

催化学报

Chinese Journal of Catalysis

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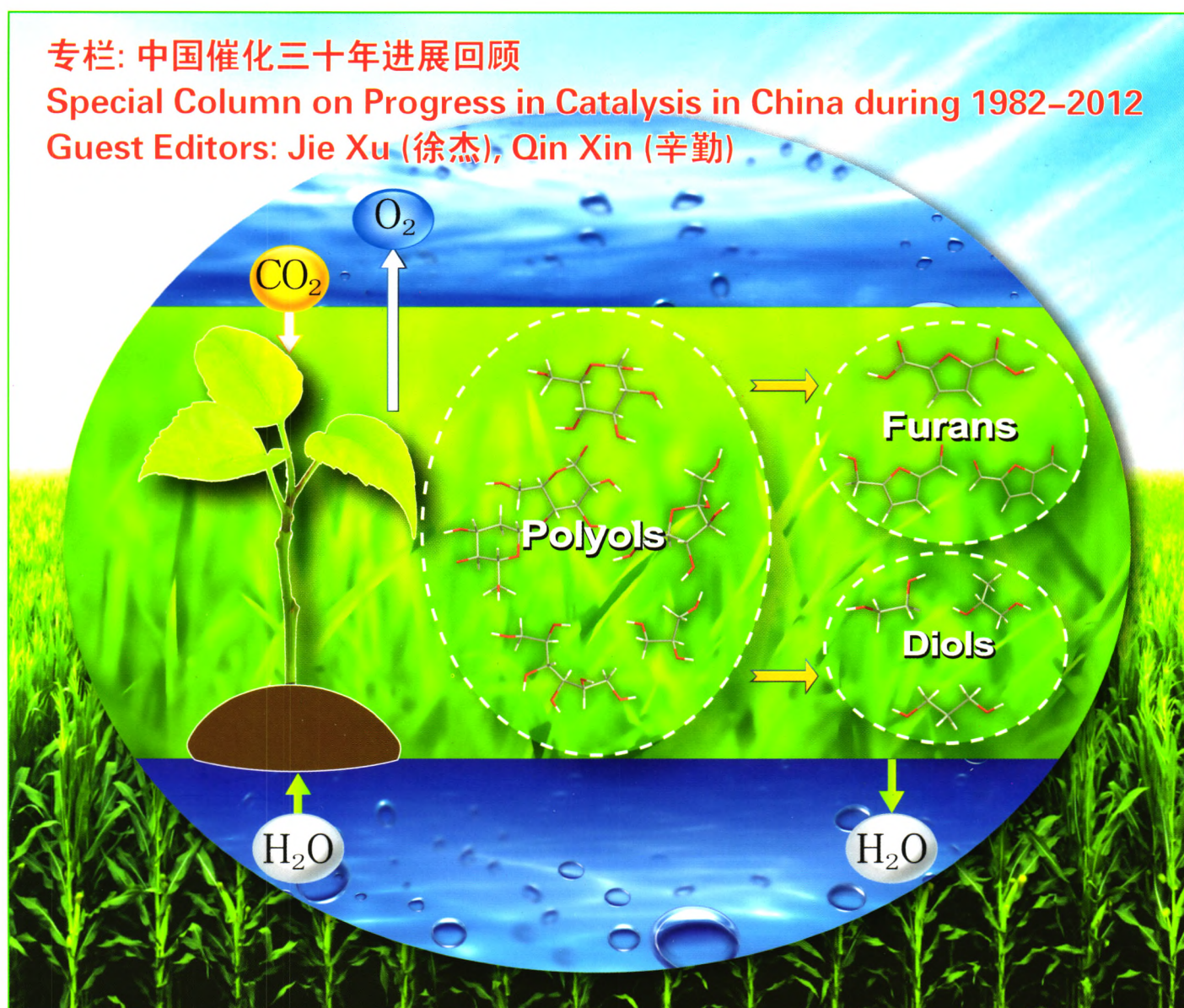
2013

Vol. 34 No. 3

专栏: 中国催化三十年进展回顾

Special Column on Progress in Catalysis in China during 1982-2012

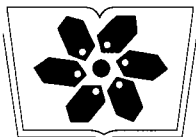
Guest Editors: Jie Xu (徐杰), Qin Xin (辛勤)



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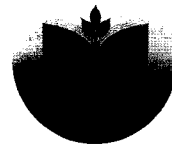
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通知

558 第十三届全国均相催化学术讨论会第一轮通知

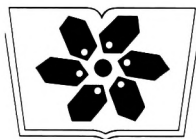
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Graphical Contents

Special Column on Progress in Catalysis in China during 1982–2012

Chin. J. Catal., 2013, 34: 399–400 doi: 10.1016/S1872-2067(12)60550-6

Preface to Special Column on Progress in Catalysis in China during 1982–2012

XU Jie, XIN Qin (Guest Editors)

Dalian Institute of Chemical Physics, Chinese Academy of Sciences



Chin. J. Catal., 2013, 34: 401–435 doi: 10.1016/S1872-2067(11)60463-4

Progress in catalysis in China during 1982–2012: Theory and technological innovations

XIN Qin*, LIN Liwu

Dalian Institute of Chemical Physics, Chinese Academy of Sciences

From 1982 to 2012, the major contributions of catalysis works (theory and technological innovations) in China are presented. The historical evolution of research and development work in catalysis in China is also described.



Chin. J. Catal., 2013, 34: 436–491 doi: 10.1016/S1872-2067(12)60528-2

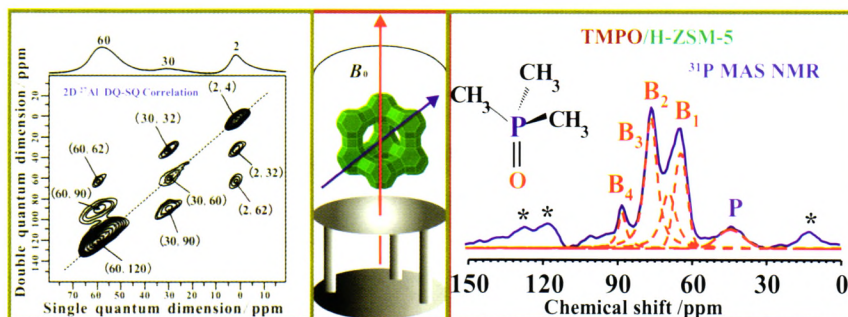
Progress in development and application of solid-state NMR for solid acid catalysis

ZHENG Anmin, HUANG Shing-Jong, WANG Qiang, ZHANG Hailu, DENG Feng*, LIU Shang-Bin*

Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences; National Taiwan University;

Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences;

Institute of Atomic and Molecular Sciences, "Academia Sinica"; National Taiwan Normal University

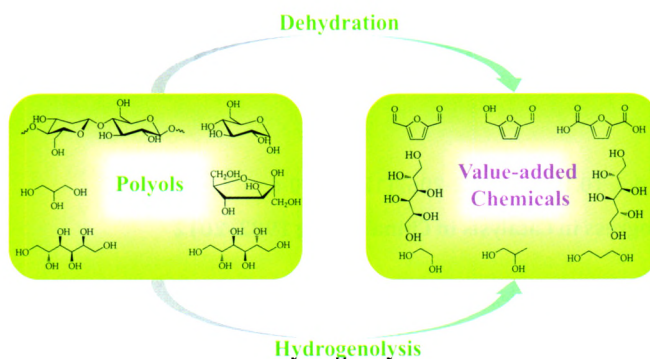


The fundamental theory and the recent developments in solid-state NMR are reviewed with specific focus on relevant applications in structure and acidity characterization of acid catalysts and catalytic mechanism.

Advances in selective catalytic transformation of polyols to value-added chemicals

MA Jiping, YU Weiqiang, WANG Min, JIA Xiuquan, LU Fang, XU Jie*

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

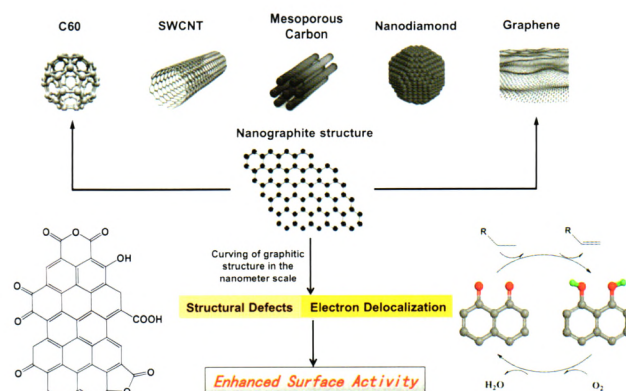


The synthesis of selected value-added chemicals from polyols by dehydration and hydrogenolysis methods is reviewed.

Research progress in metal-free carbon-based catalysts

SUN Xiaoyan, WANG Rui, SU Dangsheng*

Institute of Metal Research, Chinese Academy of Sciences;
National Institute of Clean-and-Low-Carbon Energy

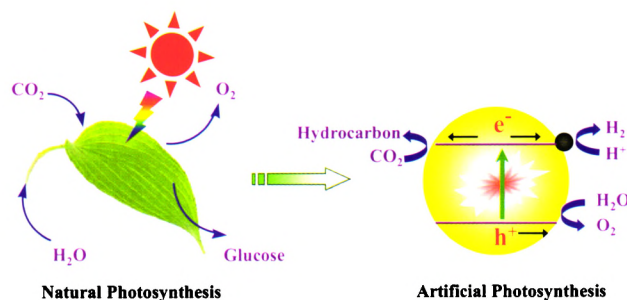


This review highlights recent progress in the development of metal-free carbon-based catalysts, including understanding their surface properties, catalytic performance, reaction mechanism, and macroscopic architecture. The state-of-the-art and future challenges of metal-free heterogeneous catalysis are also discussed.

Advances in photocatalysis in China

ZHENG Yun, PAN Zhiming, WANG Xinchen*

Fuzhou University



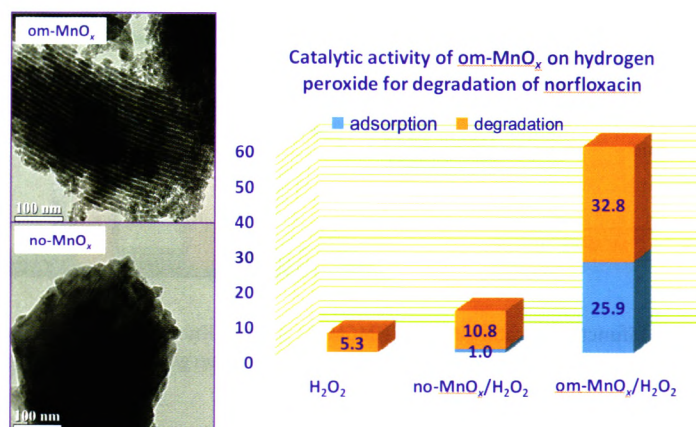
This review briefly presented developments in photocatalysis in China and focused on materials, modifications, and reaction mechanisms. The photocatalytic process is an artificial photosynthesis process for water splitting and CO₂ reduction by semiconductors using sunlight.

Articles

Chin. J. Catal., 2013, 34: 536–541 doi: 10.1016/S1872-2067(11)60492-0

Ordered mesoporous manganese oxide as catalyst for hydrogen peroxide oxidation of norfloxacin in water

SUI Minghao*, SHE Lei, SHENG Li, WEI Jinjie, ZHANG Lingdian, HUANG Shuhang
Tongji University

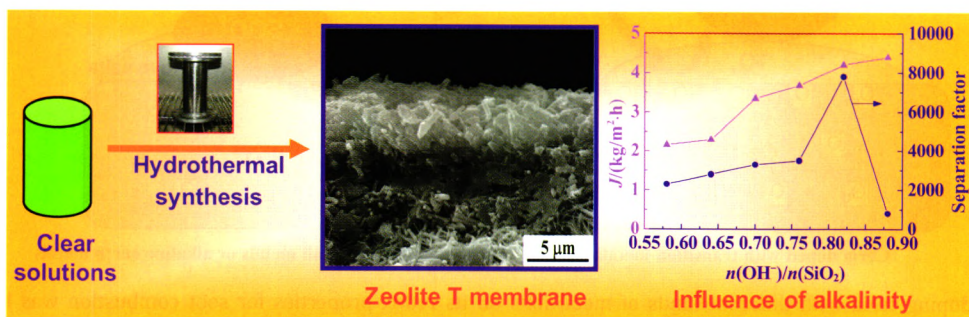


Compared with MnO_x without pores, ordered mesoporous MnO_x exhibited marked catalytic activity towards H₂O₂ for degradation of norfloxacin in aqueous solutions.

Chin. J. Catal., 2013, 34: 542–547 doi: 10.1016/S1872-2067(11)60478-6

Synthesis and pervaporation performance of highly reproducible zeolite T membranes from clear solutions

ZHANG Xiaoliang, SONG Xin, QIU Lingfang, DING Minzheng, HU Na, ZHOU Rongfei, CHEN Xiangshu*
Jiangxi Normal University

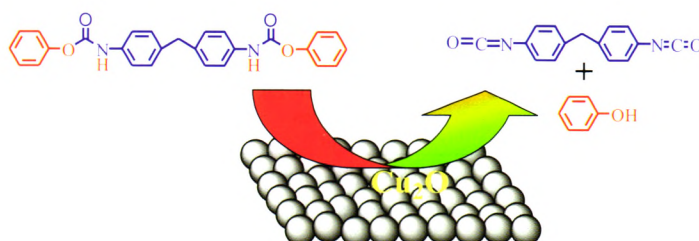


Highly reproducible zeolite T membranes were hydrothermally synthesized from clear solutions. Synthesis parameters, especially alkalinity, strongly affect the membrane growth and pervaporation performance.

Chin. J. Catal., 2013, 34: 548–558 doi: 10.1016/S1872-2067(11)60494-4

Solvent-free thermal decomposition of methylenediphenyl di(phenylcarbamate) catalyzed by nano-Cu₂O

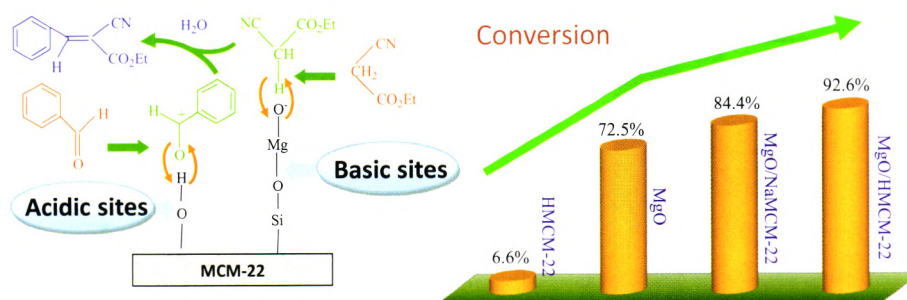
WANG Qingyin, KANG Wukui, ZHANG Yi, YANG Xiangui, YAO Jie, CHEN Tong, WANG Gongying*
Chengdu Institute of Organic Chemistry, Chinese Academy of Sciences;
University of Chinese Academy of Sciences; Qingdao Agricultural University



Nano-Cu₂O shows high catalytic activity for the thermal decomposition of methylenediphenyl di(phenylcarbamate) under solvent-free conditions. Solvent-free thermal decomposition is a green synthetic route to methylene di(phenylisocyanate).

Knoevenagel condensation reaction over acid-base bifunctional MgO/HMCM-22 catalysts

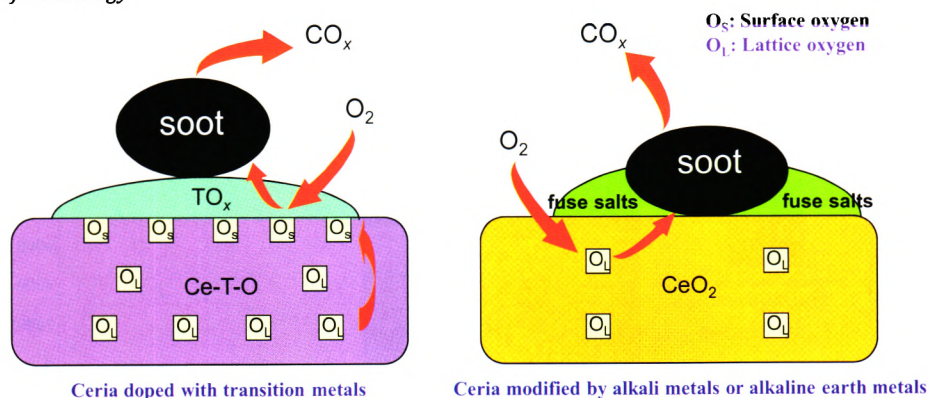
ZHANG Wenfei, LIANG Jinhua, LIU Yanqiu, SUN Shoufei, REN Xiaoqian*, JIANG Min
Nanjing University of Technology



The possible mechanism of acid-base bifunctional catalyst MgO/HMCM-22 for the Knoevenagel condensation reaction was presented. The results show that the catalyst MgO/HMCM-22 exhibited obvious acid-base synergetic effects with good catalytic performance for Knoevenagel condensation reactions.

Soot combustion performance and H₂-TPR study on ceria-based mixed oxides

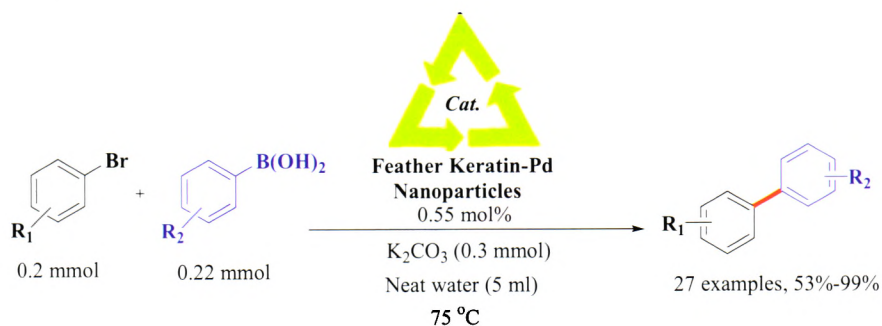
SHENG Yeqin, ZHOU Ying, LU Hanfeng*, ZHANG Zekai, CHEN Yinfei
Zhejiang University of Technology



The influence of doping ceria with different kinds of metal ions on its redox properties for soot combustion was investigated. The oxidation temperature of soot could be significantly reduced using ceria doped with transition metals because more active oxygen was generated at low temperature. In contrast, doping ceria with alkali metal and alkaline earth metals increased the combustion rate of soot.

Nanoparticle palladium catalyst stabilized by supported on feather keratin for Suzuki coupling reaction

MA Hengchang*, BAO Zhikang, HAN Guobing, YANG Ningning, XU Yufei, YANG Zengming, CAO Wei, MA Yuan
Northwest Normal University

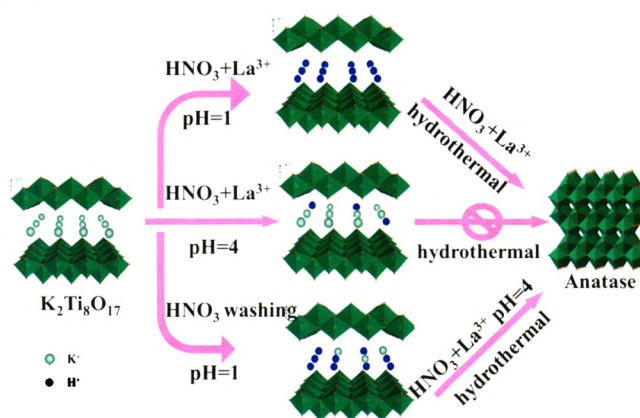


Feather keratin entrapped palladium nanoparticles efficiently catalyzed Suzuki coupling reactions in aqueous medium under mild reaction conditions, and the catalyst can be reused.

La³⁺-doped titania nanocrystals with superior photocatalytic activity prepared by hydrothermal method

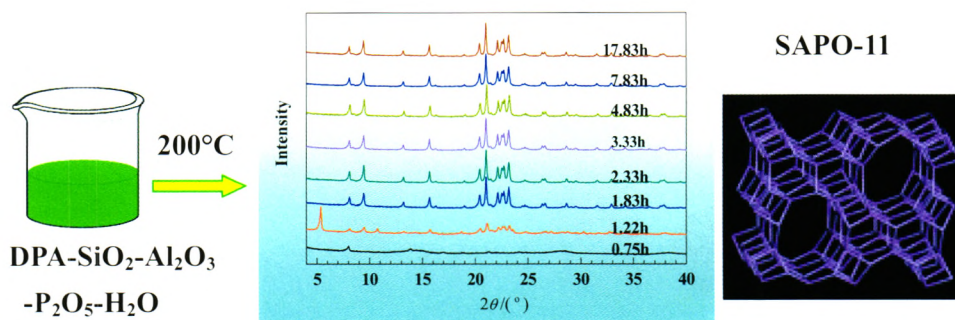
JIAO Yanchao, ZHU Mingfeng, CHEN Feng*, ZHANG Jinlong
East China University of Science and Technology

La³⁺ doped TiO₂ was prepared by treating K₂Ti₈O₁₇ in acidic solution. TiO₂ doped with 0.15 mol/L La³⁺ gave the optimal reaction constant of 0.11 min⁻¹ for methyl orange degradation, about 9.20 times that of bare TiO₂.



Study of crystallization process of SAPO-11 molecular sieve

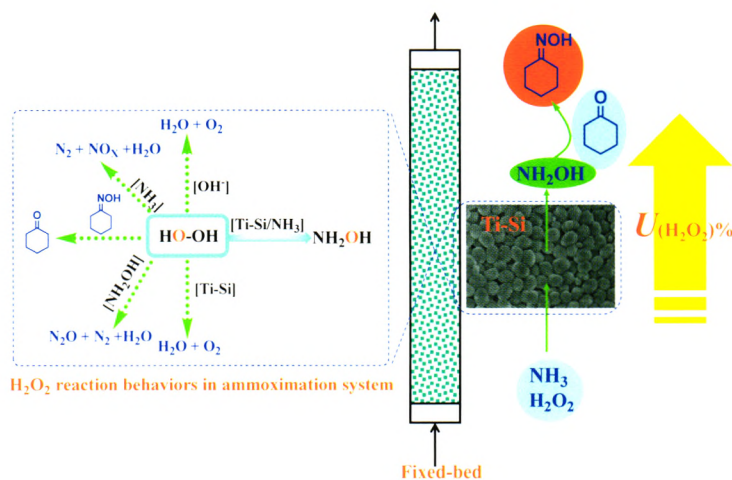
LI Bing, TIAN Peng, QI Yue, ZHANG Lin, XU Shutao, SU Xiong, FAN Dong, LIU Zhongmin*
Dalian Institute of Chemical Physics, Chinese Academy of Sciences; Graduate University of Chinese Academy of Sciences



The formation of SAPO-11 exhibited fast crystallization characteristics. The Si content of SAPO-11 increased with time, which led to a non-uniform distribution of Si in the crystals.

Fixed-bed process of liquid-phase ammoxidation of cyclohexanone over titanasilicates

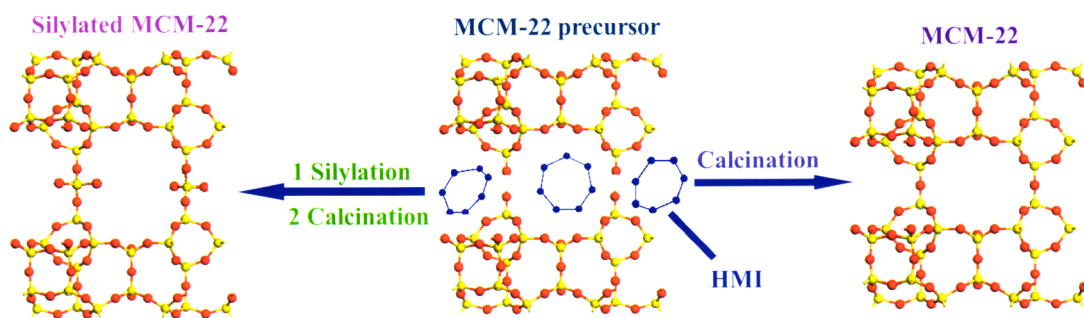
ZHUO Zuoxi, LIN Longfei, DENG Xiujuan, WANG Yuning, LIU Yueming*
East China Normal University



Liquid-phase ammoxidation of cyclohexanone over titanasilicates in a fixed-bed reactor was investigated. The efficiency of hydrogen peroxide was improved outstandingly under optimum conditions via controlling the basic hydrogen peroxide reaction behavior in the TS-1/H₂O₂ system.

Vapor-phase silylation of MCM-22 zeolite with various $\text{SiO}_2/\text{Al}_2\text{O}_3$ molar ratios

GAO Ningning, XIE Sujuan*, LIU Shenglin, LIU Kefeng, LI Xiuji, XU Longya*
Dalian Institute of Chemical Physics, Chinese Academy of Sciences



The interlayer micropores of MCM-22 with various $\text{SiO}_2/\text{Al}_2\text{O}_3$ ratios were expanded via vapor-phase silylation, which increased the pore volume of supercages and toluene adsorption capacity.