

## Contents

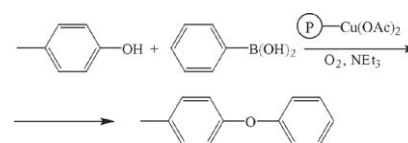
### Articles

**Andrea Biffis, Martino Gardan,  
Benedetto Corain**

*Journal of Molecular Catalysis A: Chemical 250  
(2006) 1*

Homogeneous and supported copper(II) acetate as  
catalyst for C–O coupling reactions

The results of the first systematic evaluation of the reactivity of homogeneous and polymer-supported copper(II) acetate as catalyst in the C–O coupling reaction of *p*-cresol with phenylboronic acid are reported.

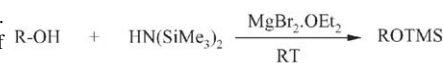


**Mohammad M. Mojtahedi, Hassan Abbasi,  
M. Saeed Abaee**

*Journal of Molecular Catalysis A: Chemical 250  
(2006) 6*

MgBr<sub>2</sub>·OEt<sub>2</sub> mediated protection of alcohols with  
hexamethyldisilazane: An efficient catalytic route for  
the preparation of silyl ethers under solvent-free  
conditions

Various types of alcohols and phenols were rapidly protected by hexamethyldisilazane in good to excellent yields at room temperature in the presence of catalytic amount of magnesium bromide ethyl etherate under solvent-free conditions. Good to excellent chemoselectivity was demonstrated for competitive protection of primary hydroxyls in the presence of secondary and tertiary alcohols. Highly selective protection of phenols in the presence of aromatic amines was also demonstrated successfully.



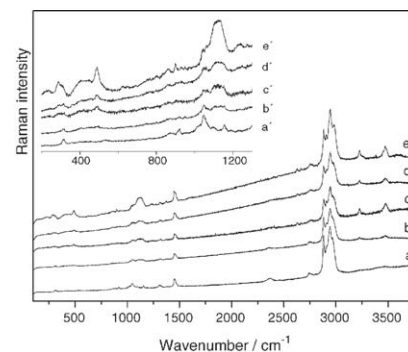
R = aryl, primary, secondary, and tertiary alkyls

**Yanfeng Ma, Niu Li, Xingtao Ren,  
Shouhe Xiang, Naijia Guan**

*Journal of Molecular Catalysis A: Chemical 250  
(2006) 9*

Synthesis of SAPO-41 from a new reproducible route  
using H<sub>3</sub>PO<sub>3</sub> as the phosphorus source and its  
application in hydroisomerization of *n*-decane

From H<sub>3</sub>PO<sub>3</sub> containing gel to SAPO-41 molecular sieve. In the new reproducible route, Phosphorous acid (H<sub>3</sub>PO<sub>3</sub>) or the mixture of H<sub>3</sub>PO<sub>3</sub> and phosphoric acid (H<sub>3</sub>PO<sub>4</sub>) are used as the phosphorus source to synthesize microporous silicoaluminophosphates. It is found that gels containing H<sub>3</sub>PO<sub>3</sub> favor the formation of SAPO-41 materials.

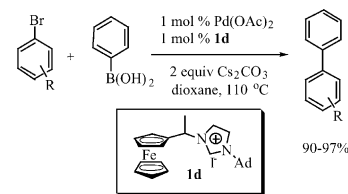


**Hong-Wei Yu, Ji-Cheng Shi, Hong Zhang,  
Peng-Yu Yang, Xin-Ping Wang, Zi-Lin Jin**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 15

Unsymmetric-1,3-disubstituted imidazolium salt for palladium-catalyzed Suzuki–Miyaura cross-coupling reactions of aryl bromides

1-(Ferrocenylethyl)-3-substituted-imidazolium salts have been synthesized and applied in the palladium-catalyzed Suzuki–Miyaura cross-coupling reactions.

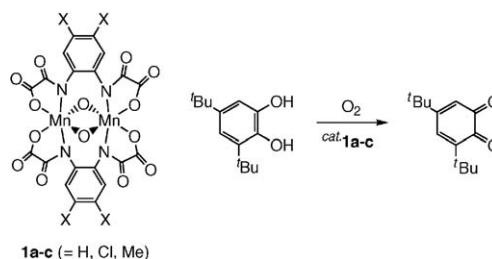


**Gonzalo Blay, Isabel Fernández, José R. Pedro,  
Rafael Ruiz-García, Tomás Temporal-Sánchez,  
Emilio Pardo, Francesc Lloret, M. Carmen Muñoz**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 20

Chemistry and reactivity of dinuclear manganese oxamate complexes: Aerobic catechol oxidation catalyzed by high-valent bis(oxo)-bridged dimanganese(IV) complexes with a homologous series of binucleating 4,5-disubstituted-*o*-phenylenedioxamate ligands

A novel series of high-valent bis( $\mu$ -oxo)dimanganese(IV) complexes with the binucleating 4,5- $X_2$ -*o*-phenylenebis(oxamate) ligands ( $X = \text{H, Cl, Me}$ ) has been developed as efficient catechol oxidase models. A balanced ligand design allows to tune the catalytic activity along this series by varying the electronic nature of the  $X$  groups.

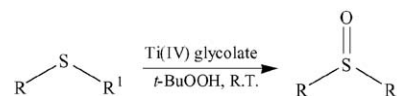


**Antonio Massa, Eleonora M. De Lorenzo,  
Arrigo Scettri**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 27

Polymeric Ti(IV) glycolate: A heterogeneous catalyst for solvent-free sulfoxidation by *t*-butyl hydroperoxide

The oxidation of sulfides to sulfoxides has been conveniently performed under heterogeneous and solvent-free conditions employing polymeric Ti(IV) glycolate as reusable catalyst and *t*-butyl hydroperoxide as oxygen donor. The catalyst can be very efficiently recovered and reused several times without any significant change in reactivity and selectivity.

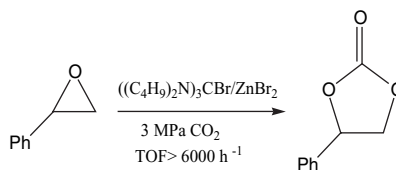


**Haibo Xie, Shenghai Li, Suobo Zhang**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 30

Highly active, hexabutylguanidinium salt/zinc bromide binary catalyst for the coupling reaction of carbon dioxide and epoxides.

An experimentally simple and inexpensive catalyst system based on hexabutylguanidinium/ $\text{ZnBr}_2$  has been developed for the coupling of carbon dioxide and epoxides to form cyclic carbonates with significant catalytic activity under mild reaction conditions without using additional organic solvents (e.g. the turnover frequencies (TOF,  $\text{h}^{-1}$ ) values as high as  $6.6 \times 10^3 \text{ h}^{-1}$  for relatively unreactive styrene oxide and  $1.01 \times 10^4 \text{ h}^{-1}$  for epichlorohydrin). This catalyst system also offers the advantages of recyclability and reusability. Therefore, it is a very effective, environmentally benign, and simple catalytic process. The special steric and electrophilic characteristics of hexabutylguanidinium bromide ionic liquid result in the prominent performance of this novel catalyst system.

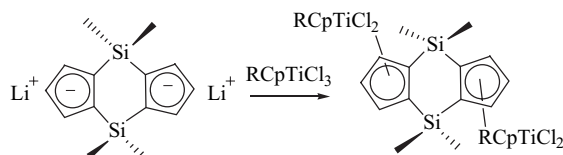


**Sheng Xu, Zuo-Feng Feng, Ji-Ling Huang**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 35

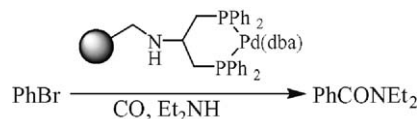
Synthesis of double silylene-bridged binuclear titanium complexes and their use as catalysts for ethylene polymerization

Five new double silylene-bridged binuclear titanium complexes were synthesized by the reaction of  $\text{RCpTiCl}_3$  and  $[\mu, \mu\text{-}(\text{SiMe}_2)_2(\text{C}_5\text{H}_3)_2]^{2-}$  in toluene. They were all well characterized. These complexes activated with methylaluminoxane (MAO) are highly active catalysts for the polymerization of ethylene even at low Al/Ti. The molecular weight distribution of the polymer indicates broad or bimodal distribution.

**Amal Mansour, Moshe Portnoy**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 40

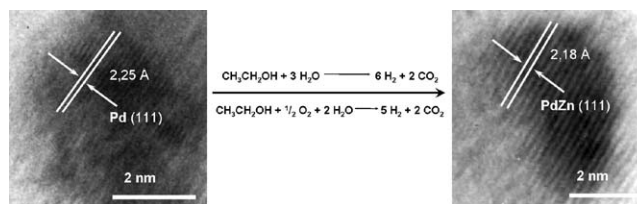
Efficient heterogeneously catalyzed amidocarbonylation of bromoarenes based on a serinol-derived chelate diphosphine ligand

**Albert Casanovas, Jordi Llorca, Narcís Homs, José Luis G. Fierro, Pilar Ramírez de la Piscina**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 44

Ethanol reforming processes over ZnO-supported palladium catalysts: Effect of alloy formation

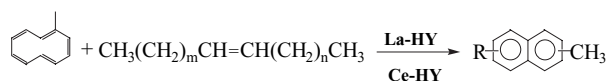
ZnO-supported palladium catalysts form a PdZn alloy under ethanol steam-reforming or oxidative steam-reforming conditions. The catalytic performance of these materials is correlated with the ability of the bimetallic phase to dehydrogenate ethanol to the intermediate acetaldehyde.

**Zhongkui Zhao, Weihong Qiao, Guiru Wang, Zongshi Li, Lübo Cheng**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 50

Alkylation of  $\alpha$ -methylnaphthalene with long-chain olefins catalyzed by rare earth lanthanum modified HY zeolite

Alkylations of  $\alpha$ -methylnaphthalene with long-chain alkenes (mixed alkenes,  $m + n = 7$  and 8, mass ratio of  $\text{C}_{11}$  to  $\text{C}_{12}$  is 45/55) in liquid-phase catalyzed by lanthanum or cerium modified HY zeolite catalysts had been first studied 2%  $\text{La}_2\text{O}_3$ -HY zeolite was chosen for its excellent catalytic performance. Effects of reaction conditions like reaction temperature, volume hour space velocity (VHSV) and time on stream on the 2%  $\text{La}_2\text{O}_3$ -HY promoted alkylation were also studied.

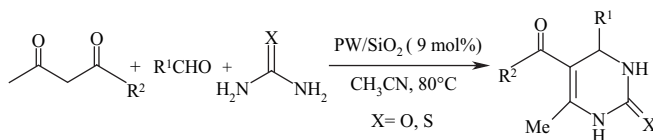


**Ezzat Rafiee, Fomaida Shahbazi**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 57

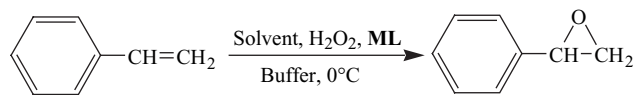
One-pot synthesis of dihydropyrimidones using silica-supported heteropoly acid as an efficient and reusable catalyst: Improved protocol conditions for the Biginelli reaction

One-pot synthesis of dihydropyrimidones catalyzed by silica-supported heteropoly acid as an efficient, inexpensive, easily available, and reusable catalyst. Mild reaction conditions, ease of workup, high yields, and short reaction times are features of this new procedure.

**X.-H. Lu, Q.-H. Xia, H.-J. Zhan, H.-X. Yuan, C.-P. Ye, K.-X. Su, G. Xu**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 62

Synthesis, characterization and catalytic property of tetradentate Schiff-base complexes for the epoxidation of styrene

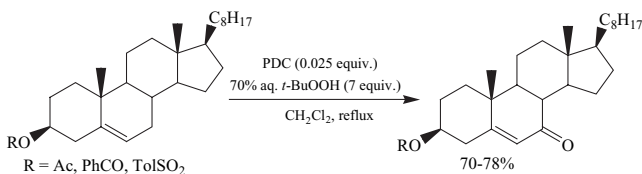


**L:** N,N'-bis(salicylidene)cyclohexanediamine (**L**<sub>1</sub>)  
**N,N'**-bis(2-pyridine carboxalidene)cyclohexanediamine (**L**<sub>2</sub>)  
**N,N'**-bis(2-hydroxy-1-naphthalidene)cyclohexanediamine (**L**<sub>3</sub>)  
**M:** Mn, Co, Cu, Fe

**Manolis A. Fouteris, Anna I. Koutsourea, Sotiris S. Nikolaropoulos, Abdelkhalek Riahi, Jacques Muzart**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 70

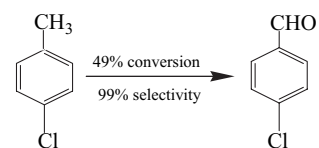
Improved chromium-catalyzed allylic oxidation of  $\Delta^5$ -steroids with *t*-butyl hydroperoxide

**Jiaqiang Wang, Hua Fang, Ying Li, Junjie Li, Zhiying Yan**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 75

Liquid phase oxidation of *p*-chlorotoluene to *p*-chlorobenzaldehyde over cobalt-doped mesoporous titania with a crystalline framework

Cobalt-doped mesoporous titania with a crystalline framework is reported as an efficient catalyst for the oxidation of *para*-chlorotoluene to *para*-chlorobenzaldehyde in acetic acid using aqueous hydrogen peroxide as oxidant for the first time. Recycling of the catalyst indicates that the catalyst can be used a number of times without losing its activity to a greater extent.



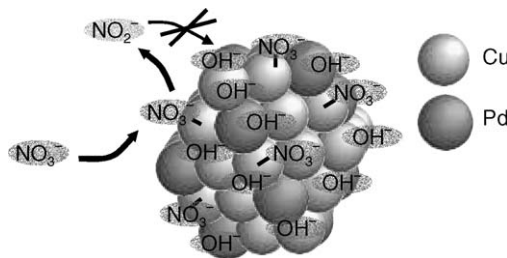
Reagents and conditions:  
 Co/MTiO<sub>2</sub>, H<sub>2</sub>O<sub>2</sub>, acetic acid, 353K

**Yoshinori Sakamoto, Yuichi Kamiya,  
Toshio Okuhara**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 80

Selective hydrogenation of nitrate to nitrite in water over Cu-Pd bimetallic clusters supported on active carbon

In hydrogenation of nitrate in water with  $H_2$ , Cu-Pd bimetallic clusters supported on active carbon exhibited high selectivities for nitrite (80–93%) at alkaline pH. This high selectivity for nitrite is due to both uniformity of the clusters and strong inhibition of  $OH^-$  toward adsorption of nitrite.

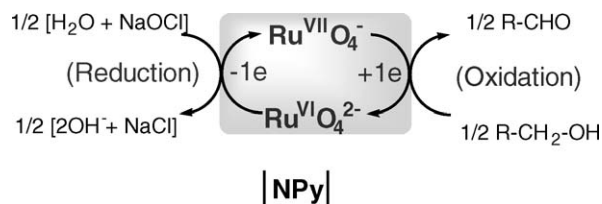


**Shanmuganathan Venkatesan,  
Annamalai Senthil Kumar, Jyh-Myng Zen**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 87

A rugged lead-ruthenate pyrochlore membrane catalyst for highly selective oxidation of alcohols

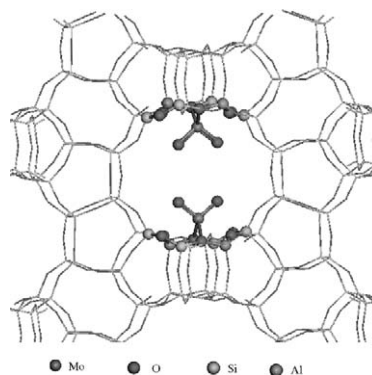
A rugged lead-ruthenate pyrochlore (Py,  $Pb_2Ru_2O_7$ ) Nafion 417 membrane catalyst ( $[NPy]$ ) has been demonstrated for highly efficient and fully selective oxidation of primary and secondary alcohols to aldehydes and ketones.



**Xiujie Li, Weiping Zhang, Shenglin Liu,  
Xiuwen Han, Longya Xu, Xinhe Bao**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 94

A high-resolution MAS NMR study on the potential catalysts Mo/HBeta for olefin metathesis: The interaction of Mo species with HBeta zeolite



**Zheng Li, Runbo Ding, Zhong Lu, Shuxiu Xiao,  
Xuelin Ma**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 100

Silica sulfate as a recyclable and efficient catalyst for Beckmann rearrangement under microwave irradiation

Silica sulfate has been proved to be an efficient and recyclable catalyst for Beckmann rearrangement of a variety of oximes in acetone under microwave irradiation.

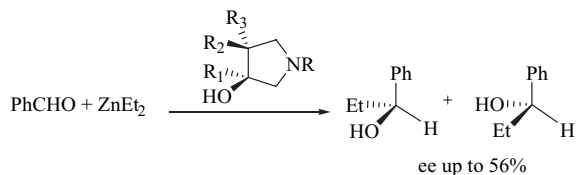


**António M. d'A. Rocha Gonsalves,  
M. Elisa S. Serra, Dina Murtinho**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 104

Approach to a better understanding and modelling  
of  $\beta$ -pyrrolidinoalcohol ligands for enantioselective  
alkylation

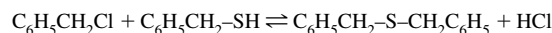
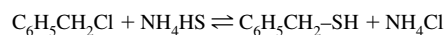
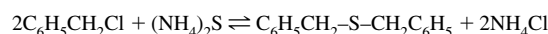
$\beta$ -pyrrolidinoalcohol derivatives of malic acid, citramalic acid and pantolactone were synthesized and tested in the enantioselective alkylation of benzaldehyde with diethylzinc. The insight into the mechanism of chiral induction contributes to the design of new ligands.



**Sunil K. Maity, Narayan C. Pradhan,  
Anand V. Patwardhan**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 114

Reaction of benzyl chloride with ammonium sulfide  
under liquid-liquid phase transfer catalysis: Reaction  
mechanism and kinetics

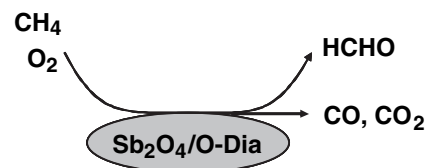


**Hiroyuki Matsumura, Kimito Okumura,  
Takahiro Shimamura, Na-oki Ikenaga,  
Takanori Miyake, Toshimitsu Suzuki**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 122

Selective oxidation of methane to formaldehyde over  
antimony oxide-loaded catalyst

Methane was selectively oxidized to formaldehyde  
on  $\text{Sb}_2\text{O}_4$  loaded oxidized diamond catalyst.

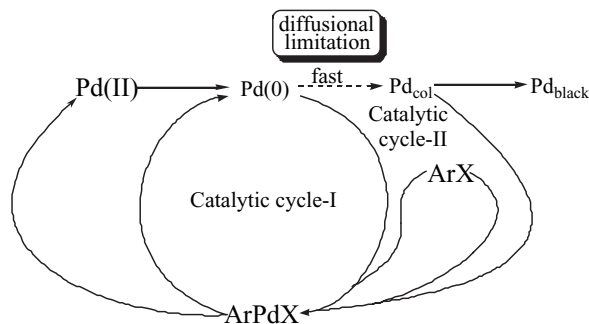


**Alexander F. Schmidt, Ayman Al-Halalqa,  
Vladimir V. Smirnov**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 131

Effect of macrokinetic factors on the ligand-free  
Heck reaction with non-activated bromoarenes

It has first been established that the Heck reaction in the conditions of ligand-free catalysis proceeds under a diffusional controlled regime.

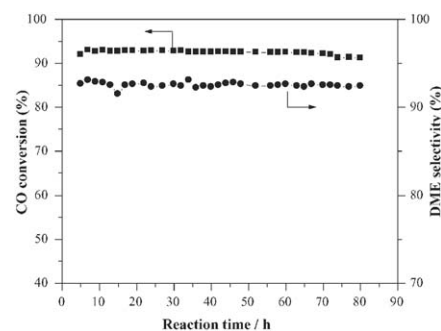


**Dongsen Mao, Weimin Yang, Jianchao Xia,  
Bin Zhang, Guanzhong Lu**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 138

The direct synthesis of dimethyl ether from syngas over hybrid catalysts with sulfate-modified  $\gamma$ -alumina as methanol dehydration components

The hybrid catalyst containing the  $\text{SO}_4^{2-}/\gamma\text{-Al}_2\text{O}_3$  with 10 wt.% sulfate content and calcined at 550 °C as dehydrating component exhibited high activity, selectivity and stability for the direct synthesis of dimethyl ether from syngas.

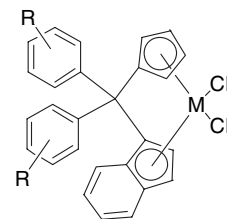


**Xiaoxia Yang, Yong Zhang, Jiling Huang**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 145

*ansa*-Metallocene  $(\text{R-Ph})_2\text{C}(\text{Cp})(\text{Ind})\text{MCl}_2$  with electron withdrawing substituents on phenyl groups for olefin polymerization

The new *ansa*-complexes  $(\text{R-Ph})_2\text{C}(\text{Cp})(\text{Ind})\text{MCl}_2$  ( $\text{R} = \text{CF}_3, \text{F}, \text{Cl}$ ;  $\text{M} = \text{Ti}, \text{Zr}$  or  $\text{Hf}$ ) were used on ethylene homopolymerization and ethylene/ $\alpha$ -olefin copolymerization. Zirconocenes contained  $\text{CF}_3$  or  $\text{Cl}$  showed the highest catalytic activity. The copolymer from zirconocene contained  $\text{Cl}$  possessed the highest  $\alpha$ -olefin contents.

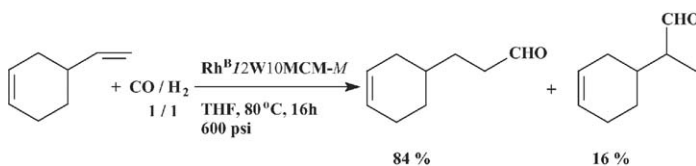


**Bassam El Ali, Jimoh Tijani,  
Mohammed Fettouhi**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 153

Hydroformylation of alkyl alkenes catalyzed by rhodium supported on MCM-41: The effect of  $\text{H}_3\text{PW}_{12}\text{O}_{40}$  on the catalytic activity and recycling

Heteropolyacids were impregnated with rhodium(I) or (III) complexes on MCM-41 and used as supported catalysts in the hydroformylation of alkyl alkenes. Two types of catalysts were prepared and tested: MCM-41 supported by rhodium(I) or rhodium(III) in the presence and in the absence of the heteropolyacid  $\text{H}_3\text{PW}_{12}\text{O}_{40} \cdot 25\text{H}_2\text{O}$  (adopted as  $\text{HPW}_{12}$ ). The supported catalysts were tested in the hydroformylation of 1-octene and other alkyl alkenes. The results showed that the supported catalysts containing the heteropolyacid  $\text{HPW}_{12}$  along with rhodium(I) or (III) have higher catalytic activity. The study of recycling of the supported catalyst showed the advantages of the use of  $\text{HPW}_{12}$  on the process of recycling of rhodium catalysts.

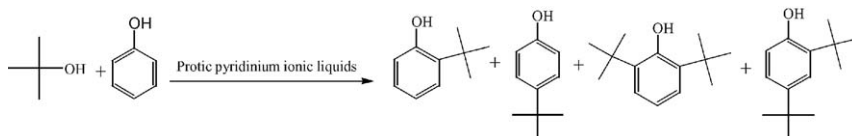


**Zhiying Duan, Yanlong Gu, Juan Zhang,  
Laiying Zhu, Youquan Deng**

*Journal of Molecular Catalysis A: Chemical* 250  
(2006) 163

Protic pyridinium ionic liquids: Synthesis, acidity determination and their performances for acid catalysis

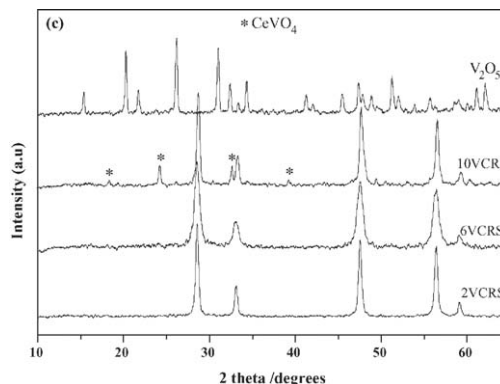
Three new protic ionic liquids based on 2-methylpyridinium were prepared and characterized. Their catalytic activities for the *tert*-butylation of phenol and the esterification of cyclic olefins with acetic acid were examined and satisfactory results were obtained over 2-methylpyridinium trifluoromethanesulfonate ( $[2\text{-MPyH}][\text{OTf}]$ ). Hammett method was used to determine the acidity order of these ionic liquids and the results are consistent with the catalytic activities observed in the acid-catalyzed probe reactions.



**T. Radhika, S. Sugunan**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 169

Structural and catalytic investigation of vanadia supported on ceria promoted with high surface area rice husk silica

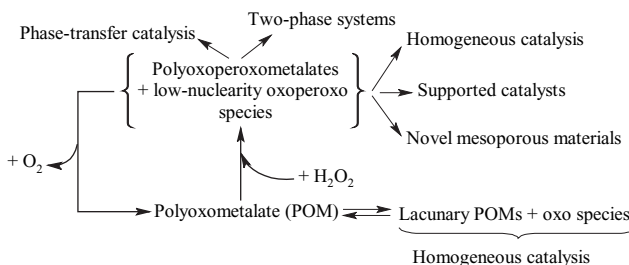


**Jean-Marie Brégeault, Maxence Vennat, Laurent Salles, Jean-Yves Piquemal, Yahdi Mahha, Emmanuel Briot, Paul Célestin Bakala, Ahmed Atlamsani, René Thouvenot**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 177

From polyoxometalates to polyoxoperoxometalates and back again; potential applications

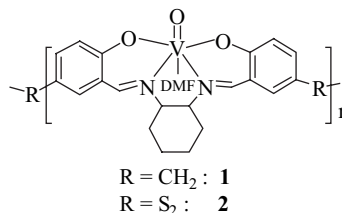
Spectrometric, structural and reactivity data on precursor complexes, lead to a more rational approach to catalysis systems and to the discovery of novel classes of precursors and/or catalysts.

**Mannar R. Maurya, Amit Kumar**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 190

Oxovanadium(IV) based coordination polymers and their catalytic potentials for the oxidation of styrene, cyclohexene and *trans*-stilbene

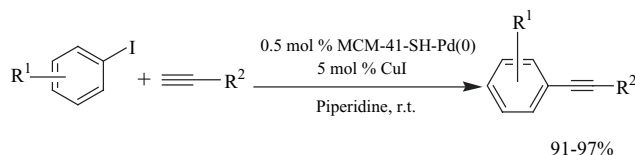
New polymeric complexes  $[-\text{CH}_2\{\text{VO}(\text{sal-dach})\cdot\text{DMF}\}-]_n$  (**1**) and  $[-\text{S}_2\{\text{VO}(\text{sal-dach})\cdot\text{DMF}\}-]_n$  (**2**) with polymeric chelating ligands  $[-\text{CH}_2(\text{H}_2\text{sal-dach})-]_n$  (**I**) and  $[-\text{S}_2(\text{H}_2\text{sal-dach})_2-]_n$  (**II**), derived from 5,5'-methylenebis(salicylaldehyde) or 5,5'-dithiobis(salicylaldehyde) and 1,2-diaminocyclohexane, have been prepared and used as catalyst for the oxidation of styrene, cyclohexene and *trans*-stilbene.

**Mingzhong Cai, Qiuhua Xu, Pingping Wang**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 199

A novel MCM-41-supported sulfur palladium(0) complex catalyst for Sonogashira coupling reaction

A novel MCM-41-supported sulfur palladium(0) complex was conveniently prepared from commercially available and cheap  $\gamma$ -mercaptopropyltriethoxysilane via immobilization on MCM-41, followed by reacting with palladium chloride and then the reduction with hydrazine hydrate. This complex exhibited excellent performance in Sonogashira coupling reaction and can be reused without noticeable loss of activity.





**Praveen K. Tandon, Sumita Sahgal, Gayatri, Manisha Purwar, Mamta Dhusia**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 203

Oxidation of ketones by cerium(IV) in presence of iridium(III) chloride

Iridium trichloride in acidic medium was found more effective than  $\text{RuCl}_3$  or  $\text{OsO}_4$  in the oxidation of ketones by ceric perchlorate. Data indicate conversion of hydrolysed to unhydrolysed species of cerium with increasing acid concentrations. Dip in acid graph precisely coincides with reported data. Reduction of cerium(IV) by water was also verified. Given rate law explains all experimental findings.

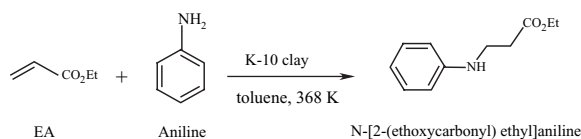
$$-d[\text{Ce}^{\text{IV}}]/dt = \frac{2kK_1K_2[\text{Ce}^{\text{IV}}][\text{S}][\text{Ir}^{\text{III}}][\text{H}^+]}{1 + K_1K_2[\text{Ce}^{\text{IV}}][\text{S}]}$$

**Trissa Joseph, G.V. Shanbhag, D.P. Sawant, S.B. Halligudi**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 210

Chemoselective *anti*-Markovnikov hydroamination of  $\alpha,\beta$ -ethylenic compounds with amines using montmorillonite clay

The catalytic activity of montmorillonite clays as a catalyst for the hydroamination of  $\alpha,\beta$ -ethylenic compounds with amines was tested. Aniline and substituted anilines reacted with  $\alpha,\beta$ -ethylenic compounds in the presence of catalytic amount of commercially available clay to afford exclusively *anti*-Markovnikov adduct in excellent yields. Aniline reacted with ethyl acrylate to yield only *anti*-Markovnikov adduct *N*-[2-(ethoxycarbonyl)ethyl]aniline (mono-addition product).



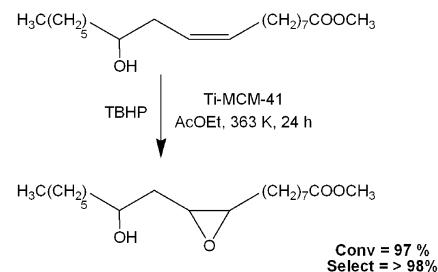
Hydroamination of ethyl acrylate with aniline

**Matteo Guidotti, Nicoletta Ravasio, Rinaldo Psaro, Enrica Gianotti, Salvatore Coluccia, Leonardo Marchese**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 218

Epoxidation of unsaturated FAMES obtained from vegetable source over Ti(IV)-grafted silica catalysts: A comparison between ordered and non-ordered mesoporous materials

Titanium-containing silica materials were compared in the liquid-phase epoxidation of mixtures of fatty acid methyl esters (FAMES) with *tert*-butylhydroperoxide (TBHP). The mixtures were obtained from vegetable renewable source. Very high activity and selectivity were obtained in the epoxidation of castor and soya-bean oil methyl esters in a reaction medium free from organic acids.

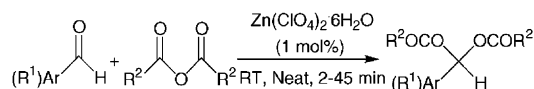


**Raj Kumar, Ramasamy Thilagavathi, Rajesh Gulhane, Asit K. Chakraborti**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 226

Zinc(II) perchlorate as a new and highly efficient catalyst for formation of aldehyde 1,1-diacetate at room temperature and under solvent-free conditions

Zinc(II) perchlorate catalyses the formation of aldehyde-1,1-dicarboxylates in high yields at room temperature under solvent-free conditions in short times.

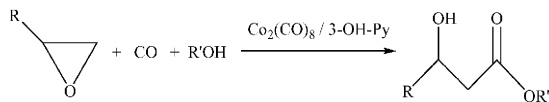


**Jianhua Liu, Jing Chen, Chungu Xia**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 232

Methoxycarbonylation of propylene oxide: A new way to  $\beta$ -hydroxybutyrate.

Methyl  $\beta$ -hydroxybutyrate was prepared by cobalt-catalyzed carbonylation reaction of propylene oxide and methanol. The effects of reaction parameters such as additive, cobalt sources, carbon monoxide pressure, temperature, etc., were investigated. The mechanism of this catalytic reaction has also been discussed in detail.

**Habib Firouzabadi, Nasser Iranpoor, Abbas Ali Jafari, Somayeh Makarem**

*Journal of Molecular Catalysis A: Chemical* 250 (2006) 237

Aluminumdodecatungstophosphate (AIPW<sub>12</sub>O<sub>40</sub>) as a reusable Lewis acid catalyst Facile regioselective ring opening of epoxides with alcohols, acetic acid and thiols

