



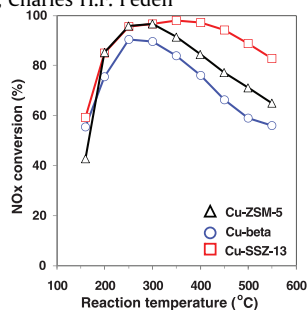
## Contents

## PRIORITY COMMUNICATION

**Excellent activity and selectivity of Cu-SSZ-13 in the selective catalytic reduction of NO<sub>x</sub> with NH<sub>3</sub>**

pp 187–190

Ja Hun Kwak, Russell G. Tonkyn, Do Heui Kim, János Szanyi, Charles H.F. Peden\*

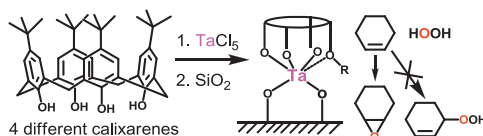
NO<sub>x</sub> conversion profiles for NH<sub>3</sub> SCR on Cu-SSZ-13 (squares), Cu-beta (circles) and Cu-ZSM-5 (triangles).

## REGULAR ARTICLES

**Grafted Ta-calixarenes: Tunable, selective catalysts for direct olefin epoxidation with aqueous hydrogen peroxide**

pp 191–201

Natalia Morlanés, Justin M. Notestein\*

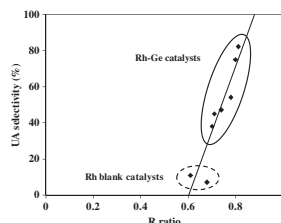


Supported calixarene-Ta catalysts are synthesized by a one-pot procedure for the epoxidation of cyclohexene. They are stable and have turnover rates insensitive to surface density. The grafted calixarene-Ta catalysts are more active and selective to direct (non-radical) epoxidation than the corresponding ligand-free case and are more selective than the analogous Ti catalysts.

**Influence of the nature of the precursor salts on the properties of Rh–Ge/TiO<sub>2</sub> catalysts for citral hydrogenation**

pp 202–210

Aurélien Vicente\*, Tchirioua Ekou, Gwendoline Lafaye, Catherine Especel, Patrice Marécot, Christopher T. Williams

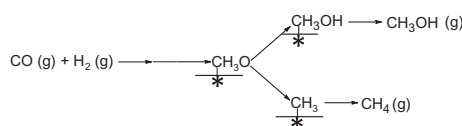


During citral hydrogenation on bimetallic Rh–Ge/TiO<sub>2</sub> catalysts, the selectivity to unsaturated alcohols is directly correlated to the ratio  $R$  ( $R = \sum A(\text{CO}_{\text{ads}} \text{ on oxidized Rh}^{\geq 1+} \text{ species}) / \sum A(\text{CO}_{\text{ads}} \text{ on total exposed Rh species})$ ) determined by FTIR. A better UA selectivity is obtained when bimetallic catalysts possess a surface in a predominantly oxidized state, a situation that is enhanced when chlorinated rhodium and germanium precursors are used.

## Relationships between oxygenate and hydrocarbon formation during CO hydrogenation on Rh/SiO<sub>2</sub>: Use of multiproduct SSITKA

pp 211–217

Jia Gao, Xunhua Mo, James G. Goodwin\*

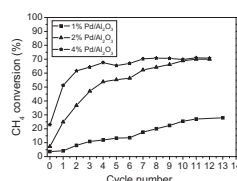


Contrary to the relationship between the formation of CH<sub>4</sub> and methanol given above and recently proposed/assumed by numerous researchers; it appears, based on SSITKA, that CH<sub>4</sub> and methanol synthesis on Rh/SiO<sub>2</sub> during CO hydrogenation do not share any intermediates nor even the same sites.

## Activation process of Pd/Al<sub>2</sub>O<sub>3</sub> catalysts for CH<sub>4</sub> combustion by reduction/oxidation cycles in CH<sub>4</sub>-containing atmosphere

pp 218–227

Paola Castellazzi, Gianpiero Groppi\*, Pio Forzatti, Elisabetta Finocchio, Guido Busca

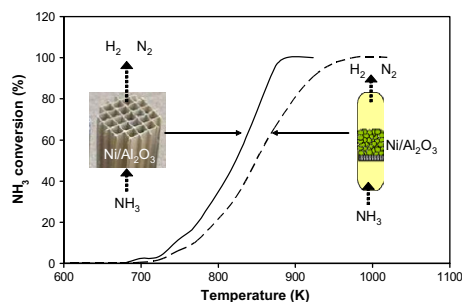


Repeated reduction/re-oxidation cycles under CH<sub>4</sub>-containing atmosphere resulted in a one order of magnitude enhancement of CH<sub>4</sub> combustion activity in Pd/Al<sub>2</sub>O<sub>3</sub> catalysts with different palladium load. Characterization data indicate weakening of Pd-support interactions as the main reason responsible for such activation.

## Ni on alumina-coated cordierite monoliths for in situ generation of CO-free H<sub>2</sub> from ammonia

pp 228–235

Carlos Plana, Sabino Armenise, Antonio Monzón, Enrique García-Bordejé\*

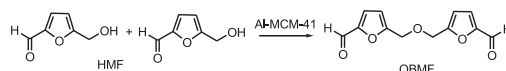


We have prepared a low-cost-structured catalytic reactor very promising for in situ H<sub>2</sub> generation from ammonia in portable devices. The monolithic catalyst shows high activity and stability, achieving a 100% conversion of pure ammonia at 880 K, while the same catalyst in packed bed achieves 100% conversion at 980 K.

## Chemicals from biomass: Etherification of 5-hydroxymethyl-2-furfural (HMF) into 5,5'-(oxy-bis(methylene))bis-2-furfural (OBMF) with solid catalysts

pp 236–242

O. Casanova, S. Iborra, A. Corma\*

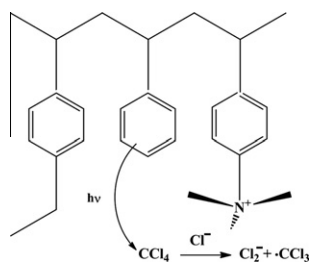


5,5'-Oxy(bismethylene)-2-furaldehyde (OBMF), which is a prepolymer and antiviral precursor, has been synthesized from 5-hydroxymethyl-2-furaldehyde (HMF) using Lewis and Brønsted micro- and mesoporous aluminosilicates as heterogeneous acid catalysts.

**Catalysis of the photodecomposition of carbon tetrachloride in ethanol by an Amberlite anion exchange resin**

pp 243–249

Patrick E. Hoggard\*, Andrea Maldotti

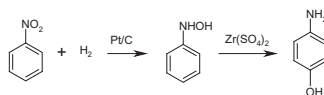


Under irradiation ( $\lambda > 350$  nm), a mixture of  $\text{CCl}_4$  and ethanol decomposes in the presence of the  $\text{Cl}^-$  form of Amberlite IRA-900 to yield phosgene, acetaldehyde, chloroform, and hydrogen chloride. Chloride appears to hinder recombination of  $\text{Cl}$  and  $\text{CCl}_3$  radicals through the formation of  $\text{Cl}_2^-$  ion radicals.

**Environmentally friendly hydrogenation of nitrobenzene to *p*-aminophenol using heterogeneous catalysts**

pp 250–256

Abhay Deshpande, F. Figueras\*, M. Lakshmi Kantam, K. Jeeva Ratnam, R. Sudarshan Reddy, N.S. Sekhar

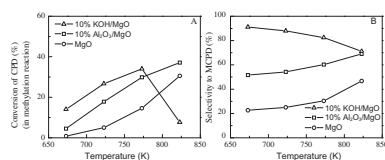


Bi-functional hydrogenation of nitrobenzene into *p*-aminophenol using only heterogeneous catalysis, with water as solvent.

**Methylation of cyclopentadiene on solid base catalysts with different surface acid–base properties**

pp 257–269

Dongxue Lan, Li Ma, Yuan Chun\*, Chen Wu, Linbing Sun, Jianhua Zhu

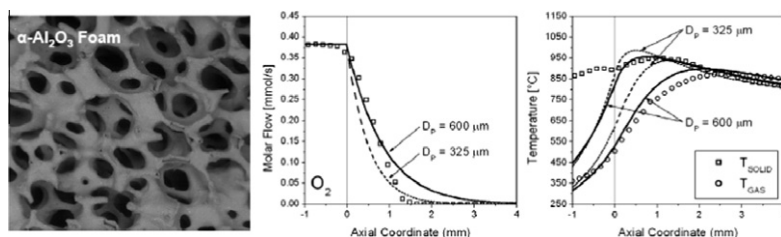


Catalytic performance of  $\text{MgO}$  in cyclopentadiene methylation was promoted by  $\text{Al}_2\text{O}_3$  via introducing acidic sites or  $\text{KOH}$  via superbasic effect. Dehydrogenation of methanol is a key step.

**Microkinetic modeling of spatially resolved autothermal  $\text{CH}_4$  catalytic partial oxidation experiments over Rh-coated foams**

pp 270–279

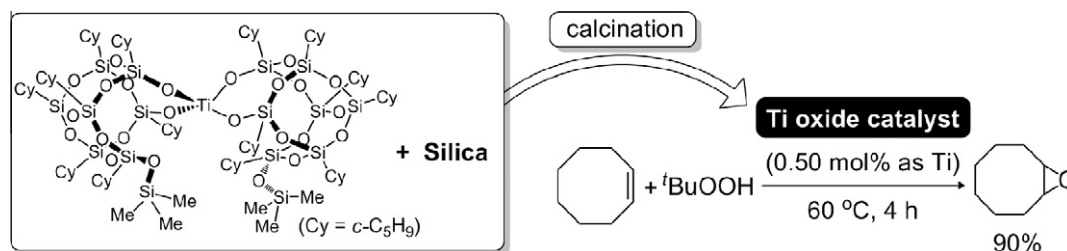
A. Donazzi, M. Maestri, B.C. Michael, A. Beretta\*, P. Forzatti, G. Groppi, E. Tronconi, L.D. Schmidt, D.G. Vlachos



Spatially resolved  $\text{CH}_4$  CPO experiments over Rh and Rh-washcoat foams were analyzed with a thermodynamically consistent  $\text{C}_1$  microkinetic scheme. Experimental values of Rh surface and transport correlations for foams were adopted.

## Ti-bridged silsesquioxanes as precursors of silica-supported titanium oxide catalysts for the epoxidation of cyclooctene pp 280–287

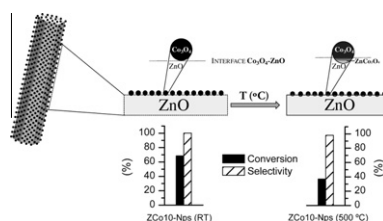
Shuko Sakugawa, Kenji Wada\*, Masashi Inoue



The controlled calcination of Ti-bridged polyhedral oligomeric silsesquioxanes (POSS) supported on silicas afforded the oxide catalysts with isolated tetrahedral Ti(IV) species on the surface, which showed excellent catalytic activities for the epoxidation of cyclooctene by *t*BuOOH.

## Novel hierarchical Co<sub>3</sub>O<sub>4</sub>/ZnO mixtures by dry nanodispersion and their catalytic application in the carbonylation of glycerol pp 288–293

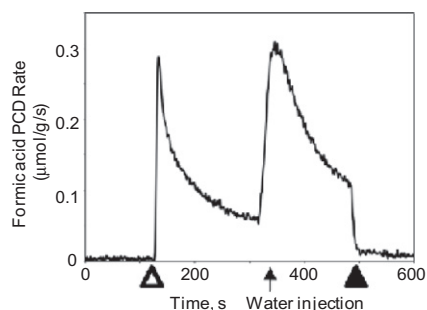
F. Rubio-Marcos\*, V. Calvino-Casilda, M.A. Bañares, J.F. Fernandez



Co<sub>3</sub>O<sub>4</sub> nanoparticles were hierarchically dispersed on ZnO microparticles using a low-energy dry mixing method. The catalytic activity of these materials was tested in the carbonylation of glycerol.

## Effect of water on formic acid photocatalytic decomposition on TiO<sub>2</sub> and Pt/TiO<sub>2</sub> pp 294–299

Kristi L. Miller, Chul Woo Lee, John L. Falconer, J. Will Medlin\*



Physisorbed water increased the PCD rate of formic acid on TiO<sub>2</sub> and Pt/TiO<sub>2</sub>, but with a much larger rate increase on Pt/TiO<sub>2</sub>. Infrared spectroscopy and temperature-programmed desorption on TiO<sub>2</sub> P25 showed water changed the adsorbed structure of bidentate bridging formate and displaced formic acid from the surface.