

Contents

Preface	1
New Catalyst for Multiphase Reactions	
Novel catalyst design for multiphase reactions G. Centi and S. Perathoner	3
Surface organometallic chemistry on metals: influence of organometallic fragments grafted to the surface of Rh particles on the competitive hydrogenation of terminal and internal double bonds of unsaturated primary alcohols C. Chupin, J.P. Candy and J.M. Basset	15
Purification of caprolactam in magnetically stabilized bed reactor X. Meng, X. Mu, B. Zong, E. Min, Z. Zhu, S. Fu and Y. Luo	21
Development of monolith with a carbon-nanofiber-washcoat as a structured catalyst support in liquid phase N. Jarrah, J.G. van Ommen and L. Lefferts	29
Carbon supported Ru catalysts as promising alternative for Raney-type Ni in the selective hydrogenation of D-glucose B.W. Hoffer, E. Crezee, P.R.M. Mooijman, A.D. van Langeveld, F. Kapteijn and J.A. Moulijn	35
Hydroformylation in microemulsions: conversion of an internal long chain alkene into a linear aldehyde using a water soluble cobalt catalyst M. Haumann, H. Koch and R. Schomäcker	43
Activity and selectivity of Rh-complex catalysts in hydroformylation of 1,4-diacetoxy-butene to Vitamin A intermediate R. Chansarkar, K. Mukhopadhyay, A.A. Kelkar and R.V. Chaudhari	51
Double bond oxidative cleavage of monoenic fatty chains E. Santacesaria, M. Ambrosio, A. Sorrentino, R. Tesser and M. Di Serio	59
Novel Multiphase Reactors	
Mass transfer in bubble columns R. Krishna and J.M. van Baten	67
Reactive distillation for sustainable, high 2-phenyl LAB production J.F. Knifton, P.R. Anantaneni, P. Eugene Dai and M.E. Stockton	77
Multi-functional trickle bed reactor for butylacetate synthesis J. Hanika, M. Kucharová, J. Kolena and Q. Smejkal	83
Tubular reactor for liquid reactions with gas release P. Stahl, A. Wegmann and P.R. von Rohr	89
A new reactor design for catalytic fluid–fluid multiphase reactions K.-D. Wiese, O. Möller, G. Protzmann and M. Trocha	97
A new concept reactor for hydrocarbon hydrogenation in the reactive evaporation mode N.A. Kuzin, A.V. Kulikov, A.B. Shigarov and V.A. Kirillov	105
Distillation column with reactive pump arounds: an alternative to reactive distillation R. Baur and R. Krishna	113

Experimental reactor development for a gas evolving catalytic decomposition reaction E.H. Stitt, F.E. Hancock, R.H. Peeling and J. Scott.	125
Tubular Inorganic catalytic membrane reactors: advantages and performance in multiphase hydrogenation reactions G. Centi, R. Dittmeyer, S. Perathoner and M. Reif.	139
Acoustic and visual study of bubble formation processes in bubble columns staged with fibrous catalytic layers V. Höller, M. Ruzicka, J. Drahos, L. Kiwi-Minsker and A. Renken.	151
Heat/Mass Transfer in Multiphase Reactors	
Effects of macroscopic hydrodynamics on heat transfer in a three-phase fluidized bed T.-J. Lin and C. Hung-Tzu	159
Mass transfer studies in gas–liquid–solid membrane contactors M. Vospernik, A. Pintar, G. Berčič and J. Levec	169
Intensification of bubble columns by vibration excitement J. Ellenberger, J.M. van Baten and R. Krishna.	181
Influence of mass transfer on regio- and enantioselectivity in hydrogenation of 1-phenyl-1,2-propanedione over modified Pt catalysts E. Toukoniitty, P. Mäki-Arvela, N. Kumar, T. Salmi and D.Yu. Murzin	189
Explaining mass transfer observations in multiphase stirred reactors: particle-liquid slip velocity measurements using PEPT R.P. Fishwick, J.M. Winterbottom and E.H. Stitt.	195
Multiphase Reactor Modeling	
MRI visualisation of two-phase flow in structured supports and trickle-bed reactors L.F. Gladden, M.H.M. Lim, M.D. Mantle, A.J. Sederman and E.H. Stitt	203
Modeling of the Fischer–Tropsch synthesis in slurry bubble column reactors N. Rados, M.H. Al-Dahhan and M.P. Dudukovic	211
Scale up studies on partitioned bubble column reactors with the aid of CFD simulations J.M. van Baten and R. Krishna	219
Hydrogenation of 4- <i>tert</i> -butylphenol in a three-phase cocurrent upflow reactor D.Yu. Murzin and S.R. Konuspaev	229
Bed length effect on the liquid phase non-idealities and holdup in pilot scale upflow reactors A.M. Thanos, G.D. Bellos, P.A. Galtier and N.G. Papayannakos	235
Catalytic reaction performed in the liquid–liquid system: comparison of conventional and neural networks modelling methods E. Molga and R. Cherbański.	241
Simulation of pervaporation membrane reactors for liquid phase synthesis of ethyl <i>tert</i> -butyl ether from <i>tert</i> -butyl alcohol and ethanol S. Assabumrungrat, W. Kiatkittipong, P. Praserttham and S. Goto	249
Scale-up strategy for bubble column slurry reactors using CFD simulations J.M. van Baten, J. Ellenberger and R. Krishna.	259
Experimental and computational study of liquid drop over flat and spherical surfaces P.R. Gunjal, V.V. Ranade and R.V. Chaudhari	267
HdPro: a mathematical model of trickle-bed reactors for the catalytic hydroprocessing of oil feedstocks D.G. Avraam and I.A. Vasalos	275
Comparison of three-phase reactor performances with and without packing elements M.R. Rönnholm, J. Wärnå and T. Salmi.	285
Selective hydrogenation in trickle-bed reactor: experimental and modelling including partial wetting A. Dietz, C. Julcour, A.M. Wilhelm and H. Delmas.	293

Modeling and Kinetic Studies

Extremum properties of interphase chemical reactions in catalytic systems S. Sieniutycz	307
Separation of kinetics and mass-transport effects for a fast reaction: the selective hydrogenation of functionalized alkynes T.A. Nijhuis, G. van Koten, F. Kapteijn and J.A. Moulijn	315
Influence of the vapor–liquid equilibria (VLE) on the kinetics in gas–liquid and gas–liquid–solid systems R. Tesser, M. Di Serio and E. Santacesaria	323
Lactose hydrolysis by immobilized β -galactosidase: the effect of the supports and the kinetics M. Di Serio, C. Maturo, E. De Alteriis, P. Parascandola, R. Tesser and E. Santacesaria	333
Alternating motion of liquid in catalyst pores in a liquid/liquid–gas reaction with heat or gas production L.B. Datsevich	341
The use of a three phase microreactor to investigate HDS kinetics G.D. Bellos and N.G. Papayannakos	349
Platinum catalysed wet oxidation of phenol in a stirred slurry reactor. The role of oxygen and phenol loads on reaction pathways Z.P.G. Masende, B.F.M. Kuster, K.J. Ptasinski, F.J.J.G. Janssen, J.H.Y. Katima and J.C. Schouten	357
Deep desulfurization of middle distillates: process adaptation to oil fractions' compositions E. Pedernera, R. Reimert, N.L. Nguyen and V. van Buren	371
Application of transient methods in three-phase catalysis: hydrogenation of a dione in a catalytic plate column E. Toukoniitty, J. Wärnä, T. Salmi, P. Mäki-Arvela and D.Yu. Murzin	383
The palladium catalysed hydrogenation of 2-butyne-1,4-diol in a monolith bubble column reactor J.M. Winterbottom, H. Marwan, E.H. Stitt and R. Natividad	391
Reaction kinetics of rhodium catalysed hydrogenations in micellar solutions N. Weitbrecht, M. Kratzat, S. Santoso and R. Schomäcker	401
Supported aqueous phase catalysis: a new kinetic model of hydroformylation of octene in a gas–liquid–liquid–solid system U.J. Jáuregui-Haza, E. Pardillo-Fontdevila, Ph. Kalck, A.M. Wilhelm and H. Delmas	409
Hydroformylation of linalool in a supported aqueous phase catalyst by immobilized rhodium complex: kinetic study M. Benaissa, U.J. Jáuregui-Haza, I. Nikov, A.M. Wilhelm and H. Delmas	419

Process Intensification

Periodic state of wet oxidation in trickle-bed reactor V. Tukač, J. Hanika and V. Chyba	427
The capillary-microreactor: a new reactor concept for the intensification of heat and mass transfer in liquid–liquid reactions G. Dumann, U. Quittmann, L. Gröschel, D.W. Agar, O. Wörz and K. Morgenschweis	433
A monolith loop reactor as an attractive alternative to slurry reactors T. Boger, S. Roy, A.K. Heibel and O. Borchers	441
Effects of temperature distribution on the catalytic pyrolysis of polystyrene waste in a swirling fluidized-bed reactor C.-G. Lee, Y.-J. Cho, P.-S. Song, Y. Kang, J.-S. Kim and M.-J. Choi	453
Fischer–Tropsch synthesis using a porous catalyst packing: experimental evidence of an efficient use of permeable composite monoliths as a novel type of the Fischer–Tropsch synthesis catalyst A.A. Khassin, T.M. Yurieva, A.G. Sipatov, V.A. Kirillov, G.K. Chermashentseva and V.N. Parmon	465
Rate enhancement effect of third liquid phase on dibenzyl ether production in solid–liquid–liquid phase transfer catalytic system G. Jin, T. Ido and S. Goto	471
On the development of new column internals for reactive separations via integration of CFD and process simulation M. Klöcker, E.Y. Kenig and A. Górak	479

The Claus process: teaching an old dog new tricks M.P. Elsner, M. Menge, C. Müller and D.W. Agar	487
Using monolithic catalysts for highly selective Fischer–Tropsch synthesis R.M. de Deugd, F. Kapteijn and J.A. Moulijn	495
Continuous enantioselective hydrogenation in fixed-bed reactor: towards process intensification N. Künzle, J.-W. Solèr and A. Baiker	503
Monolithic integrated fuel processor for the conversion of liquid methanol M. Schuessler, M. Portscher and U. Limbeck	511
Previous Issues of Catalysis Today	I