

18^{ième} Symposium canadien de catalyse - 18th Canadian Symposium on Catalysis

Technical Program - Programme technique

8:00 Symposium opening, Monday, May 17, 2004

PLENARY LECTURES

Monday, May 17, 2004

8:15 **Molecular Ingredients of Catalytic Selectivity and Catalyst Design**

Gabor A. Somorjai

Department of Chemistry and Lawrence Berkeley National Laboratory, University of California, Berkeley

Tuesday, May 18, 2004

8:15 **Bridges between heterogeneous and homogeneous catalysis. The case of single-site and multiple-site olefin polymerization catalysts**

Tobin J. Marks

Department of Chemistry, Northwestern University, Evanston, IL 60208-3113

13:15 **Ciappetta Lecture**

Highly Active Homogeneous Catalysts for Olefin Polymerization: Molecular Design, Optimization and Utilization

Douglas W. Stephan

Department of Chemistry & Biochemistry, University of Windsor, Windsor, ON, N9B 3P4

Wednesday, May 19, 2004

8:15 **Catalysis Award Lecture**

Investigations of zeolite molecular sieve catalysts and structure determinations of their host / guest complexes with organic molecules by high resolution solid state NMR spectroscopy

Colin A. Fyfe, Darren H. Brouwer, Andrew R. Lewis, J.-S. Joseph Lee, Anix C. Diaz, Yi Feng, Hiltrud Grondey

Department of Chemistry, University of British Columbia, Vancouver, BC, V6T 1Z1, Canada

APPLICATIONS OF SURFACE SCIENCE IN CATALYSIS

Monday, May 17, 2004

Chairs: Alan E. Nelson, University of Alberta (morning)

Adam F. Lee, University of York, UK (afternoon)

9:30 **KEYNOTE LECTURE**

Density Functional Theory Applied to Transition Metal Catalysis: From Resolving Reaction Mechanisms to Identifying Promising Catalysts

Manos Mavrikakis

Department of Chemical & Biological Engineering, University of Wisconsin – Madison, Madison, WI 53706

10:10 **DTF and TPD Study of Pyridine and Pyrrole Adsorption on Mo(110)**

Wa'el A. Abdallah, Murray R. Gray and Alan E. Nelson

Department of Chemical & Materials Engineering University of Alberta, Edmonton, Alberta, Canada T6G 2G6

10:35 **Fast XPS Studies of Surface Catalysed Reactions**

Adam F. Lee

Department of Chemistry, University of York, York YO10 5DD, UK

- 11:00 **Surface Active Carbon and Hydrocarbon Chain Growth in Cobalt-Catalyzed Fischer-Tropsch Synthesis**
Christopher J. Bertole^{1‡}, Gabor Kiss² and Charles A. Mims^{1*}
¹Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, Ontario, M5S 3E5, Canada, ‡Current address: Cormetech, Inc., Durham, NC 27712, USA
²ExxonMobil Research and Engineering Company, Annandale, NJ 08801, USA
- 11:25 **A model catalyst with selectivity controllable functions: effects of acoustic wave resonance oscillation on ethanol decomposition over Ag and AgAu alloy catalysts**
N. Saito, H. Nishiyama, Y. Yukawa, Y. Sato and Y. Inoue
Department of Chemistry, Nagoka University of Technology, Nagaoka 940-2188, Japan
- 13:15 **KEYNOTE LECTURE**
Carbide and Phosphide Hydrotreating Catalysts: Real Systems and Single Crystal Models
S. Ted Oyama
Department of Chemical Engineering, Virginia Tech, Blacksburg, VA 24061
- 13:55 **Theoretical Study of MoS₂, NiMoS and CoMoS Catalysts by Density-Functional Theory Calculations**
Mingyong Sun, John Adjaye*, Alan Nelson
Department of Chemical-Materials Engineering, University of Alberta, Edmonton, AB, Canada T6G 2G6
*Edmonton Research Centre, Syncrude Canada Ltd, Edmonton, AB, Canada T6N 1H4
- 14:20 **Metal-adsorbate double bonds on -Mo₂C: preparation, spectroscopy and reactivity of surface oxo and alkylidene groups**
M. Sijaj, C. Maltais, H. Oudghiri-Hassani and P. H. McBreen
Département de chimie, Université Laval, Québec (QC), Canada, G1K 7P4
- 15:10 Break
- 15:30 **Isotope Transient Studies of Oxygen Permeation Through a Dense La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3- δ} Membrane**
Linjie Hu, Charles A. Mims
Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, ON, M5S 3E5
- 15:55 **CLS and its Applications in Catalysis Research in Canada: Involvement and Collaboration**
Hui Wang
Department of Chemical Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 5C5

CATALYSIS FOR FUEL CELLS AND FUEL PROCESSORS

Monday, May 17, 2004

Chairs: Raymond Roberge, Énergie Or, Montreal (morning)
Bill Adams, Estco Battery Management, Ottawa (afternoon)

- 9:30 **KEYNOTE LECTURE**
Non-noble metal catalysts at the cathode of PEM fuel cells: dream or possibility?
Jean-Pol Dodelet
INRS-Énergie, Matériaux et Télécommunications, Varennes, QC, Canada, J3X 1S2
- 10:10 **Challenges on New Catalysts development for the Oxygen Reduction Reaction for PEFC Applications**
O. Savadogo
Laboratoire d'Électrochimie et de Matériaux Énergétiques, École Polytechnique de Montréal, C.P. 6079, Succ. Centre-ville, Montreal, QC, H3C 3A7, Canada

- 10:35 **Nickel / Conducting Polymer Electrocatalysts For Hydrogen Evolution in an Acidic Medium**
Elisa Navarro Flores, Zhiwen Chong and Sasha Omanovic
 Department of Chemical Engineering, McGill University, 3610 University Street, Montreal, Quebec, H3A 2B2, Canada
- 11:00 **Preparation and Characterization of Ni-Al₂O₃ Catalysts for Reforming of Methane**
Guohui Li and Josephine M. Hill
 Department of Chemical and Petroleum Engineering, University of Calgary, 2500 University Drive N.W., Calgary, Alberta, T2N 1N4
- 11:25 **Water gas shift and preferential oxidation processes for low temperature fuel cell grade H₂ production over the nanostructured Cu_{0.1}Ce_{0.9}O_{2-y} catalyst**
 Stanko Hocevar^a, Gregor Sedmak^{a,s}, Henrik Kušar^a, and Janez Levec^{a,b}
^aNational Institute of Chemistry, Hajdrihova 19, P.O.Box 660, SI-1000 Ljubljana, Slovenia
^bUniversity of Ljubljana, Faculty of Chemistry and Chemical Technology, Aškeričeva 5, Ljubljana, Slovenia
- 13:15 **KEYNOTE LECTURE**
Fuel Processing for Fuel Cells: Can Catalysis Save the Day?
 Brant A. Peppley
 Department of Chemistry and Chemical Engineering, Royal Military College of Canada, Kingston, Ontario K7K 7B4
- 13:55 **Optimization of Ni/Al₂O₃ Catalysts for Hydrogen Production by Partial Oxidation of Gasoline**
H. H. Ibrahim and R. O. Idem*, Process & Petroleum Systems Engineering Laboratory, Faculty of Engineering, University of Regina, 3737 Wascana Parkway, Regina, SK, Canada S4S 0A2
- 14:20 **Dry reforming of bio-ethanol to produce SOFC fuel**
Karine de Oliveira-Vigier, Nicolas Abatzoglou and François Gitzhofer
 Université de Sherbrooke, Department of Chemical Engineering, Canada
- 14:45 **Steam reforming of non purified ethanol**
Abayomi Akande, Raphael Idem* and Ajay Dalai[†]
 *Process System Engineering Laboratory, Faculty of Engineering, University of Regina, 3737, Wascana Parkway, Regina, SK, Canada, S4S 0A2
[†]Department of Chemical Engineering, University of Saskatchewan, Saskatoon, Canada
- 15:10 Break
- 15:30 **Low temperature production of hydrogen from glycerol and sugars**
Jacques Monnier, Guy Tourigny, Hardi Sulimma, Luc Pelletier
 CANMET Energy Technology Centre – Ottawa, Natural resources Canada, 1 Haanel Drive, Ottawa, Ontario, K1A 1M1 Canada
- 15:55 **Rapid Production of Synthesis Gas from Methane at Short Contact Times: Experimental and Numerical Transient Species Profiles**
C.A. Leclerc^{a,b}, K.A. Williams^b, and L.D. Schmidt^b
^aDepartment of Chemical Engineering, McGill University, Montreal, Canada
^bDepartment of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, USA

Tuesday, May 18, 2004

Chair: Wojtek Halliop, Fuel Cell Technologies, Kingston

9:30 **KEYNOTE LECTURE**

Progress in the electrocatalysis of solid oxide fuel cell reactions: Charging towards the future

Viola I. Birss

Department of Chemistry, University of Calgary, 2500 University Drive N.W. Calgary, Alberta, T2N 1N4

- 10:10 **Size-controlled synthesis of nano-sized PtRu catalysts and their application as fuel cell catalysts**
C. Bock and B. MacDougall, National Research Council Canada, Institute for Chemical Process and Environmental Technology, Ottawa, ON, K1A 0R6
- 10:35 **Pt/Sn supported catalysts for the direct oxidation of ethanol in a direct alcohol fuel cell (PEMFC)**
F. Vigier¹, C. Coutanceau², E.M. Belgsir², C. Lamy²
¹Université de Sherbrooke, 2500 blvd de l'Université, Sherbrooke, QC J1K 2R1, Canada, ²Laboratoire de Catalyse en Chimie Organique, Equipe Electrocatalyse, UMR CNRS 6503, Université Poitiers, 40 Avenue du Recteur Pineau, 86022 Poitiers Cédex, France
- 11:00 **Adatom Electrocatalysts for Direct Alcohol Fuel Cells**
Steven H. Bergens, Yue Xing, Christopher E. Lee, Dianxue Cao, Rongbing Du
University of Alberta, Department of Chemistry, Edmonton, AB, Canada T6G 2G2
- 11:25 **Modeling of a direct hydrocarbon fuel cell**
G. Psofogiannakis^{a,d}, Y. Bourgault^b, B. Conway^{c,d} and M. Ternan^e
The University of Ottawa, ^aDepartment of Chemical Engineering, ^bDepartment of Mathematics and Statistics, ^cDepartment of Chemistry and ^dCentre for Catalysis Research and Innovation, ^eEnPross Inc., 147 Banning Road, Ottawa, Ontario, K2L 1C5, Canada

CATALYSIS IN GREEN CHEMISTRY

Monday, May 17, 2004

Chairs: Karen Wilson, University of York, UK (morning)
Marcel Schlaf, University of Guelph, Ontario (afternoon)

- 9:30 **KEYNOTE LECTURE**
Development of safer chemicals through green processes: catalytic and selective transformation of natural polyols
F. Jerome, I. Adam, G. Kharchafi, Y. Pouilloux, G. Courtois and J. Barrault
Laboratoire de Catalyse en Chimie Organique, UMR6503 CNRS-Université de Poitiers, ESIP, 40 avenue du recteur Pineau, 86002 Poitiers Cedex, France
- 10:10 **Approaches to the catalytic ionic hydrogenation and hydrogenolysis of carbohydrate polyols to α,ω -diols**
Marcel Schlaf, Zhi Xie
Department of Chemistry & Biochemistry, (GWC)², University of Guelph, Guelph, Ontario, Canada, N1G 2W1
- 10:35 **A New Green Catalyst: Chitosan-Silica Hybrids Microspheres**
Karine Molvinger, Françoise Quignard, Daniel Brunel
Laboratoire de Matériaux Catalytiques et Catalyse en Chimie Organique, UMR5618-CNRS-ENSCM, 8 rue de l'Ecole Normale, 34296 Montpellier Cedex 5, France
- 11:00 **Alginate Microspheres as Encapsulating Media for Catalysts**
Romain Valentin, Karine Molvinger, and Françoise Quignard
Laboratoire de Matériaux Catalytiques et Catalyse en Chimie Organique, UMR5618-CNRS-ENSCM, 8 rue de l'Ecole Normale, 34296 Montpellier Cedex 5, France
- 11:25 **Development of electrodes for in-situ regeneration of NADH: the kinetics of electrochemical reduction of NAD⁺ on Ru-modified glassy carbon electrode**
Sasha Omanovic, Felise Man and Amir Azem
Department of Chemical Engineering, McGill University, 3610 University Street, Montreal, QC, H3A 2B2 Canada

- 13:15 **KEYNOTE LECTURE**
Green Solvents for Catalysis From Molecular Understanding to Process Design
Walter Leitner
Institute for Technical und Macromolekular Chemistry, RWTH Aachen, Germany and Max-Planck-Institute for Coal Research, Mülheim an der Ruhr, Germany
- 13:55 **Developing Catalytic C-C Bond Formations in Water**
Chao-Jun Li, Xiaoquan Yao
Department of Chemistry, McGill University, 801 Sherbrooke St. West, Montreal, QC, H3A 2K6, Canada
- 14:20 **Application of Phosphonium Ionic Liquids to Multi-Phase Biocatalysis**
M. Douglas Baumann^{1,2}, Andrew Daugulis¹, Philip Jessop²
¹Department of Chemical Engineering, Queen's University, Kingston, ON K7L 3N6, Canada
²Department of Chemistry, Queen's University, Kingston, ON K7L 3N6, Canada
- 14:45 **Recycling of Chiral Homogeneous Catalysts using Tunable Solvents**
Colin A. Thomas¹, Pamela Pollet, Jason P. Hallett, Rebecca S. Jones, Chris Ablan, Philip G. Jessop, Charles A. Eckert and Charles L. Liotta,
¹Georgia Institute of Technology, School of Chemistry and Biochemistry, Atlanta, GA 30332-0400, USA
- 15:10 Break
- 15:30 **"Green" Hydrogenation Technique for High Performance Elastomers-Fundamental Investigation for Hydrogenation of Diene-Based Polymers in a Supercritical Fluid**
Qinmin Pan and Garry L. Rempel
Department of Chemical Engineering, University of Waterloo, Waterloo, ON, N2L 3G1, Canada
- 15:55 **New Green Solvents for Homogeneous Catalysis**
Philip Jessop, David Heldebrant, Yoon-Seo Uh
Department of Chemistry, Queen's University, Kingston, ON, K7L 3N6, Canada

Tuesday, May 18, 2004

Chair: Sasha Omanovic, McGill University, Montreal

- 14:45 **Structure Reactivity Relationships in the Acidity of Sulphated Zirconia Catalysts for α -Pinene Isomerisation**
Karen Wilson¹, Muriel A. Ecornier² and Adam F. Lee^{1,2}
¹Department of Chemistry, University of York, York, YO10 5DD, UK
²Department of Chemistry, University of Hull, Hull, HU6 7RX, UK
- 15:10 **Self-Neutralizing Acid Catalysts from CO₂**
Ross R. Weikel, Charles L. Liotta, Charles A. Eckert
Schools of Chemical and Biomolecular Engineering and Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, Georgia 30332-0100
- 15:35 **New Wetproofed Catalysts for Hydrogen Isotope Exchange in Heavy Water Production**
Jintong Li, S. Suppiah, L.L. Deschenes, K.J. Kutchcoskie, J.F. Mattie, T.J. Shultz and A.W. Tripple
AECL Hydrogen Isotopes Technology Branch, Components & Systems Division, Chalk River Laboratories, Chalk River, ON, K0J 1J0 Canada
- 16:00 **Shape selective ethylation of biphenyl to 4,4'-diethylbiphenyl over different zeolites: catalytic activity and molecular modeling studies**
Suresh B. Waghmode, S. Watanabe, Y. Kubota, and Y. Sugi
Department of Materials Science and Technology Faculty of Engineering, Gifu University, Gifu 501-1193, Japan

CATALYTIC POLYMERIZATION REACTIONS

Tuesday, May 18, 2004

Chairs: Leonardo Simon, University of Waterloo, Ontario
Davit Zargarian, University of Montreal, Quebec

9:30 **KEYNOTE LECTURE**

Isobutene polymerization using a chelating diborane: A revolutionary approach to the synthesis of poly(iso-butene)?

Scott Collins^{*a}, Stewart P. Lewis^a, Nicholas J. Taylor^b, Warren E. Piers^c and Joseph P. Kennedy^a

^aDepartment of Polymer Science, University of Akron, Akron, OH 44325-3909

^bDepartment of Chemistry, University of Waterloo, Waterloo, ON, N2L 3G1 Canada

^cDepartment of Chemistry, University of Calgary, Calgary, AB, T2V 2R3 Canada

10:10 **Syntheses, Structures and Applications of New Weakly Coordinating Anions to Catalytic Olefin Polymerization**

Neda Bavarian and Michael C. Baird*

Department of Chemistry, Queen's University, Kingston, ON, K7L 3N6 Canada

10:35 **Catalytic Hydrogenation of Natural Rubber in the Presence of OsHCl(CO)(O₂)(PCy₃)₂**

Napida Hinchiranan¹, Pattarapan Prasassarakich¹ and Garry L. Rempel²

¹Department of Chemical Technology, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand

²Department of Chemical Engineering, University of Waterloo, Ontario, Canada N2L 3G1

11:00 **Use of Coordination Catalysts for Preparation of Hybrid Polyethylene-Montmorillonite Nanocomposites**

Fabio F. Mota^{1,2}, Leonardo C. Simon¹, João B.P. Soares¹, Osvaldo L. Casagrande Jr.²

¹Department of Chemical Engineering, University of Waterloo, 200 University Av. W., Waterloo, ON, Canada, N2L 3G1

²Institute of Chemistry, Federal University of Rio Grande do Sul, Av. Bento Gonçalves 9500, Porto Alegre, RS, Brazil

11:25 **Identification and Quantification of Metal-Polymeryl Groups during Olefin Polymerization by Metallocene Catalysts**

Mihaela Vatamanu, Britta Boden and Michael C. Baird*

Department of Chemistry, Queen's University, Kingston, ON, K7L 3N6, Canada

14:30 **KEYNOTE LECTURE**

The Discovery of New Stereospecific Polypropylene catalysts Using High-Throughput Techniques

Thomas R. Bousie, Gary M. Diamond, Christopher Goh, Keith A. Hall, Anne LaPointe, Margarete Leclerc, James Longmire, Vince Murphy, Robert K. Rosen, James A. W. Shoemaker, Howard Turner and James C. Stevens[†]

Symyx Technologies, 3100 Central Expressway, Santa Clara, California 95051, USA

[†]The Dow Chemical Company, 2301 N. Brazosport Blvd., Freeport, Texas 77541, USA

15:10 **The influence of "activated" magnesium chloride on Ziegler-Natta catalyst performance in a high temperature solution polymerization process**

Qinyan Wang, Zengrong Zhang, Liangyou Fan, Garry Yamashita, Marlee Cossar and Joo The NOVA Chemicals Corporation

15:35 **A Kinetics Study of β -Hydrogen and β -Methyl Elimination Reactions of the Metallocene Cations [Cp'₂ZrR]⁺ (Cp' = substituted cyclopentadienyl; R = neopentyl, sec-butyl, iso-butyl)**

Ping Yang and Michael C. Baird*

Department of Chemistry, Queen's University, Kingston, ON, K7L 3N6 Canada

- 16:00 **Aluminum Chloride Grafted MMS's as alkylation Catalyst**
D. Dubé^a, S. Royer^a, D. Trong On^a, F. Béland^b, and S. Kaliaguine^{a*}
^aDepartment of Chemical Engineering, Laval University, Quebec City, Quebec, G1K 7P4, Canada
^bSilicycle Inc., 1200 Ave St-Jean-Baptiste, Suite 114, Quebec City, Quebec, G2E 5E8 Canada
- 16:25 **Catalytic Reactivities of Indenyl Nickel Complexes in the Oligomerization and Polymerization of Olefins**
 Laurent F. Groux, Yaofeng Chen, Daniel Gareau, and Davit Zargarian
 Département de chimie, Université de Montréal, Montréal, Québec, Canada H3C 3J7

OXIDATION REACTIONS

Tuesday, May 18, 2004

Chair: Jamal Chaouki, École polytechnique, Montreal, Quebec

- 10:10 **A new approach to interpret the promoter effect in alcohol oxidation over platinum and palladium**
 C. Keresszegi, T. Mallat, J.-D. Grunwaldt, A. Baiker
 Institute for Chemical and Bioengineering, Swiss Federal Institute of Technology, ETH-Zurich, CH-8093
 Switzerland
- 10:35 **“State-by-State Transient Screening” of VPO catalyst in Selective Hydrocarbon Oxidation (From “Model-Free” Kinetic Characterization to the Detailed Catalytic Mechanism)**
Gregory S. Yablonsky, Sergiy O. Shekhtman, John T. Gleaves, Rebecca R. Fushimi
 Department of Chemical Engineering, Washington University, Box 1198, One Brookings Dr., St. Louis, MO
 63130
- 11:00 **Production of Ethylene by catalytic Partial Oxidation of Ethane in the Presence of H₂S**
 Peter D. Clark and Shunlan Liu
 Alberta Sulfur Research Ltd, Department of Chemistry, University of Calgary, 2500 University Drive N.W.,
 Calgary, AB, Canada T2N 1N4
- 11:25 **Effect of Additives on the Performance of V₂O₅/ZrO₂ Catalyst for Oxidative Dehydrogenation of Propane**
 Mahuya De and Deepak Kunzru
 Dept. of Chemical Engineering, Indian Institute of Technology, Kanpur, India

PHOTOCATALYSIS

Tuesday May 18, 2004

Chair: Dimitrios Berk, McGill University, Montreal

- 14:30 **KEYNOTE LECTURE**
Pore-Wall Chemistry and Photocatalytic Activity of Mesoporous Titanium Dioxide Molecular Sieve Thin Films
 Xinchun Wang and Jimmy C. Yu
 Department of Chemistry and Environmental Science Programme, The Chinese University of Hong Kong,
 Shatin, New Territories, Hong Kong
- 15:10 **Effect of hydrogen peroxide on the photocatalytic degradation of methyl tert-butyl ether (MTBE) in water**
Yujing Zang and Ramin R. Farnood
 Department of Chemical Engineering & Applied Chemistry, University of Toronto, Toronto, Canada

- 15:35 **Photocatalytic activity for water decomposition of RuO₂-dispersed complex p-block metal oxides with d¹⁰ configuration**
 H. Kadowaki, J. Sato, H. Kobayashi[#], N. Saito, H. Nishiyama and Y. Inoue*
 Department of Chemistry, Nagaoka University of Technology, Nagaoka 940-2188, Japan
[#]Department of Chemistry and Bioscience, Kurashiki University of Science and The Arts, Kurashiki 712-8505, Japan
- 16:00 **Visible-light-Active TiO₂-based Photocatalysts Prepared by Spray Pyrolysis Technology**
Di Li, Hajime Haneda, Naoki Ohashi, Shunichi Hishita
 Advanced Materials Laboratory, National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba 305-0044, Ibaraki, Japan
- 16:25 **Photocatalytic oxidation of n-butanol over commercial TiO₂ using fluorescent visible light**
 J. Kirchnerova, Mara-Lu Herrera-Cohen, C. Guy, D. Klvana
 Department of Chemical Engineering, Ecole Polytechnique, P.O. Box 6079, Station Centre-Ville, Montreal, QC, H3C 3A7, Canada

ENVIRONMENTAL CATALYSIS

Wednesday May 19, 2004

Chairs: Khaled Belkacemi, Laval University, Quebec City (morning)
 Robert E. Hayes, University of Alberta, Edmonton (afternoon)

- 9:30 **KEYNOTE LECTURE**
Environmental Implications of Heterogeneous Catalysis in Green Engineering
 Martin A. Abraham
 Department of Chemical and Environmental Engineering, University of Toledo, Toledo, OH 43606, USA
- 10:10 **Oxidation of volatile organic compounds (toluene) by combination of a non-thermal plasma and a catalyst**
S. Delagrangé, J. Barrault, L. Pinard, J. M. Tatibouët
 Laboratoire de Catalyse en Chimie Organique, UMR CNRS 6503, Université de Poitiers, Ecole Supérieure d'Ingénieurs de Poitiers, 40, Avenue du Recteur Pineau, 86022 Poitiers Cedex (France)
- 10:35 **Hydrogen sulphide scrubbing using CeO₂/Fe₂O₃ composite oxides**
C.F. Petre, F. Larachi
 Chemical Engineering Department, Laval University, QC, Canada, G1K 7P4
- 11:00 **Synthesis Condition Effect on the Properties of LaCoO₃ Perovskites**
 S. Royer, F. Bérubé and S. Kaliaguine
 Department of Chemical Engineering, Laval University, Quebec City, QC, G1K 7P4, Canada
- 11:25 **Catalytic destruction of dichloromethane over Pt supported catalysts. Influence of the support**
 L. Pinard, P. Magnoux, J. Mijoin and M. Guisnet,
 Laboratoire de Catalyse en Chimie Organique, UMR CNRS 350, Université de Poitiers, 40, avenue du Recteur Pineau, 86022 Cedex, France
- 13:15 **KEYNOTE LECTURE**
The Role of Ceria and Other Rare Earth Oxides in the Development of Catalysts for Environmental Applications
 Alessandro Trovarelli
 Dipartimento di Scienze e Tecnologia Chimiche, Università di Udine, via Cotonificio 108, 33100 Udine, Italy
- 13:55 **Anionic vacancies in Zr-Ce-Pr-O sol-gel oxides**
S. Rossignol, C. Kappenstein, D. Duprez

University of Poitiers, LACCO UMR 6503, Laboratoire de Catalyse par les Métaux, 40 Avenue du Recteur Pineau, F-86022 POITIERS Cedex, France

14:20 **Washcoat Geometry Effects on Mass Transfer in Catalytic Monoliths**

R.E. Hayes¹, B. Liu¹, R. Moxom¹ and M. Votsmeier²

¹Department of Chemical and Materials Engineering, University of Alberta, Edmonton, Alberta, Canada, T6G 2G6

²Umicore, Automotive Catalysis Division, Research and Development, Hanau, Germany

14:45 **VOC Catalytic Combustion in an Auto-Cyclic Reactor**

Danilo Klvana, Jamal Chaouki, Christophe Guy, Jitka Kirchnerova

Department of Chemical Engineering, Ecole Polytechnique, P.O. Box 6079, Station Centre-ville, Montreal, QC, H3C 3A7

15:10 **Catalytic Performance and Characterization of Fe-Nb Mixed Oxides for Selective Reduction of SO₂ by Carbon Monoxide**

Hee Chul Woo¹, Jong Kook Chung¹, Seok Hee Lee¹, Jae Kee Cheon¹, and Dae Won Park²

¹Division of Chemical Engineering, Pukyong National University, Pusan 608-739, Korea

²Division of Chemical Engineering, Pusan National University, Pusan 609-735, Korea

HYDROPROCESSING AND REFINING

Wednesday, May 19, 2004

Chairs: Flora Ng, University of Waterloo, Waterloo, Ontario (morning)
Raymond Le Van Mao, Concordia University, Montreal, Quebec (afternoon)

9:45 **Combined deep hydrogenation and ring opening of poly-aromatic hydrocarbons for diesel quality improvement**

Daniel E. Resasco^{a*}, Siriporn Jongpatiwut^a, Malee Santikunaporn^a, Jose E. Herrera^a, Walter E. Alvarez^b, Ed L. Sughrue^b and Glenn W. Dodwell^b

^aSchool of Chemical Engineering and Materials Science, University of Oklahoma, USA

^bConocoPhillips, Bartlesville Technological Center, Bartlesville, OK, 74004, USA

10:10 **Selective ring opening of naphthenes over bifunctional Pt/HBEA zeolite catalysts**

Philippe Yannic¹, Jean-Louis Lemberon¹, Michel Guisnet¹, Sylvie Lacombe² and Christine Travers²

¹Laboratoire de Catalyse en Chimie Organique, Université de Poitiers (France)

²Institut Français du Pétrole (France)

10:35 **Hydrodenitrogenation and Hydrodesulfurization of Heavy Gas Oil using NiMo/Al₂O₃ Catalyst Containing Boron: Experimental and Kinetic Studies**

Deena Ferdous, Ajay K. Dalai and John Adjaye**

Department of Chemical Engineering, Catalysis and Chemical Reaction Engineering Laboratories, University of Saskatchewan, Saskatoon, S7N 5C5, Canada

**Sincru Canada Ltd. Edmonton Research Center, T6N 1H4, Canada

11:00 **Influence of Nitrogen Compounds on Hydrodesulfurization over NiMo/Al₂O₃ Catalyst**

Hong Yang, Jinwen Chen and Zbigniew Ring

National Centre for Upgrading Technology, Devon, Alberta, Canada T9G 1A8

11:25 **Catalytic Hydrocracking Activity of Exfoliated MoS₂**

Ching Thian Tye and Kevin J. Smith

Department of Chemical & Biological Engineering, University of British Columbia, 2216 Main Mall, Vancouver, British Columbia, V6T 1Z4 Canada

- 13:30 **Feedstock Quality Effect on the Performance of an Industrial Tail-End ARDS Catalyst in Residue Hydrotreating**
M. Al-Marri and A. Marafi
Petroleum Refining Department. Kuwait Institute for Scientific Research. P.O. Box: 24885. 13109, Safat. Kuwait
- 13:55 **HDN of Quinoline Using Mo-based Dispersed Catalysts in an Emulsion**
Roy Z. Lee, Mingsen Zhang and Flora T.T. Ng
Department of Chemical Engineering, University of Waterloo, Waterloo, Ontario, Canada, N2L 3G1
- 14:20 **New Process for the Selective Deep Catalytic Cracking (SDCC) of Petroleum Naphthas and Gas Oils**
Raymond Le Van Mao, Nabil Al-Yassir and Ngoc Thanh Vu
Industrial Catalysis Laboratory and Laboratories for Inorganic Materials, Department of Chemistry and Biochemistry, Concordia University, Loyola Campus, SP275.09, 7141 Sherbrooke West, Montreal (Quebec) H4B 1R6 Canada
- 14:45 **Catalytic Isomerization and Cracking of Hexane over BEA and Ce-BEA**
Pusparatu, Y. Kubota, Y. Nishimura¹, and Y. Sugi
Department of Materials Science and Technology Faculty of Engineering, Gifu University, Gifu 501-1193, Japan
¹Center for Cooperative Research, Gifu University, Gifu 501-1193, Japan
- 15:10 **A high accessibility FCC catalyst based on synthesized AIOOH using CH₃CO₂NH₄ as precipitating agent and hydrothermal aging**
R. García de León, M.L. Guzmán C., A. Rodríguez H.
Programa de tratamiento de crudo Maza, Sismas Catalíticos FCC, Instituto Mexicano del Petróleo, Eje central Láyaro Cárdenas No.152, Col. San Bartolo Atepehuacan, Apartado Postal 14-805 07730, México D.F.

UNSTEADY CATALYTIC PROCESSES

Wednesday, May 19, 2004

Chair: Hristo Sapoundjiev, Natural Resources Canada, Varennes, Quebec

- 9:30 **KEYNOTE LECTURE**
Synthesis gas as a promising fuel for solving of the ecological problems of city transport and heat production
V.A. Kirillov*, O.F. Brizitski**, I.V. Ivanov**
*Boriskov Institute of Catalysis, Novosibirsk, Russia
**All-Russia Research Institute of Experimental Physics, Sarov, Russia
- 10:10 **Parametric Sensitivity of a Catalytic Reverse Flow Reactor**
A. Kushwaha¹, R.E. Hayes¹, M. Poirier² and H. Sapoundjiev²
¹Department of Chemical and Materials Engineering, University of Alberta, Edmonton, Alberta, Canada, T6G 2G6
²Natural Resources Canada, CANMET, 1615 Lionel-Boulet Blvd., P.O. Box 4800, Varennes, Quebec, Canada, J3X 1S6
- 10:35 **Catalytic Decomposition of Methane for Hydrogen Production**
Rahman, M., Croiset, E., Hudgins, R.R.
Department of Chemical Engineering, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1
- 11:00 **Cyclically operated separating reactors – An assessment**
P.L. Silveston
Department of Chemical Engineering, University of Waterloo, Waterloo, Ontario

11:25 **Evolution of Temperature During the Catalytic Combustion of Methane in a Flow Reversal Reactor with Heat Extraction**

Michel Poirier¹, Hristo Sapoundjiev¹ and Robert E. Hayes²

¹Natural Resources Canada, CETC-Varenes, 1615 Lionel-Boulet Blvd., P.O. Box 4800, Varenes, Quebec, Canada J3X 1S6

²Department of Chemical and Materials Engineering, University of Alberta, Edmonton, Alberta, Canada T6G 2G6

OTHER TOPICS IN CATALYSIS

Wednesday, May 19, 2004

Chair: Serge Kaliaguine, Laval University, Quebec City, Quebec

13:30 **CO₂ reforming of methane over LaNiO₃ as starting material Influence of reaction conditions**

Germán Sierra Gallego^a, Fanor Mondragón^a, Catherine Batiot-Dupeyrat^b, Joël Barrault^b and Jean-Michel Tatibouët^b

^aInstituto de Química, Universidad de Antioquia, AA 1226, Medellín, Colombia

^bLaboratoire de Catalyse en Chimie Organique, UMR CNRS 6503, Université de Poitiers-Ecole Supérieure d'Ingénieurs de Poitiers, 40, avenue du Recteur Pineau, 86022 Poitiers Cedex (France)

13:55 **Non-oxidative Dehydrogenation and Aromatization of Methane over Molybdenum-based HZSM-5 Catalyst: Mechanism and Kinetic Modeling**

Maria C. Iliuta, Ion Iliuta, Faïçal Larachi and Bernard P. A. Grandjean

Department of Chemical Engineering & CERPIC, Laval University, Québec, Canada G1K 7P4

14:20 **Hydrogenation of Vegetable Oils with Minimum trans and Saturated Fatty acid Formation over Novel Generation of Pd-Catalysts**

Amira Boulmerka¹, Joseph Arul¹ and Khaled Belkacemi²

¹Department of Food Science and Nutrition, Université Laval, Québec, Canada

²Department of Soil Science and Agri-Food Engineering, Université Laval, Québec, Canada, G1K 7P4

14:45 **Aldol condensation over semicrystalline zeolitic mesoporous UL-ZSM-5 materials**

A. Ungureanu^a, S. Royer^a, H.V. Thang^a, D. Trong On^a, E. Dumitriu^b and S. Kaliaguine^a

^aDepartment of Chemical Engineering, Laval University, Quebec City, Québec, G1K 7P4, Canada

^bLaboratory of Catalysis, Technical University of Iasi, 71 D. Mangeron, 6600 Iasi, Romania

15:10 **Synthesis of [Al]-SSZ-24 Zeolite from [Al]-BEA and Its Application to the Isopropylation of Biphenyl**

H. Maekawa, A. Ito, Y. Kubota, and Y. Sugi

Department of Materials Science and Technology Faculty of Engineering, Gifu University, Gifu 501-1193, Japan

POSTERS – Applications of Surface Science in Catalysis

Enantioselective Hydrogenation of Furancarboxylic Acids: A Spectroscopic and Theoretical Study of Reactant-Modifier Interactions

M. Maris, T. Bürgi, T. Mallat, A. Baiker

Institute for Chemical and Bioengineering, Swiss Federal Institute of Technology, ETH-Zürich, CH-8093 Switzerland

Adsorption States and Modifier-Substrate Interactions on Pt(111) Relevant to the Enantioselective Hydrogenation of Alkyl Pyruvates in the Orto Reaction

S. Lavoie, M.-A. Laliberté and P. H. McBreen*

Département de chimie, Université Laval, Québec (QC), Canada, G1K 7P4

POSTERS – Fuel Cells

The effects of synthesis parameters in controlling microstructure and sinterability in solid oxide fuel cell anodes

Catherine M. Grgicak and Javier B. Giorgi
Department of Chemistry, University of Ottawa

Optimal materials for direct oxidizing SOFC anodes

Alan E. Nelson, Masaki Itome
Department of Chemical-Materials Engineering, University of Alberta, Edmonton, Alberta, Canada T6G 2G6

New Catalyst based on Pd-alloys for the Oxygen Reduction Reaction in an Acid Medium

O. Savadogo^{1, 2*}, K. Lee¹, K. Oishi¹, S. Mitsushima¹, N. Kamiya¹ and K-I Ota¹
¹Department of Energy and Safety Engineering Yokohama National University; 79-5-Tokiwadai, Hodogaya-ku; Yokohama 240-8501, JAPAN
²Laboratoire d'Électrochimie et de Matériaux Énergétiques, École Polytechnique de Montréal, C.P. 6079, Succ. Centre-Ville, Montreal, QC, H3C 3A7, CANADA

An Analytical Equation for a Fuel Cell Polarization Curve

Raymond Bélanger¹, Marten Ternan²
¹Université de Québec, INRS, Énergie et Matériaux, 1650 boulevard Lionel-Boulet, Varennes, Québec, J3X 1S2, Canada,
²EnPross Inc., 147 Banning Road, Ottawa, Ontario, K2L 1C5, Canada

POSTERS – Fuel Processing

Production of hydrogen by steam reforming of methanol over Ni(Au, Rh)Al-hydrotacite-derived catalysts

Caixia Qi, Jerry Hinchey, John C. Amphlett and Brant A. Peppley
Department of Chemistry and Chemical Engineering, Royal Military College of Canada, Kingston, Ontario K7K 7B4

Effects of preparation procedure on the activity of Ni/Al₂O₃ catalyst in the partial oxidation of hexadecane to produce hydrogen

O.A. Fatokun and R.O. Idem*
Process & Petroleum Systems Engineering Laboratory, Faculty of Engineering, University of Regina, 3737 Wascana Parkway, Regina, SK, Canada S4S 0A2

Copper Based Catalysts as Anode Materials for the Low-temperature Solid Oxide Fuel Cells

K. Rajender Reddy and K. Karan
Dept. of Chemical Engineering, Queen's University, Kingston, ON, Canada, K7L 3N6

POSTERS – Catalysis in Green Chemistry

Influence of CO₂ Critical Point Drying on a New Heterogeneous Green Catalyst

Romain Valentin, Karine Molvinger, Françoise Quignard and Daniel Brunel
Laboratoire de Matériaux Catalytiques et Catalyse en Chimie Organique, UMR5618-CNRS-ENSCM, 8 rue de l'École Normale, 34296 Montpellier Cedex 5, France

An Alternative Strategy for Homogeneous Catalyst Recycle

P. Pollet, J. Lu, J. P. Hallett, R. S. Jones, M. J. Lazzaroni, D. S. Kass, C. A. Eckert, C. L. Liotta, Schools of Chemical & Biomolecular Engineering and Chemistry & Biochemistry, Georgia Institute of Technology, Atlanta, GA 30332-0100

Competitive reaction between the hydrogenation and the cis/trans isomerization of methyl octadecenoate over CoSn catalysts

K. De Oliveira, Y. Pouilloux and J. Barrault, Laboratoire de Catalyse en Chimie Organique, UMR CNRS 6503, ESIP, 40 Avenue du recteur Pineau, 86022 Poitiers Cedex, France

Catalytic etherification of sucrose with 1,2-epoxydodecane over heterogeneous basic catalysts

I. Adam, F. Jérôme, G. Courtois, and J. Barrault, Laboratoire de Catalyse en Chimie Organique, UMR 6503 CNRS-Université de Poitiers, ESIP, 40 avenue du Recteur Pineau, 86022 Poitiers Cedex, FRANCE

Catalytic performance of metalloaluminophosphate (MAPO-5) molecular sieves in the isopropylation of biphenyl

S.K. Saha, S.B. Waghmode, H. Maekawa, Y. Kubota, and Y. Sugi, Department of Materials Science and Technology Faculty of Engineering, Gifu University, Gifu 501-1193, Japan

Organic solvent-free oxidation of alcohols and alkynes by t-butyl hydroperoxide catalyzed by water-soluble copper complexes

Abdelaziz Nait Ajjou and Gabriel Ferguson, Department of Chemistry and Biochemistry, Université de Moncton, Moncton, New-Brunswick, E1A 3E9 Canada

POSTERS – Catalytic Polymerization Reactions

Rhodium catalyzed routes to thioboronate esters

C.M. Vogel¹, S.A. Westcott¹, R.T. Baker²; ¹Department of Chemistry, Mount Allison University, Sackville, NB, E4L 1G8 Canada; ²Los Alamos Catalysis Initiative, Chemical Science and Technology Division, MS J514, Los Alamos National Laboratory, Los Alamos, NM 87545, USA

Palladium Catalysts with (h³/h⁵)-Indenyl Ligands : Synthesis, Characterization and Reactivities

Christine Sui-Seng and Davit Zargarian

Département de chimie, Université de Montréal, Québec, Canada H3C 3J7

New Nickel Pincer Complexes and Dimers. Preparation and Their Use in Catalysis

A. Castonguay, A. L. Beauchamp and D. Zargarian

Université de Montréal, Département de chimie, C. P. 6128, succ. Centre-Ville, Montréal (Qc), H3C 3J7

Density Functional Theory Study of Nickel Indenyl Complexes as Catalysts

Véronique Tessier, Matthias Ernzerhof and Davit Zargarian; Department of Chemistry, University of Montreal, C.P. 6128, Succursale A, Montréal, QC, H3C 3J7, Canada

POSTERS – Oxidation Reactions

Effects of calcium cations incorporated into magnesium vanades on the redox behaviors and the catalytic activities for the oxidative dehydrogenation of propane

Shigeru Sugiyama, Takuya Hashimoto, Yuki Morishita, Hiromu Hayashi

Department of Chemical science and Technology, Faculty of Engineering, The University of Tokushima, Minamijosanjima, Tokushima 770-8506, Japan

POSTERS – Photocatalysis

Effect of metal doping on the activity of commercial TiO₂ in the photocatalytic oxidation of –Butanol

J. Kirchnerova, Mara-Lu Herrera-Cohen, C. Guy, D. Klvana; Department of Chemical Engineering, Ecole Polytechnique, P.O. Box 6079, Station Centre-Ville, Montreal, QC, H3C 3A7, Canada

Photocatalytic properties of TiO₂ rough films deposited on glass microrods for the degradation of phenol in water

J. Medina-Valtierra^{a*}, M. Sánchez-Cárdenas^a, E. Moctezuma^b, C. Frausto-Reyes^c, S. Calixto^d

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^bEscuela de Ciencias Químicas, Universidad Autónoma de San Luis Potosí, A. Obregón No. 64, San Luis Potosí 78000, MEXICO

^cCentro de Investigaciones en Optica A.C., Unidad Aguascalientes. Constitución 607, Reserva de Loma Bonita, Aguascalientes, 20200, MEXICO

^dCentro de Investigaciones en Optica A.C., Loma del Bosque No. 115, Col. Lomas del Campestre, León, Gto. 37150, MEXICO

POSTERS – Environmental Catalysis

Structural properties and stability of catalysts before and after decomposition of ionic propellants

L. Courtheoux, S. Rossignol, C. Kappenstein ; University of Poitiers, LACCO UMR 6503, Laboratoire de Catalyse par les Métaux, 40 Avenue du Recteur Pineau, F-86022 POITIERS Cedex, France

Modelling of Catalytic Oxidation of Phenol over Active Carbon in Trickle Bed Reactor

A. Eftaxias^a, J. Font^a, A. Fortuny^b, A. Fabregat^a, F. Stüber^a, F. Larachi^c; ^aDepartament d'Enginyeria Química, Universitat Rovira i Virgili, Paisos Catalans 26, 43007 Tarragona, Spain; ^bDepartament d'Enginyeria Química, EUPVG, Universitat Politècnica de Catalunya, Av. Víctor Balaguer, s/n, 08800 Vilanova i la Geltrú, Spain; ^cDepartment of Chemical Engineering, Université Laval, Québec, GIK 7P4, Canada

Catalytic Performance of New Pd-only/CeO₂-ZrO₂-La₂O₃/g-Al₂O₃ Three-way Catalyst

Jiang Pingping^{1,2}, Lu Guanzhong¹, Guo Yanglong¹, Guo Yun¹, Wang Xingyi¹; ¹Research Institute of Industrial Catalysis, East China University of Science and Technology, Shanghai, 200237 P.R. China, ²School of Chemistry and Material Engineering, Southern Yangtse University, WuXi, 214036 P.R. China

Hydrogen Sulfide Conversion in Liquid Sulfur

P.D. Clark, C.S.C. Lau, P. Blais, M. Shields; Alberta Sulfur Research Ltd, Department of Chemistry, University of Calgary, 2500 University Drive NW, Calgary, AB, Canada T2N 1N4

Catalytic Reduction of NO with H₂S

Peter D. Clark and Adam Nielsen; Alberta Sulfur Research Ltd, Department of Chemistry, University of Calgary, 2500 University Drive N.W., Calgary, AB, Canada T2N 1N4

The Influence of Rare Earth Promoters in Pd-PdO Transformation over Pd/Al₂O₃ and Pd/ZrO₂ Combustion Catalysts

Sara Colussi¹, Alessandro Trovarelli¹, Giuliano Dolcetti¹, Raffaella Villa², Cinzia Cristiani², Gianpiero Groppi², Luca Lietti², Pio Forzatti²; ¹Dipartimento di Scienze e Tecnologie Chimiche, Università di Udine, via Cotonificio 108, 33100 Udine, Italy ; ²Dipartimento di Chimica, Materiali e Ingegneria Chimica, Politecnico di Milano, piazza Leonardo da Vinci 32, 20133 Milano, Italy

POSTERS – Hydroprocessing and Refining

The role of the support in methane reforming with CO₂ over nickel catalysts

D. Halliche^a, O. Cherifi^a and A. Auroux^b

^aLaboratoire de Chimie du Gaz naturel, Faculté de Chimie, USTHB, Bp32, El-Alia, Alger, Algeria

^bInstitut de Recherches sur la Catalyse, CNRS, 2 av. Albert Einstein, 69626 Villeurbanne Cedex, France

The concept of "Pore Continuum" in hybrid catalysts used in the selective deep catalytic cracking of n-hexane

Raymond Le Van Mao¹, Nabil Al-Yassir¹, David T.T. Nguyen¹ and Jacques Monnier²;

¹Industrial Catalysis Laboratory and Laboratories for Inorganic Materials, Department of Chemistry and Biochemistry, Concordia University, Loyola Campus, SP 275.09, 7141 Sherbrooke West, Montreal (Quebec) H4B 1R6 Canada; ²CANMET Energy Technology Centre-Ottawa (CETC-O), Natural Resources Canada, 1 Haanel Drive, Nepean (Ontario) K1A 1M1 Canada

The coke deposition and its influence on the deactivation of FCC catalysts

Hai-Tao Song, Bei-Yan Chen, Wen-Bin Jiang, Yu-Xia Zhu, Zhi-Jian Da
Research Institute of petroleum Processing, SINOPEC, P.O. Box 914, Beijing 100083, China

Studies on Pd-loaded hybrid catalyst for residual hydrocracking to produce middle distillates

S. K. Saha¹, G. K. Biswas¹, C. R. Lahiri² and D. Biswas²;

¹Chemical Engineering Department, Jadavpur University, Kolkata-700032, India

²Chemical Technology Department, Calcutta University, Kolkata-700009, India

1-butanol catalytic dehydration to dibutylether on sulfonated mesoporous silicas; an insitu FTIR study

Bineta Sow, M. Hassan Zahedi-Niaki, Serge Kaliaguine
Department of Chemical Engineering, Laval University, QC, Canada G1K 7P4

Synthesis, Characterization and HDS activity of Transition-Metal Phosphides

I. I. Abu and Kevin J. Smith; Department of Chemical & Biological Engineering, University of British Columbia, 2216 Main Mall, Vancouver, BC

Thermochemical Characterization of Monofunctional ZrO₂-yMoO_x Catalysts for the Selective Ring Opening of Aromatics and Cycloalkanes

Carolyn Kenney, Yadollah Maham and Alan E. Nelson
Department of Chemical Engineering and Materials Engineering, Edmonton, AB, T6G 2G6, Canada

Aromatic Hydrogenation of Bitumen-Derived Light Gas Oil Using Commercial Catalyst; Experimental and Kinetic Studies

Abena Owusu-Boakye, Deena Ferdous, Ajay K. Dalai, John Adjaye**; Department of Chemical Engineering, Catalysis and Chemical Reaction Engineering Laboratories, University of Saskatchewan, Saskatoon, S7N 5C5, Canada; **Syncrude Edmonton Research Centre, Edmonton, T6N 1H4, Canada

High-Severity Fluid Catalytic Cracking (HS-CC): A Novel Process for Integrating Refining & Petrochemicals

M. Saeed¹, A. Aitani¹, M. Abdul bari Siddiqui¹, T. Okuhara², T. Ino²

¹Center for Refining & Petrochemicals, The Research Institute, King Fahd University of Petroleum & Minerals, Dhahran 31261, Saudi Arabia; ²Japan Cooperation Center, Petroleum, Tokyo, Japan

Hydrodesulfurisation and hydrodenitrogenation of pyrolysed fuel oil in a trickle bed micro-reactor

H.K. Mishra, D.D. Das, A.K. Dalai;

Catalysis and Chemical Reaction Engineering Laboratories, Department of Chemical Engineering, University of Saskatchewan, 105 Maintenance Road, Saskatoon, SK, S7N 5C5

Structure-HDS reactivity relationship of dibenzothiophenes based on density functional theory

Hong Yang, Craig Fairbridge, Jinwen Chen, Zbigniew Ring
The National Centre for Upgrading Technology, Devon, Alberta, T9G 1A8

POSTERS – Other Topics in Catalysis

Maintenance of high reduction ability of powder solid catalyst in gas-liquid processes

E.F. Stefoglo, I.V. Kuchin, A.V. Kravtsov, O.P. Zhukova

Institute of Coal and Coal Chemistry, Rukavishnikov, 21, Kemerovo, 650610, Russia

Diffusivity of n-heptane in SBA-15 materials by the Zero Length Column (ZLC) method

H.V. Thang^a, H. Qinglin^b, M. Eic^b, D. Trong On^a, and S. Kaliaguine^a; ^aDepartment of Chemical Engineering, Laval University, Quebec City, QC, G1K 7P4, Canada; ^bDepartment of Chemical Engineering, University of New Brunswick, P.O Box 4400, Fredericton, N.B., E3B 5A3, Canada

Catalytic Decomposition of the Hydrocarbon Jet Fuel JP-10

Carrie Galligan¹, Rob Stowe¹, Paul Harrison¹, Charles Dubois¹, Serge Kaliaguine² and Hassan Zahedi-

Niaki²; ¹DRDC-Valcartier; ²Dept. of Chemical Engineering, Laval University

A NMR Study of aluminophosphate molecular sieve AIPO-36

M. Hassan Zahedi-Niaki^a, Colin Fyfe^b, Serge Kaliaguine^a

^aDepartment of Chemical Engineering, Laval University, Quebec City, QC, G1K 7P4, Canada

^bDepartment of Chemistry, University of British Columbia, Vancouver, BC, V6T 1Z1, Canada

Dispersion and Reactivity of Molybdenum Oxide Catalysts Supported on Various Polymorphs of TiO₂

K. Rajender Reddy¹, K.V.R. Chary² and Kunal Karan¹; ¹Centre for Automotive Materials and Manufacturing, Dept. of Chemical Engineering, Queen's University, Kingston, ON, K7L 5L9, CANADA

²Catalysis Division, Indian Institute of Chemical Technology, Hyderabad-500 007, A.P., INDIA

Manufacturing of mixed oxides hollow sphere catalyst/catalyst support structures for heterogeneous catalysis using the Altair industrial process

Jan Prochazka, Timothy M. Spitler, Bruce Sabacky

Altair Nanomaterials, Inc., 204 Edison Way, Reno, Nevada 89502 USA