

催化学报

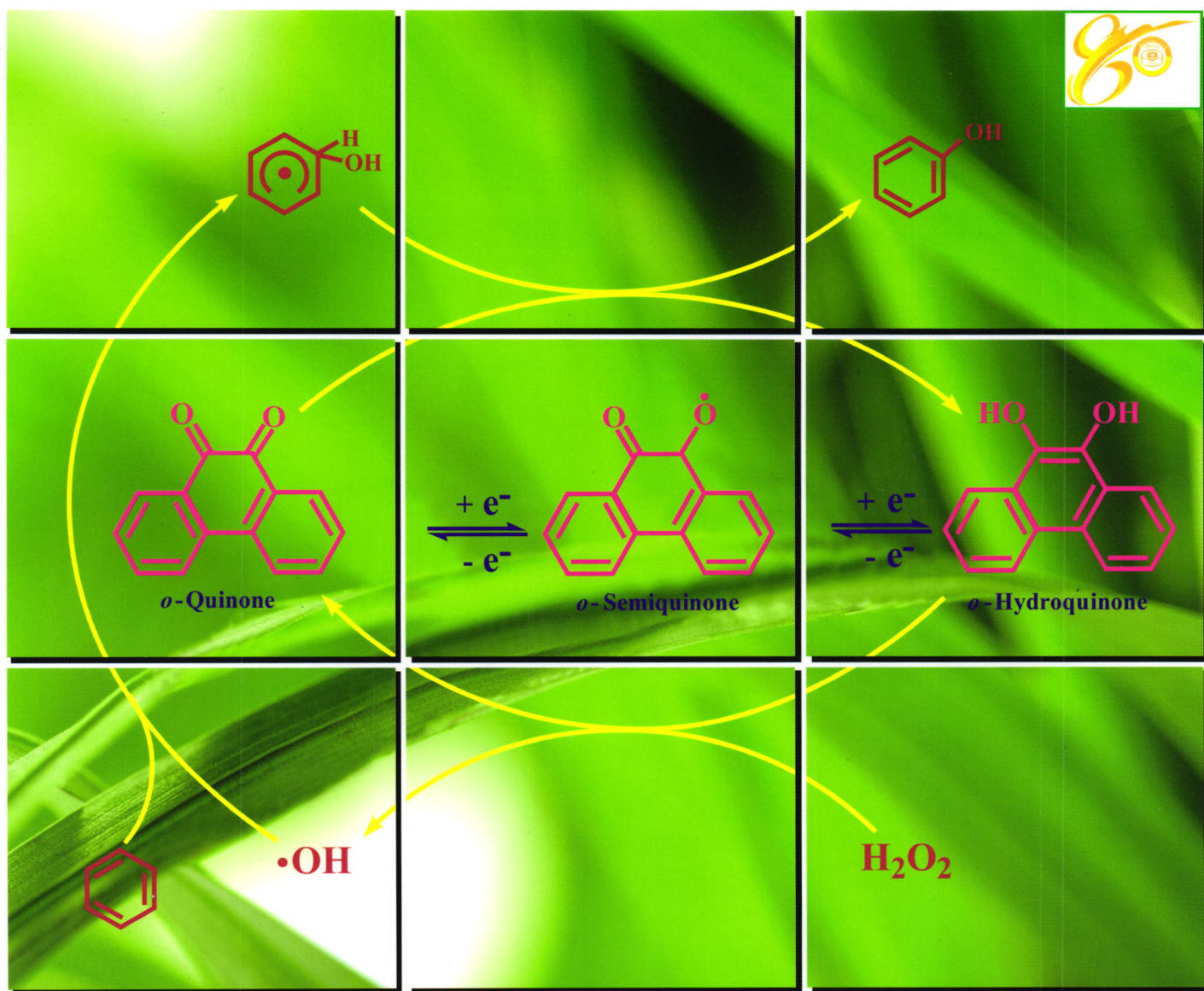
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目次

综 述

1611 (国际版)

环境催化中的陶瓷材料: 应用与可能性

Nitin LABHSETWAR, P. DOGGALI, S. RAYALU,
R. YADAVI, T. MISTUHASHI, H. HANEDA

研究论文

1622 (国际版/封面文章)

活性炭催化苯一步羟基化制备苯酚

徐加泉, 刘慧慧, 杨瑞光, 李桂英, 胡常伟

1631 (国际版)

程序升温表面反应技术研究氧化铈上 H₂S 的吸附和转化

刘冰, 徐恒泳, 张泽会

1636 (国际版)

Yb(OTf)₃ 催化的碳氢键活化 2-甲基氮杂芳烃对靛红的加成反应

牛瑞, 杨世迎, 肖建, 梁涛, 李兴伟

1642 (国际版)

第二金属对 Co/SiO₂ 加氢催化剂结构和性能的影响

薛晶晶, 崔芳, 黄志威, 左建良, 陈静, 夏春谷

1650 (国际版)

不对称还原制备光学纯 (R)-2-羟基-4-苯基丁酸乙酯的双酶共表达重组菌的构建

宿宇宁, 倪晔, 王骏超, 徐志豪, 孙志浩

1661 (国际版)

一种高效简易的聚(4-乙烯基三溴化吡啶)催化乙醇合成乙酸盐的方法

Maryam HAJJAMI, Arash GHORBANI-CHOGHAMARANI,
Masoomeh NOROUZI

1665 (国际版)

高结晶度氮掺杂介孔 TiO₂ 的制备及光催化活性

刘二强, 郭晓玲, 秦雷, 申国栋, 王向东

1672 (国际版)

LED 照射光催化剂用于苯、甲苯、乙苯和二甲苯分解

JO Wan-Kuen, KANG Hyun-Jung

1681

溶胶-凝胶辅助水热双模板法制备球形介孔 TiO₂

王殿平, 刘守新

1689

氨基功能化介孔氧化硅纳米中空球负载乙酰丙酮氧钒催化苯甲硫醚选择性氧化反应

王鹏, 白诗扬, 李博, 杨启华

1696

Sn-MCM-41 与 SnO₂/SiO₂ 催化转化生物质基碳水化合物制乳酸甲酯

刘镇, 冯刚, 潘春燕, 李望, 陈平, 楼辉, 郑小明

1706

Rh(111) 及 Rh@Cu(111) 表面乙烯氢甲酰化反应选择性的理论研究

马秀芳, 赵永慧, 苏海燕, 李微雪

1712

Cu 在 ZrO₂(111) 薄膜载体上的生长与界面相互作用

侯建波, 韩永, 潘永和, 徐倩, 潘海斌, 朱俊发

1717

基于同源建模和定点突变技术研究嗜热型 L-阿拉伯糖异构酶与 D-半乳糖的亲合作用

李贵祥, 徐铮, 李莎, 徐虹

1724

核壳型 SAPO-34/AIPO-18 分子筛的制备及生长机理

张琳, 田鹏, 苏雄, 樊栋, 王德花, 刘中民

1730

4-二甲氨基吡啶催化的界面聚合法制备超支化聚乙烯亚胺复合膜

张林, 林赛赛, 魏平, 程丽华, 陈欢林

1736

纳米纤维铁氧化物柱撑蒙脱土可见光助芬顿降解罗丹明 B

张世龙, 胡小明, 王晓韡, 梁诗景, 吴棣

相关信息

1742 作者索引

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Contents

Review

Chin. J. Catal., 2012, 33: 1611–1621 doi: 10.1016/S1872-2067(11)60440-3

Ceramics in Environmental Catalysis: Applications and Possibilities

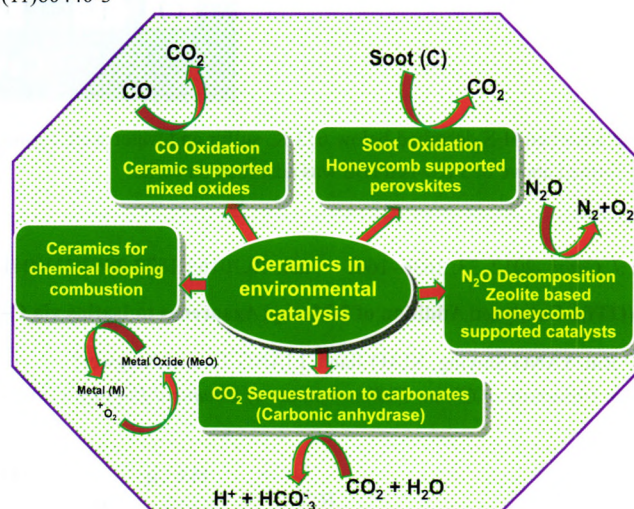
Nitin LABHSETWAR*, P. DOGGALI, S. RAYALU,

R. YADAV, T. MITSUHASHI, H. HANEDA

National Environmental Engineering Research Institute
(CSIR-NEERI), India;

National Institute for Materials Science (NIMS), Japan

The article deals with various environmental applications of ceramic based materials and structures. Synthesis, characterization, and catalytic properties of various ceramic materials including catalyst supports are discussed.



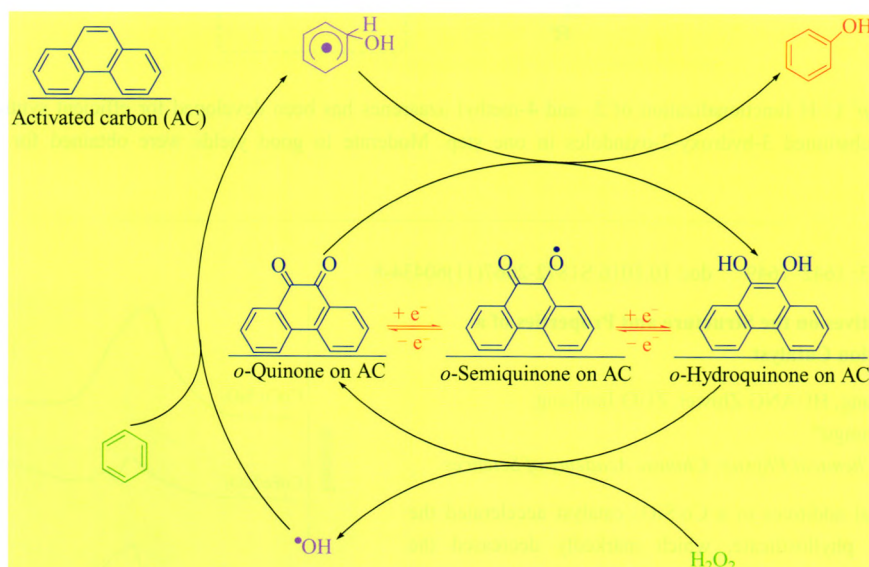
Articles

Chin. J. Catal., 2012, 33: 1622–1630 doi: 10.1016/S1872-2067(11)60444-0

Hydroxylation of Benzene by Activated Carbon Catalyst

XU Jiaquan, LIU Huihui, YANG Ruiguang, LI Guiying*, HU Changwei*

Sichuan University

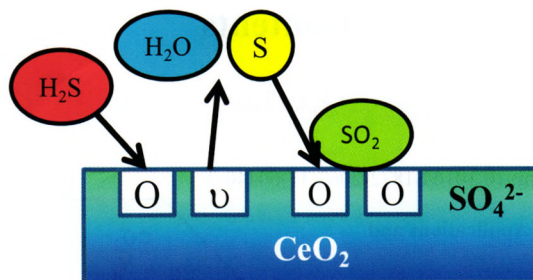


The reaction between phenolic hydroxyl and quinone on the surface of activated carbon activated H_2O_2 to form a OH radical, which then reacts with benzene to form phenol.

Temperature-Programmed Surface Reaction Study of Adsorption and Reaction of H₂S on Ceria

LIU Bing, XU Hengyong*, ZHANG Zehui*

South-Central University for Nationalities; Dalian Institute of Chemical Physics, Chinese Academy of Sciences

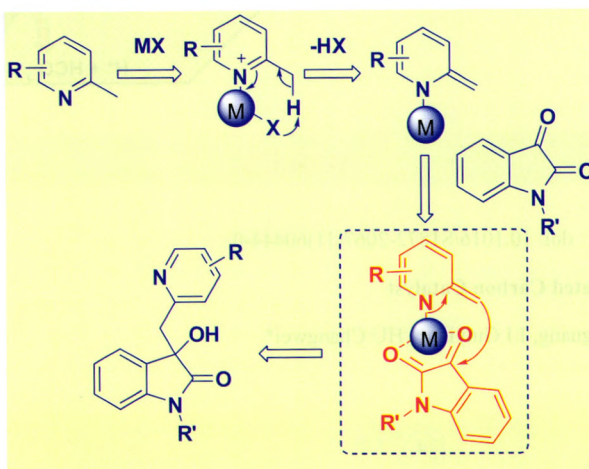


Some adsorbed H₂S desorbed below 673 K, sulfur and water were formed below 473 K, SO₂ was formed from 473 to 673 K, and sulfate was formed above 673 K when H₂S was adsorbed on ceria.

Yb(OTf)₃-Catalyzed Addition of 2-Methyl Azaarenes to Isatins via C–H Functionalization

NIU Rui, YANG Shiyong, XIAO Jian*, LIANG Tao, LI Xingwei*

Ocean University of China; Dalian Institute of Chemical Physics, Chinese Academy of Science



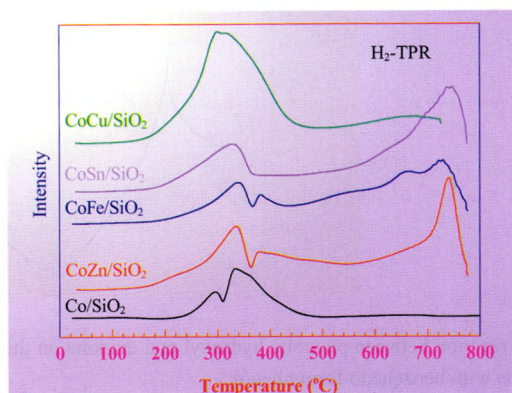
Yb(OTf)₃-catalyzed *sp*³ C–H functionalization of 2- and 4-methyl azaarenes has been developed for efficient synthesis of biologically important azaarene-substituted 3-hydroxy-2-oxindoles in one step. Moderate to good yields were obtained for various isatins and azaarenes.

Effect of Metal Additives on the Structure and Properties of a Co/SiO₂ Hydrogenation Catalyst

XUE Jingjing, CUI Fang, HUANG Zhiwei, ZUO Jianliang, CHEN Jing*, XIA Chungu*

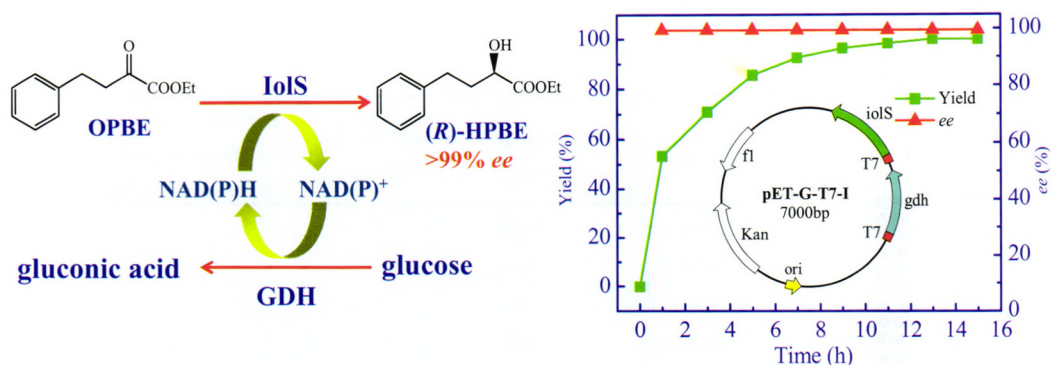
Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences

Incorporation of metal additives in a Co/SiO₂ catalyst accelerated the formation of cobalt phyllosilicate, which markedly decreased the reducibility of the catalyst as well as its activity and 1,2-propanediol selectivity in the hydrogenation of ethyl lactate.



Two-Enzyme Coexpressed Recombinant Strain for Asymmetric Synthesis of Ethyl (*R*)-2-Hydroxy-4-phenylbutyrate

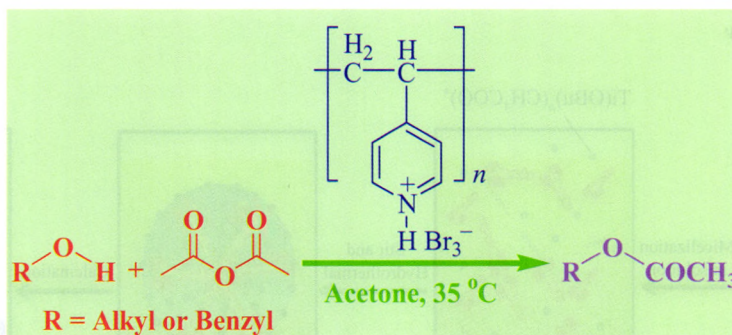
SU Yuning, NI Ye*, WANG Junchao, XU Zhihao, SUN Zhihao
Jiangnan University



A carbonyl reductase (IolS) exhibiting high enantioselectivity in the reduction of OPBE to (*R*)-HPBE was cloned, characterized, and coexpressed with glucose dehydrogenase to construct recombinant *E. coli* with cofactor regeneration.

An Efficient and Facile Procedure for Synthesis of Acetates from Alcohols Catalyzed by Poly(4-vinylpyridinium tribromide)

Maryam HAJJAMI*, Arash GHORBANI-CHOGHAMARANI, Masoomeh NOROUZI
Ilam University, Iran

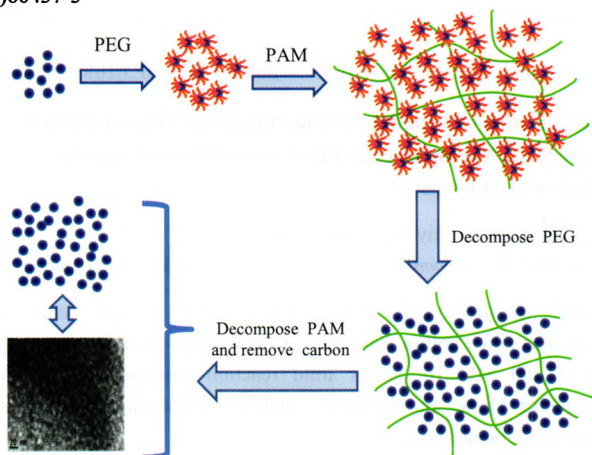


Acetylation of alcohols has been introduced using acetic anhydride in the presence of a catalytic amount of poly(4-vinylpyridinium tribromide).

Fabrication and Photocatalytic Activity of Highly Crystalline Nitrogen Doped Mesoporous TiO₂

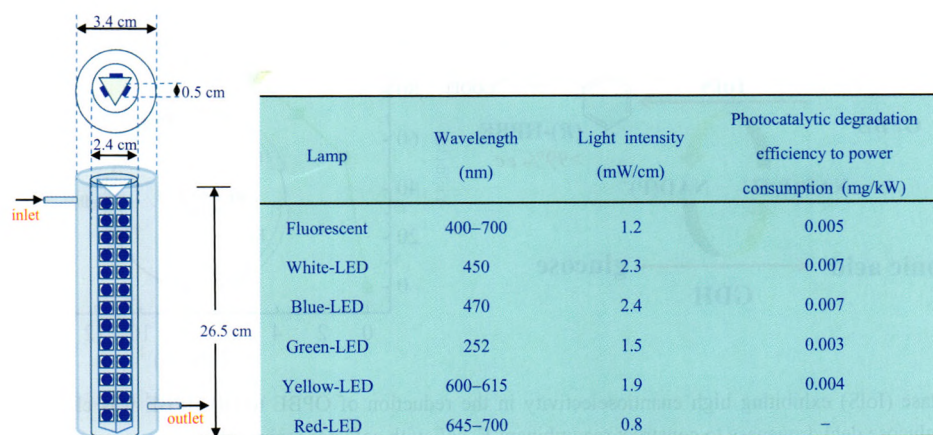
LIU Erqiang, GUO Xiaoling, QIN Lei, SHEN Guodong,
WANG Xiangdong*
Xi'an Jiaotong University; Xi'an Polytechnic University

Nitrogen doped mesoporous TiO₂ photocatalysts with high crystallinity were fabricated by the sol-gel method using polyacrylamide and polyethylene glycol as templates, and then calcining in nitrogen and air.



LED Irradiation of a Photocatalyst for Benzene, Toluene, Ethyl Benzene, and Xylene Decomposition

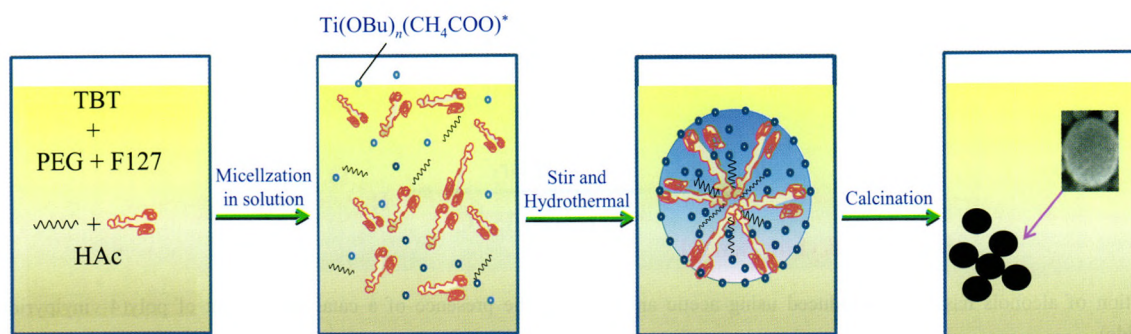
JO Wan-Kuen*, KANG Hyun-Jung
Kyungpook National University, Korea



The use of chips of visible light emitting diodes to irradiate an annular reactor coated with a nitrogen doped titania catalyst to decompose gaseous aromatic compounds was studied.

Preparation of Mesoporous TiO₂ Spheres via Sol-Gel Assisted Hydrothermal Method Using Double Templates

WANG Dianping, LIU Shouxin*
Northeast Forestry University

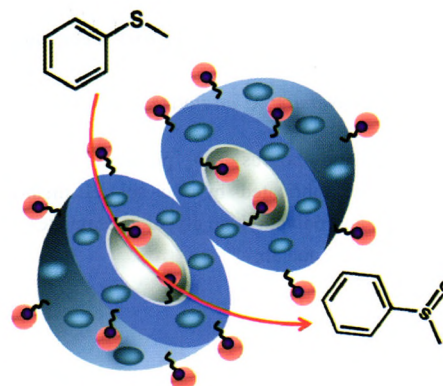


Mesoporous TiO₂ (MS-TiO₂) spheres were synthesized with double surfactant (PEG and F127) as templates, which showed higher reliability than single template.

Immobilization of Vanadyl Acetylacetonate on Amino Functionalized Hollow Silica Nanospheres and Its Catalytic Performance for Selective Oxidation of Thioanisole

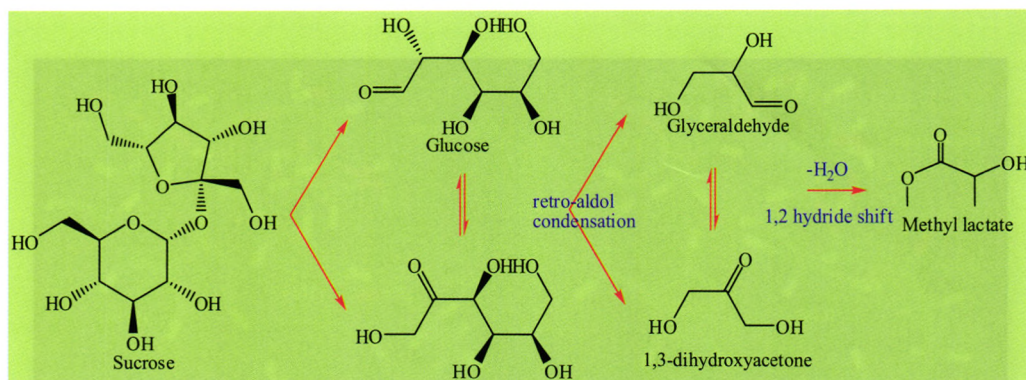
WANG Peng, BAI Shiyang, LI Bo, YANG Qihua*
Dalian Institute of Chemical Physics, Chinese Academy of Sciences

Vanadyl acetylacetonate was immobilized on amino functionalized mesoporous silica hollow nanospheres, as well as on amino functionalized SBA-15 and SBA-16. Under mild reaction conditions, the vanadium nanospheres show an enhanced catalytic performance than the bulk mesoporous counterparts.



Conversion of Biomass-Derived Carbohydrates to Methyl Lactate Using Sn-MCM-41 and SnO₂/SiO₂

LIU Zhen, FENG Gang, PAN Chunyan, LI Wang, CHEN Ping, LOU Hui*, ZHENG Xiaoming
Zhejiang University; Shaoxing Testing Institute of Quality Technical Supervision

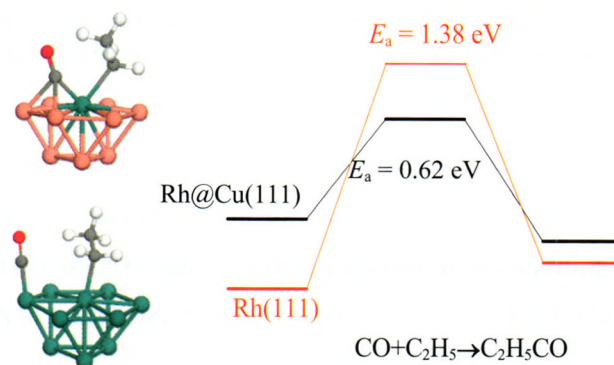


Biomass-derived carbohydrates were used as feedstock and methyl lactate was obtained in higher yield of 40%. Catalysts used in this work are easy synthesis, operational simplicity, reusability, and safe handling.

Theoretical Study of Selectivity of Ethylene Hydroformylation on Rh(111) and Rh@Cu(111) Surfaces

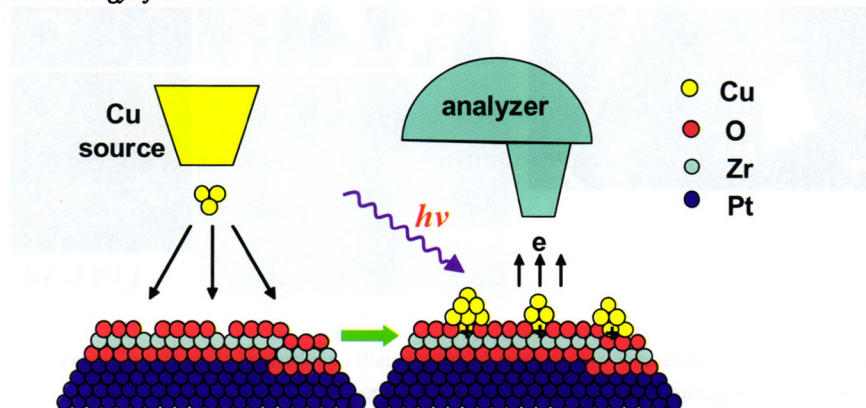
MA Xiufang, ZHAO Yonghui, SU Haiyan, LI Weixue*
Dalian Institute of Chemical Physics, Chinese Academy of Sciences

Due to the ensemble and ligand effects on Rh@Cu(111) destabilizing the reactants (CO and C₂H₅), the RhCu alloy catalyst has a low CO insertion barrier with improved hydroformylation selectivity compared with the pristine Rh(111).



Growth and Interfacial Interaction of Cu on ZrO₂(111) Thin Film

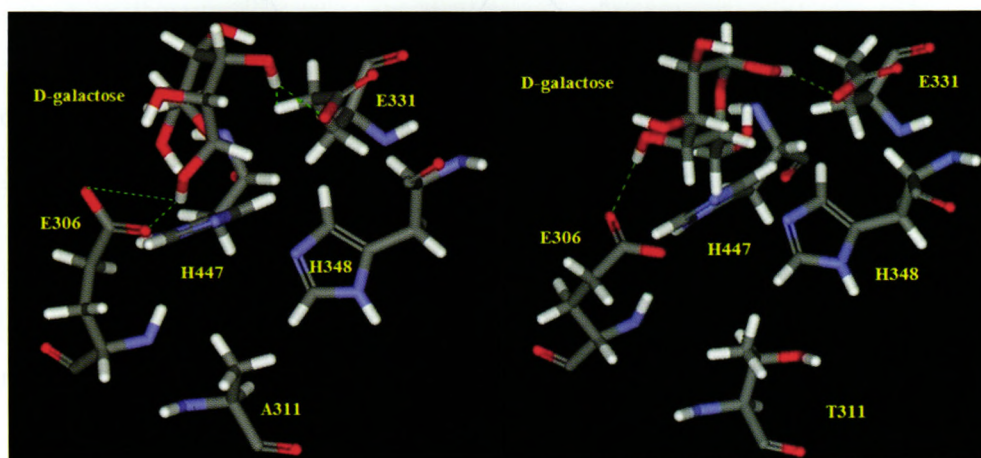
HOU Jianbo, HAN Yong, PAN Yonghe, XU Qian, PAN Haibin, ZHU Junfa*
University of Science and Technology of China



Cu grows two-dimensionally on ZrO₂(111)/Pt(111) up to 0.15 ML at 300 K, followed by three-dimensional growth. At low coverages, Cu(I) state appears. Above 1 ML, Cu becomes metallic state.

Probing the Essential Catalytic Residues and Substrate Affinity in Thermophilic L-Arabinose Isomerase by Homology Modeling and Site-Directed Mutagenesis

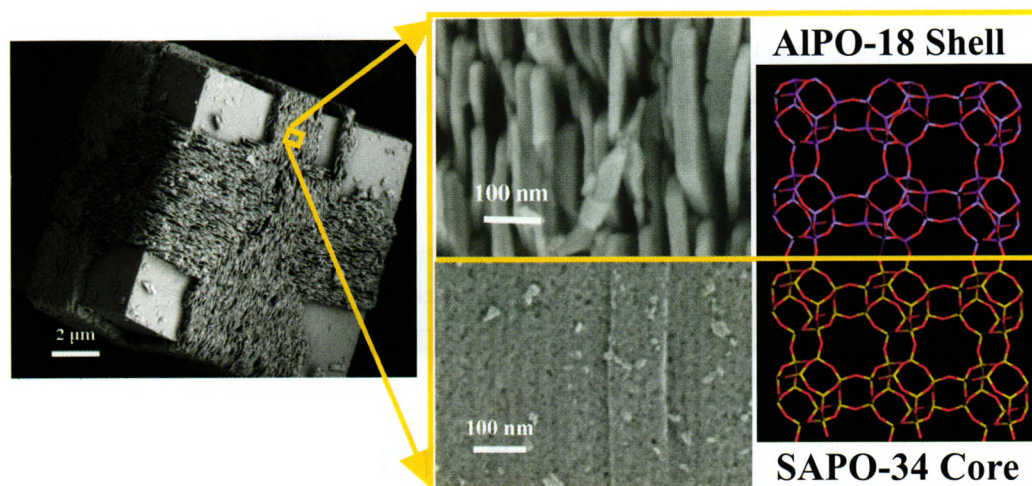
LI Guixiang, XU Zheng, LI Sha, XU Hong*
Nanjing University of Technology



By means of site-directed mutagenesis, the LFAI native enzyme has been successfully mutated. Among the obtained mutants, some exhibited an enhancement on substrate conversion rate. For mutants relevant to amino acid residue No. 311, we found that the number of hydrogen bonds between substrate (D-galactose) and the catalytic center has an influence on the D-galactose conversion rate.

Synthesis and Growth Mechanism of the Core-Shell SAPO-34/AIPO-18 Molecular Sieves

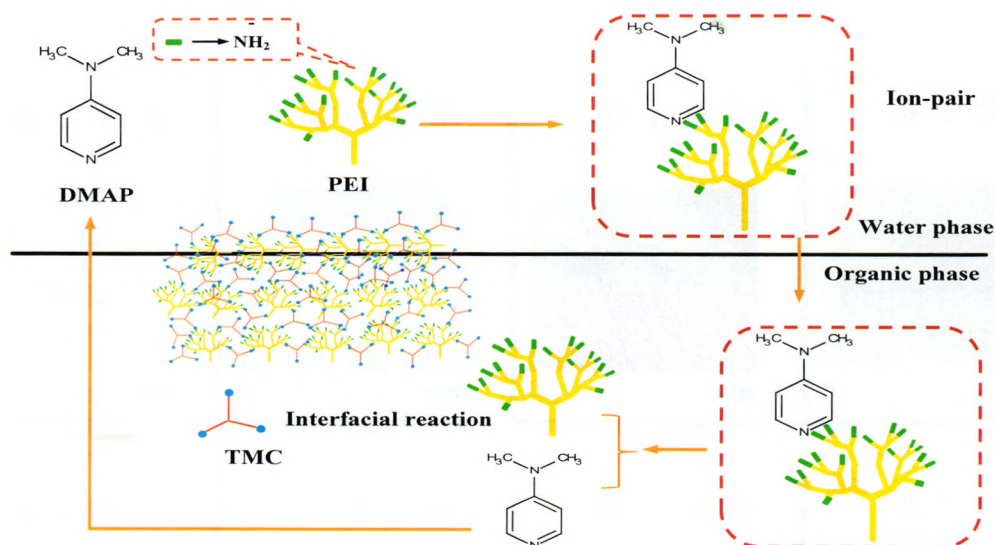
ZHANG Lin, TIAN Peng, SU Xiong, FAN Dong, WANG Dehua, LIU Zhongmin*
Dalian Institute of Chemical Physics, Chinese Academy of Sciences



The core-shell SAPO-34/AIPO-18 molecular sieves were hydrothermally synthesized through the epitaxial growth of AIPO-18 shell induced rationally by the microstructure on the SAPO-34 external surface.

Preparation of Hyperbranched Polyethyleneimine Composite Membrane Using Interfacial Polymerization Catalyzed by 4-Dimethylaminopyridine

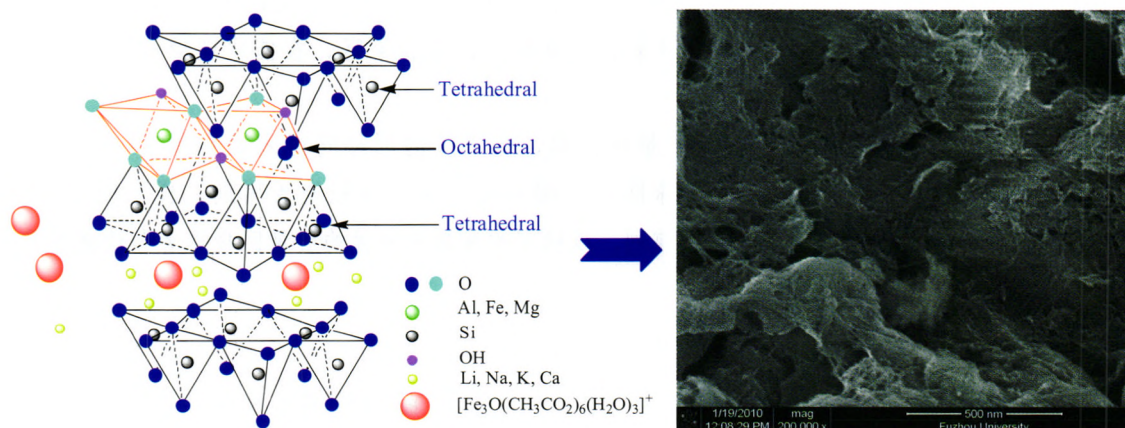
ZHANG Lin, LIN Saisai, WEI Ping, CHENG Lihua*, CHEN Huanlin
Zhejiang University



The promoting effect of 4-dimethylaminopyridine (DMAP) on the interfacial polymerization between trimesoyl chloride (TMC) and hyperbranched polyethyleneimine(PEI) to prepare reverse osmosis membrane was investigated. The rejection against NaCl of PEI/TMC reverse osmosis composite membrane was improved from 45.2% to 85.4%.

Photo-Fenton Degradation of RhB over Nano-fibre Iron Oxides Interacted Montmorillonite under Visible Light Irradiation

ZHANG Shilong, HU Xiaoming, WANG Xiaowei, LIANG Shijing, WU Ling*
Fuzhou University; Western Geological Exploration Brigade of Jiangxi Geology & Mineral Resources Development Bureau



A large iron cluster was intercalated into the layers of montmorillonite via a facile cation exchange method. The SEM image shows that a few amorphous nano-fibre iron oxides were anchored on the surface of the intercalated montmorillonite.