

<http://www.chxb.cn>

ISSN 0253-9837

CN 21-1195/O6

CODEN THHPD3

催化学报

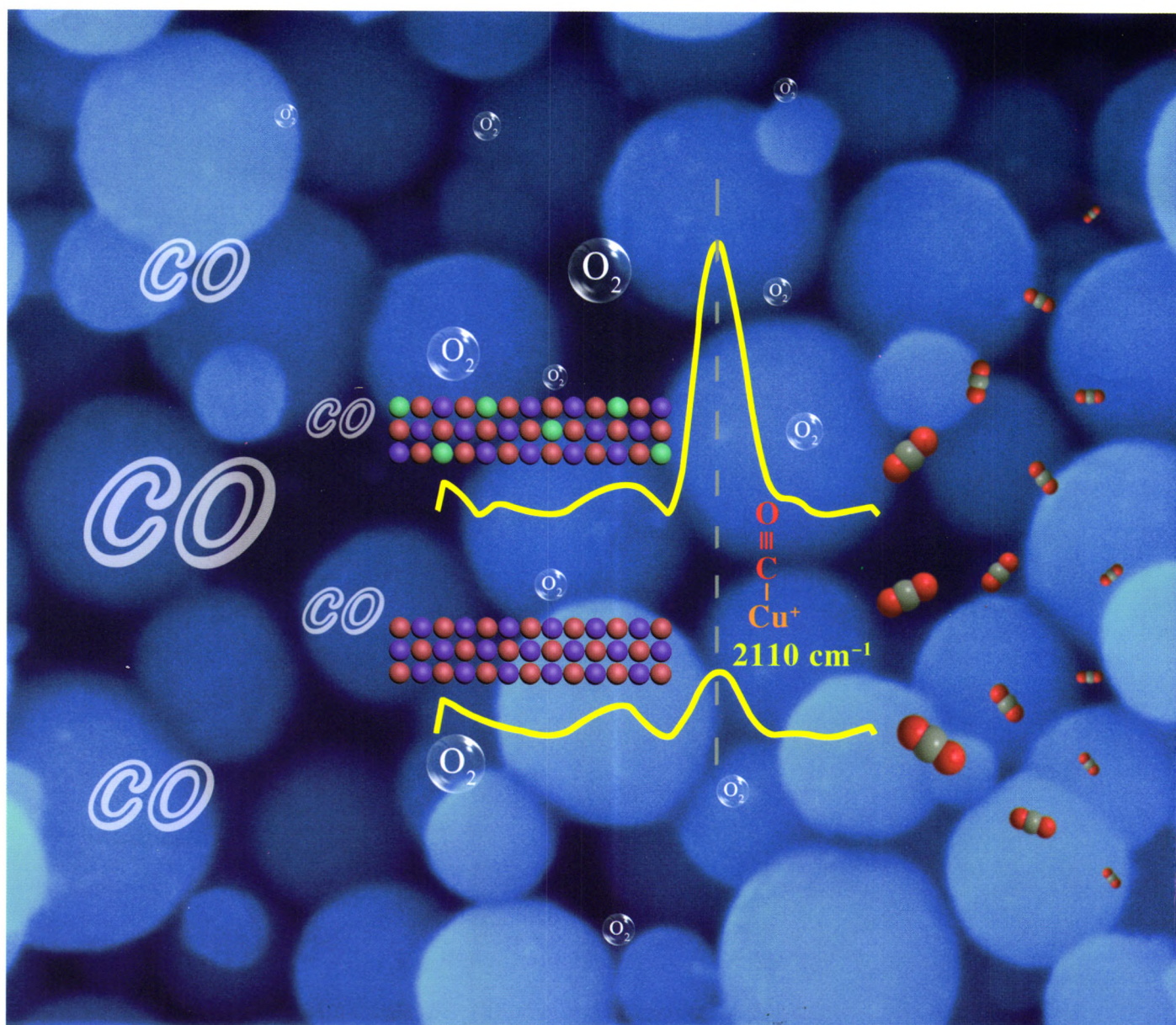
Chinese Journal of Catalysis

主编 林励吾

Editor-in-Chief LIN Liwu

2014

Vol. 35 No. 2



ISSN 0253-9837



万方数据

中国化学会催化学会会刊

Transaction of the Catalysis Society of China



中国科学院科学出版基金资助出版

催化学报

(CUIHUA XUEBAO)

CHINESE JOURNAL OF CATALYSIS

月刊 SCI 收录 2014 年 2 月 第 35 卷 第 2 期



目次

研究论文

159 (英/中/封面文章)

过渡金属氧化物掺杂对铜锰氧化物催化 CO 氧化性能的影响

蔡丽娜, 胡臻皓, Peter Branton, 李文翠

168 (英)

采用溶胶-凝胶-溶剂热路径合成 $\text{H}_3\text{PW}_{12}\text{O}_{40}/\text{TiO}_2$ 和 $\text{H}_4\text{SiW}_{12}\text{O}_{40}/\text{TiO}_2$ 及其光催化降解二硝基甲苯

冯长根, 尚海茹, 刘霞

175 (英/中)

国产航空煤油裂解催化剂 $\text{Pt}/\text{Zr}_x\text{Ti}_x\text{Al}_{1-2x}\text{O}_2$ 的性能

焦毅, 王健礼, 朱权, 李象远, 陈耀强

185 (英/中)

MOF(Fe)的制备及其氧气还原催化性能

宋国强, 王志清, 王亮, 李国儒, 黄敏建, 银凤翔

196 (英)

用于吡内酯合成的二氧化钛纳米晶体材料

Priyanka Anandgaonker, Ganesh Kulkarni, Suresh Gaikwad, Anjali Rajbhoj

201 (英)

尿酸和叶酸存在下改性碳纳米管糊电极上多巴胺电催化氧化

Mohammad Mazloum-Ardakani, Mahboobe Abolhasani, Bibi-Fatemeh Mirjalili, Mohammad Ali Sheikh-Mohseni, Afsaneh Dehghani-Firouzabadi, Alireza Khoshroo

210 (英)

X射线光电子能谱法研究 $\text{UV}_{254\text{nm}}$ 光催化、 O_3 强化 $\text{UV}_{254\text{nm}}$ 光催化和真空紫外光催化降解甲醛中 $\text{Pt}-\text{TiO}_2$ 薄膜的表面性质

傅平丰, 张彭义

219 (英/中)

丝网印刷法制备高催化活性对电极

赵春雨, 史彦涛, 钟志勇, 马廷丽

227 (英)

铈-ImiFerroPhos 配合物对 β -取代- α,β -不饱和磷酸酯的不对称氢化

段正超, 王联芝, 左晓宇, 胡向平, 郑卓

232 (英)

NaOH 改性 WO_3/SiO_2 催化剂催化 2-丁烯和乙烯复分解制丙烯

Surasa Maksasithorn, Damien P. Debecker, Piyasan Praserttham, Joongjai Panpranot, Kongkiat Suriye, Sirachaya Kunjara Na Ayudhya

242 (英)

二氧化硅键合丙基哌-N-氨基磺酸作为可回收固体酸催化剂制备 2-氨基-3-氰基-4-芳基-5,10-二氧代-5,10-二氢-4*H*-苯并[g] 苯并吡喃和羟基取代的萘-1,4-二酮衍生物

Fahime Khorami, Hamid Reza Shaterian

247 (英)

掺杂双 (*N*-2-甲基苯基-水杨醛亚胺)合铜(II) 配合物的碳糊电极电催化测量过氧化氢

Hossein Khoshro, Hamid R. Zare, Rasoul Vafazadeh

255 (英)

CO 在修饰的邻位 Cu(100) 表面低温吸附的对比研究

Przemysław Jan Godowski, Jens Onsgaard

260 (英)

新型多功能三溴三聚氰胺催化剂催化醇甲酰化和乙酰化反应

Maryam Hajjami, Arash Ghorbani-Choghamarani, Zahra Karamshahi, Masoomah Norouzi

264 (英)

铈改性的沸石 Y 上醇类和胺类的氰乙基化反应

Sara Zamanian, Ali Nemati Kharat

270 (英)

铋和镍对钒磷氧化物催化剂性能的影响

Yun Hin Taufiq-Yap, Choon Seon Yuen, Nawi @ Mohamed Nurul Suziana, Ramli Irmawati

相关信息

277 作者索引

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>

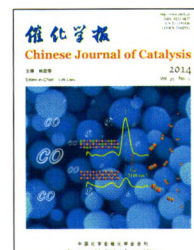
<http://www.chxb.cn>



available at www.sciencedirect.com



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



Chinese Journal of Catalysis

Graphical Contents

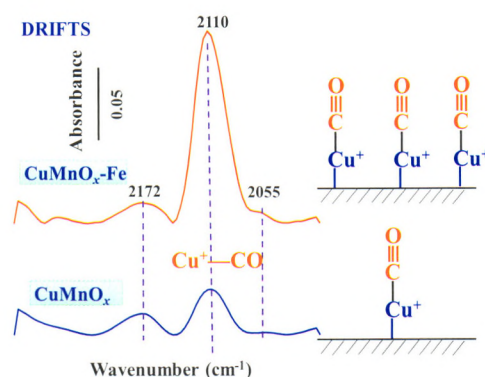
Articles

Chin. J. Catal., 2014, 35: 159–167 doi: 10.1016/S1872-2067(12)60699-8

The effect of doping transition metal oxides on copper manganese oxides for the catalytic oxidation of CO

Lina Cai, Zhenhao Hu, Peter Branton, Wencui Li*
 Dalian University of Technology, China;
 British American Tobacco, UK

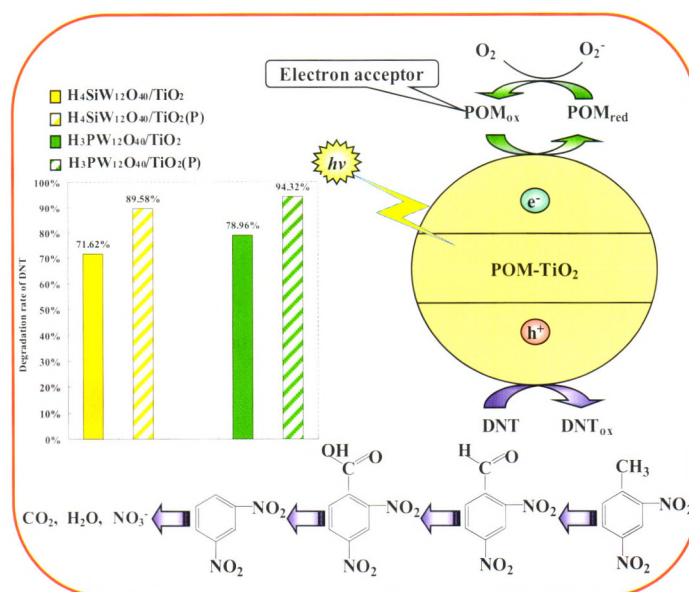
Doping with specific transition metal oxides can enhance the CO adsorption on Cu^+ in a copper manganese oxide catalyst and benefits its catalytic oxidation.



Chin. J. Catal., 2014, 35: 168–174 doi: 10.1016/S1872-2067(12)60736-0

Photocatalysis of dinitrotoluene decomposition by $\text{H}_3\text{PW}_{12}\text{O}_{40}/\text{TiO}_2$ and $\text{H}_4\text{SiW}_{12}\text{O}_{40}/\text{TiO}_2$ prepared by a modified sol-gel synthesis and solvothermal treatment method

Changgen Feng*, Hairu Shang, Xia Liu
 Beijing Institute of Technology; China Agricultural University



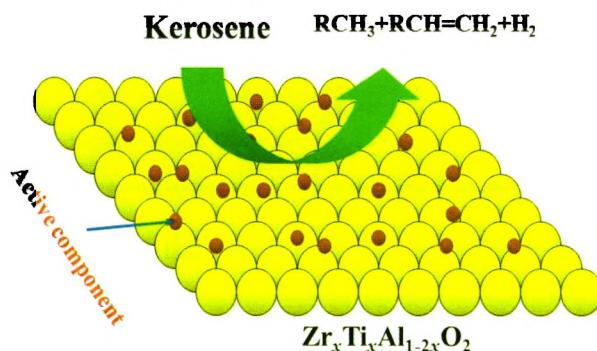
This article focuses on the preparation of new materials (POMs/TiO_2) using P123 as a structure directing agent with solvothermal treatment. Photocatalytic tests show that new materials exhibit high photocatalytic activity for DNT degradation.

Chin. J. Catal., 2014, 35: 175–184 doi: 10.1016/S1872-2067(12)60732-2

The performance of Pt/Zr_xTi_xAl_{1-2x}O₂ as Kerosene cracking catalysts

Yi Jiao, Jianli Wang*, Quan Zhu, Xiangyuan Li, Yaoqiang Chen
Sichuan University

A series of Pt/Zr_xTi_xAl_{1-2x}O₂ catalysts were prepared and they showed good performance for the kerosene cracking reaction. The quantities of gaseous products obtained from catalytic cracking using ZrO₂:TiO₂:Al₂O₃ (1:1:3)-supported Pt catalyst are increased by factors of 2.1 and 1.4 compared with the quantities generated by thermal cracking at 650 and 700 °C, respectively.

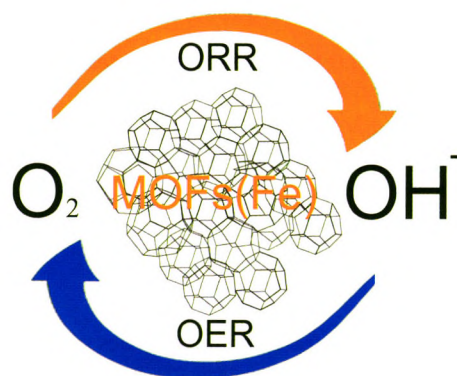


Chin. J. Catal., 2014, 35: 185–195 doi: 10.1016/S1872-2067(12)60729-3

Preparation of MOF(Fe) and its catalytic activity for oxygen reduction reaction in an alkaline electrolyte

Guoqiang Song, Zhiqing Wang, Liang Wang, Guoru Li, Minjian Huang, Fengxiang Yin*
Changzhou University;
Beijing University of Chemical Technology

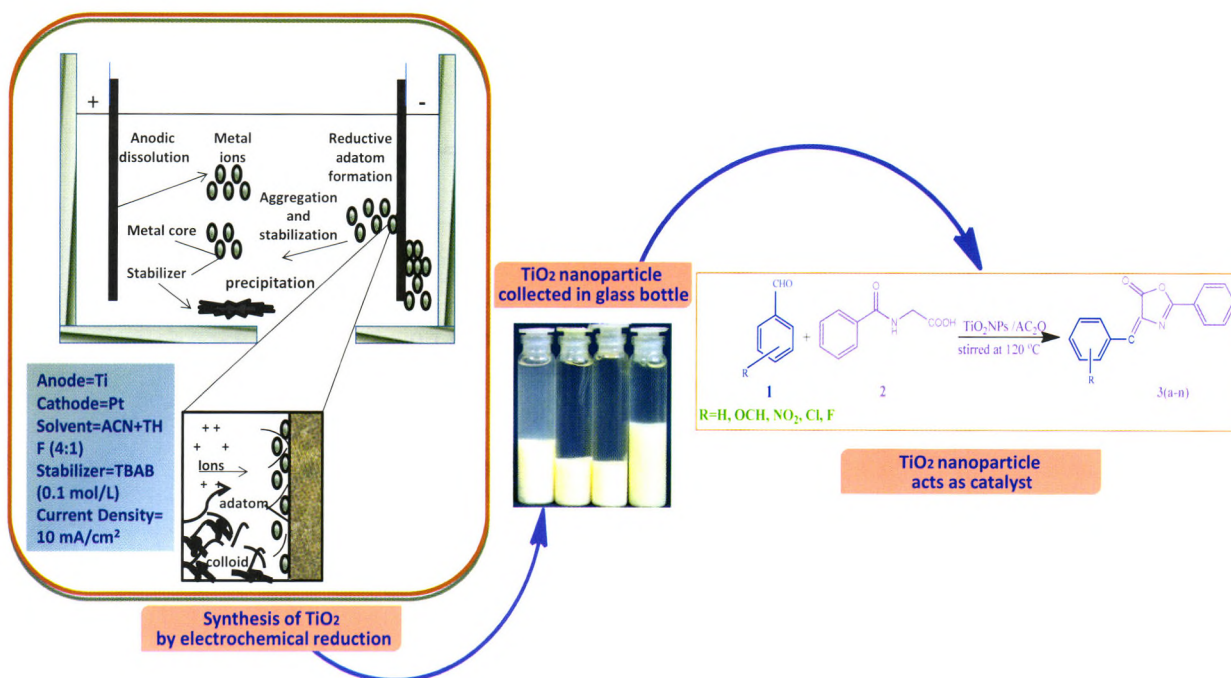
MOF(Fe) was synthesized by a hydrothermal method and shows excellent bifunctional catalytic activity for the oxygen evolution reaction (OER) and oxygen reduction reaction (ORR) in an alkaline electrolyte.



Chin. J. Catal., 2014, 35: 196–200 doi: 10.1016/S1872-2067(12)60741-4

Nanocrystalline titanium dioxide catalyst for the synthesis of azlactones

Priyanka Anandgaonker, Ganesh Kulkarni, Suresh Gaikwad, Anjali Rajbhoj*
Dr. Babasaheb Ambedkar Marathwada University, India



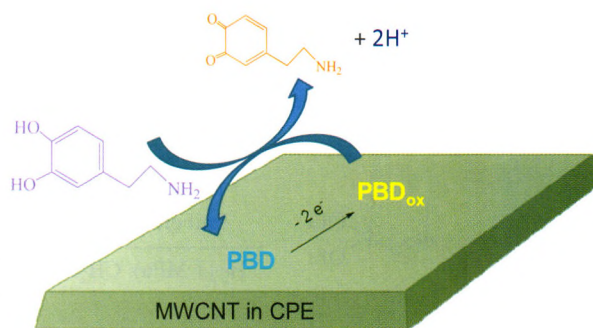
Size controlled synthesis of TiO₂ by electrochemical reduction gave nanoparticles for the synthesis of 4-aryldiene-2-phenyl-5(4)-oxazolones. The smaller size catalyst has promising features for the reaction.

Chin. J. Catal., 2014, 35: 201–209 doi: 10.1016/S1872-2067(12)60734-7

Electrocatalysis of dopamine in the presence of uric acid and folic acid on modified carbon nanotube paste electrode

Mohammad Mazloum-Ardakani*, Mahboobe Abolhasani, Bibi-Fatemeh Mirjalili, Mohammad Ali Sheikh-Mohseni, Afsaneh Dehghani-Firouzabadi, Alireza Khoshroo
Yazd University, Iran; Urmia University, Iran

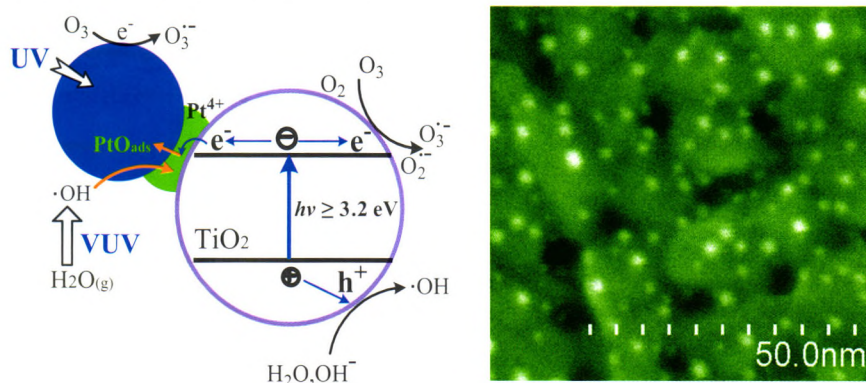
Dopamine is oxidized in a catalytic chemical reaction by the oxidized form of a modifier (PBD_{ox}), produced via an electrochemical reaction at a multiwalled-carbon-nanotube-modified carbon paste electrode (MWCNT in CPE).



Chin. J. Catal., 2014, 35: 210–218 doi: 10.1016/S1872-2067(12)60740-2

Characterization of Pt-TiO₂ film used in three formaldehyde photocatalytic degradation systems: UV_{254 nm}, O₃+UV_{254 nm} and UV_{254+185 nm} via X-ray photoelectron spectroscopy

FU Pingfeng, ZHANG Pengyi*
University of Science and Technology Beijing; Tsinghua University

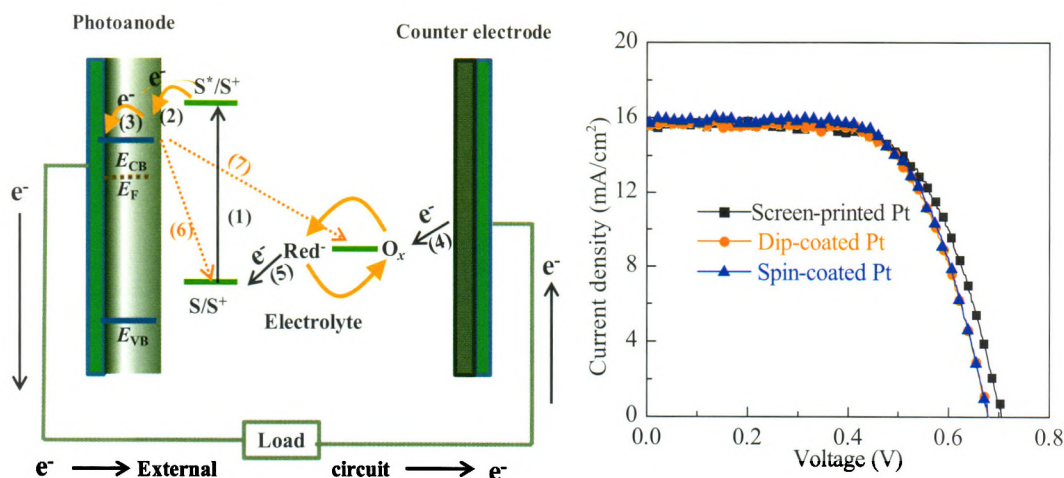


O₃ byproduct can be photocatalytically decomposed on both TiO₂ substrate and Pt nanoparticles under UV_{254+185 nm} irradiation. The oxidized Pt species can trap the photogenerated electrons to increase the photocatalytic activity of Pt-TiO₂.

Chin. J. Catal., 2014, 35: 219–226 doi: 10.1016/S1872-2067(12)60737-2

Screen-printed Pt counter electrodes exhibiting high catalytic activity

Chunyu Zhao, Yantao Shi*, Zhiyong Zhong, Tingli Ma*
Dalian University of Technology; Yingkou Optech New Energy Co. Ltd.



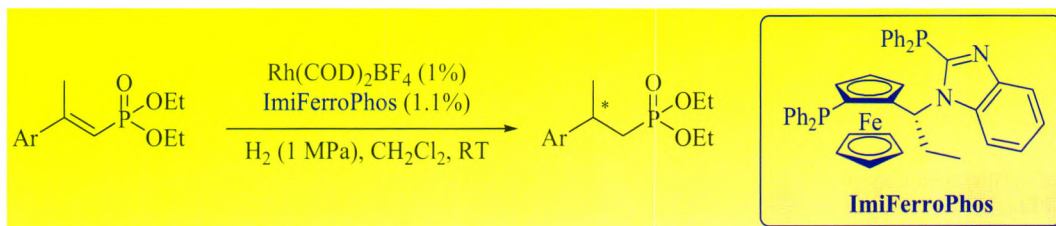
The addition of surfactant improved film adhesion, and allowed counter electrodes to be screen-printed. A photoelectric conversion efficiency of 7.30% was achieved for dye-sensitized solar cells containing screen-printed Pt-based counter electrodes.

Chin. J. Catal., 2014, 35: 227–231 doi: 10.1016/S1872-2067(12)60742-6

Rh-ImiFerroPhos complexes catalyzed asymmetric hydrogenation of β -substituted α,β -unsaturated phosphonates

Zhengchao Duan*, Lianzhi Wang, Xiaoyu Zuo, Xiangping Hu*, Zhuo Zheng

Hubei University for Nationalities; Dalian Institute of Chemical Physics, Chinese Academy of Sciences



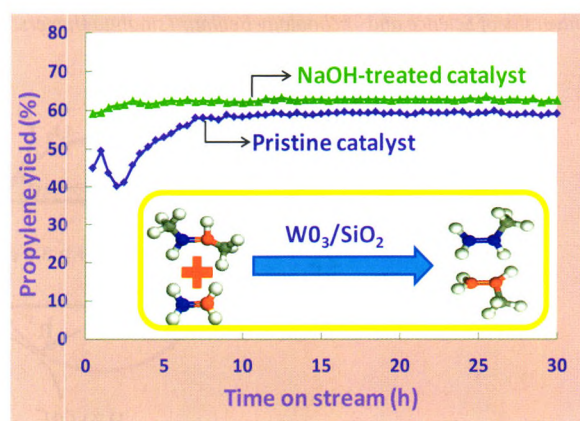
A range of optically active β -substituted alkylphosphonates have been prepared in good yields and good enantioselectivity under mild conditions via the Rh-catalyzed asymmetric hydrogenation of β -substituted α,β -unsaturated phosphonates using chiral ImiFerroPhos ligands.

Chin. J. Catal., 2014, 35: 232–241 doi: 10.1016/S1872-2067(12)60760-8

NaOH modified WO_3/SiO_2 catalysts for propylene production from 2-butene and ethylene metathesis

Surasa Maksasithorn, Damien P. Debecker, Piyasan Praserttham*, Joongjai Panpranot, Kongkiat Suriye, Sirachaya Kunjara Na Ayudhya
Chulalongkorn University, Thailand;
Université catholique de Louvain, Belgium;
SCG Chemicals, Co., Ltd., Thailand

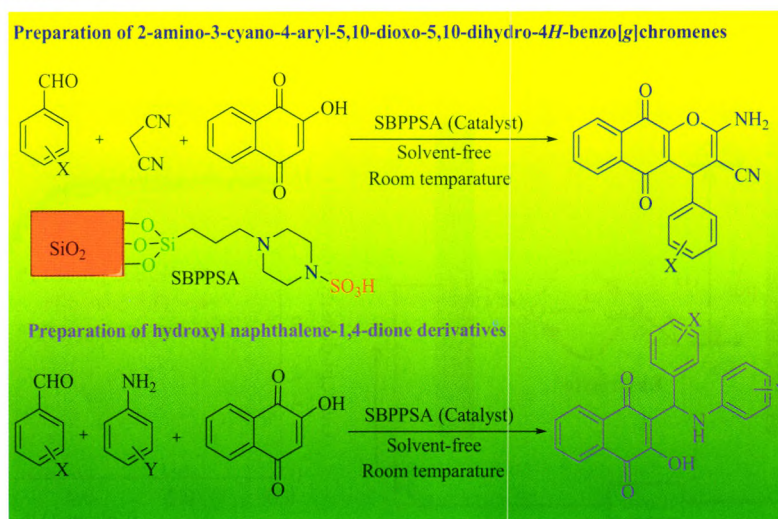
After treatment of a WO_3/SiO_2 catalyst with NaOH to reduce its acidity, the conversion was not changed but isomerization was slightly reduced, and the final propene yield and overall catalyst stability were improved.



Chin. J. Catal., 2014, 35: 242–246 doi: 10.1016/S1872-2067(12)60761-X

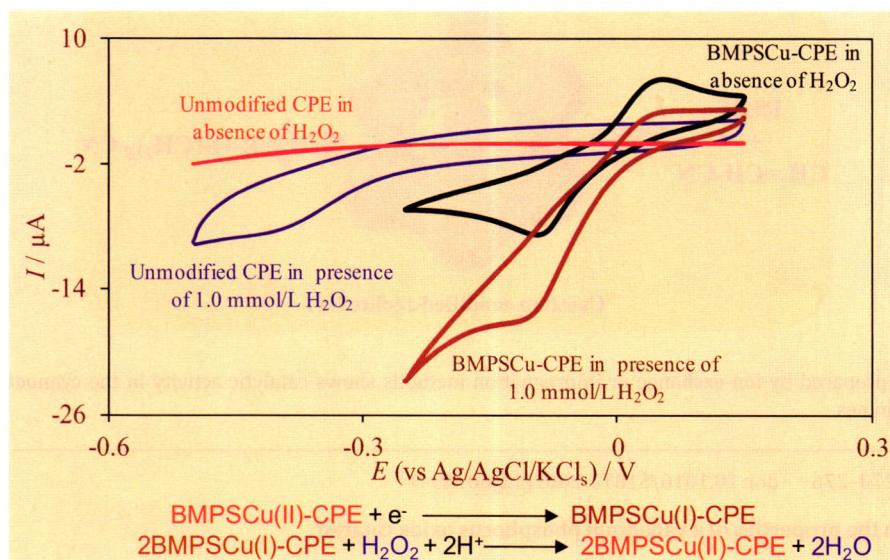
Silica-bonded propylpiperazine-*N*-sulfamic acid as recyclable solid acid catalyst for preparation of 2-amino-3-cyano-4-aryl-5,10-dioxo-5,10-dihydro-4*H*-benzo[*g*]chromenes and hydroxy-substituted naphthalene-1,4-dione derivatives

Fahime Khorami, Hamid Reza Shaterian*
University of Sistan and Baluchestan, Iran



An efficient method for the synthesis of 2-amino-3-cyano-4-aryl-5,10-dioxo-5,10-dihydro-4*H*-benzo[*g*]chromenes and hydroxy-substituted naphthalene-1,4-dione derivatives, using silica-bonded propylpiperazine-*N*-sulfamic acid (SBPPSA) as a solid acid, green, heterogeneous catalyst, under ambient and solvent-free conditions, is described.

Chin. J. Catal., 2014, 35: 247–254 doi: 10.1016/S1872-2067(12)6753-0

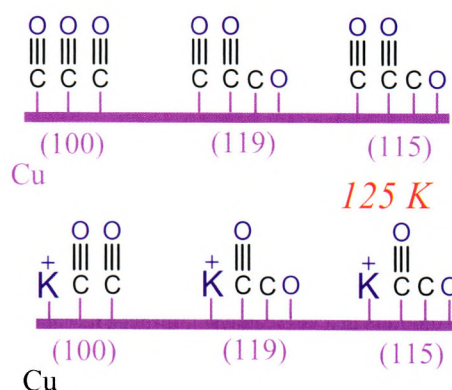
Electrocatalytic measurement of H₂O₂ concentration using bis(*N*-2-methylphenyl-salicylidenaminato)copper(II) spiked in a carbon paste electrodeHossein Khoshro, Hamid R. Zare*, Rasoul Vafazadeh
Yazd University, Iran

A Cu(II) complex (BMPSCu) used for the electrocatalytic reduction of H₂O₂ gave excellent activity. It successfully detected H₂O₂ in two pharmaceutical samples.

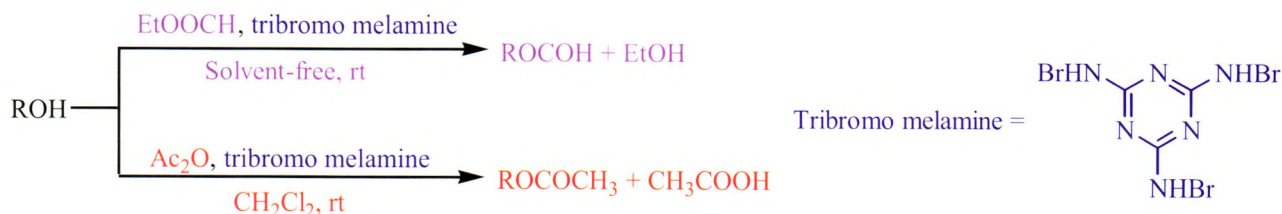
Chin. J. Catal., 2014, 35: 255–259 doi: 10.1016/S1872-2067(12)60747-5

Low temperature adsorption of CO on modified, vicinal Cu(100) surfaces: A comparative studyPrzemysław Jan Godowski*, Jens Onsgaard
University of Wrocław, Poland;
University of Aalborg, Denmark

Low temperature adsorption of CO on stepped and K-modified Cu surfaces was studied. At CO saturation, the 4s intensity (*I*) follow the order: *I*(100) > *I*(119) > *I*(115) for both the clean and K-modified surfaces.



Chin. J. Catal., 2014, 35: 260–263 doi: 10.1016/S1872-2067(12)60748-7

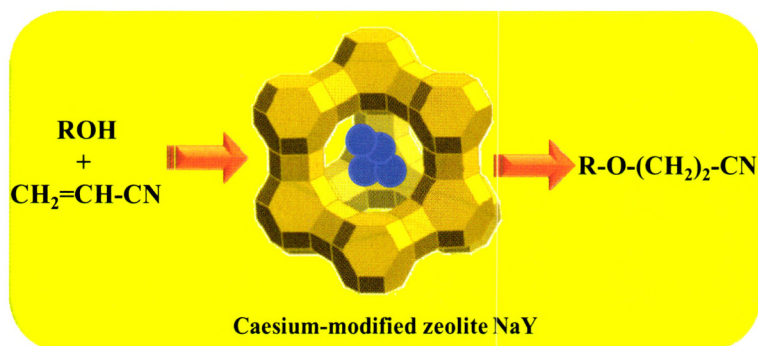
Tribromo melamine as novel and versatile catalyst for the formylation and acetylation of alcoholsMaryam Hajjami*, Arash Ghorbani-Choghamarani, Zahra Karamshahi, Masoomeh Norouzi
Ilam University, Iran

The acetylation and formylation of alcohols with acetic anhydride and ethyl formate in the presence of catalytic amounts of tribromo melamine at room temperature are described.

Chin. J. Catal., 2014, 35: 264–269 doi: 10.1016/S1872-2067(12)60751-7

Cyanoethylation of alcohols and amines by cesium-modified zeolite Y

Sara Zamanian, Ali Nemati Kharat*
University of Tehran, Iran

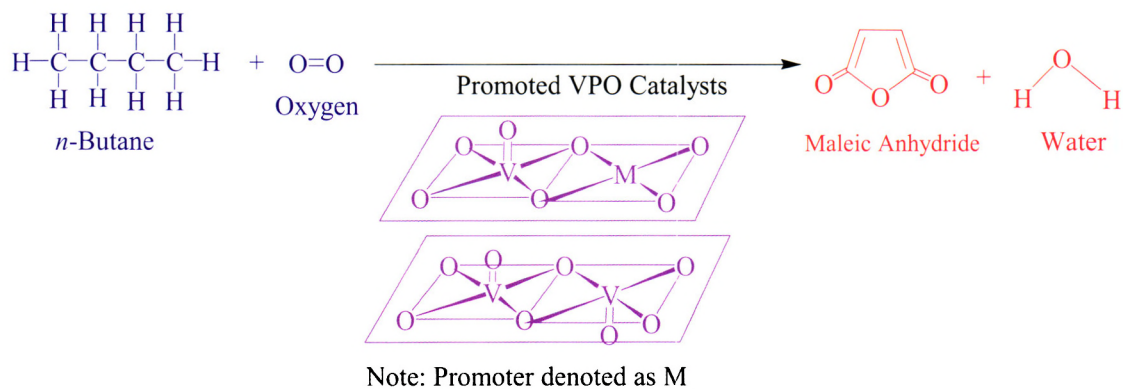


Cesium-modified NaY prepared by ion-exchange or impregnation methods shows catalytic activity in the cyanoethylation reactions of various alcohols and amines.

Chin. J. Catal., 2014, 35: 270–276 doi: 10.1016/S1872-2067(12)60749-9

Effects of Bi and Ni on the properties of a vanadium phosphorus oxide catalyst

Yun Hin Taufiq-Yap*, Choon Seon Yuen, Nawi @ Mohamed Nurul Suziana, Ramli Irmawati
Universiti Putra Malaysia, Malaysia



Bi and Ni promoters in a VPO catalyst improved its catalytic properties in selective oxidation of *n*-butane to maleic anhydride.

美国麦克仪器公司

美国麦克仪器公司自 1962 年成立以来始终保持着颗粒分析仪器的世界领导地位，在自动样品传递、TPD/TPR 化学吸附、表面积吸附平衡、DFT 数据处理等领域拥有多达 40 多项颗粒表征方面的专利。主要产品有全自动比表面与孔隙度分析仪、化学吸附仪、高压物理 / 化学吸附仪、压汞仪、纳米粒度与 Zeta 电位分析仪、密度仪和粒度仪等。



3Flex 全功能型多用气体吸附仪

- 高通量 - 可同时进行 3 个微孔测试，超高分析能力与超多样品分析量
- 介孔、微孔分析与蒸汽吸附、化学吸附可选
- 气动高压硬密封阀，保证无泄漏气体管理
- 全新设计的自动诊断系统，可方便地对仪器各个部件实时监控
- 精确的多歧管和传感器温度控制
- 自动选择适合的压力范围显示
- 三个 RTD 用于精确温度监控和控制

研究级高性能全自动程序升温化学吸附仪 AutoChem II 2920

- 提供精确程序升温技术进行催化剂表征，如金属分散度、活性金属表面积、活性颗粒尺寸和催化材料表面活性等
- 能进行全自动脉冲化学吸附和程序升温还原（TPR）、程序升温脱附（TPD）、程序升温氧化（TPO）和程序升温反应（TPRx）以及 BET 表面积评价
- 配套专用接口，可连接质谱、气相、红外等设备
- 蒸汽发生器选件可进行惰性载气中液体蒸汽包括有机蒸汽（例如吡啶、苯）的吸附
- CryoCooler II 选件可满足低至 -120°C 的分析温度



HPVA- II 超高压容量法气体吸附仪

- 超高压，压力可达 200bar，
- 四个分析站，四个独立的脱气站，可同时测试 4 个样品
- 宽温度范围：从 -196°C 到 500°C
- 软件升级：增加自由空间管理、基线校准、压力显示等功能
- 增加传感器类型，满足不同用户的需要，仪器适用范围更广

麦克默瑞提克（上海）仪器有限公司
地址：上海市浦东新区民生路 550 号 1505-1509 室
邮编：200135 电话：021-51085884

北京办公室
地址：北京市丰台区南四环西路 188 号总部基地 12 区 28 栋 7 层
邮编：100070 电话：010-51280918

广州办公室
地址：广州市天河区中山大道 140 号华港商务大厦 1602 室
邮编：510630 电话：020-38023057

全国服务热线电话：400-630-2202
网址：www.micromeritics.com.cn, www.micromeritics.com
微博：t.sina.com.cn/micromeritics