

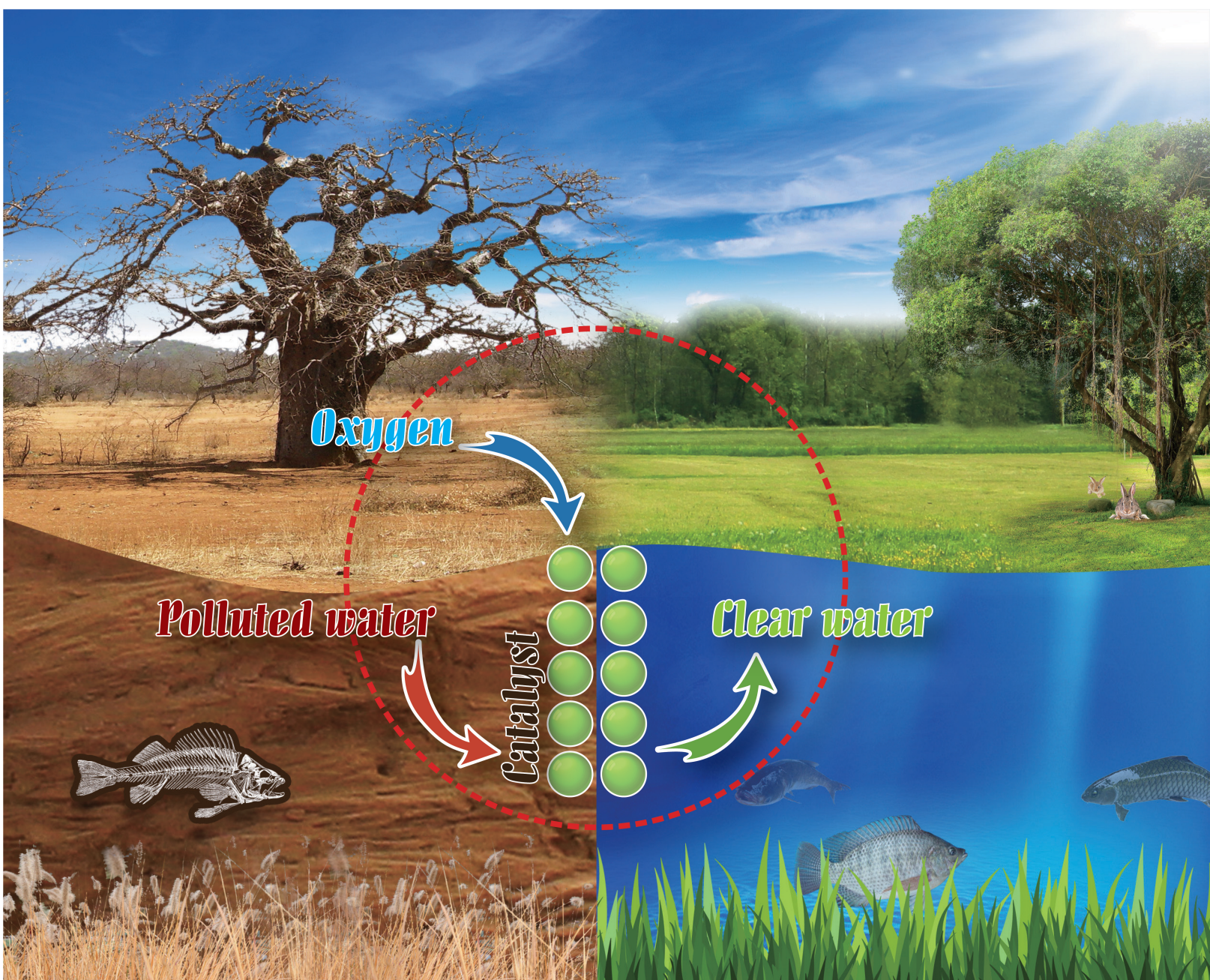


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催化学报
CHINESE JOURNAL OF CATALYSIS
August 2019
Vol. 40 No. 8
pages 1117-1230



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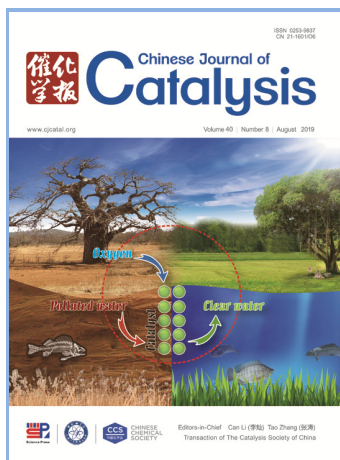
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In This Issue



Cover: Thermally catalytic degradation of organic pollutants under dark ambient conditions provides unparalleled advantages over other advanced oxidation processes (AOPs) in treating domestic and industrial contaminated wastewaters in terms of energy conservation and easy operation, and renders promising applications in the field of environmental remediation. Read more about the article behind the cover on pages 1117–1134.

封面: 王连洲等报道了热催化作用可以在常温常压黑暗氛围下催化降解废水中有机污染物, 相比其他高级氧化技术, 该技术在处理家庭和工业废水时更节约能源且便于操作, 这使得其在环境修复领域具有较大的应用潜力. 见本期第1117–1134页.

About the Journal

Chinese Journal of Catalysis is an international journal published monthly by Chinese Chemical Society, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, and Elsevier. The journal publishes original, rigorous, and scholarly contributions in the fields of heterogeneous and homogeneous catalysis in English or in both English and Chinese. The scope of the journal includes:

- ◆ New trends in catalysis for applications in energy production, environmental protection, and production of new materials, petroleum chemicals, and fine chemicals;
- ◆ Scientific foundation for the preparation and activation of catalysts of commercial interest or their representative models;
- ◆ Spectroscopic methods for structural characterization, especially methods for in situ characterization;
- ◆ New theoretical methods of potential practical interest and impact in the science and applications of catalysis and catalytic reaction;
- ◆ Relationship between homogeneous and heterogeneous catalysis;
- ◆ Theoretical studies on the structure and reactivity of catalysts.
- ◆ The journal also accepts contributions dealing with photo-catalysis, bio-catalysis, and surface science and chemical kinetics issues related to catalysis.

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- **Reviews** deal with topics of current interest in the areas covered by this journal. Reviews are surveys, with entire, systematic, and important information, of recent progress in important topics of catalysis. Rather than an assemblage of detailed information or a complete literature survey, a critically selected treatment of the material is desired. Unsolved problems and possible developments should also be discussed. Authors should have published articles in the field. Reviews should have more than 80 references.
- **Communications** rapidly report studies with significant innovation and major academic value. They are limited to four Journal pages. After publication, their full-text papers can also be submitted to this or other journals.
- **Articles** are original full-text reports on innovative, systematic and completed research on catalysis.
- **Highlights** describe and comment on very important new results in the original research of a third person with a view to highlight their significance. The results should be presented clearly and concisely without the comprehensive details required for an original article.
- **Perspectives** are short reviews of recent developments in an established or developing topical field. The authors should offer a critical assessment of the trend of the field, rather than a summary of literatures.
- **Viewpoints** describe the results of original research in general in some area, with a view to highlighting the progress, analyzing the major problems, and commenting the possible research target and direction in the future.

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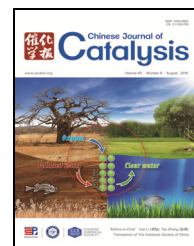
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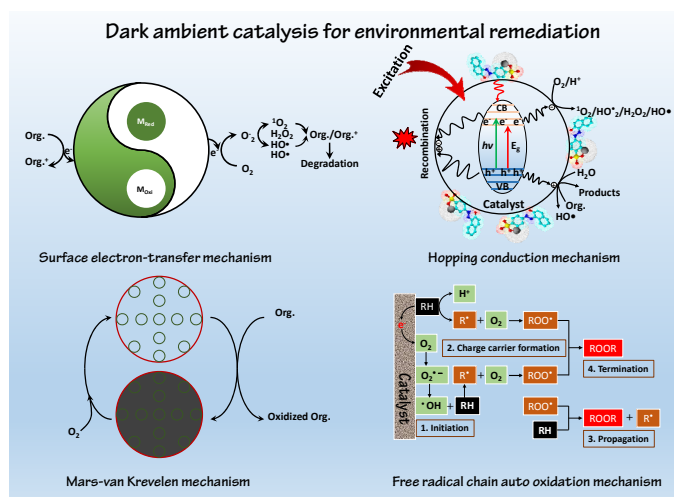
Review

Chin. J. Catal., 2019, 40: 1117–1134 doi: S1872-2067(19)63366-8

Thermal catalysis under dark ambient conditions in environmental remediation: Fundamental principles, development, and challenges

Huihuang Chen *, Jiangang Ku *, Lianzhou Wang *

University of Science and Technology of China, China; Fuzhou University, China; The University of Queensland, Australia



Dark ambient catalysis, which can be grouped into four categories based on reaction mechanisms, plays an important role in the field of environmental remediation in terms of straightforward operation and cost saving.

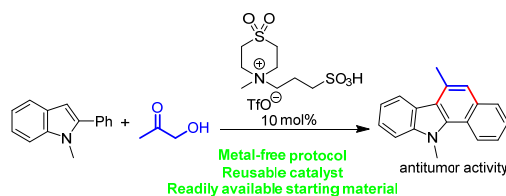
Communications

Chin. J. Catal., 2019, 40: 1135–1140 doi: S1872-2067(19)63370-X

Brønsted acidic ionic liquid catalyzed synthesis of benzo[*a*]carbazole from renewable acetol and 2-phenylindoles in a biphasic system

Minghao Li, Fengtian Wu, Yanlong Gu *

Huazhong University of Science and Technology; Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences



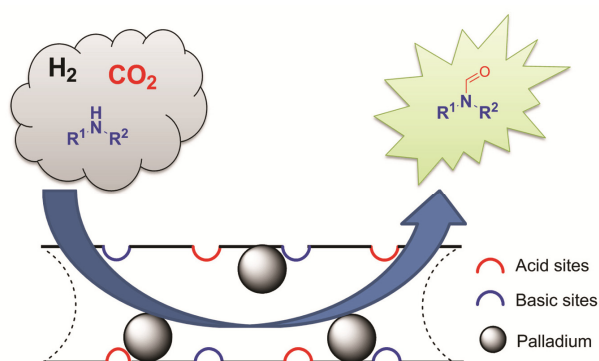
An expeditious synthesis of benzo[*a*]carbazole from readily available 2-phenylindoles and bio-renewable acetol catalyzed by a reusable Brønsted acidic ionic liquid is reported.

Chin. J. Catal., 2019, 40: 1141–1146 doi: S1872-2067(19)63397-8

Amine formylation with CO₂ and H₂ catalyzed by heterogeneous Pd/PAL catalyst

Xingchao Dai, Bin Wang, Aiqin Wang, Feng Shi*

Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences; Northwest Minzu University; University of Chinese Academy of Sciences



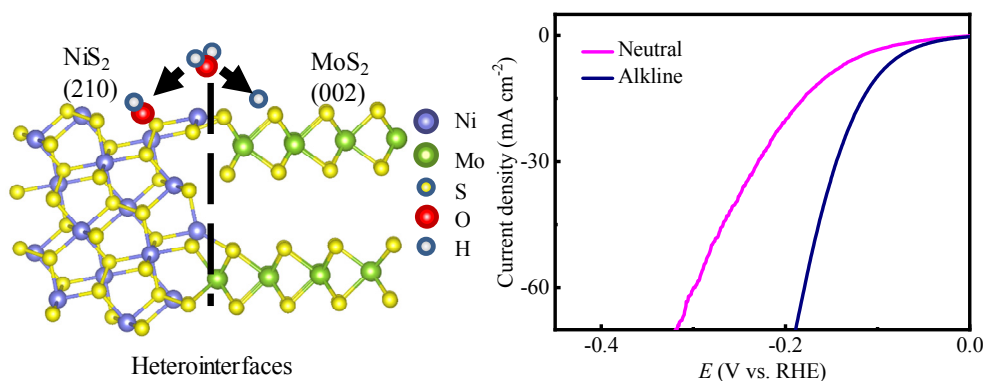
Heterogeneous Pd catalyst with the natural palygorskite as support could effectively catalyze amine formylation with CO₂ and H₂ via the synergistic effect of multiple functional sites.

Chin. J. Catal., 2019, 40: 1147–1152 doi: S1872-2067(19)63390-5

Laser-direct-writing of 3D self-supported NiS₂/MoS₂ heterostructures as an efficient electrocatalyst for hydrogen evolution reaction in alkaline and neutral electrolytes

Peng-Fei Cheng, Ting Feng, Zi-Wei Liu, De-Yao Wu, Jing Yang*

Tianjin University



Mechanisms have been proposed for the dissociation of H₂O, and the HER performance of NiS₂/MoS₂ heterostructures in different electrolytes was evaluated.

Articles

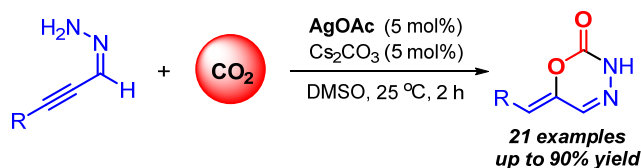
Chin. J. Catal., 2019, 40: 1153–1159 doi: S1872-2067(19)63352-8

Silver-catalyzed carboxylative cyclization of alkynic hydrazones with carbon dioxide

Wenzhen Zhang*, Yuqian Sun, Min Zhang, Hui Zhou, Xiaobing Lu

Dalian University of Technology

A silver(I)-catalyzed carboxylative cyclization of alkynic hydrazones with carbon dioxide under mild reaction conditions was developed, which efficiently affords biologically important 1,3,4-oxadiazin-2-one compounds in good yield.

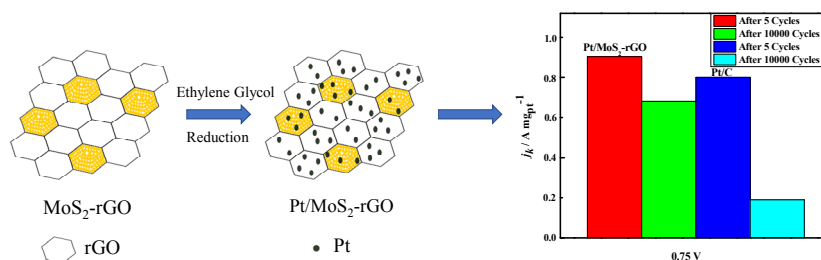


Chin. J. Catal., 2019, 40: 1160–1167 doi: S1872-2067(19)63365-6

MoS₂-rGO hybrid architecture as durable support for cathode catalyst in proton exchange membrane fuel cells

Muhammad Tuoqeer Anwar, Xiaohui Yan, Muhammad Rehman Asghar, Naveed Husnain, Shuiyun Shen, Liuxuan Luo, Xiaojing Cheng, Guanghua Wei, Junliang Zhang *

Shanghai Jiao Tong University, China; COMSATS University Islamabad (Sahiwal Campus), Pakistan



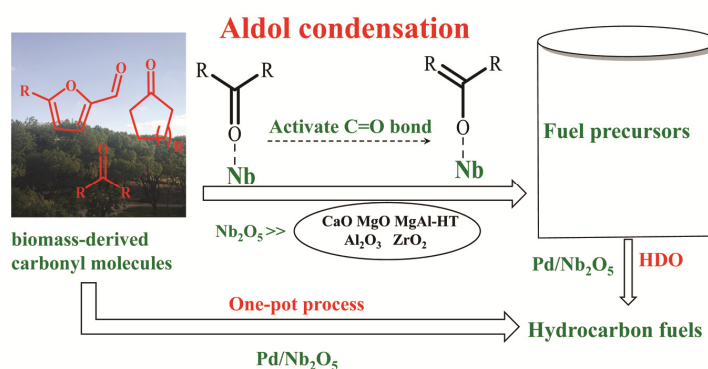
To overcome the shortage and poor durability of commonly used carbon-black support, a MoS₂-rGO hybrid support material is proposed and prepared that enables both improved activity and durability relative to carbon-black supported electrocatalysts.

Chin. J. Catal., 2019, 40: 1168–1177 doi: S1872-2067(19)63371-1

Highly efficient Nb₂O₅ catalyst for aldol condensation of biomass-derived carbonyl molecules to fuel precursors

Yaxuan Jing, Yu Xin, Yong Guo *, Xiaohui Liu, Yanqin Wang *

East China University of Science and Technology



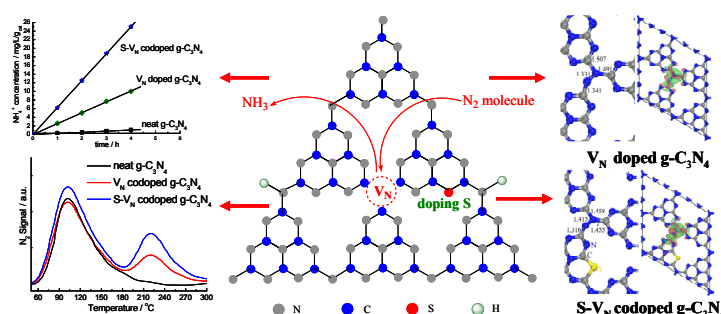
We demonstrated the exceptional activity of Nb₂O₅ catalyst for aldol condensation and provided the originate of high activity.

Chin. J. Catal., 2019, 40: 1178–1186 doi: S1872-2067(19)63364-4

Promotion of activation ability of N vacancies to N₂ molecules on sulfur-doped graphitic carbon nitride with outstanding photocatalytic nitrogen fixation ability

Zheng Li, Guizhou Gu, Shaozheng Hu, Xiong Zou, Guang Wu *

Liaoning Shihua University; Heilongjiang University; Dalian University of Technology



The introduction of sulfur can promote the activation ability of N vacancies to N₂ molecules, leading to the promoted N₂ photofixation performance of graphitic carbon nitride.

Chin. J. Catal., 2019, 40: 1187–1197 doi: S1872-2067(19)63377-2

Decorating Ag/AgCl on UiO-66-NH₂: Synergy between Ag plasmons and heterostructure for the realization of efficient visible light photocatalysis

Wanyue Zhao, Tong Ding, Yating Wang, Moqing Wu, Wenfeng Jin, Ye Tian, Xingang Li *
Tianjin University

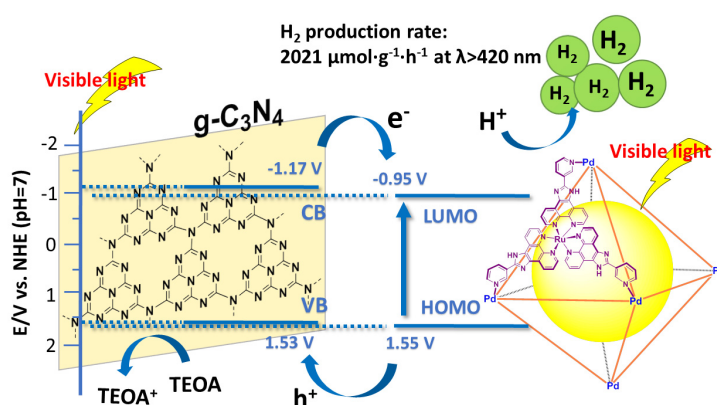


Ag/AgCl plasmons were decorated on UiO-66-NH₂ to enhance the visible light absorbability, and the heterostructure suppresses the rapid recombination of the photoinduced carriers. The synergy between the heterostructure and the Ag plasmons greatly improves the visible light photocatalytic activity.

Chin. J. Catal., 2019, 40: 1198–1204 doi: S1872-2067(19)63387-5

Immobilization of metal-organic molecular cage on g-C₃N₄ semiconductor for enhancement of photocatalytic H₂ generation

Yuanpu Wang, Liang Liu, Dongjun Wu, Jing Guo, Jianying Shi *, Junmin Liu *, Chengyong Su
Sun Yat-sen University; Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences



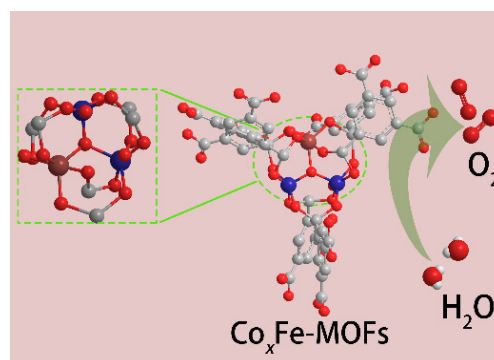
A new compound based on immobilizing of metal-organic molecular cage on g-C₃N₄ has been synthesized and a significant leap in photocatalytic H₂ evolution under visible light was observed.

Chin. J. Catal., 2019, 40: 1205–1211 doi: S1872-2067(19)63384-X

Cobalt/iron bimetal-organic frameworks as efficient electrocatalysts for the oxygen evolution reaction

Shili Xie, Fei Li *, Suxian Xu, Jiayuan Li, Wei Zeng *
Dalian University of Technology;
Dalian Wondersun Biochemical Technology Co., LTD

Co/Fe-based bimetal-organic frameworks were synthesized, using a facile ultrasonic method, as efficient electrocatalysts for the OER. The optimized Co₂Fe-MOF exhibited high performance toward the OER.

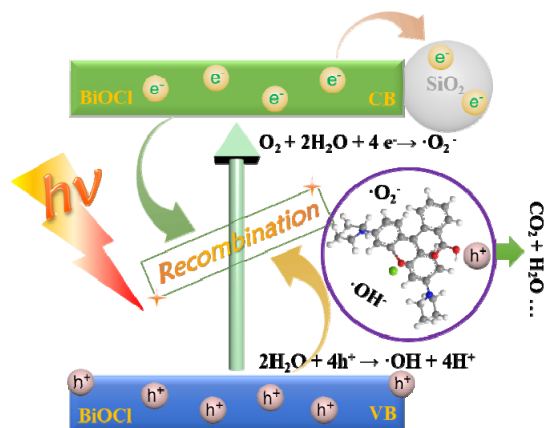


Chin. J. Catal., 2019, 40: 1212–1221 doi: S1872-2067(19)63359-0

Novel SiO₂ nanoparticle-decorated BiOCl nanosheets exhibiting high photocatalytic performances for the removal of organic pollutants

Changlin Yu *, Hongbo He, Xingqiang Liu *, Julan Zeng, Zhen Liu
*Guangdong University of Petrochemical Technology;
 Sun Yat-sen University; Xiamen University Tan Kah Kee College;
 Changsha University of Science and Technology*

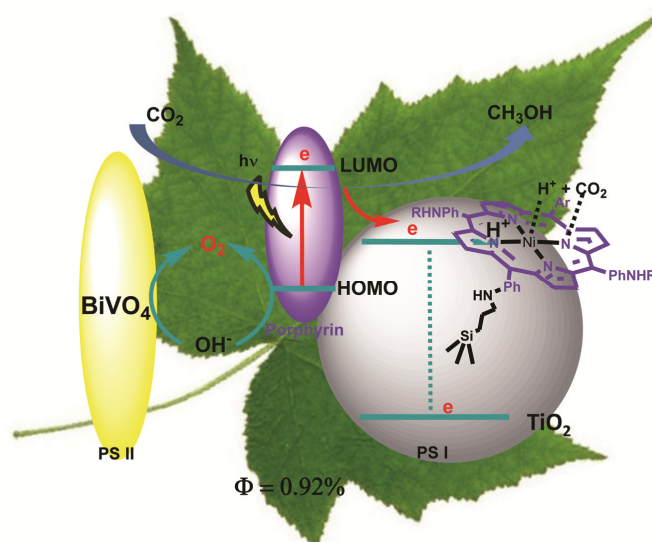
Novel SiO₂ nanoparticle-decorated BiOCl nanosheets with higher e⁻ transfer efficiencies were fabricated via the facile hydrothermal route. The SiO₂/BiOCl revealed significant enhancements in the photocatalytic activities for the degradation of organic pollutants.



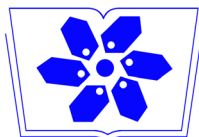
Chin. J. Catal., 2019, 40: 1222–1230 doi: S1872-2067(19)63375-9

Photoelectrocatalytic CO₂ reduction based on metalloporphyrin-modified TiO₂ photocathode

Yapeng Dong, Rong Nie, Jixian Wang, Xiaogang Yu, Pengcheng Tu, Jiazang Chen, Huanwang Jing *
Lanzhou University; Institute of Coal Chemistry, Chinese Academy of Sciences



Metalloporphyrin molecules were covalently anchored to the surface of TiO₂ that mimic chlorophyll, NADP and Calvin cycle in CO₂ reduction, improving the efficiency of artificial photosynthesis cells to methanol in 0.92% quantum efficiency.



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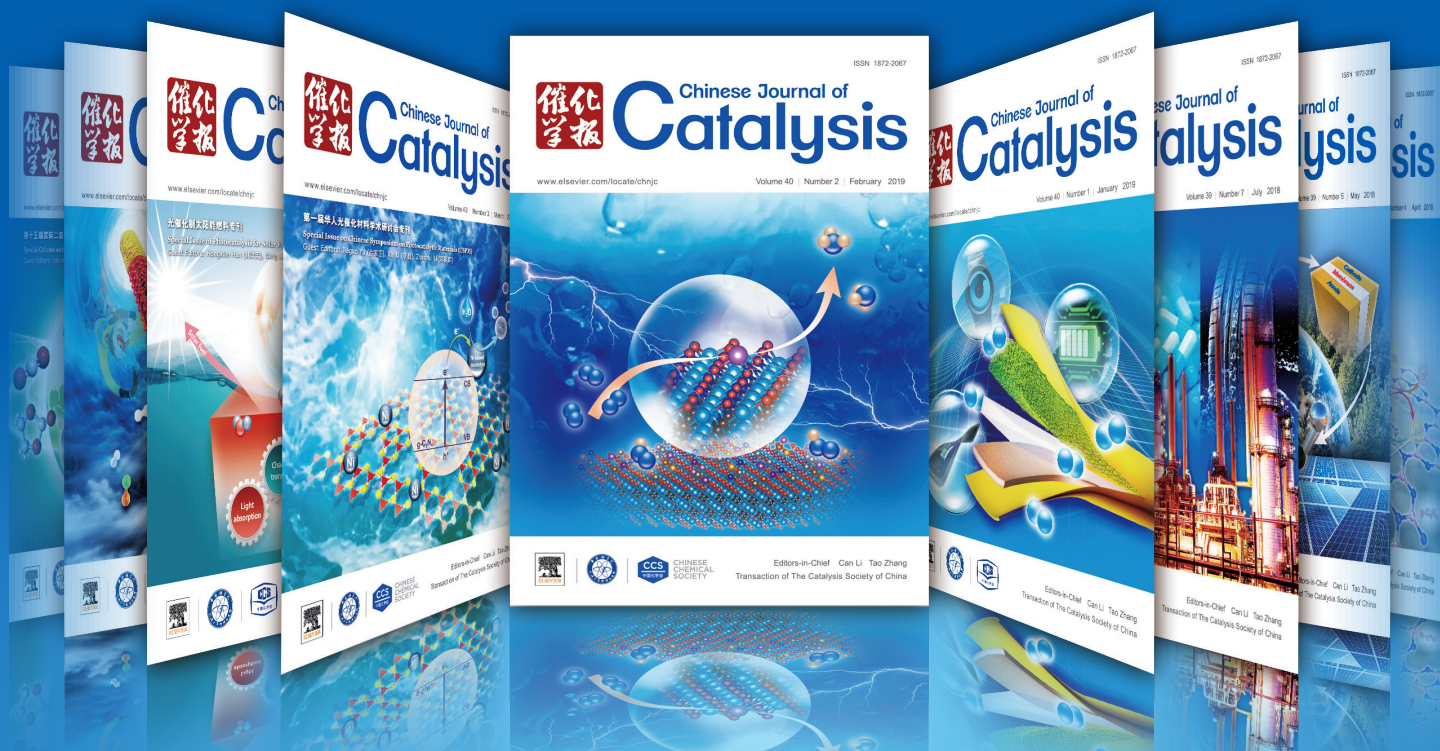
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