

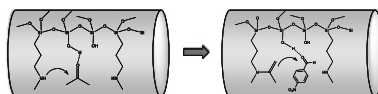


## Contents

### REGULAR ARTICLES

#### Efficient solid-base catalysts for aldol reaction by optimizing the density and type of organoamine groups on nanoporous silica pp 131–140

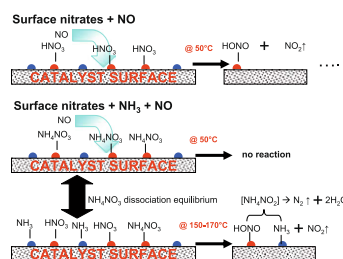
Youwei Xie, Krishna K. Sharma, Abhishek Anan, Gang Wang, Ankush V. Biradar, Tewodros Asefa\*



A highly efficient solid-base catalyst for aldol condensation reaction was synthesized by grafting site-isolated secondary amines onto the channel walls of mesoporous silica, MCM-41, in a polar-protic solvent.

#### Ammonia blocking of the “Fast SCR” reactivity over a commercial Fe-zeolite catalyst for Diesel exhaust aftertreatment pp 141–147

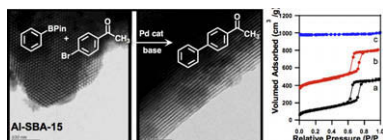
Antonio Grossale, Isabella Nova, Enrico Tronconi\*



On a Fe-zeolite catalyst NO reduces nitrates at 50 °C, but this reactivity, critical for the Fast SCR mechanism, is blocked by NH<sub>3</sub> due to a strong ammonia–nitrates interaction.

#### Catalysis with chemically modified mesoporous silicas: Stability of the mesostructure under Suzuki–Miyaura reaction pp 148–154

Ben W. Glasspoole, Jonathan D. Webb, Cathleen M. Crudden\*

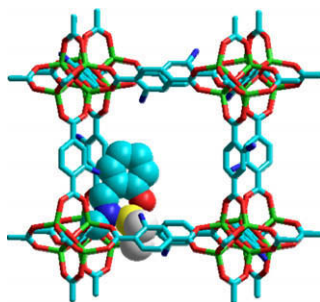


Base needed in the Suzuki–Miyaura reaction has a deleterious effect on mesoporous materials employed as supports. Boric acid produced during the reaction protects the material, as does pre-incorporated aluminum.

**Gold(III) – metal organic framework bridges the gap between homogeneous and heterogeneous gold catalysts**

pp 155–160

X. Zhang, F.X. Llabrés i Xamena, A. Corma \*

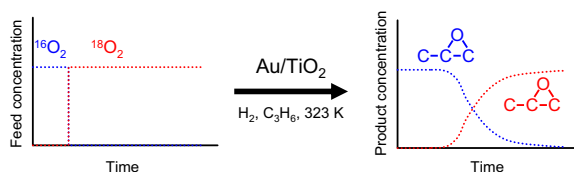


Open cationic Au<sup>III</sup> species are created based on a post-synthesis strategy on IRMOF-3, which shows much higher catalytic performance in coupling and hydrogenation reactions in comparison with oxide-supported gold and homogeneous gold salt/complexes (Zn: green; O: red; C: light blue; N: deep blue; Au: yellow; Cl: white. H atoms are omitted). (For interpretation of the references to colour text, the reader is referred to the web version of this article.)

**The role of support oxygen in the epoxidation of propene over gold–titania catalysts investigated by isotopic transient kinetics**

pp 161–169

T.A. Nijhuis \*, E. Sacaliuc-Parvulescu, N.S. Govender, J.C. Schouten, B.M. Weckhuysen

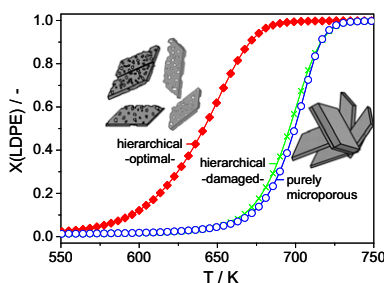


The epoxidation of propene over gold–titania catalysts was investigated using transient kinetic experiments with isotopically labeled oxygen to determine the role of support oxygen and the amounts of surface intermediate species.

**Desilication of ferrierite zeolite for porosity generation and improved effectiveness in polyethylene pyrolysis**

pp 170–180

Adriana Bonilla, David Baudouin, Javier Pérez-Ramírez \*

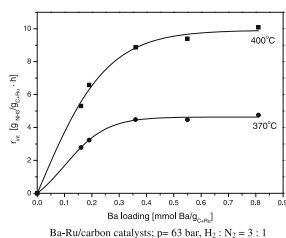


Desilication in NaOH is proven as a powerful method to create mesoporosity in ferrierite. The optimal hierarchical zeolite has improved catalytic performance in the pyrolysis of low-density polyethylene due to enhanced accessibility upon introduction of a secondary mesopore network and coupled to preserved intrinsic zeolite properties.

**Barium-promoted Ru/carbon catalyst for ammonia synthesis: State of the system when operating**

pp 181–190

Elżbieta Truskiewicz \*, Wioletta Raróg-Pilecka, Krzysztof Schmidt-Szałowski, Sławomir Jodzis, Ewa Wilczkowska, Dariusz Łomot, Zbigniew Kaszkur, Zbigniew Karpiński, Zbigniew Kowalczyk

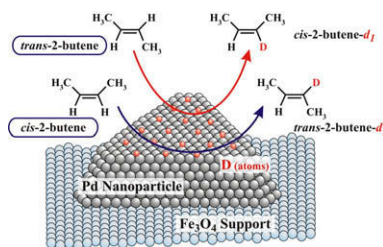


Barium-promoted ruthenium catalysts were studied in the ammonia synthesis:  $N_2 + 3H_2 = 2NH_3$ . Under steady-state ammonia synthesis conditions the surface of the catalysts is probably partly covered with  $Ba^0 + BaO$ .

**Conversion of *cis*- and *trans*-2-butene with Deuterium on a Pd/Fe<sub>3</sub>O<sub>4</sub> model catalyst**

pp 191–198

Björn Brandt, Wiebke Ludwig, Jan-Henrik Fischer, Jörg Libuda, Francisco Zaera, Svetlana Schauer mann \*

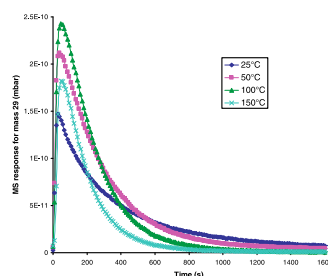


Conversions of olefins with hydrogen, such as *cis-trans* isomerization and hydrogenation, can critically depend on the steric structure of the reactant. Molecular beam experiments with *cis*- and *trans*-2-butene on a supported model Pd/Fe<sub>3</sub>O<sub>4</sub> catalyst reveal reaction conditions leading to different reactivities for the steric isomers.

**Kinetic study of CO desorption from PtRu/C PEM fuel cell anodes: Temperature dependence and associated microstructural transformations**

pp 199–208

A. Pitois \*, J.C. Davies, A. Pilenga, A. Pfrang, G. Tsotridis

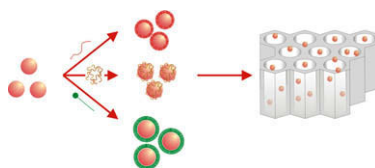


The temperature-dependent CO desorption rates, obtained on a carbon-supported platinum–ruthenium alloy catalyst using isotopic exchange experiments, are high compared to previously published CO oxidation data. This suggests that the rate of CO desorption (and not CO electrooxidation) plays the most significant role in determining the equilibrium CO coverage at the fuel cell anode.

**Effect of organic capping layers over monodisperse platinum nanoparticles upon activity for ethylene hydrogenation and carbon monoxide oxidation**

pp 209–215

John N. Kuhn, Chia-Kuang Tsung, Wenyu Huang, Gabor A. Somorjai \*

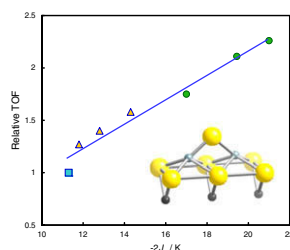


Catalytic differences are demonstrated over Pt for different capping agents. These results revealed the need to consider the application while developing synthetic approaches for morphology control.

**Effect of sulfidation temperature on the intrinsic activity of Co–MoS<sub>2</sub> and Co–WS<sub>2</sub> hydrodesulfurization catalysts**

pp 216–228

Yasuaki Okamoto \*, Akira Kato, Usman, Nino Rinaldi, Takashi Fujikawa, Hiromichi Koshika, Ichiro Hiromitsu, Takeshi Kubota

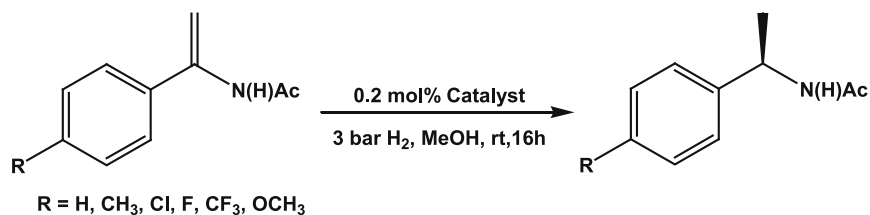


The intrinsic activity of the active sites, Co–Mo–S, is correlated with the Co–S–Co antiferromagnetic interaction strength, suggesting modifications of the electronic state and local structure of Co–Mo–S by MoS<sub>2</sub>–O–support interactions.

**Heterogeneously catalyzed asymmetric hydrogenation of  $\alpha$ -arylamides over immobilized RhBPE and RhDUPHOS complexes**

pp 229–237

Adrian Crosman, Wolfgang F. Hoelderich \*

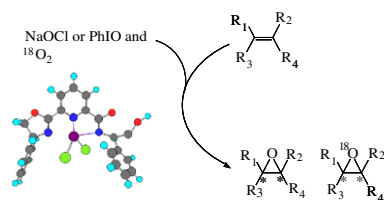


Optically active  $\alpha$ -1-arylalkylamine derivatives were successfully synthesized through heterogeneous asymmetric hydrogenation of  $\alpha$ -arylamides over immobilized RhBPE and RhDUPHOS complexes on aluminum-containing M41S and SBA-15 type materials with up to 99% e.e. at 99% conversion and >99% chemoselectivity.

**Enantioselective epoxidation of olefins with molecular oxygen catalyzed by gold(III): A dual pathway for oxygen transfer**

pp 238–244

Avelino Corma \*, Irene Domínguez, Antonio Doménech, Vicente Fornés, Carlos J. Gómez-García, Tania Ródenas, María J. Sabater \*



Au(III) complex is able to epoxidize olefins with PhIO and bleach and O<sub>2</sub> enantioselectively at moderated rates and enantioselectivity. Oxygen from O<sub>2</sub> is incorporated in the epoxide as confirmed by <sup>18</sup>O isotopic studies.

**ERRATUM****Erratum to “An Examination of Brønsted Acid Sites in H-[Fe]ZSM-5 for Olefin Oligomerization and Adsorption” [J. Catal. 210 (2002) 106–115]**

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O. Kresnawahjuesa, G.H. Kuhl, R.J. Gorte, C.A. Querini \*