

# Program and Abstracts

## 2<sup>nd</sup> CBNM

*The 2<sup>nd</sup> Symposium on Future Challenges  
for Carbon-Based Nanoporous Materials*

**September 23-25, 2010**  
**Nagano, Japan**

**September 23**

at Hotel Sunroute Nagano-Higashiguchi

**September 24 and 25**

at SASTec Building 3F, Faculty of Engineering,  
Shinshu University

Organized by

Research Center for Exotic Nano Carbon Project  
and Faculty of Engineering, Shinshu University

Co-organized by

Foundation Advanced Technology Institute  
Nagano Techno Foundation

Sponsored by

JST: Strategic Japanese-Spanish Cooperative Program  
BELL Japan Inc.  
Fuji Chemical Company Ltd.  
Micromeritics Instrument Corporation  
Quantachrome Instruments

# Welcome to 2<sup>nd</sup> CBNM

We organized the first symposium on Future Challenges for Carbon-base Nanoporous Materials at Chiba University, Chiba in 2007.

We had intensive discussions on these important issues. The researches on carbon-based materials extraordinarily are expanding all over the world due to the urgent demand for construction of environmentally-friendly technologies. Graphene has joined in new nanocarbon families, promoting intensively worldwide researches with the relevance to energy and environmental technologies.

Shinshu University established “World Research Center for Exotic Nanocarbons” to innovate new nanocarbons for contribution to the global issues on December in 2009. Also very fortunately we have started Strategic Japanese-Spanish Cooperative program [Nanoscience and New Materials for Environmental Challenges] between Alicante University and Shinshu University on “Nanostructured Carbon Monoliths for Storage and Conversion of Methane”. The 2<sup>nd</sup> CBNM can give a firm base for this JST project to promote the collaboration fruitfully.

The essential progresses on nanocarbon-related science and technology can be brought by mutual interactions among researchers who have high research activities from a wide aspect on the common understanding of the current social and earth situations.

Fortunately we can have outstanding invited speakers who can stimulate and promote the related science and technology. I sincerely hope that the 2<sup>nd</sup> CBNM can create new seeds in this area at a representative green city of Nagano being filled with fresh air and natural water.

Please enjoy 2<sup>nd</sup> CBNM.

I gratefully acknowledge financial supports from Nagano Techno Foundation, Foundation Advanced Technology Institute (ATI), Fuji Chemical Industry, BELL Japan Inc. Micromeritics Instrument Co., and Quantachrome Co.



Katsumi Kaneko, Chairman

Organizing Committee  
Prof. Katsumi Kaneko  
Prof. Morinobu Endo  
Dr. Tsutomu Itoh  
Dr. Toshihiko Fujimori

## Correspondence

Carbon Nanospace Utilization Group  
Professor Katsumi KANEKO  
kkaneko@shinshu-u.ac.jp  
Tel.81-(0)26-269-5743

Ms.E.Machida: emachida@shinshu-u.ac.jp  
Ms.R.Takenaka: takenaka@shinshu-u.ac.jp  
Tel.81-(0)26-269-5736  
Fax.81-(0)20-269-5737

# Program

## September 23 Thursday

### Session T

**Chair: L. R. Radovic**

Place: Hotel Sunroute Nagano-Higashiguchi

- 16:00-17:30 Registration**
- 17:30-17:40 K. Kaneko Welcome address**  
Shinshu University, Japan
- 17:40-18:20 F. Rodríguez-Reinoso**  
*Nanoporous Carbons for Gas Storage*  
Alicante University, Spain
- 18:20-18:35 T. Fujimori**  
*Evidence of Stone-Thrower-Wales Defect using Surface-Enhanced Raman Scattering*  
Shinshu University, Japan
- 18:35-18:50 Y. Tao**  
*Comprehensive Characterization of Double-Walled Carbon Nanotubes of Different Bundle Structures using Physisorption, Transmission Electron Microscopy, Raman Spectroscopy and Synchrotron X-ray Diffraction*  
Shinshu University, Japan
- 18:50-19:05 S. Utsumi**  
*Valuable Design of Nanoporous Carbon Materials*  
Tokyo University of Science, Japan
- 19:15-20:45 Micromeritics Reception**

## September 24, Friday

### Session F1

**Chair: D. D. Do**

Place: SAS Tec Building 3F, Faculty of Engineering, Shishu University

- 9:00-9:30 L. R. Radovic**  
*Adsorption of O<sub>2</sub> on Graphene: Effects of Surface Chemistry and Curvature*  
Pennsylvania State University, USA
- 9:30-10:00 M. Endo**  
*Coaxial Carbon Nanotubes: Synthesis, Characterization and Applications*  
Shinshu University, Japan
- 10:00-10:30 S. Sakamoto**  
*Increased attention on Natural Gas*  
Japan Oil, Gas and Metals National Corporation, Japan
- 10:30-10:45 T. Hayashi**  
*Effect of Double Walled Carbon Nanotube Fluorination*  
Shinshu University, Japan
- 10:45-11:00 Break (Snacks)**

### Session F2

**Chair: M. J. Biggs**

Place: SAS Tec Building 3F, Faculty of Engineering, Shishu University

- 11:00-11:30 N. K. Kanellopoulos**  
*Templated growth of aligned carbon nanotubes on porous supports and membranes Preparation, characterization and applications*  
National Center for Scientific Research Demokritos, Greece
- 11:30-12:00 Y. Iwasawa**  
*In-situ real-time XAFS analysis for Pt-M/C catalysts in a fuel cell system*  
The University of Electro-Communications, Japan

- 12:00-12:30 K. Naoi**  
*NANOHYBRID CAPACITOR A New Hybrid System by Use of nc-Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> / Nanocarbon Composite Electrode*  
Tokyo University of Agriculture & Technology, Japan
- 12:30-13:00 J. J. Qiu**  
*Zeolite Married to Carbon: A New Approach to High Performance Membrane Materials for Gas Separation*  
Dalian University of Technology, China
- 13:10-17:00 Quantachrome Bus-excursion**
- 17:30-18:20 Poster session**  
Place: SASTec Building 3F, Faculty of Engineering, Shinshu University
- 18:40-20:40 Banquet**  
Place: Hotel Sunroute Nagano-Higashiguchi

## September 25, Saturday

### Session S1

**Chair: C. M. Lastoskie**

Place: SASTec Building 3F, Faculty of Engineering, Shishu University

- 9:00-9:30 M. Terrones**  
*Synthesis and Applications of Novel Nanocarbons*  
Shinshu University, Japan
- 9:30-10:00 (George) X. S. Zhao**  
*Challenges in Nanoporous Carbon Materials for new-generation Supercapacitors*  
National University of Singapore, Singapore
- 10:00-10:30 M. J. Biggs**  
*Molecular Modeling of Adsorption and Transport in Carbons*  
The University of Adelaide, Australia
- 10:30-10:45 J. Miyawaki**  
*Solid-state NMR study on electrolyte ion behavior in EDLC electrode*  
Kyushu University, Japan
- 10:45-11:00 Y. Hattori**  
*Electrochemical Energy Storage in Porous Carbon Nanosheets*  
Shinshu University, Japan
- 11:00-11:20 Break (Snacks)**

### Session S2

**Chair: N. K. Kanellopoulos**

Place: SASTec Building 3F, Faculty of Engineering, Shishu University

- 11:20-11:50 D. D. Do**  
*Adsorption of Gases on a Carbon Surface over a Wide Range of Temperature-Characterization of Carbon Surface for its Surface Energy by a New Monte Carlo Optimization Scheme*  
University of Queensland, Australia
- 11:50-12:20 F. Rojas**  
*Entrapment, covalent attachment, and functionalization of mesoporous silica by carbon-containing molecules*  
The Metropolitan Autonomous University, Mexico
- 12:20-12:35 D. Minami**  
*Molecular dynamics study of adsorption behavior of surfactant molecules on the hydrophobic surface of single-wall carbon nanotube*  
Tokyo University of Science, Japan
- 12:35-12:50 T. Iiyama**  
*The structure determination of water and multi-component molecular assembly in carbon micropore by X-ray and neutron diffractions*  
Shinshu University, Japan
- 12:50-14:20 Lunch**

### **Session S3**

**Chair: M. Terrones**

Place: SASTec Building 3F, Faculty of Engineering, Shishu University

- 14:20-14:50 C. M. Lastoskie**  
*Carbon Dioxide Adsorption on Latent Porous Crystalline Metal-Organic Frameworks ELM-11 and ELM-12*  
University of Michigan, USA
- 14:50-15:20 J. Jagiello**  
*Using two-dimensional finite pore models for the analysis of structure of nanoporous carbons*  
Micromeritics Instrument Corporation, USA
- 15:20-15:35 T. Sakai**  
*Amphiphile- and Reductant-Free Synthesis of Naked Gold Nanoparticles Using Sonochemical Reduction in Water*  
Shinshu University, Japan
- 15:35-15:50 K. Teshima**  
*Nature-Mimetic Fabrication and Application of Functional Nanocrystal/Carbon Nanotube composites*  
Shinshu University, Japan
- 15:50-16:05 Break**

### **Session S4**

**Chair: F. Rojas**

Place: SASTec Building 3F, Faculty of Engineering, Shishu University

- 16:05-16:20 R. Cruz-Silva**  
*Synthesis of mesoporous carbons derived from conducting polymer/silica nanocomposites*  
Shinshu University, Japan
- 16:20-16:35 K. Urita**  
*Carbon Nanospaces Induced Confinement Effect on Crystal Growth*  
Nagasaki University, Japan
- 16:35-16:45 R. Futamura**  
*Investigation of hydrate structures in hydrophobic nano-spaces by X-ray scattering methods*  
Shinshu University, Japan
- 16:45-17:00 M. Kubo**  
*Enhancement of Hydrogen Uptake on MIL-53 (Al) by Li-doping*  
The University of Tokyo, Japan
- 17:00-17:15 H. Tanaka**  
*Hydrogen Isotope Separation in Nanopores*  
Kyoto University, Japan

**Adjourn**

---

**An information board will be available near the entrance of each oral session room.**

---

# Poster Session

**September 24 (Friday) 17:30-18:20**

Place: SASTec Building 3F, Faculty of Engineering, Shishu University

- P01** *Preparation and Characterization of Single Wall Carbon Nanotube-based Polyethylene Terephthalate Film Electrodes*  
**T. Itoh**, T. Yasuhi, M. Lu, T. Ohba, T. Fujimori, K. Kaneko, H. Kanoh
- P02** *Mesoporous Carbons from Bioresources*  
**W. Jiang**, Z. Tang, Y. Chen
- P03** *Bundle Structure Control of Single-Walled Carbon Nanotubes and Their Adsorptivity for Supercritical  $H_2$  and  $CH_4$*   
M. Yamamoto, **H. Sakamoto**, T. Fujimori, K. Urita, T. Ohba, H. Kanoh, K. Hata, M. Murata, S. Iijima, K. Kaneko
- P04** *Methane Adsorptivity and Electrical Conductivity of Activated Carbon Monolith*  
**T. Kubo**, T. Ohba, H. Kanoh, F. Rodríguez-Reinoso, M. Martínez Escandell, J. M. Ramos-Fernández, K. Kaneko
- P05** *Enhancement of Electrochemical Performance of Macroporous Carbon by Surface Coating of Polyaniline*  
**L. L. Zhang**, S. Li, J. Zhang, P. Guo, J. Zheng, X. S. Zhao
- P06** *Application of Measurement Apparatus of Amount Adsorbed Using Pressure-Feedback System Adapted to High Pressure Condition*  
**Y. Morita**, T. Iiyama, T. Shigeoka, A. Hamasaki, S. Ozeki, K. Nakai
- P07** *Pore Structure Controlled Activated Carbon Fiber and Gas Adsorptivities*  
**A. Rejifu**, H. Noguchi, T. Ohba, H. Kanoh, F. Rodríguez-Reinoso, K. Kaneko
- P08** *Organic Electrolyte Solution Structure in Slit-shaped Carbon Nanospaces with X-ray Diffraction Technique*  
**M. Fukano**, J. Ségalini, A. Tanaka, T. Fujimori, T. Ohba, H. Kanoh, P. Simon, K. Kaneko
- P09** *Neutron and X-ray Diffraction Study of Hydrogen-bonding Structure in Water Assemblies on Hydrophobic Space*  
**F. Fujisaki**, T. Iiyama, A. Hamasaki, S. Ozeki, A. Hoshikawa, T. Ishigaki
- P10** *Effect of Nanopore Structures on the Electrochemical Performance of Mesoporous Carbons in Both Aqueous and Non-aqueous Systems*  
**Y. Tao**, I. Y. Jang, K. Oshida, M. Endo, K. Kaneko
- P11** *Isobaric Adsorption Study of Water Adsorbed State in the Small Space*  
**H. Ito**, T. Iiyama, A. Hamasaki, S. Ozeki
- P12** *Kinetic Quantum Adsorption Apparatus for  $H_2$  and  $D_2$  Mixture*  
**S. Niimura**, T. Fujimori, T. Itoh, H. Sakamoto, A. Rejifu, M. Asai, K. Kaneko
- P13** *Quantum Molecular Sieving Effect of  $CH_4$  and  $CD_4$  on Nanoporous Carbons*  
**T. Tamura**, H. Kagita, T. Fujimori, D. Noguchi, T. Ohba, H. Kanoh, K. Kaneko
- P14** *Use of Mining Slag as a Catalyst in the Synthesis of Nitrogen Doped Carbon Nanotubes*  
**S. M. Vega-Diaz**, A. Morelos-Gómez, V. J. González-Velásquez, E. Muñoz-Sandoval, M. Terrones
- P15** *Adsorption Measurement of Extremely Small Amount of Sample Using Automated Quartz-Balance System at 303 K*  
**M. Asai**, T. Ohba, H. Kanoh, T. Sueyoshi, K. Nakai, K. Hata, K. Kaneko