 764 K.

Chinese Chemical Letters 33 (2022) 4687



Promoting electrochemical reduction of CO_2 to ethanol by B/N-doped sp^3/sp^2 nanocarbon electrode

Yanming Liu^{a,b}, Haolei Yang^a, Xinfei Fan^c, Bing Shan^b, Thomas J. Meyer^b

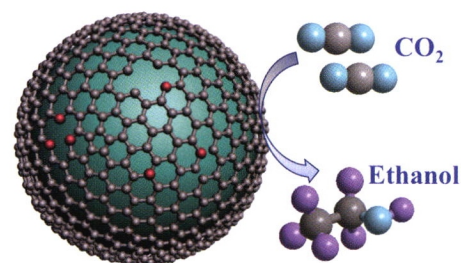
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^bDepartment of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599, United States

^cCollege of Environmental Science and Engineering, Dalian Maritime University, Dalian 116026, China

B/N-doped sp^3/sp^2 nanocarbon is efficient for electrochemical reduction of CO_2 to ethanol with high selectivity at low overpotential. Both sp^3 carbon and B/N doping contribute to enhanced ethanol production with sp^2 carbon reducing the overpotential for CO_2 reduction to ethanol.

Chinese Chemical Letters 33 (2022) 4691



Inherently hydrophilic mesoporous channel coupled with metal oxide for fishing endogenous salivary glycopeptides and phosphopeptides

Zixing Xu^a, Yonglei Wu^a, Xufang Hu^c, Chunhui Deng^{a,b}, Nianrong Sun^b

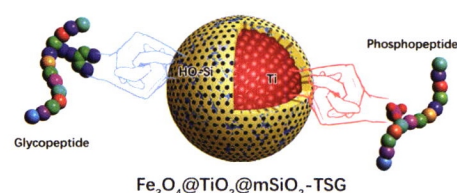
^aDepartment of Chemistry, Fudan University, Shanghai 200433, China

^bDepartment of Gastroenterology and Hepatology, Zhongshan Hospital, Fudan University, Shanghai 200032, China

^cSchool of Chemical Science and Technology, Yunnan University, Kunming 650091, China

A magnetic metal oxide coupled with inherently hydrophilic mesoporous silica ($\text{Fe}_3\text{O}_4@\text{TiO}_2@\text{mSiO}_2\text{-TSG}$) was intelligently constructed. It facilitated the identification of 94/164 endogenous glycopeptides/phosphopeptides from merely 2 μL human saliva and revealed the prospect in handling complex samples for glycoproteome and phosphoproteome research.

Chinese Chemical Letters 33 (2022) 4695



Construction of high-efficiency $\text{CoS}@\text{Nb}_2\text{O}_5$ heterojunctions accelerating charge transfer for boosting photocatalytic hydrogen evolution

Xin Ren^{a,b}, Jianyou Shi^c, Ruihuan Duan^d, Jun Di^d, Chao Xue^e, Xiao Luo^f, Qing Liu^f, Mengyang Xia^b, Bo Lin^b, Wu Tang^a

^aSchool of Materials and Energy, University of Electronic Science and Technology of China, Chengdu 611731, China

^bXJTU-Oxford International Joint Laboratory for Catalysis, School of Chemical Engineering and Technology, Xi'an Jiaotong University, Xi'an 710049, China

^cPersonalized Drug Therapy Key Laboratory of Sichuan Province, Sichuan Academy of Medical Science & Sichuan Provincial People's Hospital, School of Medicine, University of Electronic Science and Technology of China, Chengdu 610072, China

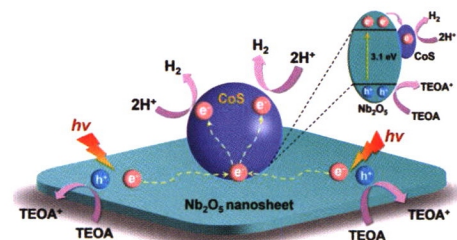
^dSchool of Materials Science and Engineering, Nanyang Technological University, 639798, Singapore

^eState Centre for International Cooperation on Designer Low-carbon and Environmental Materials (CDLCEM), School of Materials Science and Engineering, Zhengzhou University, Zhengzhou 450001, China

^fSchool of Optoelectronic Science and Engineering, University of Electronic Science and Technology of China, Chengdu 611731, China

The high-efficiency $\text{CoS}@\text{Nb}_2\text{O}_5$ heterojunctions show significantly accelerated charge separation and transfer, which boosts the photocatalytic hydrogen evolution activity of the binary system.

Chinese Chemical Letters 33 (2022) 4700



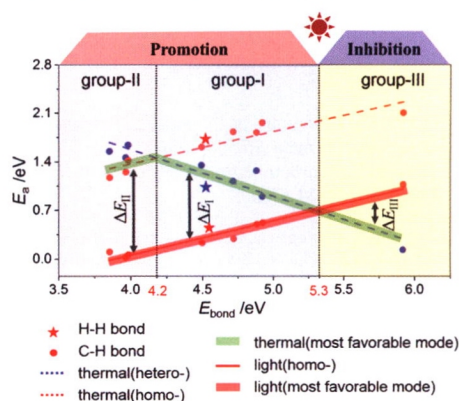
Insight into the photoexcitation effect on the catalytic activation of H₂ and C-H bonds on TiO₂(110) surface

Min Zhou, Hai-Feng Wang

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

The first-principles DFT calculations have provided a fundamental insight into the R-H (R = H, C) bond activation in thermo- and photo-catalytic conditions and deepen the understanding of photoexcitation-driven reaction; especially, a general framework was revealed to predict the possibility of photo-hole on promoting R-H bond activation.

Chinese Chemical Letters 33 (2022) 4705



Dissection the endocytic routes of viral capsid proteins-coated upconversion nanoparticles by single-particle tracking

Yujun Ning^{a,b}, Lin Wei^c, Shen Lin^b, Yifan Jiang^{d,e}, Naidong Wang^d, Lehui Xiao^b

^aCollege of Chemistry, Zhengzhou University, Zhengzhou, 450001, China

^bState Key Laboratory of Medicinal Chemical Biology, Tianjin Key Laboratory of Biosensing and Molecular Recognition, College of Chemistry, Nankai University, Tianjin 300071, China

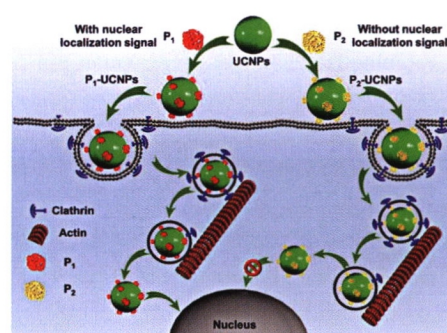
^cCollege of Chemistry and Chemical Engineering, Hunan Normal University, Changsha 410081, China

^dCollege of Veterinary Medicine, Hunan Agricultural University, Changsha 410128, China

^eSchool of Chemistry and Chemical Engineering, Henan Normal University, Xinxiang 453007, China.

We dissected the cellular translocation process of Porcine circovirus type 2 (PCV2, a member of genus circovirus in the family Circoviridae) viral capsid proteins (with or without nuclear localization ability) functionalized UCNP in HepG2 cells for the first time. With SPT, the invasion process was investigated by analyzing the behaviors of VCP-UCNPs within individual cell.

Chinese Chemical Letters 33 (2022) 4710



The photocatalytic ·OH production activity of g-C₃N₄ improved by the introduction of NO

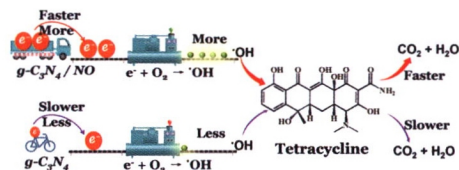
Jun Jing^a, Kai Qi^a, Guohui Dong^a, Mengmeng Wang^a, Wingkei Ho^b

^aSchool of Environmental Science and Engineering, Shaanxi University of Science and Technology, Xi'an 710021, China

^bDepartment of Science and Environmental Studies and Centre for Education in Environmental Sustainability, The Education University of Hong Kong, Hong Kong, China

The introduction of nitric oxide could improve the photocatalytic ·OH generation and pollution treatment activities of g-C₃N₄.

Chinese Chemical Letters 33 (2022) 4715



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