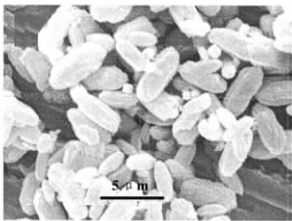


**Direct Synthesis, Characterization and Catalytic
C4 Alkane Cracking Properties
of Zeolite ZSM-23**

Ji Dong, WANG Yi, LIU Tao,
SU Yi, LI Ping, GAO Xiong-hou

J. Mol. Catal. (China) **2007**,21(3) , 193 ~199

Zeolite ZSM-23 materials with different Si/Al ratios were



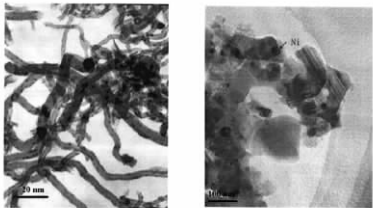
synthesized and were found to be very highly efficient and stable catalysts for the catalytic cracking of C4 alkane. The SEM photograph confirmed the absence of amorphous material outside the zeolite crystals.

**Influences of Reaction Temperature on Catalytic Behaviors
of Ni/SiC Catalyst for Partial Oxidation of Methane**

SUN Wei-zhong, WU Xiang-yang,
JIN Guo-qiang, GUO Xiang-yun

J. Mol. Catal. (China) **2007**,21(3) , 200 ~204

Influences of reaction temperature on the catalytic and co-
king behaviors of 1 0 % Ni / SiC catalyst for partial oxidation of



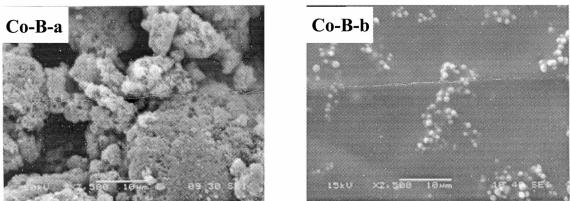
methane were investigated. The reaction temperature influenced
not only the catalyst activity, but also the surface species of the
catalyst, coke content and morphology.

**Preparation of a Co-B Amorphous Alloy Catalyst
for High Activity by Ultrasound-assisted
Chemical Reduction Method**

WANG Cheng-zuo, LI Hui,
CHEN Song-ying, LI He-xing

J. Mol. Catal. (China) **2007**,21(3) , 205 ~208

Uniform Co-B amorphous alloy was prepared by ultrasound-



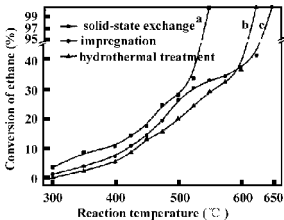
assisted chemical reduction method, which exhibited higher ac-
tivity than the regular Co-B obtained via direct chemical reduc-
tion during the liquid phase hydrogenation of acetonitrile.

**Influence of Preparation Methods and CeO₂ Promoter
on Oxidative Dehydrogenation of Ethane to Ethylene
over Ni Based Catalysts**

SUN Jian, Yu Lin, HAO Zhi-feng,
FANG Yi-wen, SUN Chang-yong,
SUN Ming

J. Mol. Catal. (China) **2007**,21(3) , 209 ~214

Ni-Based catalysts were prepared by different methods and



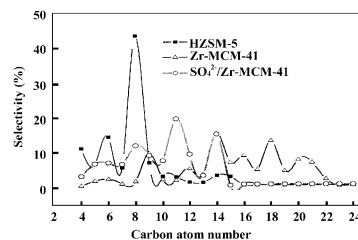
the activity of oxidative dehydrogenation of ethane to ethylene
(ODE) was investigated. The activity of NiO/ γ -Al₂O₃ at low
temperature is increased greatly after the introduction of CeO₂.
The catalyst was characterized by XRD , XPS and H₂-TG.

Study on Catalytic Pyrolysis of Polypropylene over $\text{SO}_4^{2-}/\text{Zr-MCM-41}$

LIU Fu-sheng, LEI Huo-xing, XIE Cong-xia,
YU Shi-tao, XIE Fang-fei, GE Xiao-ping

J. Mol. Catal. (China) **2007**, 21(3), 215 ~ 219

$\text{SO}_4^{2-}/\text{Zr-MCM-41}$ was synthesized and characterized by XRD, FT-IR, N_2 adsorption/desorption and NH_3 -TPD techniques.



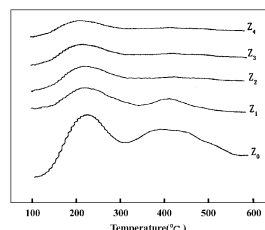
It was used as catalyst in the pyrolysis of polypropylene (PP). Compared with the results obtained over HZSM-5 or Zr-MCM-41, higher pyrolysis conversion of PP and higher yield of liquid products were obtained over $\text{SO}_4^{2-}/\text{Zr-MCM-41}$.

Effects of Hydrothermal Treatment on Catalytic Performance of P-ZSM-5

YANG Kang-zhen, ZHOU Yu-ming,
ZHANG Yi-wei, LIU Rong

J. Mol. Catal. (China) **2007**, 21(3), 220 ~ 223

The NH_3 -TPD diagrams of hydrothermal treated samples and of original P-ZSM-5 sample were compared. With the increasing temperature of treatment, the quantities of both strong



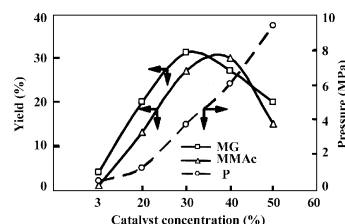
acid and weak acid decrease while those of the strong acid decrease even faster. But it was favorable to enhance the selectivity and yield of propylene, and to lower the carbon paraffins. And the P-ZSM-5 zeolites by hydrothermal treatment at 580 °C has an optimum cracking of 1-butene.

Analysis of Process for the Coupling Reaction of Trioxane and Methyl Formate with Acid Catalyst

WANG Ke-bing, YAO Jie,
WANG Yue, WANG Gong-ying

J. Mol. Catal. (China) **2007**, 21(3), 224 ~ 228

Methyl glycolate (MG) and methyl methoxy acetate (MMAc) can be synthesized in the condensation reaction of formaldehyde and methyl formate in the presence of acid catalyst.



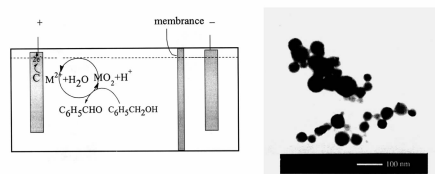
the effect of catalyst, molar ratio of reactants, reaction temperature, and reaction time on the yield of MG and MMAc and system pressure has been studied. The result shown that the acidity of catalyst decided its activation ability to formaldehyde, which was the major effect factor to the reaction.

Electro-catalytic Synthesis of Benzaldehyde Using Electro-oxidation Nano MnO_2 as Mediator

XU Chun-hong, CHEN Ri-yao, ZHENG Xi,
GENG Ya-min, CHEN Zhen

J. Mol. Catal. (China) **2007**, 21(3), 229 ~ 232

Benzaldehyde was synthesized from benzaldealcohol using



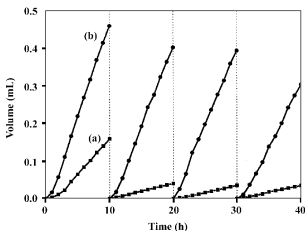
$\text{MnO}_2/\text{Mn}^{2+}$ or $\text{PbO}_2/\text{Pb}^{2+}$, $\text{Ce}^{4+}/\text{Ce}^{3+}$, $\text{Cr}_2\text{O}_7^{2-}/\text{Cr}^{3+}$ as the oxidant by indirect electrooxidation. TEM showed that MnO_2 appeared a nano size (10 ~ 50 nm) under the ultrasound irradiation.

Photocatalytic Properties of B-doped Cd_{0.5}Zn_{0.5}S
Photocatalyst for Hydrogen Generation

ZHUGE Fu-yu, JIN Zhi-liang, LV Gong-xuan

J. Mol. Catal. (China) 2007,21(3), 233 ~ 238

The B-doped Cd_{0.5}Zn_{0.5}S photocatalyst, in comparison with pure Cd_{0.5}Zn_{0.5}S, showed remarkable higher activity and stabil-

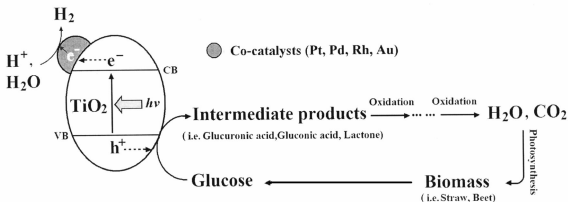


ity for hydrogen generation from aqueous solutions containing S²⁻ as sacrificial electron donors under visible light ($\lambda \geq 420$ nm) irradiation.

Photocatalytic Hydrogen Evolution over M/TiO₂
(M = Pt, Pd, Au, Rh)
with Glucose as Electron Donor

ZHANG Xiao-jie, CHU Guo-hai,
Li Shu-ben, LV Gong-xuan

J. Mol. Catal. (China) 2007,21(3), 239 ~ 244



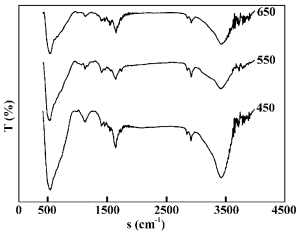
With glucose as an electron donor, hydrogen can be produced efficiently over M / TiO₂ (M = Pt, Pd, Au, Rh) under UV light irradiation.

Photocatalytic Oxidation of Orth-nitrophenol by
SO₄²⁻/TiO₂-WO₃

PENG Shao-hong, ZHONG Li

J. Mol. Catal. (China) 2007,21(3), 245 ~ 248

SO₄²⁻ / TiO₂-WO₃ photocatalysts with the different loading of SO₄²⁻ were prepared with different concentration of H₂SO₄.



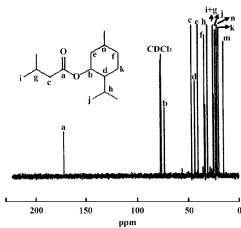
The photocatalytic degradation of orth- nitrophenol was observed on the photocatalysts. It was found that the photocatalytic activity of SO₄²⁻ / TiO₂-WO₃ was higher than the that of TiO₂-WO₃.

Carbonyl Synthesis of Menthol and Isobutene on a Complex
Pd Catalyst

WANG Cheng-xue, SUN Jing-ru,
SUN De

J. Mol. Catal. (China) 2007,21(3), 249 ~ 254

The carbonyl synthetic reaction of menthol and isobutene to Validol on PdCl₂ (PPh₃)₂/PPh₃/p-CH₃C₅H₄SO₃H catalysts was



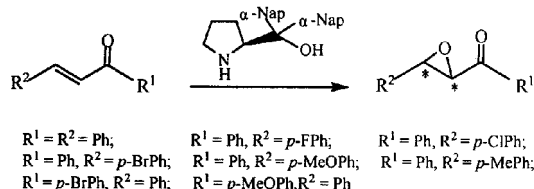
accomplished in a slurry reactor with dimethyl benzene solvent. More than 98% the validol of was distinguished by FT-IR, MS, ¹³C NMR and ¹H NMR. The reaction mechanism and process were given.

A New Recyclable Prolinol Derivative for the Asymmetric Organocatalytic Epoxidation of α , β -Enones

LIU Wen-min, LIU Xue-ying, HE Wei,
LIU Peng, ZHANG Sheng-yong

J. Mol. Catal. (China) **2007**, 21(3), 255 ~ 259

Starting from (*S*)-proline, a new (*S*)-prolinol derivative,



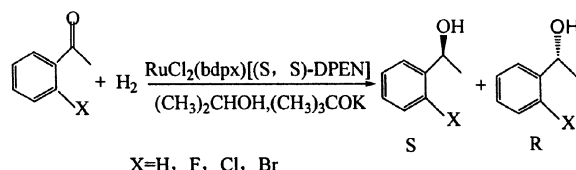
(*S*)-2-(di- α - naphthylhydroxyl methyl) pyrrolidine, was prepared and applied in the organocatalytic asymmetric epoxidation of α , β -enones. The catalyst was recovered almost by a simple acid-base adjustment and reused for five cycles without obvious decreased enantioselectivities and catalytic reactivities.

Ru-BDPX-DPEN A Novel Catalyst for Asymmetric Hydrogenation of Simple Aromatic Ketones

TAO Ming, XIONG Wei,
CHEN Hua, LI Xian-jun

J. Mol. Catal. (China) **2007**, 21(3), 260 ~ 263

A Ruthenium complex $\text{RuCl}_2(\text{BDPX})(\text{S}, \text{S-DPEN})$ (BD-



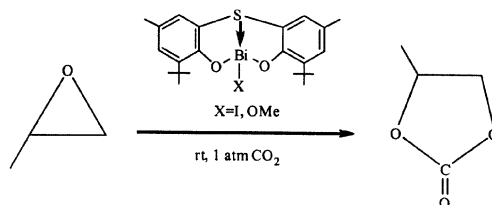
PX = 1, 2-bis (diphenylphosphinomethyl) benzen, *S*, *S*-DPEN = *S*, *S*-1, 2-diphenyl ethylenediamine) used as a catalyst in the asymmetric hydrogenation of acetophenone. The hydrogenation of acetophenone with *S*/*C* = 20000 in optimized conditions gave 100% conversion and 59.0% ee. .

Synthesis of Novel Organobismuth Complexes Bearing a Sulfur-bridged Biphenolate Ligand and Their Catalytic Application to CO_2 Cycloaddition with Propylene Epoxide

YIN Shuang-feng, DAI Wei-li, LI Wen-sheng,
ZHOU Xiao-ping, SHIMADA Shigeru

J. Mol. Catal. (China) **2007**, 21(3), 264 ~ 267

Novel organobismuth complexes bearing a sulfur-bridged bi-



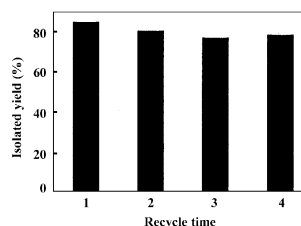
phenolate ligand were synthesized and characterized. They were found to show high catalytic activity and selectivity for the solvent-free direct synthesis of propylene carbonate from CO_2 cycloaddition with propylene oxide in the presence of iodide nucleophilic reagents.

Green Oxidation of Cyclohexene to Adipic Acid with Hydrogen Peroxide Catalyzed by 12-Phosphotungstate acid and Ionic Liquids

LU Rui-ling, LI Zhen,
CHEN Jing, LANG Xian-jun

J. Mol. Catal. (China) **2007**, 21(3), 268 ~ 271

With 12-Phosphotungstate acid as catalyst for the oxidation

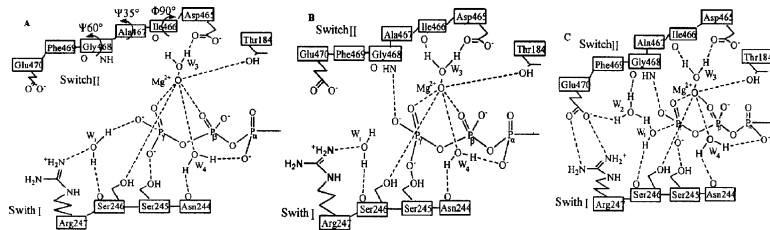


of cyclohexene to adipic acid, the role and amount of ionic liquids in this reaction were investigated and discussed. The reusability of the catalyst system HPW- $[(\text{CH}_2)_4\text{SO}_3\text{H-Py}][\text{HSO}_4]$ were also investigated.

The Structure and Mechanochemical Mechanism of Myosin

ZHOU Jin-ying, NI Kun,
LV Gong-xuan

J. Mol. Catal. (China) 2007, 21(3), 272 ~ 279



ATP hydrolysis is catalyzed by myosin. Arg-247 and Glu-470 come together into a "salt-bridge" in smooth muscle myosin. And the "salt-bridge" plays an important role in the ATP hydrolysis process.

Development on the Research of Dendritic
Phosphine Metal Catalysts

YI Bing, FAN Qing-hua

The research advances of dendritic phosphorous metal catalysts in the recent years are reviewed. Some viewpoints on the future development of dendritic catalysts are submitted.

J. Mol. Catal. (China) 2007, 21(3), 280 ~ 288

欢迎订阅《分子催化》

《分子催化》是由中国化学会主办、科学出版社出版，由中国科学院兰州化学物理研究所承办的向国内外公开发行的学术刊物。主要报导有关分子催化方面的最新进展与研究成果。辟有学术论文、研究简报、研究快报及进展评述等栏目。内容侧重于络合催化、酶催化、光助催化、催化过程中的立体化学问题、催化反应机理与动力学、催化剂表面态的研究及量子化学在催化学科中的应用等。工业催化过程中均相催化剂、固载化的均相催化剂、固载化的酶催化剂等的活化、失活和再生，以及用于新催化过程的催化剂的优选与表征等方面的稿件，本刊也很欢迎。读者对象主要是科研单位及工矿企业中从事催化工作的科技人员、研究生、高等院校化学系和化工系师生。欢迎相关专业人员投稿。

本刊为双月刊，每逢双月末出版，大16开本，约16万字，每册定价18.00元。

本刊为国内外公开发行。中国标准刊号：ISSN 1001-3555/CN 62-1039/O6。邮发代号：54-69。E-mail 信箱：FZCH@lzb.ac.cn 通过兰州市邮局发行。亦可向本刊编辑部直接函购。

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