

## CONTENTS

Organizing Committee	X
Foreword	XI
Acknowledgements	XIII
Financial Support	XIV

### **Studies of unit operations in catalyst preparation**

Illustration of process scale-up in heterogeneous catalyst preparation I. Biay, G. Dessalces, C. Hypolite, F. Kolenda, J.P. Reymond	19
Deposition precipitation onto pre-shaped carrier bodies. Possibilities and limitations K.P. de Jong	19
Influence of the preparation procedure on the physical properties, surface acidity and dispersion of MoP/Al <sub>2</sub> O <sub>3</sub> catalysts R. Prada Silvy, Y. Romero, J. Guareguia, R. Galiazzo	
Synthesis of non-stoichiometric spinel-type phases : a key tool for the preparation of tailored catalysts with specific activity M. Piemontese, F. Trifirò, A. Vaccari, E. Foresti, M. Gazzano	49
Effect of preparation variables on catalytic behaviour of copper/zirconia catalysts for the synthesis of methanol from carbon dioxide R.A. Koeppe, A. Baiker, Ch. Schild, A. Wokaun	50
Preparation of TiO <sub>2</sub> -Al <sub>2</sub> O <sub>3</sub> by impregnation with TiCl <sub>4</sub> -CCl <sub>4</sub> Liu Yingjun, Zhang Qinpei, Zhu Yongfa, Gui Linlin, Tang Youqi	60
Interactions of the impregnating solution with the support during the preparation of Rh/TiO <sub>2</sub> catalysts R.J. Fenoglio, W. Alvarez, G.M. Nuñez, D.E. Resasco	77
Impregnation of controlled-porosity silica : Cu/SiO <sub>2</sub> , Co/SiO <sub>2</sub> and Cu-Co/SiO <sub>2</sub> . Investigation of the parameters affecting selectivity in CO hydrogenation M.A. Martin Luengo-Yates, Y. Wang, P.A. Sermon	87
Selective hydrogenation of cyclododecatriene isomers to cyclododecene catalyzed by Cu-Al <sub>2</sub> O <sub>3</sub> V. Di Castro, M. Gargano, N. Ravasio, M. Rossi	95
Preparation and characterization of highly selective Fe-Cu/SiO <sub>2</sub> catalysts for partial hydrogenation of alkynes Y. Nitta, Y. Hiramatsu, Y. Okamoto, T. Imanaka	103
Some remarks on the preparation of Fe-K/Ca-Cr catalyst for styrene production Z. Dziewiecki, E. Ozdoba	113
Hydrogenation of 2-ethyl hexen-2-al on Ni/SiO <sub>2</sub> catalysts. Role of preparation parameters A.F. da Silva Jr, V.M.M. Salim, M. Schmal, R. Frety	123
Preparation and properties of a Pt/silica and its comparison with Europt-1 S.D. Jackson, M.B.T. Keegan, G.D. McLellan, P.A. Meheux, R.B. Moyes, G. Webb, P.B. Wells, R. Whyman, J. Willis	135

Factors analysis for mechanical strength in pelleting process of Fe-based high temperature shift catalyst Yongdan Li, Jiusheng Zhao, Liu Chang	145
Studies on pore size control of alumina : preparation of alumina catalyst extrudates with large unimodal pore structure by low temperature hydrothermal treatment M. Absi-Halabi, A. Stanislaus, H. Al-Zaid	155
Production of nickel-on-alumina catalysts from preshaped support bodies L.M. Knijff, P.H. Bolt, R. van Yperen, A.J. van Dillen, J.W. Geus	165
Development of a methodology for investigating the adsorption of species containing catalytically active ions on the surface of industrial carriers N. Spanos, Ch. Kordulis, A. Lycourghiotis	175
Scaling down of the calcination process for industrial catalyst manufacturing G. Groen, J. Ferment, M.J. Groeneveld, J. Decler, A. Delva	185
Hydrothermal sintering of the active phase in alumina supported fixed bed nickel catalysts during reduction E.K. Poels, J.G. Dekker, W.A. van Leeuwen	205

#### **Catalyst preparation via the sol-gel route**

The influence of silica support on polymerisation catalyst performance C.E. Marsden	215
Preparation and catalytic effects of $\text{CeO}_x\text{-MO}_y\text{-Al}_2\text{O}_3$ (M = Ba, La, Zr and Pr) by an improved sol gel method for automotive catalysts K. Masuda, M. Kawai, K. Kuno, N. Kachi, F. Mizukami	
Influence of preparation parameters on pore structure of silica gels prepared from tetraethoxy orthosilicate B. Handy, K.L. Walther, A. Wokaun, A. Baiker	239

#### **Preparation of catalysts from layered structures and pillaring of clays**

Aspects of the synthesis of aryl-sulfonic acid MELS® catalysts D.L. King, M.D. Cooper, W.A. Sanderson, Ch.M. Schramm, J.D. Fellmann	
Preparation of basic silicates and their use as supports or catalysts G.A. Martin, M.C. Durupt, C. Mirodatos, N. Mouaddib, V. Perrichon	269
Soils as unusual catalysts S.A. Moya, A. Flores, M. Escudey	279
Thermal stability, acidity and cracking properties of pillared rectorite catalysts M.L. Occelli	287
Preparation and properties of large-pore RE/Al-pillared montmorillonite. A comparison of RE cations J. Sterte	301
Preparation of pillared montmorillonite with enriched pillars E. Kikuchi, H. Seki, T. Matsuda	311

Intercalation of $\text{La}_2\text{O}_3$ and $\text{La}_2\text{O}_3\text{-NiO}$ -oxidic species into montmorillonite layered structure A.K. Ladavos, P.J. Pomonis	319
Mixed Al-Fe pillared laponites : preparation, characterization and catalytic properties in syngas conversion F. Bergaya, N. Håssoun, L. Gatineau, J. Barrault	329
Zirconium pillared clays. Influence of basic polymerization of the precursor on their structure and stability E.M. Farfan-Torres, O. Dedeycker, P. Grange	337
Control of the acidity of montmorillonites pillared by Al-hydroxy cationic species D. Tichit, Z. Mountassir, F. Figueras, A. Auroux	345
 <b>Preparation and modification of zeolite-based catalysts</b>	
The chemistry of dealumination of faujasite zeolites with silicon tetrachloride J.A. Martens, P.J. Grobet, P.A. Jacobs	355
Factors affecting the formation of extra-framework species and mesopores during dealumination of zeolite Y D. Goyaerts, J.A. Martens, P.J. Grobet, P.A. Jacobs	381
Treatment of galloalumino-silicate (ZSM-5 type zeolite) with KOH solution. Dispersion of aggregated zeolites into small particles J. Kanai, N. Kawata	397
Design and preparation of vanadium resistant FCC catalysts D.J. Rawlence, K. Gosling, L.H. Staal, A.P. Chapple	407
Double substitution in silicalite by direct synthesis : a new route to crystalline porous bifunctional catalysts G. Bellussi, A. Carati, M.G. Clerici, A. Esposito	421
Study on titanium silicalite synthesis M. Padovan, F. Genoni, G. Leofanti, G. Petrini, G. Trezza, A. Zecchina	431
 <b>Carbon supported catalysts</b>	
Activated carbon from bituminous coal J.A. Pajares, J.J. Pis, A.B. Fuertes, J.B. Parra, M. Mahamud, A.J. Pérez	439
Carbon-supported palladium catalysts. Some aspects of preparation in connection with the adsorption properties of the supports A.S. Lisitsyn, P.A. Simonov, A.A. Ketterling, V.A. Likhobov	449
Preparation of palladium-copper catalysts of designed surface structure Zs. Bodnár, T. Mallát, S. Szabó, J. Petró	459
Optimization and characterization of Pt-Fe alloys supported on charcoal P. Fouilloux, D. Goupil, B. Blanc, D. Richard	469
Supported metallic catalysts achieved through graphite intercalation compounds F. Beguin, A. Messaoudi, A. Chafik, J. Barrault, R. Erre	479

- Preparation of graphite-iron-potassium catalysts for ammonia synthesis  
 K. Kalucki, A.W. Morawski

487

### Preparation of oxidation catalysts

- Synthesis of V-P-O catalysts for oxidation of C<sub>4</sub> hydrocarbons  
 V.A. Zazhigalov, G.A. Komashko, A.I. Pyatnitskaya, V.M. Belousov,  
 J. Stoch, J. Haber

- Preparation of well dispersed vanadia catalysts by ultra-high intensity  
 grinding at ambient temperature  
 Z. Sobalik, O.B. Lapina, V.M. Mastikhin

507

- Dispersion and physico-chemical characterization of iron oxide on various supports  
 Weijie Ji, Shikong Shen, Shuben Li, Hongli Wang

517

- The use of chelating agents for the preparation of iron oxide catalysts for  
 the selective oxidation of hydrogen sulfide  
 P.J. van den Brink, A. Scholten, A. van Wageningen,  
 M.D.A. Lamers, A.J. van Dillen, J.W. Geus

527

- Preparation of oxidation catalysts with a controlled architecture  
 Y.L. Xiong, L.T. Weng, B. Zhou, B. Yasse, E. Sham, L. Daza,  
 F. Gil-Llambias, P. Ruiz, B. Delmon

537

- Structure and selectivity changes in vanadia-titania-deNO<sub>x</sub> catalysts  
 M. Kotter, H.-G. Lintz, T. Turek

547

- Binary oxide catalysts synthesized by sequential precipitation  
 C.S. Brooks

557

- ZrO<sub>2</sub> as a support : oxidation of CO on CrO<sub>x</sub>/ZrO<sub>2</sub>  
 T. Yamaguchi, M. Tan-no, K. Tanabe



567

- Methane oxidative coupling by definite compounds (e.g. perovskite, cubic  
 or monoclinic structure, ...) obtained by low temperature processes  
 J.L. Rehspringer, P. Poix, A. Kaddouri, A. Kiennemann

575

### Novel and unusual preparation methods

- Preparation of strong alumina supports for fluidized bed catalysts  
 M.N. Shepeleva, R.A. Shkrabina, Z.R. Ismagilov, V.B. Fenelonov

583

- Synthesis and regeneration of Raney catalysts by mechanochemical  
 methods  
 A.B. Fasman, S.D. Mikhailenko, O.T. Kalinina, E.Yu. Ivanov,  
 G.V. Golubkova

591

- Controlled preparation of Raney Ni catalysts from Ni<sub>2</sub>Al<sub>3</sub> base alloys.  
 Structure and properties  
 S. Hamar-Thibault, J. Gros, J.C. Joud, J. Masson, J.P. Damon,  
 J.M. Bonnier

601

- Novel type of hydrotreating catalysts prepared through precipitation  
 from homogeneous solution (PFHS) method  
 K. Somasekhar Rao, V.V.D.N. Prasad, K.V.R. Chary, P. Kanta Rao

611

Preparation of manganese oxide catalysts using novel $\text{NH}_4\text{MnO}_4$ and manganese hydroxide precursors. Comparison of unsupported and alumina supported catalysts A.K.H. Nohman, D. Duprez, C. Kappenstein, S.A.A. Mansour, M.I. Zaki	617
Influence of surface OH groups and traces of water vapor during the preparation of $\text{TiO}_2\text{-SiO}_2$ samples A. Muñoz-Paez, G. Munuera	
Catalysts and preparation of new titanates R.G. Anthony, R.G. Dosch	637
New methods of synthesis of highly dispersed silver catalysts N.E. Bogdanchikova, V.V. Tretyakov	647
Preparation of high-surface-area V-Si-P oxide catalysts M. Ai	653
Preparation of fine particles of ruthenium-alumina composite by mist reduction method H. Imai, J. Sekiguchi	661
Designed catalysts for hydrodechlorination, reduction and reductive amination reactions J.L. Margitfalvi, S. Göbölös, E. Tálas, M. Hegedüs	669
Preparation of high surface area hydrogen-molybdenum bronze catalysts C. Hoang-Van, O. Zegaoui, B. Pommier, P. Pichat	679
New preparation of supported metals. Hydrogenation of nitriles M. Blanchard, J. Barrault, A. Derouault	687
Preparation of highly dispersed gold on titanium and magnesium oxide S. Tsubota, M. Haruta, T. Kobayashi, A. Ueda, Y. Nakahara	695
Preparation of monodisperse colloidal Pt-ReO <sub>2</sub> particles using microemulsions A. Claerbout, J. B. Nagy	705
New organometallic active sites obtained by controlled surface reaction of organometallic complexes with supported metal particles B. Didillon, A. El Mansour, J.P. Candy, J.M. Bassett, F. Le Peltier, J.P. Bournonville	
Conversion coatings on stainless steel as multipurpose catalysts L. Aries, A. Komla, J.P. Traverse	729

#### Author Index

Studies in Surface Science and Catalysis (other volumes in the series)