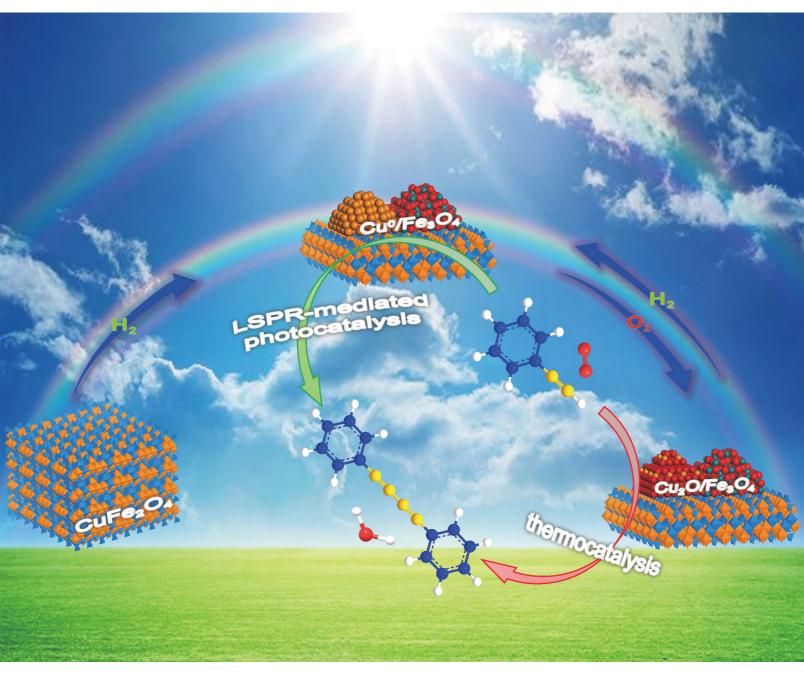


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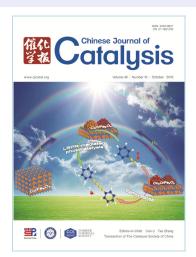






2019年 第40卷 第10期

In This Issue



Cover: Liu and coworkers in their Article on pages 1505-1515 reported that partially reduced $CuFe_2O_4$ can be used as heterogeneous photocatalyst for oxidative homocoupling of alkynes under visible-light irradiation. The localized surface plasmon resonance effect of copper nanoparticles contributes to high photocatalytic activity comparable to surface Cu_2O -mediated thermocatalysis.

封面: 刘鹏等人发现部分还原的 CuFe₂O₄ 尖晶石可用于多相可见光催化炔 烃氧化自偶联,纳米铜的表面等离子体共振效应促使光催化取得与表面 Cu₂O 热催 化相当的催化活性. 见本期第 1505—1515 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.

Types of Contributions

- 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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邮编: 116023

电话: (0411)84379240

传真: (0411)84379543

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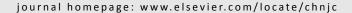
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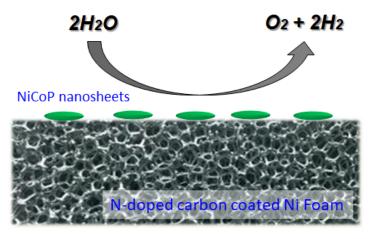
Highlight

Chin. J. Catal., 2019, 40: 1405-1407 doi: S1872-2067(19)63443-1

Ni foam-supported NiCoP nanosheets as bifunctional electrocatalysts for efficient overall water splitting

Xuping Sun *

University of Electronic Science and Technology of China



Ni foam-supported NiCoP nanosheet acts as a high-performance bifunctional water-splitting electrocatalyst with excellent long-term stability without obvious attenuation after 10000 time cycles.

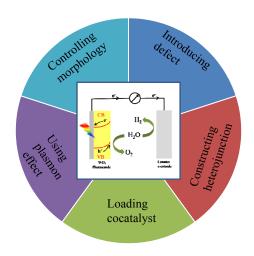
Reviews

Chin. J. Catal., 2019, 40: 1408-1420 doi: S1872-2067(19)63399-1

A review on tungsten-trioxide-based photoanodes for water oxidation

Jingwei Huang, Pengfei Yue, Lei Wang, Houde She, Qizhao Wang * Northwest Normal University; Guangdong University of Technology; Harbin Normal University; Chang'an University

This review presents the advantages and drawbacks of WO_3 photoanode for PEC water oxidation and summarizes the various strategies reported for improving the performance of WO_3 photoanode.

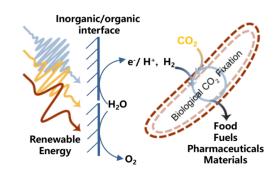


Chin. J. Catal., 2019, 40: 1421-1437 doi: S1872-2067(19)63408-X

Artificial bioconversion of carbon dioxide

Ting-Ting Zhao, Guang-Hui Feng, Wei Chen*, Yan-Fang Song, Xiao Dong, Gui-Hua Li, Hai-Jiao Zhang, Wei Wei* Shanghai University; Shanghai Advanced Research Institute, Chinese Academy of Sciences; Shanghai Tech University

The CO_2 artificial bioconversion system, in which CO_2 is converted into value-added chemicals via the metabolic pathway in organisms, is driven by renewable energy.

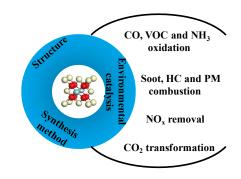


Chin. J. Catal., 2019, 40: 1438-1487 doi: \$1872-2067(19)63400-5

Structure, synthesis, and catalytic properties of nanosize cerium-zirconium-based solid solutions in environmental catalysis

Jixing Liu, Zhen Zhao, Chunming Xu, Jian Liu* China University of Petroleum; Shenyang Normal University

Cerium-zirconium-based solid solutions have been widely used in environmental catalysis, such as the purification for nitrogen oxides (NO_x) , CO, hydrocarbon (HC), CO_2 and solid particulate matters (PM).



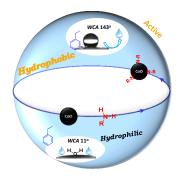
Communications

Chin. J. Catal., 2019, 40: 1488-1493 doi: \$1872-2067(19)63413-3

Aliphatic amines modified CoO nanoparticles for catalytic oxidation of aromatic hydrocarbon with molecular oxygen

Meng Liu, Song Shi *, Li Zhao, Chen Chen, Jin Gao, Jie Xu *
Dalian Institute of Chemical Physics, Chinese Academy of Sciences;
University of Chinese Academy of Sciences; Ningbo University

The amines-modified CoO nanoparticles exhibited hydrophobic properties with a water contact angle of 143°, which was accompanied by better performance in the hydrocarbon oxidation process compared to that of the hydrophilic commercial CoO nanoparticles.



Chin. J. Catal., 2019, 40: 1494-1498 doi: S1872-2067(19)63420-0

Visible-light-induced deoxygenative C2-sulfonylation of quinoline N-oxides with sulfinic acids for the synthesis of 2-sulfonylquinoline via radical reactions

Dao-Qing Dong, Li-Xia Li, Guang-Hui Li, Qi Deng, Zu-Li Wang *, Shu Long Qingdao Agricultural University; Hunan University of Science and Technology; Changsha University of Science and Technology

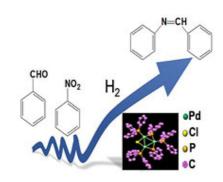
A simple and efficient method for the synthesis of 2-sulfonylquinoline from deoxygenative C2-sulfonylation of quinoline *N*-oxides with sulfinic acid induced by visible light is presented. This protocol shows a broad substrate scope, and desired products with various substituents can be formed in moderate to high yields at room temperature.

Chin. J. Catal., 2019, 40: 1499-1504 doi: S1872-2067(19)63423-6

Benzalaniline from nitrobenzene and benzaldehyde catalyzed efficiently by an atomically precise palladium nanocluster

Linquan Bao, Chengcheng Zhao, Shenggang Li*, Yan Zhu*
Nanjing University; Shanghai Advanced Research Institute, Chinese
Academy of Sciences

Three-atom-Pd nanocluster protected by PPh_2 and PPh_3 ligands was found to exhibit unique conversion and selectivity toward the partially hydrogenated product in the catalysis of the reductive amidation of nitrobenzene and benzaldehyde.



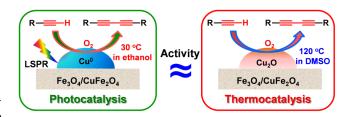
Articles

Chin. J. Catal., 2019, 40: 1505-1515 doi: S1872-2067(19)63418-2

On the comparable activity in plasmonic photocatalytic and thermocatalytic oxidative homocoupling of alkynes over prereduced copper ferrite

Ying Zhu, Nan Deng, Meiqing Feng, Peng Liu * Huazhong University of Science and Technology

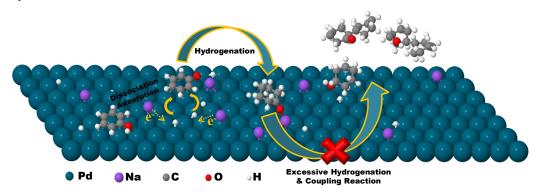
A green and efficient heterogeneous photocatalytic oxidative homocoupling of alkynes under visible-light irradiation was developed, which exhibits comparable activity to thermocatalysis.



Chin. J. Catal., 2019, 40: 1516-1524 doi: S1872-2067(19)63386-3

Study of the role of alkaline sodium additive in selective hydrogenation of phenol

Yuzhuo Chen, Xiangqian Kong, Shanjun Mao, Zhe Wang, Yutong Gong, Yong Wang * *Zhejiang University*



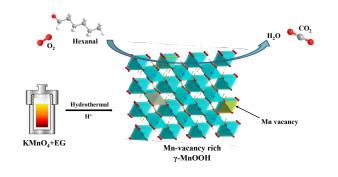
A comprehensive understanding of the role of Na additives in the continuous hydrogenation of phenol to cyclohexanone in the gas phase.

Chin. J. Catal., 2019, 40: 1525-1533 doi: S1872-2067(19)63415-7

Low-temperature catalytic degradation of the odorous pollutant hexanal by γ -MnOOH: The effect of Mn vacancies

Shanhong Sui, Pengyi Zhang *, Huiyu Zhang, Ranran Cao Tsinghua university

Mn-vacancy rich γ -MnOOH was synthesized via the hydrothermal reaction between MnO₄- and ethylene glycol with the addition of H₂SO₄, which could efficiently degrade a major indoor odorant, hexanal, at a low temperature.



Chin. J. Catal., 2019, 40: 1534-1539 doi: S1872-2067(19)63388-7

Facet-dependent anchoring of gold nanoparticles on TiO_2 for CO oxidation

Bin Shao, Wenning Zhao, Shu Miao, Jiahui Huang*, Lili Wang, Gao Li*, Wenjie Shen

Dalian Institute of Chemical Physics, Chinese Academy of Sciences; University of Chinese Academy of Sciences

Two different Au/TiO $_2$ catalysts, prepared via colloid-immobilized method, showed significant morphological effect in CO oxidation. The TiO $_2$ {001} can well stabilize the 2–3 nm Au nanoparticles and exhibit higher catalytic activity in CO oxidation.

Au-TiO₂(101) d₀₀₀=0.23 nm d₀₀₀=0.23 nm 2nm 2nm

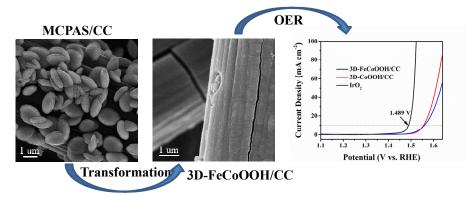
TOF_{CO oxidation}: 1.52 s⁻¹

TOF_{CO oxidation}: 2.34 s⁻¹

Chin. J. Catal., 2019, 40: 1540-1547 doi: S1872-2067(19)63401-7

Iron-induced 3D nanoporous iron-cobalt oxyhydroxide on carbon cloth as a highly efficient electrode for oxygen evolution reaction

Guodong Chen, Jian Du, Xilong Wang, Xiaoyue Shi, Zonghua Wang *, Han-Pu Liang *
Qingdao University; Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences; University of Chinese Academy of
Sciences



"Micro go chess piece" arrays on carbon cloth (MCPAs/CC) were transformed into a three-dimensional nanoporous iron-cobalt oxyhydroxide conformal coating on carbon cloth (3D-FeCoOOH/CC) via electrochemical oxidation. Superior OER performance was exhibited by 3D-FeCoOOH/CC, thereby outperforming IrO₂.

Chin. J. Catal., 2019, 40: 1548-1556 doi: S1872-2067(19)63398-X

Synthesis of polymer/CNTs composites for the heterogeneous asymmetric hydrogenation of quinolines

Lin Tao, Chunzhi Li, Yiqi Ren, He Li, Jian Chen, Qihua Yang *
Dalian Institute of Chemical Physics, Chinese Academy of Sciences; University of Chinese Academy of Sciences

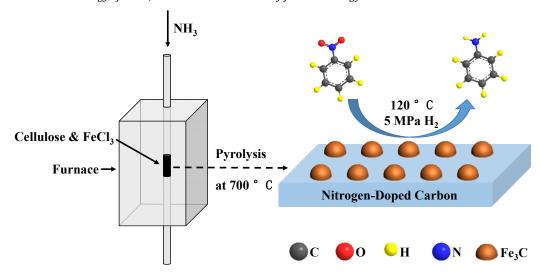


The polymer/CNTs composites with VDPEN-RuOTf as active sites could efficiently catalyze the asymmetric hydrogenation of 2-methylquinoline to afford 2-methyl-1,2,3,4-tetrahydroquinoline with $27 \, h^{-1}$ TOF and 90% ee.

Chin. J. Catal., 2019, 40: 1557-1565 doi: S1872-2067(19)63416-9

In situ synthesis of Fe-N-C catalysts from cellulose for hydrogenation of nitrobenzene to aniline

Hao Wang, Xiaohao Liu, Guangyue Xu, Ziwei Guo, Ying Zhang*
University of Science and Technology of China; Dalian National Laboratory for Clean Energy



Nitrogen-doped carbon supported iron catalysts (Fe-N-C) were prepared via co-pyrolysis of the widely available cellulose and FeCl₃ under ammonia atmosphere. The catalyst showed good performance in hydrogenation of nitrobenzene.

Chin. J. Catal., 2019, 40: 1566-1575 doi: S1872-2067(19)63396-6

Chiral Brønsted acid-catalyzed conjugate addition of indoles to azadienes: Enantioselective synthesis of hetero-triarylmethanes

Huan-Ping Xie, Bo Wu, Xin-Wei Wang, Yong-Gui Zhou*

Dalian Institute of Chemical Physics, Chinese Academy of Sciences; University of Chinese Academy of Sciences

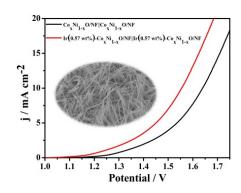
An efficient chiral Brønsted acid-catalyzed conjugate addition of indoles to azadienes has been successfully developed, which enables a facile approach to optically active hetero-triarylmethanes with excellent enantioselectivities and broad substrate scope. This chiral Brønsted acid catalytic system provides a new opportunity for the development of asymmetric reactions of azadienes.

Chin. J. Catal., 2019, 40: 1576-1584 doi: S1872-2067(19)63414-5

In situ growth of minimal Ir-incorporated $Co_xNi_{1-x}O$ nanowire arrays on Ni foam with improved electrocatalytic activity for overall water splitting

Xiaoli Li, Wenming Xue, Rong Mo*, Sui Yang, Hongxing Li*, Jianxin Zhong Xiangtan University

Minimal Ir-incorporated $Co_xNi_{1-x}O$ nanowire arrays with enhanced overall water-splitting performance were synthesized through the facile hydrothermal method with subsequent calcination by using Ni foam as both the substrate and source of Ni.





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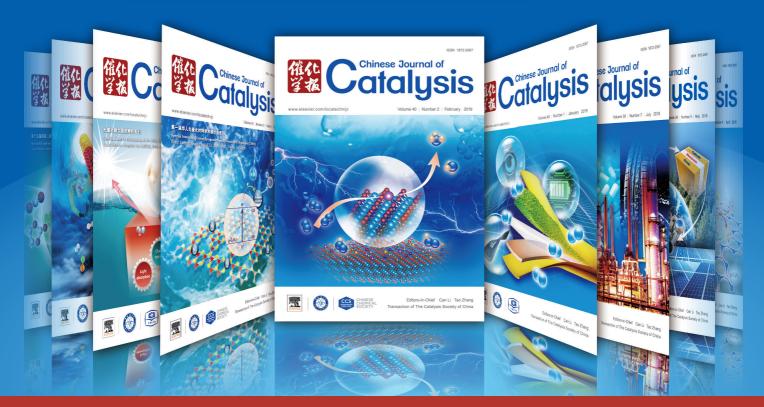
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