

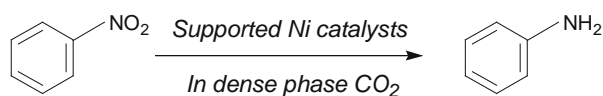


Contents

REGULAR ARTICLE

Selective hydrogenation of nitrobenzene to aniline in dense phase carbon dioxide over Ni/ γ -Al₂O₃: Significance of molecular interactions pp 1–10

Xiangchun Meng, Haiyang Cheng, Yoshinari Akiyama, Yufen Hao, Weibin Qiao, Yancun Yu, Fengyu Zhao*, Shin-ichiro Fujita, Masahiko Arai*



~100% selectivity

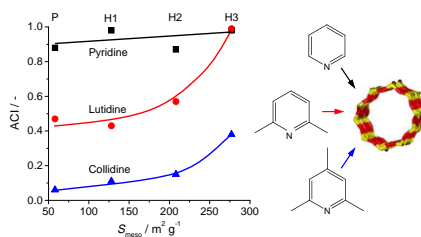
at any conversion

The complete selective hydrogenation of nitrobenzene to aniline can be achieved over conventional supported Ni catalysts under mild conditions in the presence of dense phase CO₂.

PRIORITY COMMUNICATION

Quantification of enhanced acid site accessibility in hierarchical zeolites – The accessibility index pp 11–14

Frédéric Thibault-Starzyk*, Irina Stan, Sònia Abelló, Adriana Bonilla, Karine Thomas, Christian Fernandez, Jean-Pierre Gilson, Javier Pérez-Ramírez

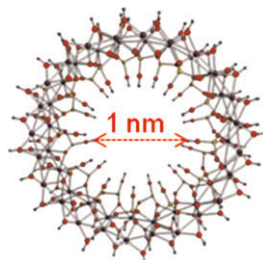


The accessibility index (ACI) derived from infrared spectroscopy of substituted alkylpyridines with different size is a powerful tool to quantify the enhanced accessibility of acid sites in hierarchical porous zeolites.

REGULAR ARTICLES

IR spectroscopic and catalytic characterization of the acidity of imogolite-based systems pp 15–30

Barbara Bonelli, Ilaria Bottero, Nicola Ballarini, Sauro Passeri, Fabrizio Cavani, Edoardo Garrone*

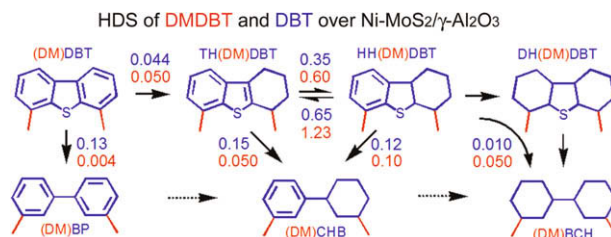


The surface properties of three systems based on imogolite, an aluminosilicate with a chemical composition (OH)₃Al₂O₃SiOH and a fascinating nanotube structure with ca. 1 nm inner diameter and remarkable surface features being the outer surface covered by Al(OH)Al groups and the inner surface lined by SiOH groups, are studied.

Hydrodesulfurization of dibenzothiophene, 4,6-dimethyldibenzothiophene, and their hydrogenated intermediates over Ni–MoS₂/γ-Al₂O₃

pp 31–43

Huamin Wang, Roel Prins*

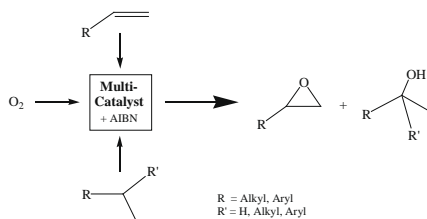


Rate constants in kPa mol/(g min) for the reaction steps in the HDS of DBT (in blue) and 4,6-DMDBT (in red) over Ni–MoS₂/γ-Al₂O₃.

A cascade aerobic epoxidation of alkenes over Au/CeO₂ and Ti-mesoporous material by “in situ” formed peroxides

pp 44–53

Carmela Aprile, Avelino Corma*, Marcelo E. Domine, Hermenegildo Garcia, Chris Mitchell

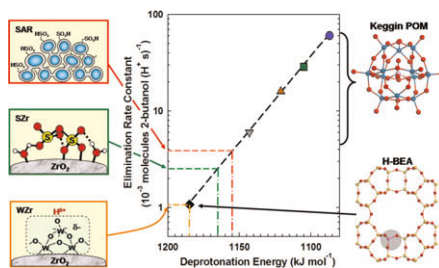


Aerobic epoxidation of alkenes was efficiently performed through an alternative cascade-type reaction using nano-particulated Au/CeO₂ and Ti-MCM-41 silylated materials in the presence of a hydrocarbon and a promoter.

Functional assessment of the strength of solid acid catalysts

pp 54–66

Josef Macht, Robert T. Carr, Enrique Iglesia*

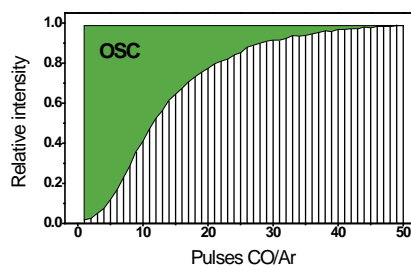


The acid strength of solid acids with uncertain structure was determined from elimination and isomerization rate constants using their sensitivity to deprotonation energies, established independently for catalysts with known structures.

Reactive oxygen on a Au/TiO₂ supported catalyst

pp 67–76

M. Kotobuki, R. Leppelt, D.A. Hansgen, D. Widmann, R.J. Behm*

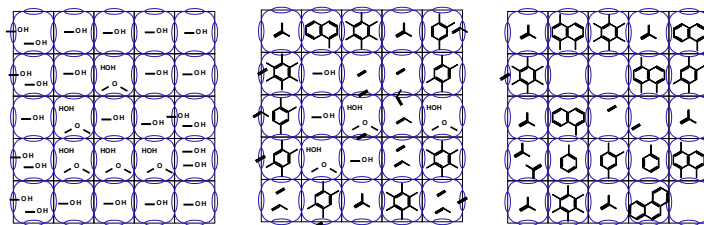


The presence of stable oxygen on a Au/TiO₂ catalyst removable by reaction with CO (‘oxygen storage capacity’) was demonstrated by TAP measurements, and for catalysts with varying Au particle size, it was shown to be correlated with the CO oxidation activity and the perimeter length of the Au/TiO₂ interface.

Product shape selectivity dominates the Methanol-to-Olefins (MTO) reaction over H-SAPO-34 catalysts

pp 77–87

Bart P.C. Hereijgers, Francesca Bleken, Merete H. Nilsen, Stian Svelle, Karl-Petter Lillerud, Morten Bjørgen, Bert M. Weckhuysen, Unni Olsbye*

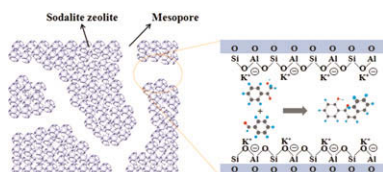


Three stages in the MTO life cycle: Left: Reactant adsorption. Middle: Active intermediates give product formation in crystal rim. Right: Bulky product molecules give (poly-) aromatics formation in crystal core.

RESEARCH NOTE**Mesoporous sodalite: A novel, stable solid catalyst for base-catalyzed organic transformations**

pp 88–92

Ganapati V. Shanbhag, Minkee Choi, Jeongnam Kim, Ryong Ryoo*



Sodalite with high mesoporosity was successfully synthesized. This basic catalyst showed a higher activity and longer lifetime than CsNaX and KAlMCM-41 in liquid and vapor phase organic transformations.