



Chinese Journal of Catalysis

www.cjcatal.org

Volume 40 | Number 11 | November 2019

庆祝中国科学院大连化学物理研究所建所70周年专刊

Special issue on celebrating the 70th anniversary of Dalian Institute of Chemical Physics,
Chinese Academy of Sciences

Guest Editors: Can Li (李灿), Tao Zhang (张涛), Zhongmin Liu (刘中民)

中国科学院 大连化学物理研究所



1949-2019



CHINESE
CHEMICAL
SOCIETY

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

In This Issue



Cover: The year 2019 marks the 70th anniversary of the Dalian Institute of Chemical Physics, Chinese Academy of Sciences (abbreviated as DICP). Since its foundation, DICP has been at the forefront of fundamental and applied sciences and technologies that closely response the scientific and economic demands of China. After the efforts of several generations, DICP has gained a high reputation in chemistry research, covering from fundamental studies, technology development to industrial applications. Especially, DICP has made great contributions in the field of catalysis. To celebrate the 70th anniversary, the journal publishes this special issue. Internationally renowned catalysis scientists were kindly invited to make contributions. The special issue contains 23 papers, including 2 Editorials, 3 Reviews, 1 Communication, and 17 research Articles that cover aspects of both fundamental studies and industrial applications.

封面: 2019 年是中国科学院大连化学物理研究所 (简称大连化物所) 建所 70 周年。大连化物所是一个基础研究与应用研究并重、应用研究和技术转化相结合, 以任务带学科为主要特色的综合性研究所。七十年来, 研究所不断积累和调整, 逐步在催化化学、工程化学、化学激光、分子反应动力学、分析化学和生物技术等领域形成了特色。特别是在催化化学领域取得了一系列重大科技成果, 为科学技术发展做出了重要的贡献。本期庆祝大连化物所建所 70 周年专刊共邀请国际催化领域权威专家的 23 篇文章, 包括 2 篇回顾、3 篇综述、1 篇快讯和 17 篇论文, 展示了国际国内催化领域的研究进展及大连化物所在催化领域所取得的成就。

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.

Impact Factor

2018 SCI Impact Factor: **4.914**
2018 SCI 5-Year Impact Factor: 3.618

Abstracting and Indexing

Abstract Journals (VINITI)
Cambridge Scientific Abstracts (CIG)
Catalysts & Catalysed Reactions (RSC)
Current Contents/Engineering, Computing and Technology
(Clarivate Analytics ISI)
Chemical Abstract Service/SciFinder (CAS)
Chemistry Citation Index
(Clarivate Analytics ISI)
Japan Information Center of Science and Technology
Journal Citation Reports/Science Edition
(Clarivate Analytics ISI)
Science Citation Index Expanded
(Clarivate Analytics ISI)
SCOPUS (Elsevier)
Web of Science (Clarivate Analytics ISI)

Publication Monthly (12 issues)
Started in March 1980
Transaction of The Catalysis Society of China
Superintended by

Chinese Academy of Sciences (CAS)

Sponsored by

Chinese Chemical Society and Dalian
Institute of Chemical Physics, CAS

Editors-in-Chief Can Li, Tao Zhang

Edited by Editorial Board of

Chinese Journal of Catalysis

Tel.: +86-411-84379240

E-mail: cjatal@dicp.ac.cn

Add.: Dalian Institute of Chemical

Physics, CAS, 457 Zhongshan Road,

Dalian 116023, Liaoning, China

Published by Science Press

Distributed by Science Press,

16 Donghuangchenggen North Street, Beijing
100717, China, Tel: +86-10-64017032

E-mail: sales_journal@mail.sciencep.com

Subscription Agents

Domestic All Local Post Offices in China

Foreign China International Book Trading
Corporation, P.O.Box 399, Beijing 100044,
China

Printed by

Dalian Haida Printing Company, Limited

Price \$60

月刊 SCI收录 1980年3月创刊

中国化学会催化学会会刊

主管 中国科学院

主办 中国化学会

中国科学院大连化学物理研究所

主编 李 灿 张 涛

编辑 《催化学报》编辑委员会

出版 科学出版社

编辑部联系方式:

地址: 大连市沙河口区中山路 457 号

中国科学院大连化学物理研究所

邮编: 116023

电话: (0411)84379240

传真: (0411)84379543

电子信箱: cjatal@dicp.ac.cn

国内统一连续出版物号 CN 21-1601/06

国际标准连续出版物号 ISSN 0253-9837

CODEN THHPD3

广告经营许可证号 2013003

总发行 科学出版社

北京东黄城根北街16号, 邮编: 100717

电话: (010) 64017032

E-mail: sales_journal@mail.sciencep.com

国内订购 全国各地邮政局

邮发代号 8-93

国外订购 中国国际图书贸易总公司

北京399信箱 邮编 100044

国外发行代号 M417

印刷 大连海大印刷有限公司

定价 60元

公开发 行

The Fifth Editorial Board of *Chinese Journal of Catalysis*

《催化学报》第五届编辑委员会

Advisors (顾问)

Alexis T. Bell (美国)	Mingyuan He (何鸣元)	Huilin Wan (万惠霖)
Jürgen Caro (德国)	Graham J. Hutchings (英国)	Youchang Xie (谢有畅)
Gabriele Centi (意大利)	Johannes A. Lercher (德国)	Qin Xin (辛勤)
Yi Chen (陈懿)	S. Ted. Oyama (日本)	Xiaoming Zheng (郑小明)
Avelino Corma (西班牙)	Daniel E. Resasco (美国)	
Zi Gao (高滋)	Rutger A. van Santen (荷兰)	
Masatake Haruta (日本)	Ferdi Schüth (德国)	

Editors-in-Chief (主编)

Can Li (李灿)	Tao Zhang (张涛)
-------------	----------------

Associate Editors (副主编)

Xingwei Li (李兴伟)	Roel Prins (瑞士)	Peng Wu (吴鹏)
Haichao Liu (刘海超)	Junwang Tang (唐军旺, 英国)	Qihua Yang (杨启华)

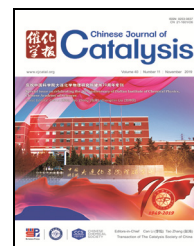
Members (编委)

Xinhe Bao (包信和)	Yongdan Li (李永丹)	Zili Wu (吴自力, 美国)
Yong Cao (曹勇)	Changjun Liu (刘昌俊)	Chungu Xia (夏春谷)
De Chen (陈德, 挪威)	Jingyue Liu (刘景月, 美国)	Fengshou Xiao (肖丰收)
Jingguang G. Chen (陈经广, 美国)	Zhongmin Liu (刘中民)	Jianliang Xiao (肖建良, 英国)
Weiping Ding (丁维平)	An-Hui Lu (陆安慧)	Zaiku Xie (谢在库)
Yunjie Ding (丁云杰)	Marcel Schlaf (加拿大)	Boqing Xu (徐柏庆)
Xianzhi Fu (付贤智)	Susannah L. Scott (美国)	Jie Xu (徐杰)
Naijia Guan (关乃佳)	Jianyi Shen (沈俭一)	Longya Xu (徐龙偃)
Xinwen Guo (郭新闻)	Wenjie Shen (申文杰)	Yushan Yan (严玉山, 美国)
Hongxian Han (韩洪宪)	Chunshan Song (宋春山, 美国)	Weimin Yang (杨为民)
Heyong He (贺鹤勇)	Baolian Su (苏宝连, 比利时)	Weishen Yang (杨维慎)
Hong He (贺泓)	Zhiyong Tang (唐智勇)	Shuangfeng Yin (尹双凤)
Emiel J. M. Hensen (荷兰)	Zhijian Tian (田志坚)	Jiaguo Yu (余家国)
Jiahui Huang (黄家辉)	Ying Wan (万颖)	Youzhu Yuan (袁友珠)
George W. Huber (美国)	Aiqin Wang (王爱琴)	Zongchao Zhang (张宗超)
Huanwang Jing (景欢旺)	Dezheng Wang (王德峰)	Huijun Zhao (赵惠军, 澳大利亚)
Alexander Katz (美国)	Feng Wang (王峰)	Zhen Zhao (赵震)
Jinlin Li (李金林)	Jianguo Wang (王建国)	Xiao-Dong Zhou (周晓东, 美国)
Jun Li (李隽)	Ye Wang (王野)	Yonggui Zhou (周永贵)
Junhua Li (李俊华)	Yong Wang (王勇, 美国)	
Weixue Li (李微雪)	Yingxu Wei (魏迎旭)	
Yingwei Li (李映伟)	Zidong Wei (魏子栋)	

Young Members (青年编委)

Bingyang Bai (拜冰阳)	Rengui Li (李仁贵)	Guoxiong Wang (汪国雄)
Shaowen Cao (曹少文)	Xiang Li (李翔)	Xiuli Wang (王秀丽)
Weili Dai (戴卫理)	Xin Li (李鑫)	Yujie Xiong (熊宇杰)
Jiguang Deng (邓积光)	Zhenxing Liang (梁振兴)	Fan Yang (杨帆)
Yong Ding (丁勇)	Gang Liu (刘钢)	Hengquan Yang (杨恒权)
Fan Dong (董帆)	Gang Liu (刘岗)	Changlin Yu (余长林)
Pingwu Du (杜平武)	Mingce Long (龙明策)	Huogen Yu (余火根)
Fengtao Fan (范峰滔)	Kangle Lv (吕康乐)	Yunbo Yu (余运波)
Yanlong Gu (顾彦龙)	Botao Qiao (乔波涛)	Wangcheng Zhan (詹望成)
Yanqiang Huang (黄延强)	Yong Qin (覃勇)	Jing Zhang (张静)
Changzhi Li (李昌志)	Feng Shi (石峰)	Wenzhen Zhang (张文珍)
Fei Li (李斐)	Wei Sun (孙伟)	Liangshu Zhong (钟良枢)

Online Submission <https://mc03.manuscriptcentral.com/cjatal>, <http://www.elsevier.com/locate/chnjc>
Homepage <http://www.cjatal.org>, <http://www.journals.elsevier.com/chinese-journal-of-catalysis>

available at www.sciencedirect.comjournal homepage: www.elsevier.com/locate/chnjc

Special Issue on Celebrating the 70th Anniversary of Dalian Institute of Chemical Physics, Chinese Academy of Sciences

Guest Editors: Can Li, Tao Zhang, Zhongmin Liu

Chinese Journal of Catalysis

Graphical Contents

Editorials

Chin. J. Catal., 2019, 40: 1589–1590 doi: S1872-2067(19)63457-1

Preface to Special Issue on Celebrating the 70th Anniversary of Dalian Institute of Chemical Physics, Chinese Academy of Sciences

Can Li, Tao Zhang, Zhongmin Liu

Dalian Institute of Chemical Physics, CAS; Chinese Academy of Sciences, China*Chin. J. Catal.*, 2019, 40: 1591–1614 doi: S1872-2067(19)63483-2

History of the Dalian Institute of Chemical Physics and the friendship between China and Japan in catalysis

S. Ted Oyama* with Qin Xin, Guoxing Xiong, Wenjie Shen, Jie Xu, Hongmei Yin, Youzhu Yuan, Haichao Liu, Huidong Zheng
*Fuzhou University, China; The University of Tokyo, Japan; Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China;
Xiamen University, China; Peking University, China*

The year 2019 marks the 70th anniversary of the beginning of the Dalian Institute of Chemical Physics, Chinese Academy of Sciences (DICP). This article presents a history of the origins of DICP and relates the recent friendship between China and Japan in the field of catalysis.

Chin. J. Catal., 2019, 40: 1615–1626 doi: S1872-2067(19)63482-0

An odyssey: The Way Chinese catalysis towards the world

Qin Xin *, Yongxue Li

Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China; University of Liverpool, UK

With the careful planning and arrangements by the Chinese catalytic elites, the quadrennial grand event in the international catalytic world—the 16th International Congress on Catalysis (ICC) was successively held in Beijing presentations indicating the frontiers of the catalytic science and the magnanimity of the organizers. This paper reviewed the development of catalytic science and technology of China from scratch to small then to large under the efforts of several generations.



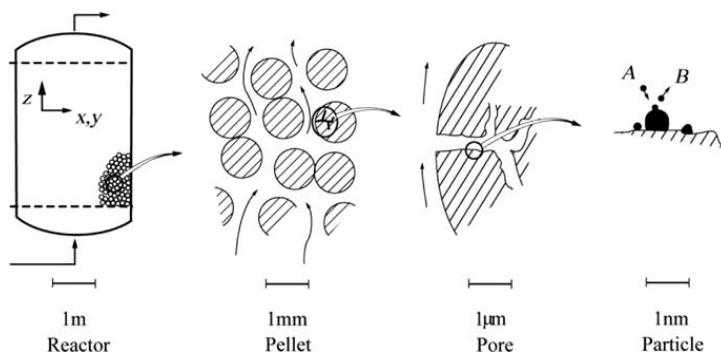
Reviews

Chin. J. Catal., 2019, 40: 1627–1636 doi: 10.1016/S1872-2067(18)63162-6

Importance, features and uses of metal oxide catalysts in heterogeneous catalysis

Jacques C. Védrine *

Sorbonne Université, France



This review aims at assembling the present state of the art of the multiuses of metal oxides in heterogeneous catalysis, concerning liquid and gaseous phases of the reactant mixtures on solid catalysts.

Chin. J. Catal., 2019, 40: 1637–1654 doi: S1872-2067(19)63372-3

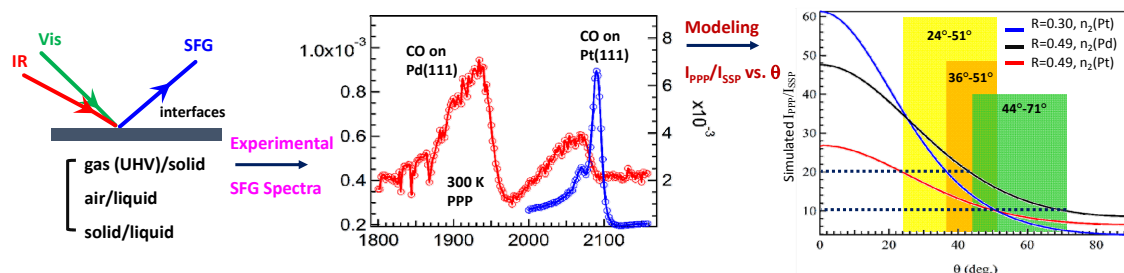
Advanced characterization for industrial catalysis applications

Shelly Kelly *, Wharton Sinkler *, Lijun Xu, Sergio Sanchez, Cem Akatay, Haiyan Wang, John Qianjun Chen
Honeywell UOP, USA



Surface and bulk chemistry characterization is reviewed for two major catalytic functions: Supported Pt nano-clusters and layered Group VI sulfides. Trends are identified relating structure with catalytic activity, and areas for improvement.

Chin. J. Catal., 2019, 40: 1655–1667 doi: S1872-2067(19)63357-7

A modeling analysis of molecular orientation at interfaces by polarization-dependent sum frequency generation vibrational spectroscopyXia Li, Günther Rupprechter*
Technische Universität Wien, Austria

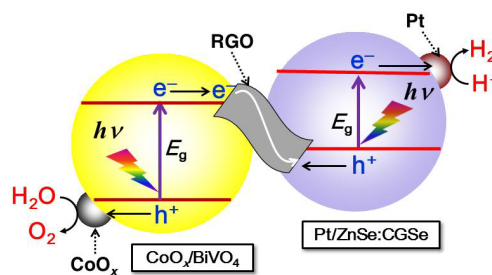
Even slight changes of refractive index (medium 2) and hyperpolarizability ratio ($R = \beta_{\text{aac}}/\beta_{\text{ccc}}$), which are usually rather ignored, have significant effects on the SFG spectral intensity and molecular orientation of gas (UHV)/solid, air/liquid and solid/liquid interfaces.

Communication

Chin. J. Catal., 2019, 40: 1668–1672 doi: S1872-2067(19)63326-7

Metal selenides for photocatalytic Z-scheme pure water splitting mediated by reduced graphene oxideShanshan Chen, Takashi Hisatomi, Guijun Ma, Zheng Wang,
Zhenhua Pan, Tsuyoshi Takata, Kazunari Domen*
Shinshu University, Japan; The University of Tokyo, Japan

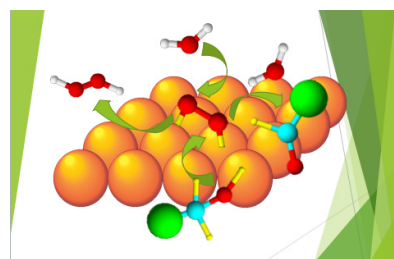
Powder suspension Z-scheme pure water splitting systems employing narrow bandgap metal selenides, $\text{CoO}_x/\text{BiVO}_4$, and reduced graphene oxide as the H_2 evolving photocatalyst, O_2 evolving photocatalyst, and electron mediator, respectively, are demonstrated.

**Articles**

Chin. J. Catal., 2019, 40: 1673–1678 doi: S1872-2067(19)63327-9

Prospect of vapor phase catalytic H_2O_2 production by oxidation of waterMayfair C. Kung, Harold H. Kung*
Northwestern University, USA

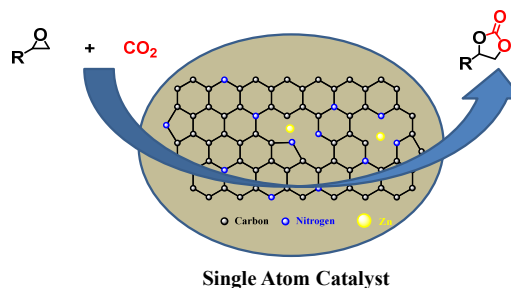
Efficient coupling of some catalytic organic oxidation reactions with oxidation of water by molecular oxygen enables production of hydrogen peroxide.



Chin. J. Catal., 2019, 40: 1679–1685 doi: S1872-2067(19)63316-4

Zinc single atoms on N-doped carbon: An efficient and stable catalyst for CO_2 fixation and conversionXinjiang Cui, Xingchao Dai, Annette-Enrica Surkus, Kathrin Junge,
Carsten Kreyenschulte, Giovanni Agostini, Nils Rockstroh,
Matthias Beller*
Leibniz-Institut für Katalyse e.V., Germany; Lanzhou Institute of
Chemical Physics, Chinese Academy of Sciences, China

A novel Zn single atom catalyst (Zn-SAC) supported on N-doped carbon material was prepared. The resulting catalyst allows for efficient and general activation of functionalized terminal epoxides to give the corresponding carbonates in high yields.



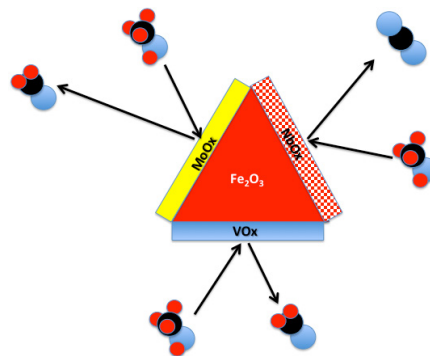
Chin. J. Catal., 2019, 40: 1686–1692 doi: S1872-2067(19)63350-4

Methanol oxidation over shell-core $\text{MO}_x/\text{Fe}_2\text{O}_3$ ($\text{M} = \text{Mo}, \text{V}, \text{Nb}$) catalysts

Pip Hellier, Peter P. Wells, Michael Bowker *

UK Catalysis Hub, UK; Cardiff University, UK; University of Southampton, UK; Diamond Light Source Ltd, UK

Methanol oxidation on three surface oxides on Fe_2O_3 showing the main carbon products. Mo and V monolayers are selective to formaldehyde, while Nb does not make complete monolayers and mainly combusts to CO_2 .



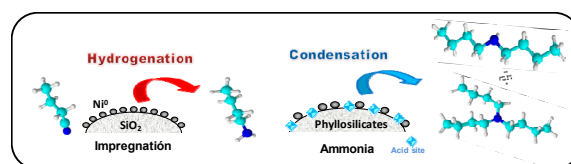
Chin. J. Catal., 2019, 40: 1693–1703 doi: 10.1016/S1872-2067(18)63179-1

Effect of the catalyst preparation method on the performance of Ni-supported catalysts for the synthesis of saturated amines from nitrile hydrogenation

D. J. Segobia, A. F. Trasarti, C. R. Apesteguía *

INCAPE, UNL-CONICET, CCT Conicet- Paraje El Pozo, Argentina

Ni/SiO_2 prepared by the ammonia method forms selectively secondary and tertiary amines from butyronitrile hydrogenation. The catalyst contains Ni^0 nanoparticles in close contact with Ni^{+2} species in Ni phyllosilicates that favor the condensation reactions.



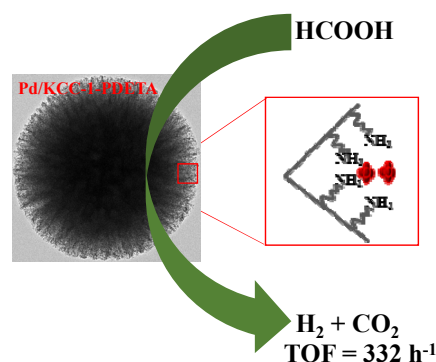
Chin. J. Catal., 2019, 40: 1704–1712 doi: S1872-2067(19)63303-6

Catalytic dehydrogenation of formic acid over palladium nanoparticles immobilized on fibrous mesoporous silica KCC-1

Siqian Zhang, Yingjie Qian, Wha-Seung Ahn *

Inha University, Republic of Korea

Highly efficient dehydrogenation of formic acid without any additives at 323 K was achieved using Pd nanoparticles supported on amine-functionalized fibrous silica KCC-1.



♦ Pd (nanoparticle size=2.75 nm)

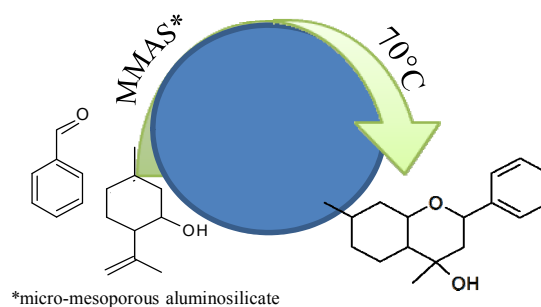
■ N-(3-trimethoxysilylpropyl) diethylenetriamine (PDETA)

Chin. J. Catal., 2019, 40: 1713–1720 doi: S1872-2067(19)63305-X

Prins cyclisation of (-)-isopulegol with benzaldehyde over ZSM-5 based micro-mesoporous catalysts for production of pharmaceuticals

Ekaterina Kholkina, Päivi Mäki-Arvela, Chloe Lozachmeur, Roman Barakov, Nataliya Shcherban, Dmitry Yu. Murzin
Åbo Akademi University, Finland; National Academy of Sciences of Ukraine, Ukraine

Strongly acidic MMAS catalysts were beneficial in Prins cyclisation for production of biologically active 2H-chromene derivatives.

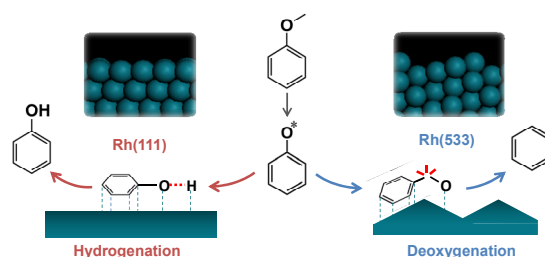


*micro-mesoporous aluminosilicate

Chin. J. Catal., 2019, 40: 1721–1730 doi: S1872-2067(19)63345-0

Hydrodeoxygenation of anisole over different Rh surfaces

Nhung N. Duong, Darius Aruho, Bin Wang *, Daniel E. Resasco *
University of Oklahoma, USA; Vietnam National University, Vietnam

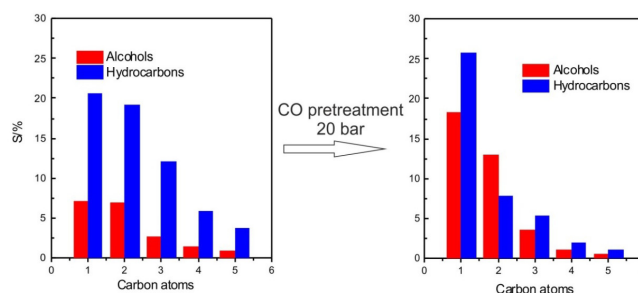


Manipulating the surface coordination of rhodium atoms can greatly affect the metal oxophilicity and in turn control its activity for C–O bond cleavage. In the hydrodeoxygenation of anisole, a step surface favors deoxygenation to benzene while a smooth terrace prefers hydrogenation to phenol.

Chin. J. Catal., 2019, 40: 1731–1740 doi: S1872-2067(19)63344-9

On the role of cobalt carbidization in higher alcohol synthesis over hydrotalcite-based Co-Cu catalysts

Janine Nebel, Stefan Schmidt, Qiushi Pan, Katrin Lotz, Stefan Kaluza *, Martin Muhler *
Ruhr-University Bochum, Germany; Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT, Germany

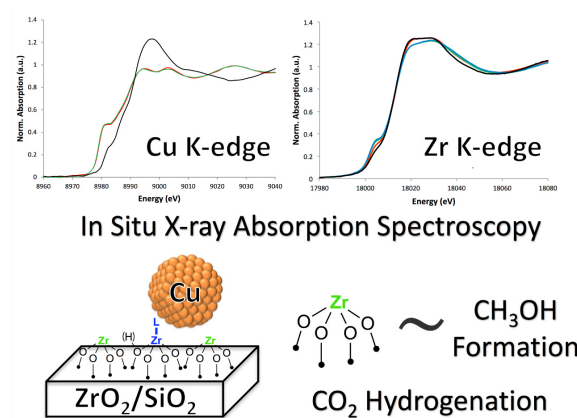


CO pretreatment at elevated pressure enhances the selectivities to linear alcohols through surface cobalt enrichment and carbide formation.

Chin. J. Catal., 2019, 40: 1741–1748 doi: S1872-2067(19)63348-6

Zr(IV) surface sites determine CH₃OH formation rate on Cu/ZrO₂/SiO₂ - CO₂ hydrogenation catalysts

Erwin Lam, Kim Larmier, Shohei Tada, Patrick Wolf, Olga V. Safonova, Christophe Copéret *
ETH Zürich, Switzerland; Paul Scherrer Institute, Switzerland; IFP Energies Nouvelles, Rond-Point de l'échangeur de Solaize, France; The University of Tokyo, Japan



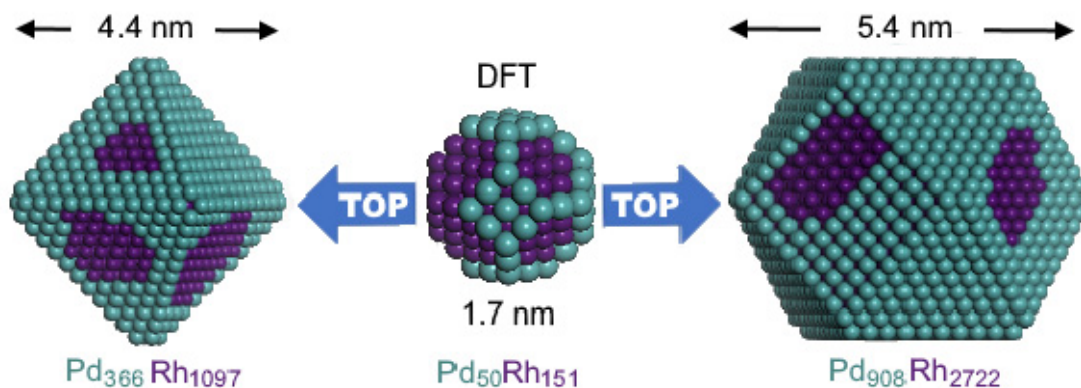
Density and role of Lewis acidic Zr(IV) surface sites in Cu/SiO₂/ZrO₂ based catalyst to promote CO₂-to-CH₃OH synthesis is elucidated by in-situ X-ray absorption spectroscopy.

Chin. J. Catal., 2019, 40: 1749–1757 doi: S1872-2067(19)63362-0

Using density functional calculations to elucidate atomic ordering of Pd-Rh nanoparticles at sizes relevant for catalytic applications

Lorena Vega, Hristiyan A. Aleksandrov *, Konstantin M. Neyman *

University of Barcelona, Spain; University of Sofia, Bulgaria; Catalan Institution for Research and Advanced Studies (ICREA), Spain



Catalytically active Pd-Rh nanoparticles adapt their surface to chemical environment. Density functional modelling identifies surface composition of Pd-Rh particles containing thousands atoms and paves the way for evaluating surface segregation caused by adsorbed reactants.

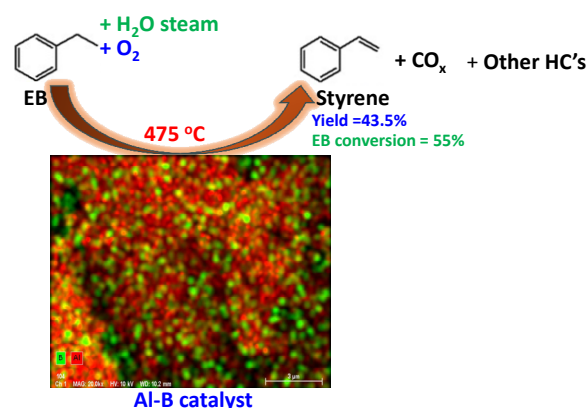
Chin. J. Catal., 2019, 40: 1758–1765 doi: S1872-2067(19)63432-7

Alumina-boron catalysts for oxidative dehydrogenation of ethylbenzene to styrene: Influence of alumina-boron composition and method of preparation on catalysts properties

Nagaraju Pasupulety *, Muhammad A. Daous,

Abdulrahim A. Al-Zahrani, Hafedh Driss, Lachezar A. Petrov *

King Abdulaziz University, Saudi Arabia



Boron addition to Al improved the acidity of the Al-B catalysts. Styrene formation depends on the nature of acid sites which were influenced by the Al-B catalyst method of preparation.

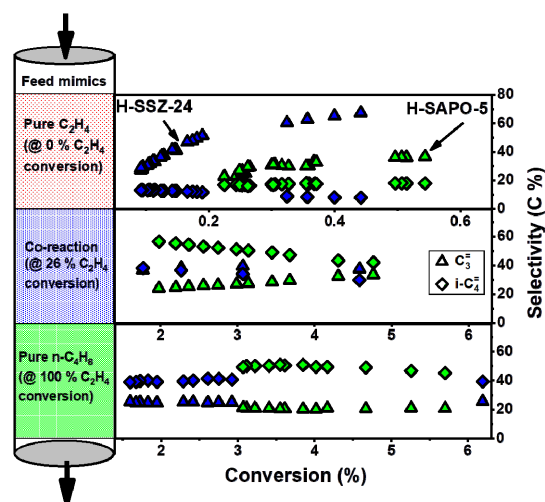
Chin. J. Catal., 2019, 40: 1766–1777 doi: S1872-2067(19)63426-1

Ethene and butene oligomerization over isostructural H-SAPO-5 and H-SSZ-24: Kinetics and mechanism

Christian Ahoba-Sam, Marius Westgård Erichsen, Unni Olsbye *

University of Oslo, Norway

Reactor with three zones; representing the three measurement regimes. On the side; three typical conversion - selectivity graphs for H-SAPO-5 and H-SSZ-24, representing C3-C5 alkene selectivity in the three regimes.

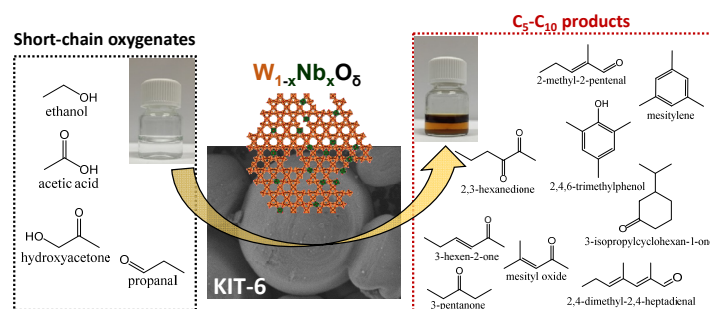


Chin. J. Catal., 2019, 40: 1778–1787 doi: S1872-2067(19)63419-4

Reflux-synthesized bulk and diluted W-Nb-O mixed oxide bronzes for the valorization of short-chain oxygenates aqueous mixtures

D. Delgado, A. Fernández-Arroyo, N. La Salvia, M. E. Domine *, Jose M. López Nieto *

Instituto de Tecnología Química, Universitat Politècnica de València-Consejo Superior de Investigaciones Científicas, Spain



The incorporation of Nb into the h - $W\text{O}_3$ framework by a reflux method leads to a loss of periodicity in the ab plane of the crystal structure, with a concomitant increase of surface Lewis acidity; thus giving rise to higher yields to C_5 - C_{10} products in the valorization of aqueous model mixtures of short-chain oxygenates.

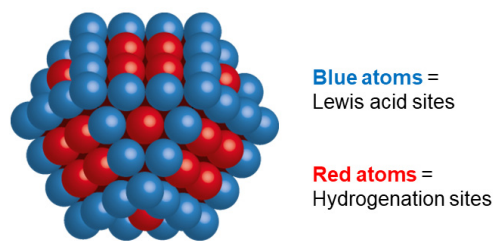
Chin. J. Catal., 2019, 40: 1788–1794 doi: S1872-2067(19)63392-9

Some insight on the structure/activity relationship of metal nanoparticles in Cu/SiO₂ catalysts

Nicola Scotti, Elisabetta Finocchio, Claudio Evangelisti, Marcello Marelli, Rinaldo Psaro, Nicoletta Ravasio *, Federica Zaccheria

CNR ISTM, Milano, Italy; University of Genoa, Genova, Italy

The activity of Cu/SiO₂ catalysts in the hydrogenation of 3-methyl-cyclohexanone was found to be linked to high coordination sites on the metal Cu particle, whereas acidic sites are represented by defective, low coordination sites.



Chin. J. Catal., 2019, 40: 1795–1799 doi: S1872-2067(19)63367-X

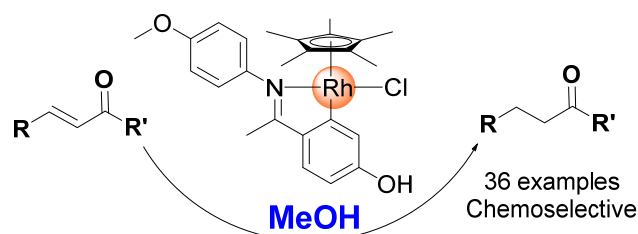
Methanol as hydrogen source: Chemoselective transfer hydrogenation of α,β -unsaturated ketones with a rhodacycle

Ahmed H. Abou, Robina Begum, Liangliang Zhao, Zahoor H. Farooqi, Jianliang Xiao *

University of Liverpool, United Kingdom;

University of the Punjab, Pakistan

A rhodacycle catalyzes highly selective transfer hydrogenation of α,β -unsaturated ketones with MeOH as the source of hydrogen, affording saturated ketones exclusively.



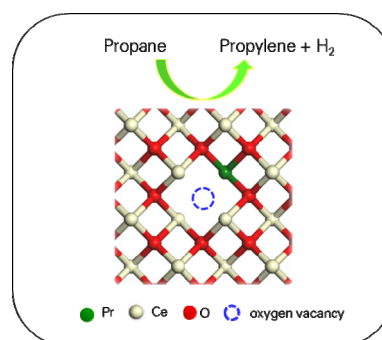
Chin. J. Catal., 2019, 40: 1800–1809 doi: S1872-2067(19)63369-3

Activation of small molecules over praseodymium-doped ceria

Meiling Guo, Xuebin Liu, Angelo Amorelli *

BP (China) Dalian Office, China; BP International, United Kingdom

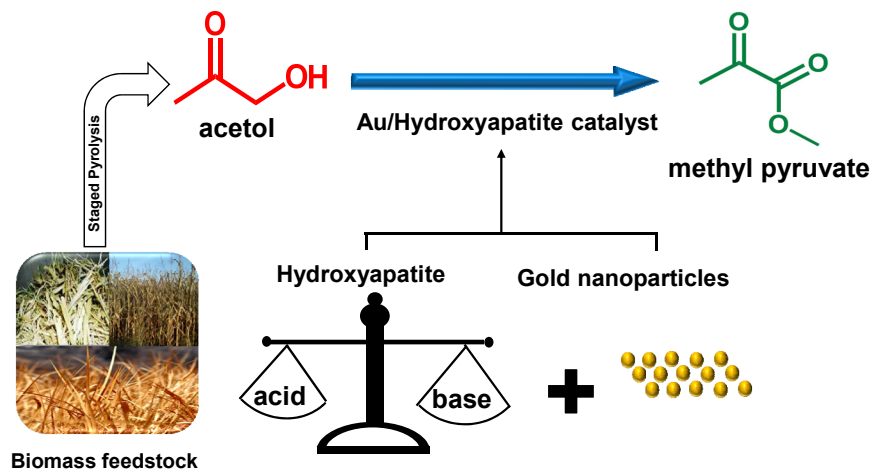
The praseodymium-doped ceria material in the absence of hydrogenation/dehydrogenation metals can selectively activate C–H bond of propane, giving a propylene selectivity of ca. 75% at a propane conversion of 5% to 10%.



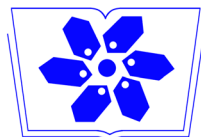
Chin. J. Catal., 2019, 40: 1810–1819 doi: S1872-2067(19)63368-1

Oxidative esterification of acetol with methanol to methyl pyruvate over hydroxyapatite supported gold catalyst: Essential roles of acid-base properties

Yan Wan, Congcong Zheng, Xianchi Lei, Mengqi Zhuang, Jinhan Lin, Wenda Hu, Jingdong Lin, Shaolong Wan*, Yong Wang
Xiamen University, China; Washington State University, USA



Au/hydroxyapatite (ratio of Ca/P = 1.62) catalyst exhibits superior performance toward the production of methyl pyruvate from bio-mass-derived acetol, where the featured acid-base properties in hydroxyapatite play an indispensable role.



中国科学院科学出版基金资助出版

月刊 SCI 收录 2019 年 11 月 第 40 卷 第 11 期



庆祝中国科学院大连化学物理研究所建所70周年专刊

专刊编辑: 李灿, 张涛, 刘中民

目次

编者语

1589

庆祝中国科学院大连化学物理研究所建所70周年专刊前言
李灿, 张涛, 刘中民

历史回顾

1591

中国科学院大连化学物理研究所的历史及中日催化界
友谊回顾
S. Ted Oyama 等

1615

中国催化界走向国际学术舞台的艰辛历程
辛勤, 李永学

综述

1627

金属氧化物催化剂在多相催化中的重要性、特点和应用
Jacques C. Védrine

1637

先进表征技术在工业催化中的应用
Shelly Kelly, Wharton Sinkler, Lijun Xu, Sergio Sanchez,
Cem Akatay, Haiyan Wang, John Qianjun Chen

1655

基于偏振依赖和频振动光谱模拟分析界面分子取向
Xia Li, Günther Rupprechter

快讯

1668

金属硒化物用于以石墨烯为电子介质的光催化Z机制全分解
水体系
陈闪山, 久富隆史, 马贵军, 王征, 潘振华, 高田刚, 堂免一成

论文

1673

气相催化水氧化制备H₂O₂的展望
Mayfair C. Kung, Harold H. Kung

1679

氮掺杂碳上单原子锌: CO₂固定和转化的高效稳定催化剂
Xinjiang Cui, Xingchao Dai, Annette-Enrica Surkus,
Kathrin Junge, Carsten Kreyenschulte, Giovanni Agostini,
Nils Rockstroh, Matthias Beller

1686

核壳结构MO_x/Fe₂O₃ (M = Mo, V, Nb)催化剂上
甲醇氧化反应
Pip Hellier, Peter P. Wells, Michael Bowker

1693

催化剂制备方法对用于腈加氢制饱和胺的负载型Ni催化
剂性能的影响
D. J. Segobia, A. F. Trasarti, C. R. Apesteguía

1704

纤维状中孔硅胶KCC-1负载的钨纳米颗粒上甲酸
催化脱氢反应
Siqian Zhang, Yingjie Qian, Wha-Seung Ahn

1713

基于ZSM-5的微孔-中孔催化剂上(-)-异蒲勒醇与苯甲醛
Prins环化反应合成药物
Ekaterina Kholkina, Päivi Mäki-Arvela, Chloe Lozachmeur,
Roman Barakov, Nataliya Shcherban, Dmitry Yu. Murzin

1721

不同Rh表面上苯甲醚加氢脱氧
Nhung N. Duong, Darius Aruho, Bin Wang, Daniel E. Resasco

1731

水滑石基钴铜催化剂中钴的碳化在高碳醇合成中的作用
Janine Nebel, Stefan Schmidt, Qiushi Pan, Katrin Lotz,
Stefan Kaluza, Martin Muhler

1741

CO₂加氢催化剂Cu/ZrO₂/SiO₂上Zr(IV)表面位对甲醇生成速
率的影响
Erwin Lam, Kim Larmier, Shohei Tada, Patrick Wolf,
Olga V. Safonova, Christophe Copéret

1749

利用密度泛函计算阐明Pd-Rh纳米颗粒在与催化应用相关尺寸下的原子排序

Lorena Vega, Hristiyan A. Aleksandrov, Konstantin M. Neyman

1758

用于乙苯氧化脱氢制苯乙烯铝-硼催化剂: 铝硼组成及制备方法对催化剂性能的影响

Nagaraju Pasupulety, Muhammad A. Daous, Abdulrahim A. Al-Zahrani, Hafedh Driss, Lachezar A. Petrov

1766

同型H-SAPO-5和H-SSZ-24上的乙烯和丁烯齐聚反应: 动力学和机理

Christian Ahoba-Sam, Marius Westgård Erichsen, Unni Olsbye

1778

回流合成体相的和稀释的青铜型W-Nb-O混合氧化物用于短链含氧化合物混合水溶液的定值化反应

D. Delgado, A. Fernández-Arroyo, N. La Salvia, M. E. Domine, Jose M. López Nieto

1788

铜/二氧化硅催化剂中金属纳米粒子构性关系的一些认识

Nicola Scotti, Elisabetta Finocchio, Claudio Evangelisti, Marcello Marelli, Rinaldo Psaro, Nicoletta Ravasio, Federica Zaccheria

1795

甲醇为氢源: Rhodacycle催化 α,β -不饱和酮化学选择性转移加氢反应

Ahmed H. Aboo, Robina Begum, Liangliang Zhao, Zahoor H. Farooqi, Jianliang Xiao

1800

锆掺杂氧化铈材料在小分子活化中的应用

郭美玲, 刘雪斌, Amorelli Angelo

1810

羟基磷灰石负载金催化丙酮醇与甲醇氧化酯化合成丙酮酸甲酯: 酸碱性质的基本作用

Yan Wan, Congcong Zheng, Xianchi Lei, Mengqi Zhuang, Jinhan Lin, Wenda Hu, Jingdong Lin, Shaolong Wan, Yong Wang

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.cjcatal.org

在线投审稿网址

<https://mc03.manuscriptcentral.com/cjcatal>



Chinese Journal of Catalysis

One of the fastest growing journals in international catalysis community

SCI Impact Factor

4.914 in 2019



Initiated from Chinese catalysis society, becoming a truly international journal

■ Editors-in-Chief



Prof. Can Li

Dalian Institute of Chemical Physics,
Chinese Academy of Sciences, China



Prof. Tao Zhang

- Heterogeneous, homogeneous, photo-, electro-, and bio-catalysis for energy, environment, chemicals, fine chemicals and pharmaceuticals
- Article, Review, Communication, Highlight, Perspective, Viewpoint
- Online submission
- Rapid peer review (3-28 d) and online publication (7-70 d)
- No submission fee or page charge
- Free electronic prints

Manuscript submission <https://mc03.manuscriptcentral.com/cjatal>
<http://www.journals.elsevier.com/chinese-journal-of-catalysis>
<http://www.cjatal.org>

