

NANOPOROUS MATERIALS III
Ottawa, Ontario, Canada, June 12-15, 2002
TECHNICAL PROGRAM

Wednesday, June 12, 2002

Room I

13:00 – 13:45 Opening Remarks

Abdel Sayari, Chair of Nanoporous Materials III

Christian Detellier, Dean of the Faculty of Science, University of Ottawa

Peter Hackett, Vice President Research and Technology Development
National Research Council of Canada

Plenary Lecture **Chair: Marc A. Hillmyer**
13:45 – 14:30 Recent Advances in Imprinted Polymers
Guenter Wulff

14:30 – 15:00 **Coffee break**

Plenary Lecture **Chair: D. Antonelli**
15:00 – 15:45 New Nanocomposites: Periodic Mesoporous Organosilicas
Geoffrey A. Ozin

Session A (Room I): **Synthesis of Mesoporous Silicas**
Chairs: Th. Maschmeyer and W. Roth

15:50 – 16:10 Synthesis of Highly Ordered Mesoporous Compounds with Control of Morphology Using a Non-ionic Surfactant as Template.

A. Léonard, J.L. Blin and B. L. Su

16:10 – 16:30 Alcothermal Synthesis of Large Pore, High Quality MCM-48 Silica.

Jihong Sun and Marc-Olivier Coppens

16:30 – 16:50 Mesoporous Silicas via Organic-Inorganic Hybrids Based on Charged Polymers.

Graham M Gray and John N Hay

16:50 – 17:10 Synthesis and Characterization of Polymer-Templated Ordered Silica with Cage-like Mesostructure.

J.R. Matos, M. Kruk, L.P. Mercuri and M. Jaroniec

Session B (Room II): **Nanoporous Polymeric Materials**
Chairs: G. Wulff and G. Liu

15:50 – 16:10 New Crystalline Coordination Polymers with Dynamic Porous Frameworks Responding to Guest Molecules.

Susumu Kitawaga, Ryo Kitaura, Kazuhiro Uemura, Ryotaro Matsuda and Ho-Chol Chang

16:10 – 16:30 Nanoporous Polymers From Reactive Block Copolymer Templates.

Marc A. Hillmyer

16:30 – 16:50 Block Copolymer Microspheres Containing Pd-lined Nanochannels as a Hydrogenation Catalyst.

Guojun Liu and Zhihua Lu

16:50 – 17:10 Mesoporous Polymeric Materials Based On Comb-Coil Supramolecules.

S. Valkama, R. Mäki-Ontto, M. Stamm, G. ten Brinke and O. Ikkala

19:00 – 21:30

RECEPTION AND POSTER SESSION I

Thursday, June 13, 2002

Room I

Keynote Lectures
Chairs: S. Tolbert and O. Yaghi

8:00 – 8:35 Nanostructured Host/Guest Compounds.
Michael Fröba

- 8:35 – 9:10 Metal-Organic Frameworks with Isomerizing Building Units.
Dima V. Soldatov and John R. Ripmeester
- Oral Talks
- 9:10 – 9:30 Requirements for the Preparation of Membranes using Mesoporous Ordered Materials.
Eric Prouzet, Cédric Boissière, Marco Martinez, Patricia Kooyman, Tom R. de Kuijff, Miriam Tokumoto and André Larbot.
- 9:30 – 9:50 A Study of Morphology of Mesoporous Silica SBA-15.
Man-Chien Chao, Hong-Ping Lin, Hwo-Shuenn Sheu and Chung-Yuan Mou

9:50 – 10:20 Coffee break

Session A (Room I): **Synthesis Mechanisms of Mesoporous Silicas**

Chairs: Bao-Lian Su and L. Mercier

- 10:20 – 10:40 Study of the Mechanism of Formation of a Mesostructured Hexagonal Alumina by Means of Fluorescence Probing Techniques.
Lorette Sicard, Bénédicte Lebeau, Joel Patarin, Raoul Zana and Frédéric Kolenda
- 10:40 – 11:00 Formation Mechanisms for Surfactant-Templated Silica Thin Film Grown at the Air/Solution Interface.
Karen J. Edler, Tessa Brennan, S.J. Roser and S. Mann
- 11:00 – 11:20 Organic - Inorganic Phase Interaction in AISBA-15 Mesoporous Molecular Sieves by Double Resonance NMR Spectroscopy.
Jean-Baptiste d'Espinose, Elias Haddad and Antoine Gédéon
- 11:20 – 11:40 Neutral and Non-Ionic Surfactant Assembly Routes to Super-Microporous Hybrid Organosilica Frameworks.
Mark D. McInall, Jennifer Scott, Louis Mercier and P.J. Kooyman
- 11:40 – 12:00 Nanotube Surface Patterning of Mesoporous Silicas by Hydrothermally Surfactant-Templating.
Zhong-Yong Yuan, Wuzong Zhou and Bao-Lian Su

Session B (Room II): **Characterization and Applications of Nanoporous Materials**

Chairs: O. Terasaki and J. Kornatowski

- 10:20 – 10:40 Electron Microscopic Investigations of Mesoporous SBA-2.
Wuzong Zhou, Alfonso E. Garcia-Bennett, Hazel M. A. Hunter and Paul A. Wright
- 10:40 – 11:00 Multinuclear NMR Study of Pore Size Expansion in Periodic Mesoporous Silica.
I. Moudrakovski, V. Tersikh, C.I. Ratcliffe, J.A. Ripmeester and A. Sayari
- 11:00 – 11:20 ¹²⁹Xe NMR to Compare the Hydrophobic Character of Surfaces in Mesoporous MCM-41 and SBA-15 Silicas.
A. Davidson, P. Berthault and H. Desvaux
- 11:20 – 11:40 Electro-rheological Response of Mesoporous Materials under Applied Electric Fields.
Min S. Cho, Hyoung J. Choi, Wha-Seung Ahn and Myung S. Jhon
- 11:40 – 12:00 Acidity Characterization of MCM-41 Materials Using Solid-State NMR Spectroscopy.
Qi Zhao, Wen-Hua Chen, Shing-Jong Huang, Yu-Chih Wu, Huang-Kuei Lee and Shang-Bin Liu

Session A (Room I): **Synthesis of Mesoporous Silicas and Metallosilicates**

Chairs: C.-Y. Mou and M.O. Coppens

- 13:20 – 13:40 Exploring the Templating Potential of Mixed Micellar Supramolecular Assembly for Mesoporous Solids Under Microwave Hydrothermal Conditions
Bharat L. Newalkar and Sridhar Komarneni
- 13:40 – 14:00 Synthesis and Characterization of Hexagonal Mesoporous Materials Using Hydrothermal Restructuring Method.
Kyoung-Ku Kang and Hyun-Ku Rhee
- 14:00 – 14:20 Synthesis and Characterisation of Super-microporous Aluminosilicates Prepared via Primary Amine Templating.
E. Bastardo-Gonzalez, Robert Mokaya and William Jones
- 14:20 – 14:40 Catalytic Reduction and Adsorption of Nitric Oxides on Al-, Ti-containing Mesopore Molecular Sieves
W. Li, Y. Zhang, Y. Lin and X. Yang

Session B (Room II): **Characterization of Nanoporous Materials**

Chairs: P. Ravikovitch and M. Thommes

- 13:20 – 13:40 Pore Size Analysis of Three-Dimensional Hybrid Organic-Inorganic Materials by Gas Adsorption.
Peter I. Ravikovitch, Shinji Inagaki and Alexander V. Neimark
- 13:40 – 14:00 SBA-15 versus MCM-41: Are They the Same Materials?
Anne Galarneau, Hélène Cambon, Thierry Martin, Louis-Charles De Ménorval, Daniel Brunel, Francesco Di Renzo and François Fajula
- 14:00 – 14:20 Sorption Behavior of Pure Fluids in Ordered and Disordered Mesoporous Silica Materials (MCM-41, MCM-48, SBA-15, Controlled-pore Glasses, and Silica Gel) at Temperatures above and Below the Bulk Triple Point.
Matthias Thommes, Ralf Köhn and Michael Fröba

14:20 – 14:40 Plugged Hexagonal Mesoporous Templated Silica : A Unique Micro- and Mesoporous Composite Material.
P. Van Der Voort, P. I. Ravikovitch, A.V. Neimark, M. Benjelloun, K.P. De Jong, B. M. Weckhuysen and E.F. Vansant

14:40 – 15:10 Coffee break

Session A (Room I): **Non-siliceous Nanoporous Materials**

Chairs: M. Froeba and J.A. Ripmeester

15:10 – 15:30 Supramolecular Templating of Thermally Stable Crystalline Mesoporous Metal Oxides Using Nanoparticulate Precursors.

Michael S. Wong, Esther S. Jeng, and Jackie Y. Ying

15:30 – 15:50 Single Crystal Particles of Mesoporous (Nb,Ta)₂O₅.

J. N. Kondo, T. Yamashita, T. Katou, B. Lee, D. Lu, M. Hara and Kazunari Domen

15:50 – 16:10 Design of Transition Metal Oxide Mesoporous Thin Films.

E. L. Crepaldi, G. J. de A. A. Soler-Illia, D. Grosso, P.-A. Albouy, H. Amenitsch and C. Sanchez

16:10 – 16:30 Synthesis and Characterization of Thermally Stable Nanoporous Vanadium-Phosphorus-Oxide Phases.

M.A. Carreon and V.V. Gulians

16:30 – 16:50 Metals and Semiconductors in Nano-Structured Frameworks

Victor V. Tersikh, Igor L. Moudrakovski, Christopher I. Ratcliffe, John A. Ripmeester, Catherine J. Reinhold, Paul A. Anderson and Peter P. Edwards*

Session B (Room II): **Environmental Applications of Nanoporous Materials**

Chairs: A. Galarneau and J. Liu

15:10 – 15:30 A Possible Use of Modified Mesoporous Molecular Sieves in Water Treatment Processes.

Izabela Nowak, Barbara Kasprzyk, Maria Ziolk and Jacek Nawrocki

15:30 – 15:50 Organized Mesoporous Titanium Dioxide - A Powerful Photocatalyst for the Removal of Water Pollutants.

Jiri Rathouský, Markéta Slabová, Katerina Macounová and Arnošt Zúkal

15:50 – 16:10 Organically-modified Mesoporous Silicate Spheres with MCM-41 Architecture as Sorbents for Heavy Metals.

M. Etienne, S. Sayen, A. Walcarius and B. Lebeau

16:10 – 16:30 Kinetic Evaluation of the Pyrolysis of Low Density Polyethylene over MCM-41 Material.

Antonio S. Araújo,, Valter J. Fernandes Jr, Sulene A. Araújo and Massao Ionashiro

19:00 – 21:00

POSTER SESSION II

Friday, June 14, 2002

Room I

Plenary Lecture

Chairs: T. Pinnavaia and S. Inagaki

8:00 – 8:45 Highly Porous and Functionalized Metal-Organic Frameworks (MOFs) and Polyhedra (MOPs).

Omar Yaghi

Keynote Lecture

8:45 – 9:20 New Approaches to Structural and Electronic Materials through Control of Nanoscale Self-Assembly.

Sarah H. Tolbert

Oral talk

9:20 – 9:40 Recent Advances in Reduced Mesoporous Transition Metal Oxides.

M. Vetraino, X. He, Michel Trudeau and David Antonelli

9:40 – 10:10 Coffee break

Session A (Room I): **Nanoporous Organosilicas and Organically-Modified Silicas**

Chairs: S. Dai and M.A. Markowitz

10:10 – 10:30 Synthesis of Functional Porous Materials through Hierarchical Molecular Imprinting.

S. Dai

10:30 – 10:50 Multiscale Ordering of Responsive Materials.

Jun Liu

10:50 – 11:10 Surface-imprinted Porous Ceramics.

Michael A. Markowitz, Mark C. Burleigh, Eva Wong Bonevich, Gang Deng and Bruce P.

- 11:10 – 11:30 Mesoporous Hybrid Materials Containing Chelating Moieties inside Both the Framework and the Channel Pores.
Robert J.P. Corriu, Ahmad Mehdi, Catherine Reyé and Chloé Thieuleux
- 11:30 – 11:50 Improving the Hydro-Stability of MCM-41 by Post-Synthesis Treatment and HMDS Coating.
Jing Yang, Antje Daehler, Michelle L. Gee, Geoffrey W. Stevens and Andrea J. O'Connor

Session B (Room II): **Catalytic Applications of Nanoporous Materials**

Chairs: C.M. Crudden and R. Raja

- 10:10 – 10:30 Engineering Active Sites in Bifunctional Nanopore and Bimetallic Nanoparticle Catalysts for One-Step, Solvent-Free Processes.
Robert Raja and John Meurig Thomas
- 10:30 – 10:50 Asymmetric Catalysis and Synthesis with Mesoporous Materials.
Cathleen M. Crudden, Daryl Allen, Meredith Fairgrieve, Irina Motorina, Kazunori Hirabayashi, Christopher Cronin and Michelle Morais
- 10:50 – 11:10 Hydrogenation and Mild Hydrocracking of Synthetic Crude Distillate by Pt-supported Mesoporous Material Catalyst.
Hong Yang, Craig Fairbridge, Zbigniew Ring, Randall Hawkins and Josephine M. Hill
- 11:10 – 11:30 High loading of short WS₂ Slabs inside the Nanotubes of SBA-15: Promotion with Nickel and Performance in Hydrodesulfurization and Hydrogenation.
L. Vradman, M.V. Landau, M. Herskowitz, S. Nikitenko, Y. Kolytyn, A. Gedanken, V. Ezersky, M. Talianker
- 11:30 – 11:50 Mesoporous Alumina as a Support for Hydrodesulphurization Catalysts.
Jiri Cejka, Nadezda Zilková, Lud?k Kaluža and Miroslav Zdražil

Room I

Plenary Lecture

Chair: W. Zhou

- 13:10 – 13:55 Porous Materials from Looking through Electron Microscope.
Osamu Terasaki

Session A (Room I): **Design and Modeling of Nanoporous Materials**

Chairs: R.Q. Snurr and R. Mokaya

- 14:00 – 14:20 The Modeling of Wall Structure of Siliceous MCM-41 Based on the Formation Process.
Y. Oumi, K. Azuma, T. Ikeda, S. Sasaki and T. Sano
- 14:20 – 14:40 Strategies for Making Porous Supramolecular Networks with Defects.
Michael Lautman, James D. Wuest, Thierry Maris, Nadia Malek, Fatima Helzy and Christophe Lescop
- 14:40 – 15:00 Thin-Film Membranes from Nanoporous Molecular-Square Materials.
Kenneth F. Czaplewski, Yoo Joong Kim, Joseph T. Hupp, SonBinh T. Nguyen and Randall Q. Snurr

Session B (Room II): **Applications of Nanoporous Materials**

Chairs: P.V. Braun and J. Da Costa

- 14:00 – 14:20 Hydrogen Storage in Single-Walled Carbon Nanotubes.
Benoit Simard, Dean Ruth, Igor Moudrakovski, Wei-Fang Du, Lee Wilson, Christopher I. Ratcliffe and John Ripmeester
- 14:20 – 14:40 H₂ and CH₄ Adsorptivities and Assembly Structures of Single-Walled Carbon Nanohorn.
K. Murata, T. Ohba, H. Kanoh, K. Kaneko, W.A. Steele F. Kokai, K. Takahash, M. Yudasaka and S. Iijima
- 14:40 – 15:00 3-D Pattern Formation in Self-Organized High Dielectric Contrast Photonic Crystals.
Paul V. Braun, Wonmok Lee and Stephanie A. Pruzinsky

15:00 – 15:30 Coffee break

Session A (Room I): **Bimodal Porous Materials**

Chairs: E. Prouzet and M. S. Wong

- 15:30 – 15:50 Imprinting of the Surface of Mesoporous Silicates using Organic Structure Directing Agents.
Kaveri R. Sawant and Raul F. Lobo
- 15:50 – 16:10 Synthesis and Reactivity of Mixed-phase Microporous/Mesoporous Materials
Raja H.P.R. Poladi and Christopher C. Landry
- 16:10 – 16:30 Structures with Hierarchical Porosity by Supported Crystallization of Zeolites on Open-cell Ceramic Foams.
F. Scheffler, W. Schwieger, M. Scheffler and P. Greil

Session B (Room II): **Applications of Nanoporous Materials**

Chairs: C.C. Landry and B. Lebeau

- 15:30 – 15:50 Diffusive Phenomena of Polymers and Gases in Nanochannels.
Piero Sozzani, Angiolina Comotti, Roberto Simonutti and Silvia Bracco
- 15:50 – 16:10 NO and NO₂ Gas Sensors Based on Surface Photovoltage System are Fabricated by Self-ordered Mesoporous Silicate Film.
Hao-Shen Zhou, Takeo Yamada, Keisuke Asai, Itaru Honma, Hidekazu Uchida and Teruaki Katsube
- 16:10 – 16:30 Isolation and Characterization of Amorphous Solids from Oil Sands Fine Tailings.
Abdul Majid, Steve Argue, Irina Kargina, Victor Boyko and Gerry Pleizier

18:30 – 21:00

BANQUET

Saturday, June 15, 2002

Plenary Lecture

Chair: M. Jaroniec and P. Van der Voort

- 8:30 – 9:15 Stability and Acid Catalytic Activity of Aluminosilicate Mesostructures.
Thomas J. Pinnavaia

Keynote Lecture

- 9:15 – 9:50 Incorporation of Nano-Zeolites into Mesoporous TUD-1.
Thomas Maschmeyer

9:50 – 10:20 Coffee break

Session A (Room I): **Other Nanoporous Materials**

Chairs: J. Cejka and J.N. Hay

- 10:20 – 10:40 Preparation of Exfoliated Zeolites from Layered Precursors - The Role of pH and Nature of Intercalating Media.
Wieslaw J. Roth and James C. Vartuli
- 10:40 – 11:00 Synthesis of New MCM-36 Derivatives Pillared with Binary Alumina Oxides.
Jan-Olaf Barth, Jan Kornatowski and Johannes A. Lercher
- 11:00 – 11:20 Highly Porous Composites of Metal Oxide Nanoparticles in Exfoliated Silicate.
H.Y. Zhu and G.Q. Lu
- 11:20 – 11:40 Synthesis and Adsorption Properties of Novel Carbons of Tailored Porosity.
Z. Li, M. Kruk and M. Jaroniec

Session B (Room II): **Nanoparticles and Nanowires within Nanoporous Materials**

Chairs: H.K. Rhee and Y. Huang

- 10:20 – 10:40 The Formation of Important Nanostructured Materials Using Mesoporous Inorganic Templates and Supercritical Fluid Chemistry.
M.A. Morris and J.D. Holmes
- 10:40 – 11:00 Synthesis and Characterization of Silica MCM-48 as Carriers of Size Confined Nanocrystalline Metal Oxides Particles inside the Pore System.
H. Gies, S. Grabowski and M. Bandyopadhyay
- 11:00 – 11:20 Surface Functionalization of the Pore Walls of MCM-41: -Se(SiMe₃) Moieties for the Anchoring of Metal Selenide Nanoclusters
C. M. Kowalchuk, Y. Huang, J. F. Corrigan
- 11:20 – 11:40 SnO₂ nanoparticles in the pores of non-structured SiO₂ and of Si-MCM-41: Comparison of their properties in gas sensing.
Yuecel Altindag, Andrei Jitianu and Michael Wark
- 11:40 – 12:00 Selectivity of Zeolite Matrices in the Cu(II) Reduction Process.
V. Petranovskii, V. Gurin, N. Bogdanchikova, M.-A. Hernandez and M. Avalos