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Contents

Articles

Tianzhu Zhang, Wen-Hua Sun, Ting Li, Xiaozhen Yang

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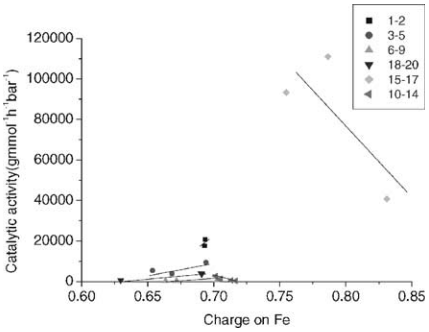
Influence of electronic effect on catalytic activity of bis(imino)pyridyl Fe(II) and bis(imino)pyrimidyl Fe(II) complexes

The metal atom net charge correlation (MANCC) was successfully used to study the relative catalytic activities of 20 bis(imino)pyridyl Fe(II) and bis(imino)pyrimidyl Fe(II) complexes for olefins polymerization/oligomerization through modifying the Dreiding force. The net charge range on the central metal Fe was found 0.6295–0.8310, which was considered in the present study as two areas, e.g. the lower charge area (0.6295–0.7000) and the higher charge area (0.7000–0.8310). The observations reveal that the catalytic activity of bis(imino)pyridyl Fe(II) and bis(imino)pyrimidyl Fe(II) complexes does not monotonously vary with the net charge on the central metal as we found for other metal system before. There possibly is an interesting turning point around 0.7000. The activity increases with the net charge in the lower charge area, while the catalytic activity increases with reducing the net charge in the higher area. The reason that the Fe(II) catalysts possess such properties was discussed.



Hanna S. Abbo, Salam J.J. Titinchi, Shri Chand, Rajendra Prasad

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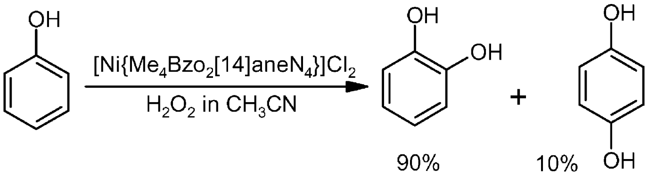
Investigation of $[Ni\{Me_4Bzo_2[14]aneN_4\}]Cl_2$ catalyzed selective hydroxylation of phenol to catechol by H_2O_2 in the homogeneous medium

The nickel(II) macrocycle complex catalyzed selective oxidation of phenol to catechol by H_2O_2 with an over all efficiency of >40% under homogeneous conditions. The electrochemical and chemical catalysis parameters are discussed.



Run Xu, Zhong-yi Ma, Cheng Yang, Wei Wei, Wen-huai Li, Yu-han Sun

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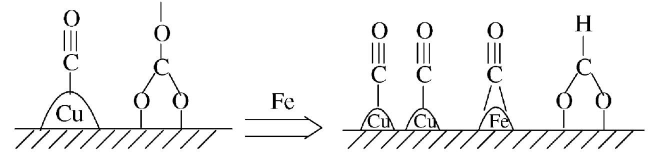
The effect of iron on the adsorption properties of $CuMnZrO_2$ catalysts studied by temperature-programmed desorption and FTIR spectroscopy

When iron was introduced in $CuMnZrO_2$ catalyst, it was found that the adsorption features of catalysts changed significantly. The presence of iron improved the copper dispersion, which resulted in the total adsorption of CO increase, and intensified the reaction between CO and catalyst surface. Moreover, the CO bridge-adsorbed on iron sites was detected. Bicarbonate species formed on the $CuMnZrO_2$ catalyst when CO adsorption took place at 573 K, while formate species were favored and predominant on the Fe-$CuMnZrO_2$ catalyst.



the adsorption of CO on $CuMnZrO_2$

the adsorption of CO on Fe-$CuMnZrO_2$

doi:10.1016/S1381-1169(04)00359-0

Rukhsana I. Kureshy, Noor-ul H. Khan, Sayed H.R. Abdi, Surendra Singh, Irshad Ahmed, Raksh V. Jasra

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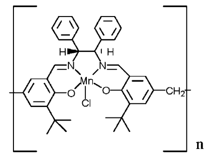
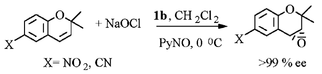
Catalytic asymmetric epoxidation of non-functionalised alkenes using polymeric Mn(III) Salen as catalysts and NaOCl as oxidant

Enantioselective epoxidation of non-functionalised alkenes using polymeric Mn(III) Salen complex in presence of PyN–O using NaOCl gave excellent (>99%) epoxide yield with high chiral induction in case of nitro and cyano chromene and the catalyst could be reused up to five cycles.



n = 10; Complex **1b**



Guixian Li, Yanlong Gu, Yong Ding, Hanpeng Zhang, Jianming Wang, Qiang Gao, Liang Yan, Jishuan Suo

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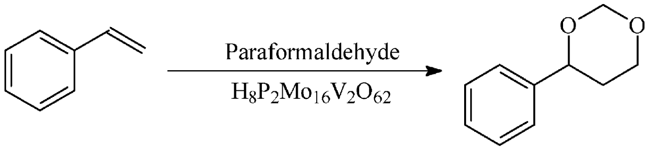
Wells–Dawson type molybdovanadophosphoric heteropolyacids catalyzed Prins cyclization of alkenes with paraformaldehyde under mild conditions—a facile and efficient method to 1,3-dioxane derivatives

Wells–Dawson type molybdovanadophosphoric heteropolyacids ($H_{6+n}P_2Mo_{18-n}V_nO_{62}$) ($n$ = 1–2, 4) have proved to be effective catalysts for Prins cyclization between alkenes and paraformaldehyde to produce corresponding 1,3-dioxane derivatives.



Yan-Yun Li, Hui Zhang, Jian-Shan Chen, Xin-Li Liao, Zhen-Rong Dong, Jing-Xing Gao

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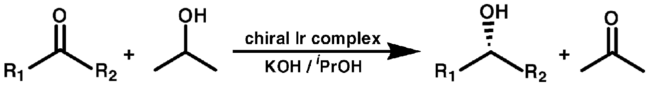
A new efficient chiral iridium catalyst for asymmetric transfer hydrogenation of ketones

A new chiral diaminodiphosphine-Ir(I) complex was prepared and applied to catalytic asymmetric transfer hydrogenation of various aromatic ketones with up to 99.0% ee.



Zongting Wang, Liwen Xu, Zonggang Mu, Chungu Xia, Hanqing Wang

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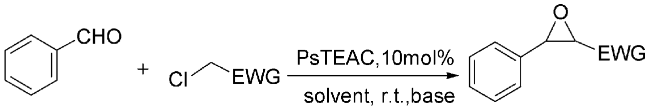
Efficient Darzens condensation reactions of aromatic aldehydes catalyzed by polystyrene-supported phase-transfer catalyst

The Darzen reaction of α-chloroester and nitrile with aromatic aldehydes under mild conditions proceeds in the presence of polystyrene-supported quaternary ammonium salt (polystyrene-supported triethylammonium chloride, Ps-TEAC) as phase-transfer catalyst (PTC) to give the corresponding cis- and trans-desired products in satisfactory yields.



Yong Ding, Qiang Gao, Guixian Li, Hanpeng Zhang, Jianmin Wang, Liang Yan, Jishuan Suo

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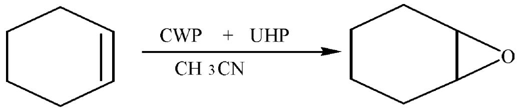
Selective epoxidation of cyclohexene to cyclohexene oxide catalyzed by Keggin-type heteropoly compounds using anhydrous urea–hydrogen peroxide as oxidizing reagent and acetonitrile as the solvent

The epoxidation of cyclohexene catalyzed by Keggin-type heteropoly compounds (HPAs) were investigated using anhydrous urea–hydrogen peroxide adduct (UHP) as an oxidant and acetonitrile as a solvent. Among a series of Keggin-type heteropoly compounds, tris(cetylpyridinium)12-tungstophosphate (CWP) showed the highest activity.



Laura Gonzalez Cuervo, Yuriy N. Kozlov, Georg Süss-Fink, Georgiy B. Shul'pin

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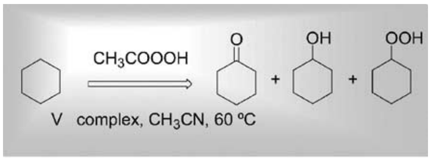
Oxidation of saturated hydrocarbons with peroxyacetic acid catalyzed by vanadium complexes

Vanadium(V) and vanadium(IV) complexes catalyse oxidation of various alkanes with peroxy acetic acid to produce corresponding alcohols, ketones and alkyl hydroperoxides.



S.M. Al-Zahrani, N.O. Elbashir, A.E. Abasaeed, M. Abdulwahed

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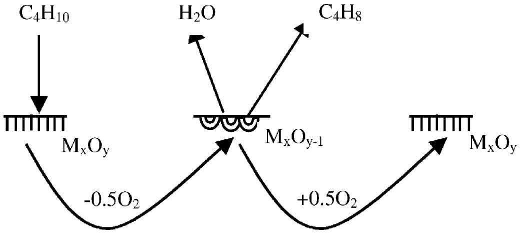
Isobutane oxydehydrogenation on Al_2O_3-supported transition and rare-earth metal oxides

Oxidative dehydrogenation of isobutane to isobutene was carried out using, as catalysts, some transition and rare-earth metals supported on Al_2O_3. Below 400 °C, Cr gave the best performance (10% conversion and 62% selectivity) while above 500 °C, Ni showed the highest activity (32% conversion).



Jiang Xiaoyuan, Ding Guanghui, Lou Liping, Chen Yingxu, Zheng Xiaoming

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Catalytic activities of CuO/TiO_2 and $CuO\text{-}ZrO_2/TiO_2$ in NO + CO reaction

The catalytic activities were improved dramatically compared with treatment in normal air at 500 °C for 2 h. The NO conversion temperature ($T_{99\%}$) was 325 °C for 6% CuO/TiO_2 and 300 °C for 6% CuO-10% ZrO_2/TiO_2, and their activities increased with increase in ZrO_2 loading. During the thermal desorption of NO, there were four desorption species (NO, N_2O, N_2 and O_2) for CuO/TiO_2 and $CuO\text{-}ZrO_2/TiO_2$ treated in both air and H_2. There were two adsorption states of NO on the catalyst's surface, i.e. desorption species at low temperature on the weak sites and at high temperature on the strong sites. Addition of ZrO_2 onto CuO/TiO_2 shifted the NO dissociation peaks towards low temperature, which means that the activity of NO decomposition was higher by $CuO\text{-}ZrO_2/TiO_2$ than by CuO/TiO_2. The overall reaction schemes involved in NO + CO reaction can be summarized as the followings:

$$2NO + CO = N_2O + CO_2 \qquad (1)$$

$$N_2O + CO = N_2 + CO_2 \qquad (2)$$

Thirugnanasamy Esakkidurai, Kasi Pitchumani

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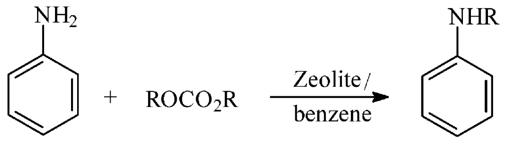
Zeolite-promoted selective mono-*N*-methylation of aniline with dimethyl carbonate

Selective mono-*N*-methylation of aniline with dimethyl carbonate is carried out over faujasite Y zeolites. Benzylation with dibenzyl carbonate is also found to be very selective, resulting in exclusive mono-benzylation. Other advantages such as lower temperature, less rigorous reaction conditions, absence of C-alkylation products, etc., are also highlighted.



$R = CH_3$ or $C_6H_5CH_2$

F. Farzaneh, E. Zamanifar, Craig D. Williams

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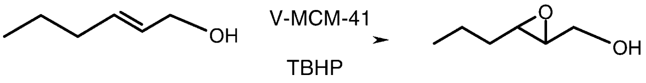
V-MCM-41 as selective catalyst for epoxidation of olefins and *trans*-2-hexene-1-ol

V-MCM-41 has been synthesized by one pot synthesis. The oxidation of olefins such as 1-hexene, cyclohexene, cyclopentene, norbornene and *trans*-2-hexene-1-ol with TBHP in the presence of V-MCM-41 in different solvents (acetone, acetonitrile, dichloromethane, chloroform) is described.



G. Cum, P. Famulari, M. Marchetti, B. Sechi

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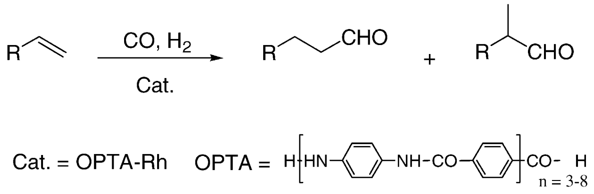
Hydroformylation by rhodium catalysts supported on oligomeric arylamides

Hydroformylation of various unsaturated substrates has been carried out using an oligomeric complex obtained by adding $Rh(CO)_2(acac)$ to oligo-1,4-phenyleneterephthalamide (OPTA). The reaction performed at 80 °C and 80 atm ($CO/H_2 = 1{:}1$), in autoclave using an innovative glass device gave satisfactory results. The catalyst was easily recycled and could be reused 8–9 times without significant loss of efficiency.



Simon G. Podkolzin, Rafael Alcalá, James A. Dumesic

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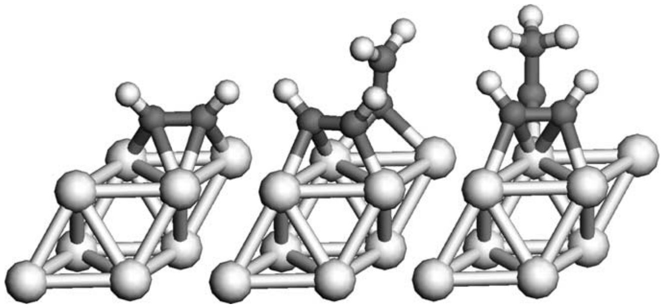
Density functional theory studies of acetylene hydrogenation on clean, vinylidene- and ethylidyne-covered Pt(1 1 1) surfaces

Density functional theory (DFT) calculations were carried out to study the stability and reactivity of various hydrocarbon intermediates involved in acetylene hydrogenation on Pt(1 1 1) in the presence of vinylidene and ethylidyne species. These latter species can also alter the activity and selectivity for acetylene hydrogenation by participating in hydrogen transfer reactions.



I. Eswaramoorthi, N. Lingappan

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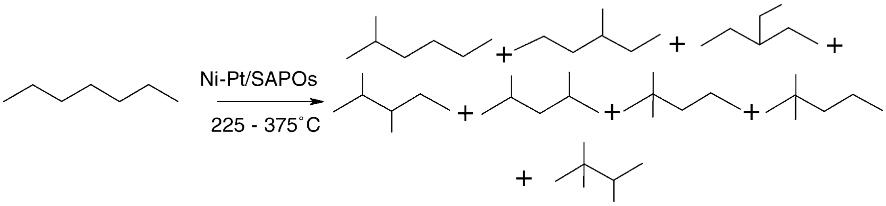
Ni–Pt loaded silicoaluminophosphate molecular sieves for hydroisomerisation of n-heptane



R. Anand, S.S. Khaire, R. Maheswari, K.U. Gore

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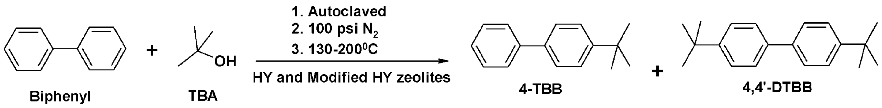
Alkylation of biphenyl with *t*-butylalcohol over modified Y zeolites



Jian Li, Shuang Gao, Meng Li, Ronghua Zhang, Zuwei Xi

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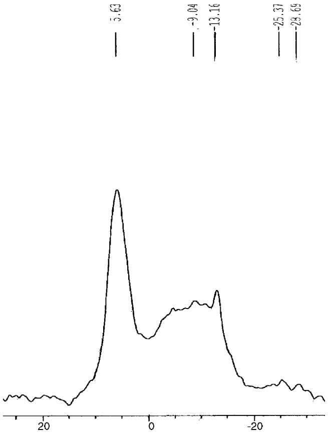
Influence of composition of heteropolyphosphatotungstate catalyst on epoxidation of propylene

A series of heteropolyphosphatotungstate catalysts with different structure were tested for the propylene epoxidation reaction. The structure entity at ca. $\delta = 5$ ppm in ^{31}P MAS NMR spectra is very probably a catalyst precursor which can be the most efficiently converted to $\{PO_4[WO(O_2)_2]_4\}^{3-}$.



Xinbin Ma, Jinlong Gong, Shengping Wang, Fei He, Xia Yang, Gang Wang, Genhui Xu

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Characterization and reactivity of silica-supported bimetallic molybdenum and stannic oxides for the transesterification of dimethyl oxalate with phenol

XRD spectra of supported monometallic oxide and supported bimetallic MoSn oxide catalysts with different Mo(Sn) loadings, B_1: 8%Mo; B_2: 8%Sn; C_1: 1%Mo-1%Sn; C_2: 2%Mo-2%Sn; C_3: 4%Mo-4%Sn; C_4: 6%Mo-6%Sn; C_5: 8%Mo-8%Sn; C_6: 10%Mo-10%Sn; C_7: 12%Mo-12%Sn; C_8: 14%Mo-14%Sn; C_9: 16%Mo-16%Sn. The appearance of tetragonal crystal SnO_2 phase strengthened the promotional effect of Sn and led to the increase in the activity of supported bimetallic MoO_3-SnO_2/SiO_2 catalysts.