



ELSEVIER

Catalysis Today 66 (2001) 547–550



CATALYSIS  
TODAY

[www.elsevier.com/locate/cattod](http://www.elsevier.com/locate/cattod)

## Contents of Volume 66

**Vol. 66, No. 1**

### **Nano-structured Materials and their Catalytic Functions**

**Guest Editors: M. Ichikawa, M. Breysse and R. Schloegl**

Preface . . . . .	1
Organometallic chemistry at the interface with materials science J. Schwartz and S.L. Bernasek . . . . .	3
New aspects of catalytic functions on sulfide catalysts M. Breysse, G. Berhault, S. Kasztelan, M. Lacroix, F. Maugé and G. Perot . . . . .	15
Ship-in-bottle synthesis and catalytic performances of platinum carbonyl clusters, nanowires, and nanoparticles in micro- and mesoporous materials A. Fukuoka, N. Higashimoto, Y. Sakamoto, M. Sasaki, N. Sugimoto, S. Inagaki, Y. Fukushima and M. Ichikawa . . . . .	23
Bidentate Lewis acids for organic synthesis K. Maruoka . . . . .	33
Iron as an effective additive for enhancement of catalytic performance of cesium hydrogen salt of molybdochosphoric acid for selective oxidation of isobutane, propane, and ethane under oxygen-rich and -poor conditions and the catalyst design J.-S. Min and N. Mizuno . . . . .	47
Carbonylation reactions catalyzed by homogeneous Pd–Co bimetallic systems Y. Ishii and M. Hidai . . . . .	53
FI Catalysts: super active new ethylene polymerization catalysts S. Matsui and T. Fujita . . . . .	63
Micelle templating for the formulation of silica at the nanometer scale F. Di Renzo, D. Desplantier, A. Galarneau and F. Fajula . . . . .	75
Properties of chemisorbed hydrogen species on Ag-A zeolite partially reduced with hydrogen as studied by $^1\text{H}$ MAS NMR T. Baba, Y. Tohjo, T. Takahashi, H. Sawada and Y. Ono . . . . .	81
HRTEM study of the morphology of RuS <sub>2</sub> supported particles M. Aouine, C. Geantet and T. Epicier . . . . .	91
Anisotropic ordering of Mo species deposited on TiO <sub>2</sub> (1 1 0) characterized by polarization-dependent total reflection fluorescence EXAFS (PTRF-EXAFS) W.-J. Chun, K. Asakura and Y. Iwasawa . . . . .	97
Supported palladium as catalyst for carbon–carbon bond construction (Heck reaction) in organic synthesis K. Köhler, M. Wagner and L. Djakovitch . . . . .	105
Design of alkenes–(O <sub>2</sub> + NO) cell system for the selective partial oxidation of alkenes I. Yamanaka, A. Nishi and K. Otsuka . . . . .	115

Skeletal isomerization of alkanes and hydroisomerization of benzene over solid strong acids and their bifunctional catalysts R.-i. Watanabe, T. Suzuki and T. Okuhara . . . . .	123
Previous Issues of Catalysis Today . . . . .	A1

**Vol. 66, Nos. 2–4**
**Catalysis in Multiphase Reactors**
**Guest Editors: G. Baldi and E. Santacesaria**

Catalysis in multiphase reactors G. Baldi and E. Santacesaria . . . . .	131
New non-traditional multiphase catalytic reactors based on monolithic structures F. Kapteijn, T.A. Nijhuis, J.J. Heiszwolf and J.A. Moulijn . . . . .	133
Dynamic methods and new reactors for liquid phase molecular catalysis S. Caravieilhes, C. de Bellefon and N. Tanchoux . . . . .	145
Monolithic catalysts as more efficient three-phase reactors T.A. Nijhuis, M.T. Kreutzer, A.C.J. Romijn, F. Kapteijn and J.A. Moulijn . . . . .	157
Synthesis and purification of anthraquinone in a multifunctional reactor E. Santacesaria, A. Scaglione, B. Apicella, R. Tesser and M. Di Serio . . . . .	167
Esterification in a structured catalytic reactor with counter-current water removal A.E.W. Beers, R.A. Spruijt, T.A. Nijhuis, F. Kapteijn and J.A. Moulijn . . . . .	175
Water-soluble rhodium/phosphonate–phosphine catalysts for hydroformylation S. Bischoff and M. Kant . . . . .	183
Platinum catalysed aqueous methyl $\alpha$ -D-glucopyranoside oxidation in a multiphase redox-cycle reactor A.P. Markusse, B.F.M. Kuster and J.C. Schouten . . . . .	191
A scale up strategy for bubble column slurry reactors R. Krishna, J.M. van Baten, M.I. Urseanu and J. Ellenberger . . . . .	199
CFD modeling of multiphase flow distribution in catalytic packed bed reactors: scale down issues Y. Jiang, M.R. Khadilkar, M.H. Al-Dahhan and M.P. Dudukovic . . . . .	209
2-Methylpropylacetate synthesis via catalytic distillation J. Hanika, Q. Smejkal and J. Kolena . . . . .	219
Influence of column hardware on the performance of reactive distillation columns R. Baur, R. Taylor and R. Krishna . . . . .	225
Hydrodynamics of reactive distillation tray column with catalyst containing envelopes: experiments vs. CFD simulations J.M. van Baten, J. Ellenberger and R. Krishna . . . . .	233
Design and optimisation of a multi-stage bubble column slurry reactor for Fischer–Tropsch synthesis C. Maretto and R. Krishna . . . . .	241
Mesoscale modeling in multiphase catalysis F. Štepánek, M. Marek, J. Hanika and P.M. Adler . . . . .	249
Experimental study of vaporization effect on steady state and dynamic behavior of catalytic pellets A.V. Kulikov, N.A. Kuzin, A.B. Shigarov, V.A. Kirillov, A.E. Kronberg and K.R. Westerterp . . . . .	255
Agglomeration and adhesion of catalyst particles in gas–liquid reactors M. van der Zon, H. Thoolen, P.J. Hamersma, E.K. Poels and A. Bliek . . . . .	263
Liquid phase selective oxidation of benzyl alcohol over Pd–Ag catalysts supported on pumice L.F. Liotta, A.M. Venezia, G. Deganello, A. Longo, A. Martorana, Z. Schay and L. Guczi . . . . .	271
Pt and Pt-alloy catalysts and their properties for the liquid-phase hydrogenation of cinnamaldehyde W. Koo-amornpattana and J.M. Winterbottom . . . . .	277

Effect of the support in Pt and PtSn catalysts used for selective hydrogenation of carvone S.R. de Miguel, M.C. Román-Martínez, D. Cazorla-Amorós, E.L. Jablonski and O.A. Scelza . . . . .	289
Multifactorial analysis in the study of hydroformylation of oct-1-ene using supported aqueous phase catalysis U.J. Jáuregui-Haza, M. Dessoudeix, Ph. Kalck, A.M. Wilhelm and H. Delmas . . . . .	297
Surface organometallic chemistry on metals in water. Chemical modification of platinum catalyst surface by reaction with hydrosoluble organotin complexes: application to the selective dehydrogenation of isobutane to isobutene F.Z. Bentahar, J.P. Candy, J.M. Basset, F. Le Peltier and B. Didillon . . . . .	303
Selective dimerisation of 1-butene in biphasic mode using buffered chloroaluminate ionic liquid solvents — design and application of a continuous loop reactor P. Wasserscheid and M. Eichmann . . . . .	309
Mass transfer effects in the $H_2SO_4$ catalyzed pivalic acid synthesis D.W.F. Brilman, N.G. Meesters, W.P.M. van Swaaij and G.F. Versteeg . . . . .	317
Catalytic reaction performed in the liquid–liquid system at batch and semibatch operating mode E. Molga and R. Cherbański . . . . .	325
On the interfacial mass transfer and the location of the chemical reaction in a fluid/fluid reacting system at elevated temperatures and pressures N. Van Nhu, A. Wanner, H. Tiltscher and J.A. Lercher . . . . .	335
Novelties of liquid–liquid–liquid phase transfer catalysis. Alkoxylation of <i>p</i> -chloronitrobenzene G.D. Yadav and S.S. Naik . . . . .	345
Substrate-selective catalysis in an aqueous biphasic system with per(2,6-di- <i>O</i> -methyl)- $\beta$ -cyclodextrin H. Bricout, L. Caron, D. Bormann and E. Monflier . . . . .	355
Selective hydrogenation of benzene to cyclohexene catalyzed by Ru supported catalysts. Influence of the alkali promoters on kinetics, selectivity and yield L. Ronchin and L. Tomiolo . . . . .	363
Kinetic modeling of homogeneous catalytic processes R.V. Chaudhari, A. Seayad and S. Jayasree . . . . .	371
Kinetics of cinnamaldehyde hydrogenation–concentration dependent selectivity Th. Vergunst, F. Kapteijn and J.A. Moulijn . . . . .	381
Hydrogenation of olefins in aqueous phase, catalyzed by polymer-protected rhodium colloids: kinetic study A. Borsla, A.M. Wilhelm and H. Delmas . . . . .	389
The influences of the gas rate dissolution and mass-transfer limitation at the interfaces on selectivity of gas–liquid processes in stirred reactors with a suspended catalyst E.F. Stefoglo, O.P. Zhukova and I.V. Kuchin . . . . .	397
Kinetic and mass transfer in the hydrogenation of polyunsaturated organic compounds in the presence of supported Pd catalysts M. Di Serio, V. Balato, A. Dimiccoli, L. Maffucci, P. Iengo and E. Santacesaria . . . . .	403
Modeling of the enantioselective hydrogenation of 1-phenyl-1,2-propanedione over Pt/Al <sub>2</sub> O <sub>3</sub> catalyst E. Toukoniitty, P. Mäki-Arvela, J. Wärnå and T. Salmi . . . . .	411
Kinetics and phase equilibria of competing aldolization and elimination in a three-phase reactor V. Serra-Holm, T. Salmi, M. Kangas, P. Mäki-Arvela and L.P. Lindfors . . . . .	419
A kinetic rate expression for the time-dependent coke formation rate during propane dehydrogenation over a platinum alumina monolithic catalyst M. van Sint Annaland, J.A.M. Kuipers and W.P.M. van Swaaij . . . . .	427
A general kinetic and mass transfer model to simulate the baker's yeast growth in bioreactors M. Di Serio, E. De Alteriis, P. Parascandola and E. Santacesaria . . . . .	437
Kinetics and mass transfer effects in the oxidation of ferrous sulfate over doped active carbon catalysts M.R. Rönnholm, J. Wärnå, D. Valtakari, T. Salmi and E. Laine . . . . .	447
Nonequilibrium thermodynamics for multiphase reacting systems: an optimal control approach S. Sieniutycz . . . . .	453
Optimal temperature profiles for parallel-consecutive reactions with deactivating catalyst Z. Szwast and S. Sieniutycz . . . . .	461

Modelling of a photocatalytic reactor with a fixed bed of supported catalyst A. Alexiadis, G. Baldi and I. Mazzarino . . . . .	467
External and internal mass transfer effect on photocatalytic degradation D. Chen, F. Li and A.K. Ray . . . . .	475
Comparison of the efficiency of immobilized and suspended systems in photocatalytic degradation M.F.J. Dijkstra, A. Michorius, H. Buwalda, H.J. Panneman, J.G.M. Winkelmann and A.A.C.M. Beenackers . . . . .	487
Gas absorption into aqueous reactive slurries of calcium and magnesium hydroxide in a multiphase reactor M.V. Dagaonkar, A.A.C.M. Beenackers and V.G. Pangarkar . . . . .	495
Catalytic denitrification: direct and indirect removal of nitrates from potable water A. Pintar, J. Batista and J. Levec . . . . .	503
Oxidation of phenol in aqueous solution with copper catalysts A. Santos, P. Yustos, B. Durbán and F. García-Ochoa . . . . .	511
Electrochemical destruction of thiourea dioxide in an undivided parallel plate electrodes batch reactor L. Szpyrkowicz, C. Juzzolino, S. Daniele and M.D. Faveri . . . . .	519
Heterogeneous sulfoxidation of thioethers by hydrogen peroxide over layered double hydroxides as catalysts E. Dumitriu, C. Guimon, A. Cordoneanu, S. Casenave, T. Hulea, C. Chelaru, H. Martinez and V. Hulea . . . . .	529
Author Index . . . . .	535
Subject Index . . . . .	539
Contents of Volume 66 . . . . .	547
Previous Issues of Catalysis Today . . . . .	A1