

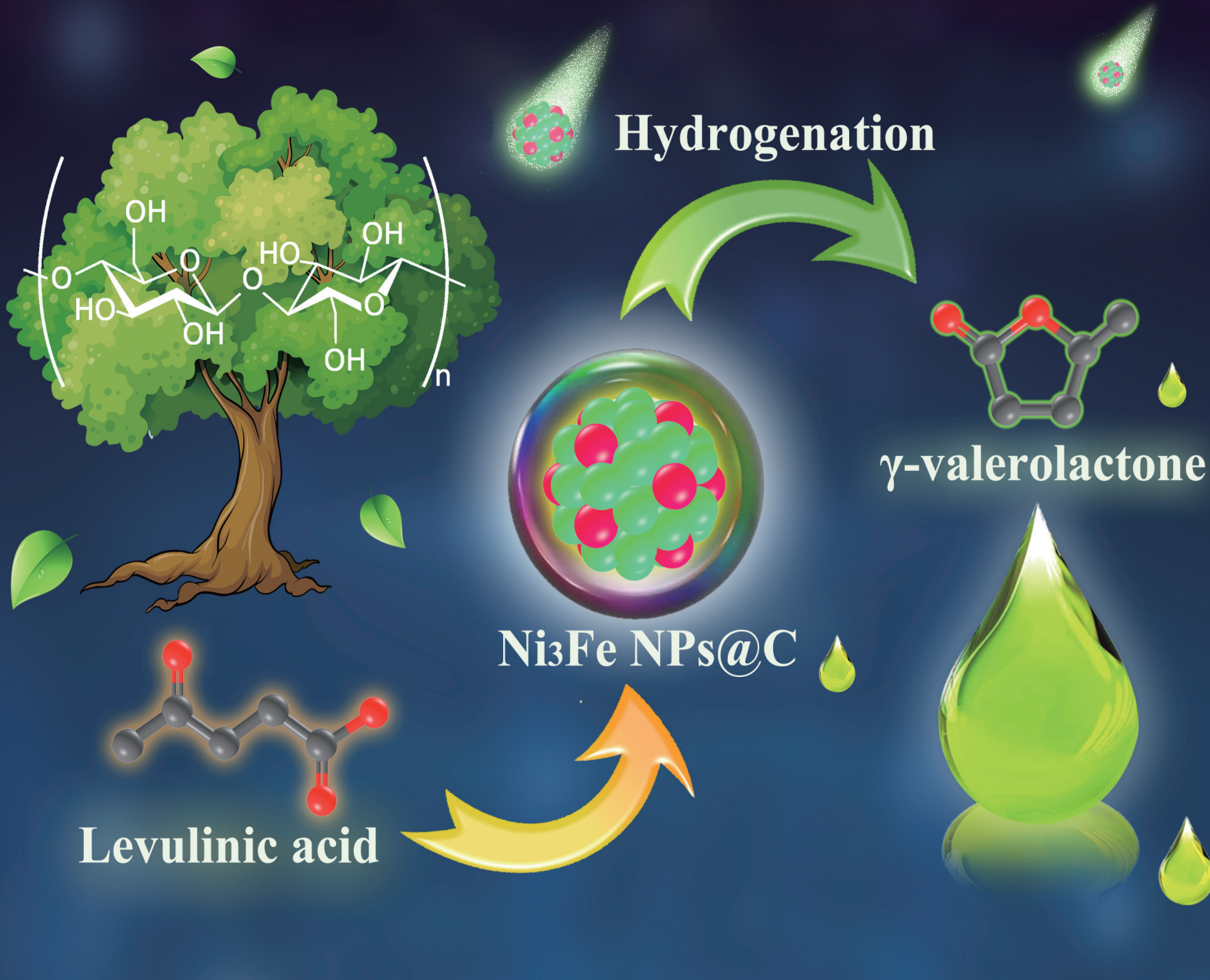


# Chinese Journal of Catalysis

www.cjccatal.org

Volume 39 | Number 10 | October 2018

催化学报  
CHINESE JOURNAL OF CATALYSIS  
October 2018  
Vol. 39 No. 10  
pages 1575-1723



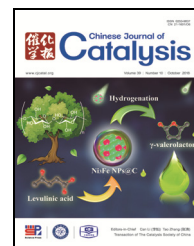
Editors-in-Chief Can Li (李灿) Tao Zhang (张涛)  
Transaction of The Catalysis Society of China



available at www.sciencedirect.com



journal homepage: www.elsevier.com/locate/chnjc



## Chinese Journal of Catalysis

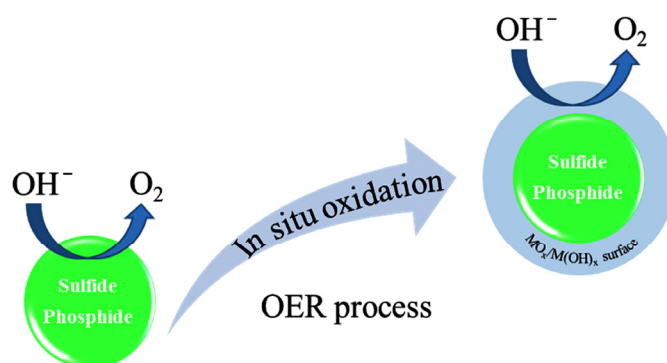
### Graphical Contents

#### Review

*Chin. J. Catal.*, 2018, 39: 1575–1593 doi: 10.1016/S1872-2067(18)63130-4

#### Recent developments in metal phosphide and sulfide electrocatalysts for oxygen evolution reaction

Lishan Peng, Syed Shoab Ahmad Shah, Zidong Wei \*  
Chongqing University



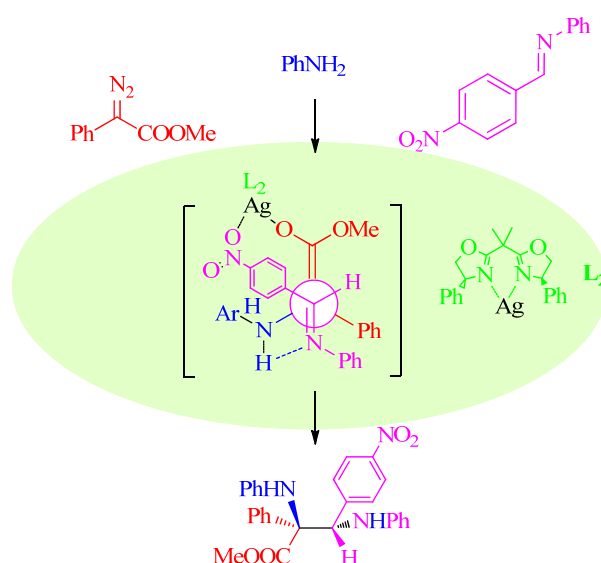
An overview summarized recent advances in metal phosphide and sulfide-based OER electrocatalysts in terms of their chemical properties, synthetic methodologies, catalytic performances evaluation and improvement strategy, and real active component for OER.

#### Communication

*Chin. J. Catal.*, 2018, 39: 1594–1598 doi: 10.1016/S1872-2067(18)63088-8

#### Silver-catalyzed three-component reaction of phenyldiazoacetate with arylamine and imine

Bai-Ling Chen, Zhen Wang, You-Can Zhang, Zhi-Gang Zhao \*,  
Zili Chen \*  
Renmin University of China; Southwest University for Nationalities



Polysubstituted 1,2-diamines were obtained from the reaction of diazoesters with arylamines and diaryl imines by using the dioxazoline-Ag(I) catalyst. The Lewis acidity of silver affected the substrate diastereoselectivities and led to the formation of amine-exchange side products.

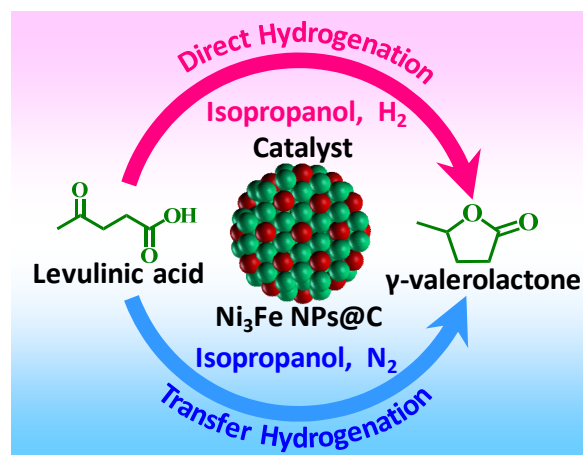
## Articles

*Chin. J. Catal.*, 2018, 39: 1599–1607 doi: 10.1016/S1872-2067(18)63105-5

**An efficient and reusable bimetallic Ni<sub>3</sub>Fe NPs@C catalyst for selective hydrogenation of biomass-derived levulinic acid to  $\gamma$ -valerolactone**

Haojie Wang, Chun Chen\*, Haimin Zhang, Guozhong Wang, Huijun Zhao\*  
*Institute of Solid State Physics, Chinese Academy of Sciences, China;*  
*University of Science and Technology of China, China;*  
*Griffith University, Australia*

A controllable carbothermal synthesized bimetallic Ni-Fe NPs supported on activated carbon catalyst (Ni<sub>3</sub>Fe NPs@C) possesses superior dual catalytic functionality towards both direct hydrogenation (DH) and transfer hydrogenation (TH) of Levulinic Acid (LA) into value-added  $\gamma$ -Valerolactone (GVL).

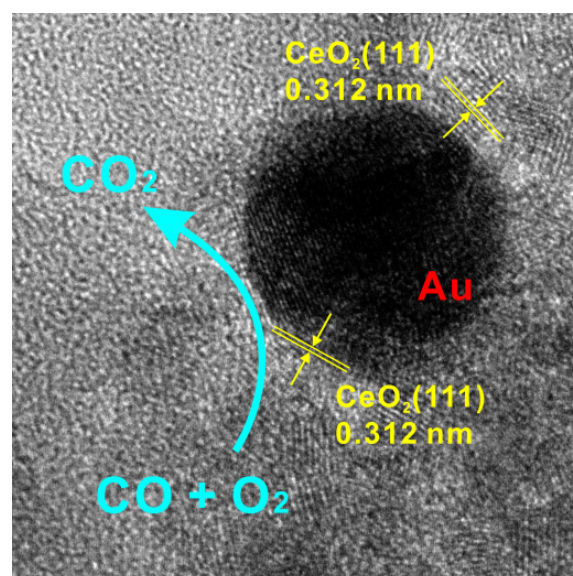


*Chin. J. Catal.*, 2018, 39: 1608–1614 doi: 10.1016/S1872-2067(18)63136-5

**Enhancement of the activity and durability in CO oxidation over silica-supported Au nanoparticle catalyst via CeO<sub>x</sub> modification**

Lingxiang Wang, Liang Wang\*, Jian Zhang, Hai Wang, Feng-Shou Xiao\*  
*Zhejiang University*

It has been successfully synthesized a CeO<sub>x</sub>@Au/SiO<sub>2</sub> catalyst with both high activity and excellent durability in CO oxidation. Key to the success is to construct abundant Au-CeO<sub>x</sub> interfaces by modification of Au nanoparticles with CeO<sub>x</sub> nanocrystals.

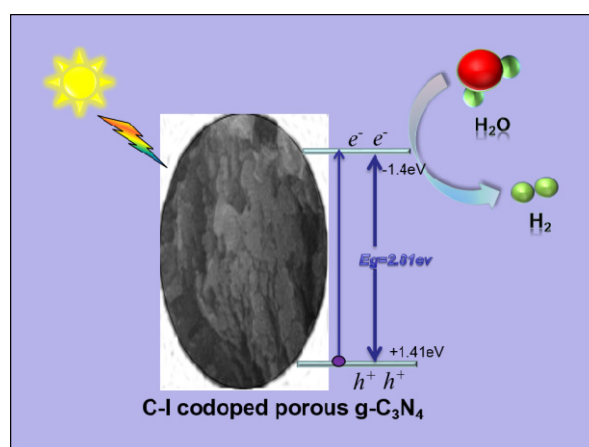


*Chin. J. Catal.*, 2018, 39: 1615–1624 doi: 10.1016/S1872-2067(18)63131-6

**C-I codoped porous g-C<sub>3</sub>N<sub>4</sub> for superior photocatalytic hydrogen evolution**

Chuanfeng Yang, Wei Teng, Yanhua Song, Yanjuan Cui\*  
*Jiangsu University of Science and Technology*

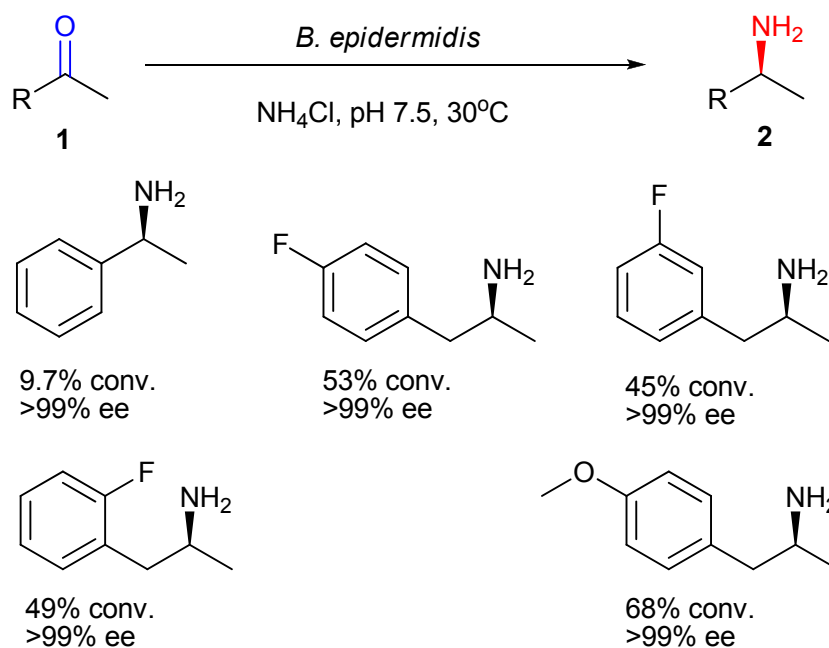
C-I co-doped porous g-C<sub>3</sub>N<sub>4</sub> synthesized from two-step thermal polymerization method was demonstrated as a stable photocatalyst for H<sub>2</sub> evolution under visible light irradiation.



*Chin. J. Catal.*, 2018, 39: 1625–1632 doi: 10.1016/S1872-2067(18)63108-0

### Reductive amination of ketones with ammonium catalyzed by a newly identified *Brevibacterium epidermidis* strain for the synthesis of (*S*)-chiral amines

Qing-Hua Li, Yuan Dong, Fei-Fei Chen, Lei Liu, Chun-Xiu Li, Jian-He Xu, Gao-Wei Zheng\*  
East China University of Science and Technology; 302 Hospital of People's Liberation Army

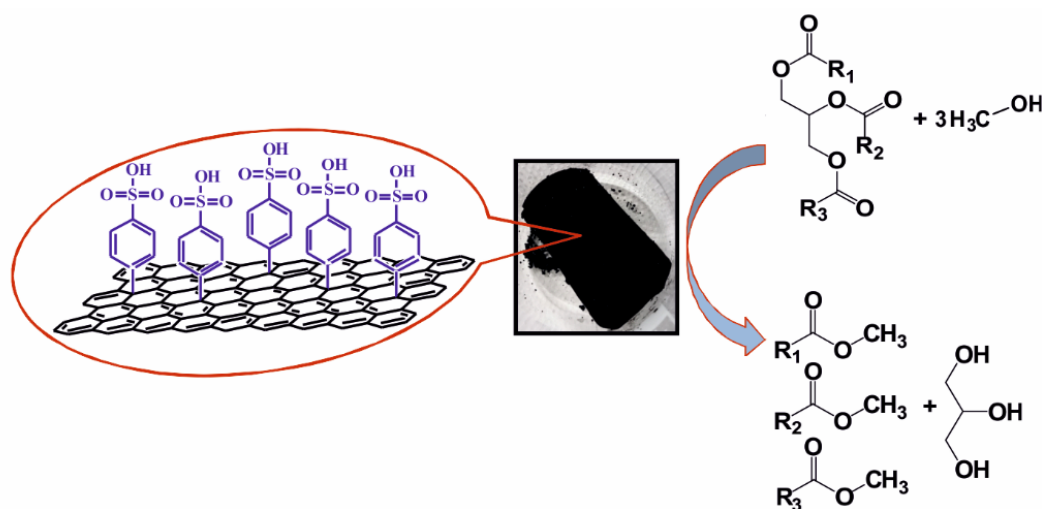


The new strain *Brevibacterium epidermidis* ECU1015 can catalyze the reductive amination of ketones using inorganic ammonium as the amino donor to generate the corresponding (*S*)-chiral amines with high enantiomeric excess ( $ee > 99\%$ ). A range of (*S*)-aryl amines were synthesized via biocatalytic reductive amination of ketones.

*Chin. J. Catal.*, 2018, 39: 1633–1645 doi: 10.1016/S1872-2067(18)63087-6

### Modified graphene-based materials as effective catalysts for transesterification of rapeseed oil to biodiesel fuel

Justina Gaidukevič\*, Jurgis Barkauskas, Anna Malaika\*, Paulina Rechnia-Gorący, Aleksandra Możdżyńska, Vitalija Jasulaitienė, Mieczysław Kozłowski  
Vilnius University, Lithuania; Adam Mickiewicz University in Poznań, Poland;  
State Research Institute Centre for Physical Sciences and Technology, Lithuania



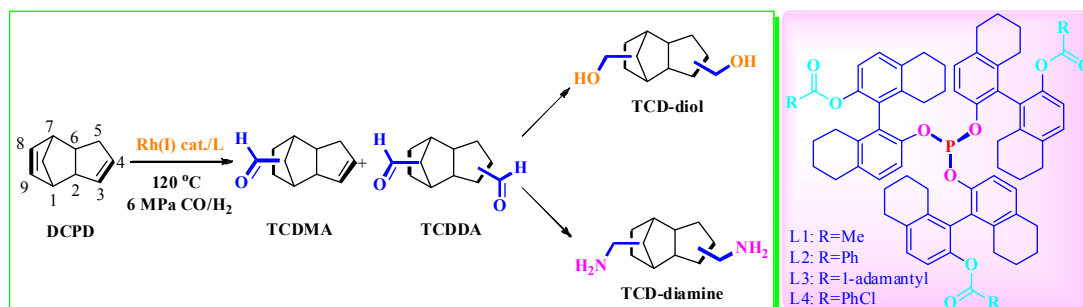
Graphene-based acidic catalysts exhibit a high performance and good stability in the transesterification reaction, which make them promising catalysts for biodiesel fuel production.

*Chin. J. Catal.*, 2018, 39: 1646–1652 doi: 10.1016/S1872-2067(18)63098-0

### Highly efficient Rh(I)/tris-H<sub>8</sub>-binaphthyl monophosphite catalysts for hydroformylation of dicyclopentadiene to dialdehydes

Mi Tian, Haifeng Li, Lailai Wang\*

Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences; University of Chinese Academy of Sciences;  
Guangzhou Lee&Man Technology Company Limited



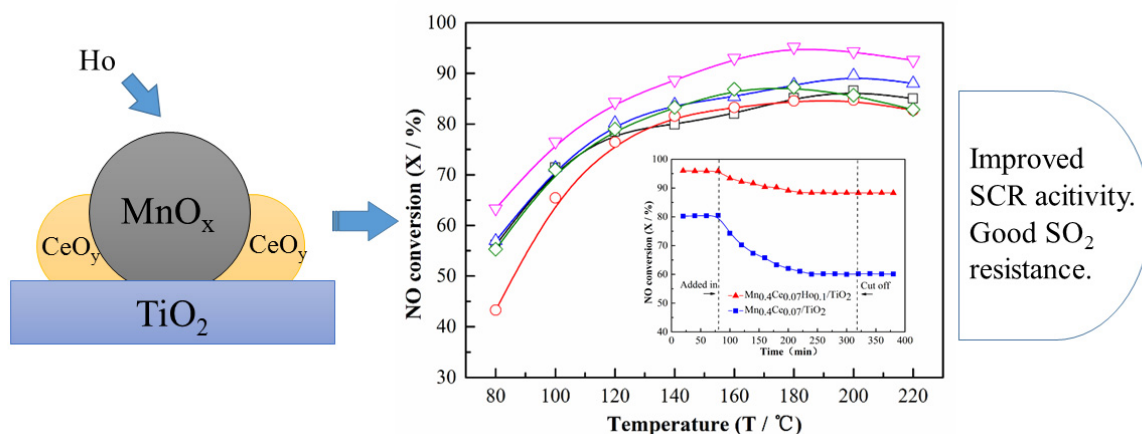
Catalytic systems for Rh(I)-catalyzed hydroformylation of dicyclopentadiene have been developed using tris-H<sub>8</sub>-binaphthyl monophosphite as ligands. The catalyst exhibited high catalytic activity ( $S/C = 4000$ ,  $TON = 3286$ ) and good to excellent selectivity to dialdehydes. The Rh(I) complex bearing the ligands with chlorophenyl ester substituents led to 99.9% conversion and 98.7% selectivity to dialdehydes under relatively mild condition (6 MPa, 120 °C).

*Chin. J. Catal.*, 2018, 39: 1653–1663 doi: 10.1016/S1872-2067(18)63099-2

### Ho-modified Mn–Ce/TiO<sub>2</sub> for low-temperature SCR of NO<sub>x</sub> with NH<sub>3</sub>: Evaluation and characterization

Wei Li, Cheng Zhang\*, Xin Li, Peng Tan, Anli Zhou, Qingyan Fang, Gang Chen\*

Huazhong University of Science and Technology



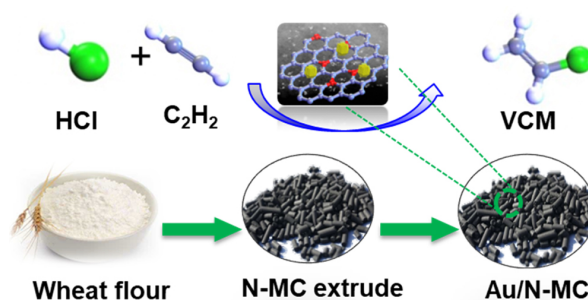
Ho can be an effective doping element for improving the low-temperature SCR performance and the SO<sub>2</sub> resistance of Mn-Ce/TiO<sub>2</sub> catalyst.

*Chin. J. Catal.*, 2018, 39: 1664–1671 doi: 10.1016/S1872-2067(18)63109-2

### Wheat flour-derived N-doped mesoporous carbon extrudes as an efficient support for Au catalyst in acetylene hydrochlorination

Jie Liu, Guojun Lan, Yiyang Qiu, Xiaolong Wang, Ying Li\*

Zhejiang University of Technology

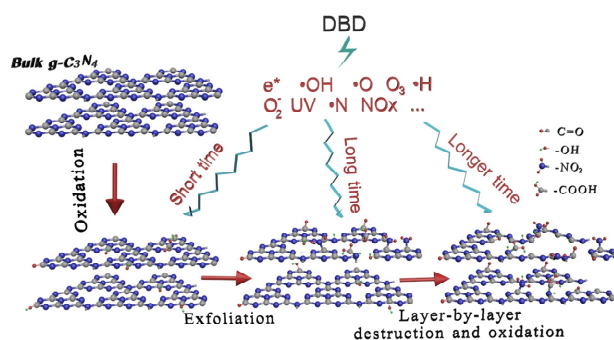


Wheat flour-derived N-doped mesoporous carbon extrudes were prepared by a cheap and convenient method as excellent supports for Au-based mercury-free acetylene hydrochlorination catalysts.

*Chin. J. Catal.*, 2018, 39: 1672–1682 doi: 10.1016/S1872-2067(18)63115-8

### Effect of high-voltage discharge non-thermal plasma on g-C<sub>3</sub>N<sub>4</sub> in a plasma-photocatalyst system

Xiaoping Wang \*, Yixia Chen, Min Fu, Zihan Chen, Qiulin Huang  
Chongqing Technology and Business University

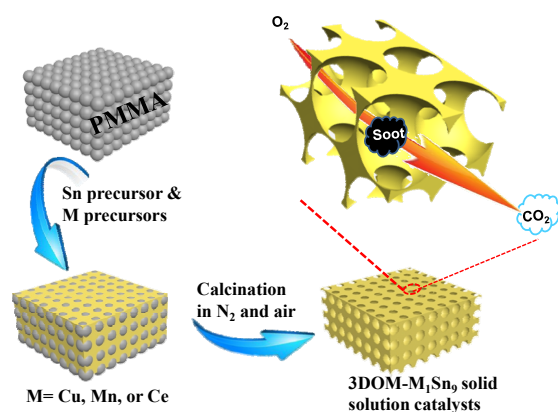


The periodic oxidation and exfoliation on g-C<sub>3</sub>N<sub>4</sub> photocatalysts under long-time DBD treatment is reported. Further, chemical and physical changes on g-C<sub>3</sub>N<sub>4</sub> influence the photocatalytical activities.

*Chin. J. Catal.*, 2018, 39: 1683–1694 doi: 10.1016/S1872-2067(18)63123-7

### Three-dimensionally ordered macroporous SnO<sub>2</sub>-based solid solution catalysts for effective soot oxidation

Cheng Rao, Rui Liu, Xiaohui Feng, Jiating Shen, Honggen Peng, Xianglan Xu, Xiuzhong Fang, Jianjun Liu, Xiang Wang \*  
Nanchang University;  
Jiangxi Baoan New Material Technology Corporation

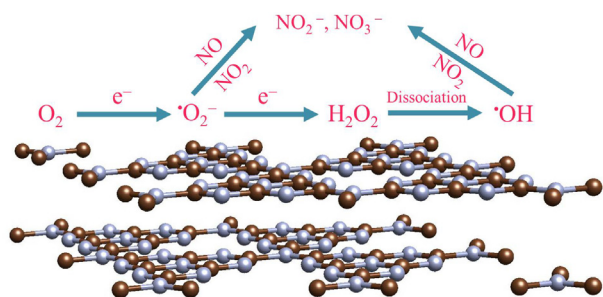


3DOM SnO<sub>2</sub>-based solid solution catalysts modified by Ce<sup>4+</sup>, Mn<sup>3+</sup>, or Cu<sup>2+</sup> cations have been prepared using a colloidal crystal templating method. 3DOM-Cu<sub>1</sub>Sn<sub>9</sub> shows the best soot combustion activity among all the studied catalysts.

*Chin. J. Catal.*, 2018, 39: 1695–1703 doi: 10.1016/S1872-2067(18)63097-9

### Generation and transformation of ROS on g-C<sub>3</sub>N<sub>4</sub> for efficient photocatalytic NO removal: A combined *in situ* DRIFTS and DFT investigation

Jieyuan Li, Ping Yan, Kanglu Li, Wanglai Cen, Xiaowei Yu \*, Shandong Yuan \*, Yinghao Chu \*, Zhengming Wang  
Sichuan University, China; National Institute of Advanced Industrial Science and Technology, Japan;  
The Ministry of Environmental Protection of PRC, China



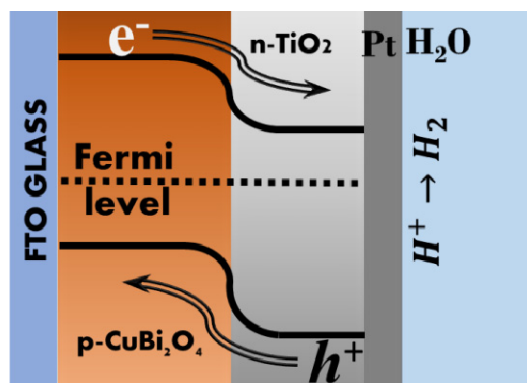
Using a closely combined theoretical and experimental approach, the reactive oxygen species behavior on g-C<sub>3</sub>N<sub>4</sub> for effective NO removal and the reaction mechanism at the atomic level were clarified, which enriches the understanding of ROS in photocatalytic environmental remediation.

*Chin. J. Catal.*, 2018, 39: 1704–1710 doi: 10.1016/S1872-2067(18)63127-4

### Amorphous TiO<sub>2</sub>-modified CuBi<sub>2</sub>O<sub>4</sub> Photocathode with enhanced photoelectrochemical hydrogen production activity

Xianglin Zhu, Zihan Guan, Peng Wang\*, Qianqian Zhang, Ying Dai, Baibaio Huang\*  
Shandong University

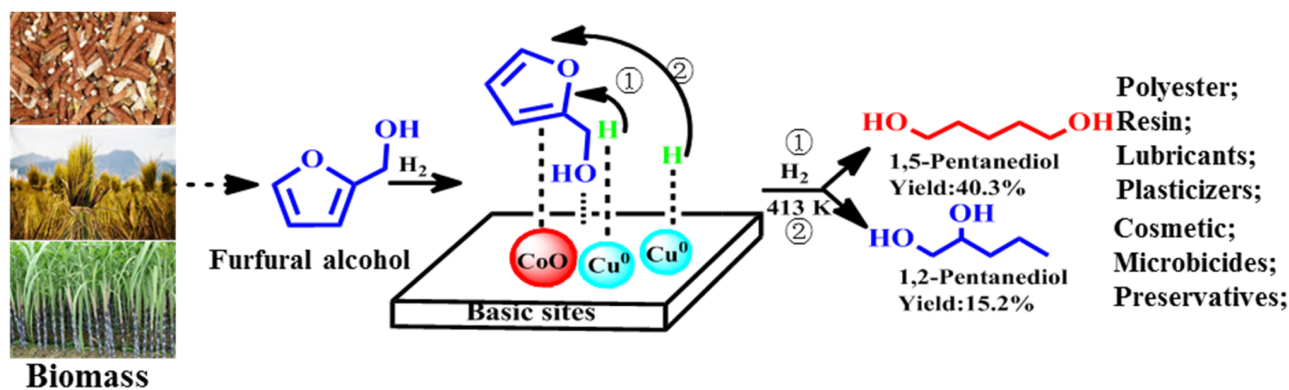
CuBi<sub>2</sub>O<sub>4</sub> photocathodes were prepared for PEC hydrogen production. The fabricated photocathodes were modified with amorphous TiO<sub>2</sub> and Pt co-catalysts, which resulted in the formation of p-n heterojunctions, and enhanced the activities.



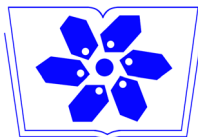
*Chin. J. Catal.*, 2018, 39: 1711–1723 doi: 10.1016/S1872-2067(18)63110-9

### Selective hydrogenolysis of furfuryl alcohol to 1,5- and 1,2-pentanediol over Cu-LaCoO<sub>3</sub> catalysts with balanced Cu<sup>0</sup>-CoO sites

Fangfang Gao, Hailong Liu, Xun Hu, Jing Chen\*, Zhiwei Huang\*, Chungu Xia  
Lanzhou Institute of Chemical Physics (LICP), Chinese Academy of Sciences; University of Chinese Academy of Sciences



The synergism between balanced Cu<sup>0</sup> and CoO sites played a critical role in achieving a high yield of PeDs with high 1,5-/1,2-pentanediol selectivity ratio during the hydrogenolysis of biomass-derived furfuryl alcohol.



中国科学院科学出版基金资助出版

月刊 SCI 收录 2018 年 10 月 第 39 卷 第 10 期



## 目次

### 综述

1575

电催化析氧反应过渡金属磷化物和硫化物催化剂研究进展  
彭立山, Syed Shoaib Ahmad Shah, 魏子栋

### 快讯

1594

银催化重氮酯与苯胺, 亚胺的三组分反应  
陈佰灵, 王振, 张有灿, 赵志刚, 陈自立

### 论文

1599

乙酰丙酸选择性加氢合成 $\gamma$ -戊内酯中高效和可循环使用的  
 $\text{Ni}_3\text{Fe NPs}@C$ 双金属催化剂  
王豪杰, 陈春, 张海民, 汪国忠, 赵惠军

1608

通过 $\text{CeO}_x$ 修饰提高金纳米颗粒在 $\text{CO}$ 氧化反应中的催化活性和耐久性  
王凌翔, 王亮, 张建, 王海, 肖丰收

1615

C-I共掺杂多孔 $g\text{-C}_3\text{N}_4$ 光催化分解水制氢  
杨传锋, 滕伟, 宋艳华, 崔言娟

1625

*Brevibacterium epidermidis*催化酮不对称还原胺化合成(S)-手性胺  
李清华, 董源, 陈飞飞, 柳磊, 李春秀, 许建和, 郑高伟

1633

改进的石墨烯基材料用作菜籽油转酯化反应制生物柴油的有效催化剂  
Justina Gaidukevič, Jurgis Barkauskas, Anna Malaika, Paulina Rechnia-Goraćy, Aleksandra Moźdzynska, Vitalija Jasulaitienė, Mieczysław Kozłowski

1646

铈(I)/三- $\text{H}_8$ -联萘单齿亚磷酸酯高效催化双环戊二烯氢甲酰化制备双醛  
田密, 李海峰, 王来来

1653

Ho改性的 $\text{Mn-Ce/TiO}_2$ 催化剂低温脱硝性能的评价和表征  
李伟, 张成, 李鑫, 谭鹏, 周安鹏, 方庆艳, 陈刚

1664

小麦粉衍生中孔氮掺杂颗粒炭负载金催化剂用于乙炔氢氯化反应  
刘杰, 蓝国钧, 邱一洋, 王小龙, 李瑛

1672

高压放电-光催化剂体系中低温等离子对 $g\text{-C}_3\text{N}_4$ 的影响  
王小平, 陈义霞, 傅敏, 陈咨含, 黄秋林

1683

三维有序大孔 $\text{SnO}_2$ 基固溶体用于有效燃烧碳烟颗粒  
饶成, 刘瑞, 冯小辉, 沈家庭, 彭洪根, 徐香兰, 方修忠, 刘建军, 王翔

1695

活性氧自由基生成及传输对 $g\text{-C}_3\text{N}_4$ 上 $\text{NO}$ 光催化去除的影响: 原位红外光谱与计算模拟结合法  
李解元, 颜萍, 李康璐, 岑望来, 于晓巍, 袁山东, 楚英豪, 王正明

1704

非晶 $\text{TiO}_2$ 修饰 $\text{CuBi}_2\text{O}_4$ 光阴极增强其光电化学产氢活性  
朱相林, 管子涵, 王朋, 张倩倩, 戴瑛, 黄柏标

1711

$\text{Cu-LaCoO}_3$ 催化剂选择氢解生物质基糠醇制备1,5-和1,2-戊二醇  
高芳芳, 刘海龙, 胡勋, 陈静, 黄志威, 夏春谷

英文全文电子版(国际版)由Elsevier出版社在ScienceDirect上出版  
<http://www.sciencedirect.com/science/journal/18722067>  
<http://www.elsevier.com/locate/chnjc>  
[www.cjatal.org](http://www.cjatal.org)  
在线投审稿网址  
<https://mc03.manuscriptcentral.com/cjatal>