

APPLIED CATALYSIS
A: GENERAL

Vol. 149 (1997)

Founding Editor:

B. DELMON

Honorary

Editor:

K. TANABE

Associate

Editor:

L. GUCZI

Regional Editors:

H.H. KUNG

K. SEGAWA

J.C. VEDRINE

Editorial Board

G.J.K. Acres (Reading)

H. Arai (Fukuoka)

C. Bezouhanova (Sofia)

M.M. Bhasin (S. Charleston, WV)

J. Bousquet (Paris)

R. Burch (Reading)

G. Centi (Bologna)

R. Dalla Betta (Mountain View, CA)

J.A. Dumesic (Madison, WI)

O.H. Ellestad (Oslo)

H.C. Foley (Newark, DE)

E. Furimsky (Ottawa, Ont.)

A. Gaffney (Newtown Square, PA)

R.D. Gonzalez (New Orleans, LA)

H. Hattori (Sapporo)

M.-Y. He (Beijing)

W.F. Hölderich (Aachen)

Y. Izumi (Nagoya)

Y.G. Kim (Pohang)

G. Maire (Strasbourg)

E.A. Mamedov (Riyadh)

L.E. Manzer (Wilmington, DE)

N. Nojiri (Tokyo)

P. Ratnasamy (Pune)

D.E. Resasco (Norman, OK)

C.N. Satterfield (Cambridge, MA)

M. Schmal (Rio de Janeiro)

J.A. Schwartz (Syracuse, NY)

T. Yashima (Tokyo)

M. Zdrzil (Praque)



ELSEVIER

AMSTERDAM – LAUSANNE – NEW YORK – OXFORD – SHANNON – TOKYO

Modification of Surface Reactivity by Adsorbed Species

Editors

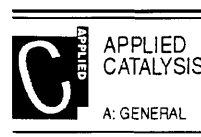
Z. Schay and L. Guzzi

Institute of Isotopes of the Hungarian Academy of Sciences

P.O. Box 77

H-1525 Budapest

Hungary



Preface

During the last decade our understanding of heterogeneous catalytic reactions has drastically changed. We learned that the solid surface continuously changes during the catalytic process and the catalytically active site itself develops in the interaction between the reactants and the solid surface. This interaction can be cyclic as in oscillatory reactions or limited mainly to the beginning of the reaction.

In this special issue the processes at the beginning of the catalytic reaction will be addressed, especially the effect of the adsorbed species of all origins on the restructuring of the surface and the influence on the reactivity of the catalysts. The first contribution addresses the classical problem of carbon deposits in metal catalyzed reactions of hydrocarbons. This is followed by contributions about the effect of promoters and other preadsorbed species and overlayers introduced during the preparation of catalysts. Reactants-induced structural changes in the ammoxidation and selective hydrogenation are also included in this special issue.

The editors are indebted to all authors who delivered excellent manuscripts and to the referees for their quick response and careful work.

Z. Schay and L. Guzzi

Contents Volume 149

Modification of Surface Reactivity by Adsorbed Species

Editors: Z. Schay and L. Guzzi

Preface.	1
The role of carbon deposits in metal-catalysed reactions of hydrocarbons [A3598] G.C. Bond (Uxbridge, UK)	3
On the role of promoters in hydrogenations on metals; α,β -unsaturated aldehydes and ketones [A3599] V. Ponec (Leiden, Netherlands)	27
Platinum modified by electrochemical deposition of adatoms [A3656] E. Lamy-Pitara and J. Barbier (Poitiers, France)	49
CO-induced structural changes of supported Rh promoted by NO [A3600] E. Novák, D. Sprinceana and F. Solymosi (Szeged, Hungary)	89
Modification of supported Pt catalysts by preadsorbed phosphines: enhanced selectivity in the oxidation of L-sorbose [A3601] T. Mallat, C. Brönnimann and A. Baiker (Zürich, Switzerland)	103
Sulfur adsorbed on Pt catalyst: its chemical state and effect on catalytic properties as studied by electron spectroscopy and n-hexane test reactions [A3602] Z. Paál, K. Matusek (Budapest, Hungary) and M. Muhler (Berlin, Germany)	113
Structure and catalysis of vanadium oxide overlayers on oxide supports [A3603] K. Inumaru, M. Misono (Tokyo, Japan) and T. Okuhara (Sapporo, Japan)	133
Effect of the reaction temperature and hydrocarbon partial pressure on the activity of carbon-modified MoO ₃ for n-hexane isomerization [A3604] P. Delporte, C. Pham-Huu and M.J. Ledoux (Strasbourg, France)	151
On the promotion effects in the hydrogenation of acetone and propanal [A3605] G.M.R. Van Druuten, L. Aksu and V. Ponec (Leiden, Netherlands)	181
Modification of surface reactivity by adsorbed species on supported palladium and platinum catalysts during the selective hydrogenation of but-1-yne [A3606] Ph. Maetz (Liège, Belgium) and R. Touroude (Strasbourg, France)	189
Semi-hydrogenation of 1,3-butadiene on adspecies modified Pd–Ni, Co and Cu catalysts [A3657] A. Sarkany (Budapest, Hungary)	207
Effect of ammonia chemisorption on the surface reactivity of V-Sb-oxide catalysts for propane ammoxidation [A3607] G. Centi (Bologna, Sant'Agata di Messina, Italy), F. Marchi and S. Perathoner (Bologna, Italy)	225

- Influence of the surrounding atmosphere upon the catalytic performances of three-way catalysts [A3658]
 V. Pitchon, F. Garin and O. Maire (Strasbourg, France) 245
- Iron pillared clays — efficient catalysts for Friedel–Crafts reactions [A3659]
 B.M. Choudary, M.L. Kantam, M. Sateesh, K.K. Rao and P.L. Santhi (Hyderabad, India) . . . 257

Articles

- Two-step processing of C_8 aromatic mixture over modified ZSM-5 catalysts [A3629]
 A. Smieskova, P. Hudec, M. Paciga and Z. Zidek (Bratislava, Slovakia) 265
- Characterization of lithium and cesium modified zeolite catalysts in the oxidative conversion of methane [A3630]
 P. Kovacheva, K. Arishtirova and N. Davidova (Sofia, Bulgaria) 277
- Synthesis of dimethyl ether (DME) from methanol over solid-acid catalysts [A3624]
 M. Xu, J.H. Lunsford, D.W. Goodman (College Station, TX, USA) and A. Bhattacharyya (Naperville, IL, USA) 289
- Catalytic dehydration of methanol to dimethyl ether (DME) over Pd/Cab-O-Sil catalysts [A3625]
 M. Xu, D.W. Goodman (College Station, TX, USA) and A. Bhattacharyya (Naperville, IL, USA) 303
- Alkoxylation of limonene and alpha-pinene over beta zeolite as heterogeneous catalyst [A3622]
 K. Hensen (Aachen, Germany), C. Mahaim (La Plaine, Switzerland) and W.F. Hölderich (Aachen, Germany) 311
- Selective hydrogenation of toluene over ruthenium catalysts prepared by the sol–gel method [A3627]
 P. Kluson, J. Had, Z. Belohlav and L. Cerveny (Prague, Czech Republic) 331
- TPR and XRD study of ammonia synthesis catalysts [A3595]
 F. Pinna, T. Fantinel, G. Strukul, A. Benedetti (Venezia, Italy) and N. Pernicone (Novara, Italy) 341
- TPR and FT-IR studies on carbonyl cluster derived Co–Ru/SiO₂ catalysts [A3628]
 J. Kiviaho (VTT, Finland), M.K. Niemelä (Espoo, Finland), M. Reinikainen (VTT, Finland) and T.A. Pakkanen (Joensuu, Finland) 353
- Surface acidity and catalytic behavior of modified zirconium and titanium dioxides [A3596]
 A. Hess and E. Kemnitz (Berlin, Germany) 373
- Sustainable Ni/Ca_{1-x}Sr_xTiO₃ catalyst prepared in situ for the partial oxidation of methane to synthesis gas [A3623]
 T. Hayakawa, H. Harihara (Ibaraki, Japan), A.G. Andersen (Oslo, Norway), K. Suzuki (Ibaraki, Japan), H. Yasuda (Chiba, Japan), T. Tsunoda, S. Hamakawa, A.P.E. York (Ibaraki, Japan), Y.S. Yoon (Chiba, Japan), M. Shimizu and K. Takehira (Ibaraki, Japan) . . . 391
- Acid zeolites as catalysts in organic reactions. *tert*-Butylation of anthracene, naphthalene and thianthrene [A3594]
 E. Armengol, A. Corma, H. García and J. Primo (Valencia, Spain) 411
- Erratum to 'Intrinsic kinetics and industrial reactors modelling for the dehydrogenation of ethylbenzene to styrene on promoted iron oxide catalysts [Appl. Catal. A, 113.(1994) 89–102] [A3590]
 B.K. Abdalla, S.S.E.H. Elnashaie, S. Al-Khowaiter and S.S. Elshishini (Riyadh, Saudi Arabia) 425