Second International Conference on Flow Dynamics

Program

Plenary Lecture 1

TACHIBANA

November 16, 2005

Chair: Prof. S. Maruyama

13:15-14:15 **Urban Air Quality - The Role of Flow Structure**

Prof. Richard Perkins (Ecole Centrale de Lyon)

Plenary Lecture 2

TACHIBANA

November 17, 2005

Chair: Prof. H. Nishiyama

9:00-10:00 **Applications of Thermal Plasma Flow Systems to Nano-materials Syntheses**

Prof. Sang Hee Hong (Seoul National University)

OS1: The 6th Japan-Korea Students' Symposium, Fast Ion Transport in Solids and Through Interfaces – The Related Materials and Phenomena

SHIRAKASHI 2

November 16, 2005

9:00-9:10 **OS-1 Opening Address**
Maya Sase (Tohoku University, Japan)

OS1-1 **Emission Characteristics of F^- Ion into Vacuum from Eu-doped CaF_2**
9:10-9:30 Takaaki Sakai (Tohoku University, Japan)

OS1-2 **Mechanism of Proton Transport in Polymer Electrolyte Membrane for**
9:30-9:50 **PEFC**
Kazuki Hattori, Keiji Yashiro, Takanori Otake, Tatsuya Kawada, Junichiro Mizusaki, Junichi Kawamura (Tohoku University, Japan)

OS1-3 **Recovery of Electrolytic Manganese Dioxide Using a Modified Cyclone**
9:50-10:10 **Reactor**
Jae-Myung Lee, Hun-Joon Sohn (Seoul National University, Korea)

10:10-10:40 Break

OS1-4 **Molecular Dynamics Simulations of Oxygen Ion Dynamics and**
10:40-11:00 **Mechanical Deformation in Yttria Doped Ceria for Solid Oxide Fuel Cells Electrolytes**
Kazuhisa Sato, Ken Suzuki, Toshiyuki Hashida, Hiroo Yugami, Tatsuya Kawada, Junichiro Mizusaki (Tohoku University, Japan)

OS1-5 **In Situ Micro-Structural Observation of Electrodes of Solid Oxide Fuel**
11:00-11:20 **Cells at High Temperatures by Environmental SEM**
Yoichi Nakagawa, Keiji Yashiro (Tohoku University, Japan)

OS1-6 **Optical Study on Color Centers of $BaTiO_3$**
11:20-11:40 Tae-Sik Oh (Seoul National University, Korea)

OS1-7 **Oxygen-nonstoichiometry Relaxation Kinetics of Donor-doped $BaTiO_3$**
11:40-12:00 **: BaO/TiO_2 Activity Effect**
Chung-Eun Lee (Seoul National University, Korea)

12:00-13:15 Lunch

OS1-8 15:00-15:20 **In Situ Observation of Electrode Reactions at High Temperature by PM-IRRAS**
Nobuyuki Hirai, Takuya Murai (Tohoku University, Japan)

OS1-9 15:20-15:40 **Electrode Reaction on (La,Sr)CoO_{3-d} Thin Films Deposited by Pulsed Laser Deposition**
Maya Sase, Hiroaki Hosoi, Junji Suzuki, Keiji Yashiro, Takanori Otake, Atsushi Kaimai, Tatsuya Kawada, Junichiro Mizusaki, Hiroo Yugami (Tohoku University, Japan)

OS1-10 15:40-16:00 **Electrical Conductivity and Thermopower of $La_2NiO_{4+\delta}$: International Conference on Fuel Cell**
Hong-Seok Kim (Seoul National University, Korea)

OS1-11 16:00-16:20 **Electrochemical Behaviors of MnO_2 Recovered from Spent Batteries for Li Secondary Batteries**
Jung-Bae Lee, Hun-Joon Sohn(Seoul National University, Korea)

16:20-16:30 Break and Discussion

November 17, 2005

OS1-12 9:00-9:20 **Transition Metal Ion Doping Effect on Gd-doped CeO_2 (GDC)**
Sang-Hyun Park (Seoul National University, Korea)

OS1-13 9:20-9:40 **The Kinetics of Gadolinia-doped Ceria Anode for SOFC**
Takashi Nakamura (Tohoku University, Japan)

OS1-14 9:40-10:00 **Synthesis of NiO-SDC Composite Powders for Solid Oxide Fuel Cell Anode by Co-precipitation**
Changsheng Ding, Toshiyuki Hashida (Tohoku University, Japan)

OS1-15 10:00-10:20 **Elucidation of the Mechanism in Carbon Deposition on the Anode by Raman Spectroscopy**
Mitsunari Takase, Tomoaki Taura, Keiji Yashiro (Tohoku University, Japan)

10:20-10:50 Break

OS1-16 **Anomalous Codeposition of NiCoFe Permalloy**
10:50-11:10 Min-Soo Kim, Tak Kang (Seoul National University, Korea)

OS1-17 **Electrodeposition and Characterization of $Ni_{0.75}Fe_{0.25-x}Cu_x$ Alloy**
11:10-11:30 Hak-Jun Kim, Seok-Ho Kim, Tak Kang (Seoul National University, Korea)

OS1-18 **Preparation of ZrO_2/ZrW_2O_8 Co-sintered Ceramics with Controlled**
11:30-11:50 **Thermal Expansion Coefficient**
Eiki Niwa, Keiji Yashiro, Tatsuya Kawada, Junichiro Mizusaki (Tohoku University, Japan), Shuji Wakamiko, Takaaki Ichikawa, Takuya Hashimoto (Nihon University, Japan)

OS1-19 **Route to the Synthesis of Binder-free SWCNT Solids with Enhanced**
11:50-12:10 **Mechanical Properties**
Go Yamamoto, Yoshinori Sato, Toru Takahashi, Mamoru Omori, Toshiyuki Hashida, Akira Okubo, Sadao Watanabe, Kazuyuki Tohji (Tohoku University, Japan)

12:10-13:50 Lunch

13:50-14:50 **Tutorial Lecture**
Jong-Ho Lee (Korea Institute of Science and Technology, Korea)

14:50-15:10 Break

OS1-20 **Study of Proton-Conducting Oxides by Artificial Modulation of Dopant**
15:10-15:30 **Distribution**
Daisuke Hondo, Takao Tsurui, Naoaki Kuwata, Noriko Sata, Hiroo Yugami (Tohoku University, Japan)

OS1-21 **Proton Conductivity and Microstructures of Y-doped $BaZrO_3$ Thin**
15:30-15:50 **Films**
Fumitada Iguchi, Noriko Sata, Hiroo Yugami (Tohoku University, Japan)

OS1-22 **Characterization of the Microstructure-dependent Electrical**
15:50-16:10 **Conductivity of Nano-crystalline $Ce_{0.9}Gd_{0.1}O_{2-x}$ via AC-impedance Spectroscopy**
Kyung-Ryul Lee, Joosun Kim, Hae-Weon Lee, Jong-Ho Lee (Seoul

National University and Korea Institute of Science and Technology, Korea)

OS1-23 **Design and Characterization of Integrated On-plane μ-SOFC**

16:10-16:30 Sun-Hee Choi (Korea Institute of Science and Technology, Seoul National University, Korea), Woo-Sik Kim, Jong-Ho Lee, Hae-Weon Lee, Joosun Kim (Korea Institute of Sceince and Technology, Korea), Cheol Seong Hwang (Seoul National University, Korea)

16:30-16:50 Break

OS1-24 **The Oxygen Nonstoichiometry of B-site Mixed Perovskite Oxide**

16:50-17:10 Masatsugu Oishi, Keiji Yashiro, Atsushi Kaimai, Yutaka Nigara, Tatsuya Kawada, Juniciro Mizusaki (Tohoku University, Japan)

OS1-25 **Nb Doped $SrTiO_3$ Based High Temperature Schottky Solar Cell**

17:10-17:30 Fumimasa Horikiri, Tomoyuki Ichikawa, Li-Qun Han, Atsushi Kaimai, Keiji Yashiro (Tohoku University, Japan), Hiroshige Matsumoto (Kyushu University, Japan), Tatsuya Kawada, Junichiro Mizusaki (Tohoku University, Japan)

OS1-26 **Photo-electrolysis of Water Using n-TiO_2 Semiconductor Electrode:**

17:30-17:50 **TiO_2 Reduced under Different Thermodynamical Conditions**

Jin-Gu Kang (Seoul National University, Korea)

OS1-27 **Electrical Conductivity of ZnO-ZnS System**

17:50-18:10 Jin-Su Ha (Seoul National University, Korea)

OS1-28 **Chemical Diffusivity of Al-doped $SrTiO_{3-\delta}$: International Conference**

18:10-18:30 **on Flow Dynamics**

Cheol-Ju Shin (Seoul National University, Korea)

18:30-19:00 Break and Discussion

November 18, 2005

OS1-29 **Investigation of Hydrogen Permeability of Palladium Alloy Membrane**

9:00-9:20 **with Impurity Gases at High Temperatures**

Atsushi Unemoto, Atsushi Kaimai, Takanori Otake, Keiji Yashiro, Tatsuya Kawada, Junichiro Mizusaki (Tohoku University, Japan),

Tatsuya Tsuneki, Isamu Yasuda (Tokyo Gas Co., Ltd., Japan)

OS1-30 9:20-9:40 **Electrode Reaction Kinetics of High Temperature Proton Conductors**
Takao Kudo (Tohoku University, Japan)

OS1-31 9:40-10:00 **Transport Number of $SrCeO_3$**
Jae-Young Yoon, Han-Ill Yoon (Seoul National University, Korea)

OS1-32 10:00-10:20 **Cross Effects in Ceria System**
Woo-Seok Park (Seoul National University, Korea)

10:20-10:50 Break

OS1-33 10:50-11:10 **Carbon Coated Ti-Si/MCMB Composite as an Anode Material for Lithium Ion Batteries**
Su-Keun Yoon, Sung-il Lee, Hun-Joon Sohn (Seoul National University, Korea)

OS1-34 11:10-11:30 **Mechanical Propaties of Carbon Nanotubes / Hydroxyiapatite Composites Prepared by Spark Plasma Sintering**
Masa-aki Tanaka, Takamasa Onoki (Tohoku University, Japan), Kazuyuki Hosoi (Shiraishi Kogyo Kaisya Ltd., Japan), Toshiyuki Hashida (Tohoku University, Japan)

OS1-35 11:30-11:50 **Numerical Simulation of Flow Dynamics for CO_2 Injection into Rock Masses**
Kenta Sasaki, Takashi Fujii, Toshiyuki Hashida (Tohoku University, Japan)

11:50-12:10 Break

OS1-36 12:10-12:30 **Damage Mechanism in $(CeO_2)_{0.8}(SmO_{1.5})_{0.2}$-based Solid Oxide Fuel Cells under Simulated Operating Conditions**
Hajime Omura, Kazuhisa Sato, Toshiyuki Hashida (Tohoku University, Japan)

OS1-37 12:30-12:50 **Mg–Si-C Composite as an Anode Material for Lithium Rechargeable Batteries**
Kynug-Su Kim, Hun-Joon Sohn (Seoul National University, Korea)

OS1-38 **Current-Voltage Characteristics of $SrTiO_3$ under Oxygen Potential Gradient**

12:50-13:10 Nam-Jung Heo (Seoul National University, Korea)

13:10-13:20 **OS-1 Closing Address**

Cheol-Ju Shin (Seoul National University, Korea)

OS2: The 2nd Joint Meeting of Hydrothermal Chemistry of Pacific Basin Society

ROOM 8

November 16, 2005

OS2-1 14:49	**Conversion of Carbon Dioxide into Organic Compounds in Hydrothermal Conditions** Hiro Takahashi (Tohoku University, Japan)
OS2-2 14:52	**Hydrothermal Synthesis of Manganite CMR Materials** Yan Chen (Jilin University, China)
OS2-3 14:55	**Porous Apatite Composite with Functional Material Prepared by Hydrothermal Method** Setsuaki Murakami (Tohoku University, Japan)
OS2-4 14:58	**Superheated Steam Pyrolysis of Sugi (Japanese Cedar) for Chemicals** Zhixia Li (Tohoku University, Japan)
OS2-5 15:01	**Carbonization of Methane Fermentation Residue by Hydrothermal Dry Steam Aiming for Absorbent** Hisahiro Hosokawa (Tohoku University, Japan)
OS2-6 15:04	**Hydrothermal Synthesis of Zinc Oxide Materials** Ming Yang (Jilin University, China)
OS2-7 15:07	**Degradation of Cellulose under Dry-steam Condition** Shigeto Mizutani (Tohoku University, Japan)
OS2-8 15:10	**Hydrothermal Synthesis of $CuSb_2O_6$** Shihui Jiao (Jilin University, China)
OS2-9 15:13	**Carbonization of Bamboo by Dry Steam (and Its Adsorption Capacity)** Yuki Mori (Tohoku University, Japan)
OS2-10 15:16	**Oil Removing by Superheated Vapor for Recovery Gold from Metal Electronic Components** Hongfei Lin (Tohoku University, Japan)

OS2-11 15:19	**Three-dimensional Imaging of Subsurface Fractures by a Directional Borehole Rader** Takuya Takayama (Tohoku University, Japan)
OS2-12 15:22	**Fracture Characterization by a Fully Polarimetric Borehole System and Its Polarimetric Analysis** Jianguo Zhao (Tohoku University, Japan)
OS2-13 15:25	**Preparation of Poly (Lactic Acid) Hybrids for Bone Repair** Hirotaka Maeda (Nagoya Institute of Technology, Japan)
OS2-14 15:28	**Hydrothermal Synthesis of Bismuth Oxides** Haibo Chang (Jilin University, China)
OS2-15 15:31	**Hydrothermal Synthesis of Meso-pore Materials from the Modified Kaolinite** Takuya Yamazaki (Tohoku University, Japan)
OS2-16 15:34	**Rheological Properties of Sosium Monmorillonite Suspensions** Wensheng Fu (Jilin University, China/ Tohoku University, Japan)
OS2-17 15:37	**The Morphology of Diamond Synthesized under Hydrothermal Conditions** Kazunori Yokosawa (Tohoku University, Japan)
15:40-16:30	**Poster Presentation at SAKURA 2**

OS3: International Seminar on Multi-scale Flow Dynamics

TACHIBANA

November 16, 2005

14:30-14:35 **Opening Address**
Hideaki Kobayashi (Tohoku University, Japan)

Session 1

14:35-15:15 **Short Oral Presentation**
(3 min presentation + 1 min PC preparation for each paper)

15:20-16:30 **Poster Presentation at SAKURA 2**
(15:20-15:55 poster presentation for odd-numbered posters)
(16:00-16:30 poster presentation for even-numbered posters)

OS3-1 **The Experimental Research on Cavitating Flow of Densified Liquid Nitrogen**
Satoshi Ide, K. Niiyama, (Tohoku University, Japan), M. Oike, (Ishinomaki Senshu University, Japan), K. Ohira, (Tohoku University, Japan)

OS3-2 **Flows with Convective Heat Transfer in a Curved Square Duct for Large Grashof Numbers**
Rabindra Nath Mondal, Yoshito Kaga and Shinichiro Yanase (Okayama University, Japan)

OS3-3 **Experimental Investigations on the Aerodynamic Characteristics of the Wing for the Aero-Train with the Towing Tank**
Tomoyuki Ishizuka, Yasuaki Kohama, Takuma Katoh and Shuya Yoshioka (Tohoku University, Japan)

OS3-4 **Statistical Properties of Microcracking in Polyurethane Foams under Tensile and Creep Tests, Influence of Temperature and Density**
Stephanie Deschanel, G.Vigier,L.Vanel (Institut National des Sciences Appliquées de Lyon (INSA-Lyon), France), N.Godin (Ecole Normale Superieure de Lyon, France) and S.Ciliberto (INSA-Lyon, France)

OS3-5 **Fundamental Study of Air Plasma Flow for Enhancing Combustion**
K. Tsuri, S. Niikura, H. Takana, K. Tatagiri (Tohoku University, Japan), K. Nakano and H. Nishiyama (Tohoku University, Japan)

OS3-6 **Unsteady Behavior and Flame Response in Porous Media Burner**
Seung Gon Kim, S. Kumar, T. Yokomori (Tohoku University, Japan), N. I. Kim (ChungAng University, Korea), S. Maruyama1, K. Maruta (Tohoku University, Japan)

OS3-7 **Three-dimensional Numerical Simulation of Gas-particulate Flow around Breathing Human and Particulate Inhalation**
Yasuhiro Shimazaki, Masaaki Okubo and Toshiaki Yamamoto (Osaka Prefecture University, Japan)

OS3-8 **Aerodynamics of Land Speed Record Vehicles**
Graham Doig, T. J. Barber, E. Leonardi (The University of New South Wales (UNSW), Australia) and A.J. Neely (UNSW@Australian Defence Force Academy (ADFA), Australia)

OS3-9 **Extinction of Counterflow Diffusion O2/CO2/CH4 Flame at Elevated Pressures**
Kazuki Abe, K. Maruta, S. Hasegawa, S. Maruyama (Tohoku University, Japan) and J. Sato (Ishikawajima-Harima Heavy Industries Co., Ltd., Japan)

OS3-10 **Energy and Momentum Transport in Nanoscale Liquid Water Film between Sliding Solid Surfaces**
Daichi Torii and Taku Ohara (Tohoku University, Japan)

November 17, 2005

Session 2

14:00-14:44 **Short Oral Presentation**
(3 min presentation + 1 min PC preparation for each paper)

15:50-17:00 **Poster Presentation at SAKURA 2**
(15:50-16:25 poster presentation for odd-numbered posters)
(16:25-17:00 poster presentation for even-numbered posters)

OS3-11 **Catalytic Decomposition of Hydrogen Peroxide for Application on Micro Propulsion**
Sungyong An and Sejin Kwon (Korea Advanced Institute of Science and Technology (KAIST), Korea)

OS3-12 **Proposal of Peristaltic Actuator Component for Artificial Esophagus**

using Shape Memory Alloy

Mitsuyoshi Yamaguchi, Takeshi Okuyama, Toshiyuki Takagi, Tomoyuki Yambe and Hiroyuki Miki (Tohoku University, Japan)

OS3-13 **Effect of Flame-Surface Interaction on Flame Propagation in Narrow Confinement**

Kyu Tae Kim and Sejin Kwon (Korea Advanced Institute of Science and Technology (KAIST), Korea)

OS3-14 **The Production of Converging Polygonal Shock Waves by Means of Reflectors and Cylindrical Obstacles**

Veronica Eliasson, Nils Tillmark and Nicholas Apazidis (Kungliga Tekniska Högskolan (KTH), Sweden)

OS3-15 **Velocity Measurements in an Oblique Shock Wave Using Particle Tracking Velocimetry**

Naoki Sato, Hisashi Nakamura, Hideaki Kobayashi and Goro Masuya (Tohoku University, Japan)

OS3-16 **Active Flow Control of an Unmanned Aerial Vehicle**

Marcus Ciuryla, Michael Amitay (Rensselaer Polytechnic Institute (RPI), U.S.A.), Hiroshi Higuchi and Mark Glauser (Syracuse University, U.S.A.)

OS3-17 **Control Performance of Plasma Jet Behaviors Impinging onto the Substrate**

Shota Niikura, G. Chiba, T.Sato, H. Takana and H. Nishiyama (Tohoku University, Japan)

OS3-18 **Effect of TSP Layer Thickness on Global Heat Transfer Measurement in a Hypersonic Shock Tunnel**

Shunsuke Ohmi, Hiroki Nagai, Keisuke Asai (Tohoku University, Japan) and Kazuyuki Nakakita (Japan Aerospace Exploration Agency (JAXA), Japan)

OS3-19 **A Stochastic Semi-passive Vibration Control Technique**

Adrien Badel, D. Guyomar, E. Lefeuvre, C. Richard (Institut National des Sciences Appliquées de Lyon (INSA-Lyon), France) and J. Qiu (Tohoku University, Japan)

OS3-20 **Nondestructive Evaluation of Graphite Morphology in Gray Cast Irons**

Toshihiro Nozaki, Tetsuya Uchimoto, Toshihiro Abe, Toshiyuki Takagi and Takeshi Sato (Tohoku University, Japan)

OS3-21 **Numerical Analysis of Polypropylene Combustion in H_2O and CO_2 Enriched Oxidizers**
Kentaro Yoshinaga and Hideaki Kobayashi (Tohoku University, Japan)

Session 3

14:55-15:39 **Short Oral Presentation**
(3 min presentation + 1 min PC preparation for each paper)

15:50-17:00 **Poster Presentation at SAKURA 2**
(15:50-16:25 Poster presentation for odd-numbered papers)
(16:25-17:00 Poster presentation for even-numbered papers)

OS3-22 **Optimal Annular Fill and Water Flow Rate Profile in a Natural Draft Wet Cooling Tower**
Nicholas Williamson, M. Behnia and S. Armfield (The University of Sydney, Australia)

OS3-23 **Combined Heat Transfer of Convection and Radiation Using LES and REM²**
Atsushi Sakurai (Tohoku University, Japan), M, Behnia (University of Sydney, Australia), S. Maruyama, A. Komiya (Tohoku University, Japan) and S. Sakai (Yokohama National University, Japan)

OS3-24 **Iso-Enthalpy Expansion of R410A in Micro-Capillary Tube**
Dae-Gwan Cho (Seoul National University, Korea), Kazuto Nakagawa (Tohoku University, Japan), Joon-Sik Lee (Seoul National University, Korea) and Shigenao Maruyama (Tohoku University, Japan)

OS3-25 **Burning Velocity at Leading Edge of Lifted Laminar Flames**
K. Hashimoto, A. Saiki, M.Hirota and G. Masuya (Tohoku University, Japan)

OS3-26 **The Magnetic Field Sensors Based on Complex Manganese Oxides $Ca(Cu_xMn_{3-x})Mn_4O_{12}$**
Olga Volkova, E. Goodilin, K. Klimov, A. Vasiliev (Moscow State University, Russia)

OS3-27 **Time-Resolved Force Measurement Induced by Laser Ablation Using Velocity Interferometer**

Kohei Anju, K. Mori, E. Zaretsky and A. Sasoh (Tohoku University, Japan)

OS3-28 **The Effect of Residence Time and Flame Temperature on the Soot Formation of a Liquid Fuel Flame**

Jang Hee Park, Uen Do Lee and Hyun Dong Shin (Korea Advanced Institute of Science and Technology (KAIST), Korea)

OS3-29 **Application of Lifetime PSP Imaging Method to a Cryogenic Wind Tunnel**

Toshiyuki Kojima, Hiroki Nagai, Keisuke Asai (Tohoku university, Japan), Kazunori Mituo, Yashimi Iijima and Hirotaka Sakaue (Japan Aerospance Exploration Agency (JAXA), Japan)

OS3-30 **Pattern Formation of Flames in Radial Microchannels**

Sudarshan Kumar, Kaoru Maruta (Tohoku University, Japan) and S. S. Minaev (Russian Academy of Sciences, Russia)

OS3-31 **PIV Measurement of Single-port Low-angle Injection in Supersonic Flow**

Koichi Tanaka, Shunsuke Koike, Mitsutomo Hirota, Kenichi Takita, and Goro Masuya (Tohoku University, Japan)

OS3-32 **Development of a Simple Structured Artificial Muscle Using SMA Wire**

Ryuta Ibuki, Shigenao Maruyama and Atsuki Komiya (Tohoku University, Japan)

OS4: Joint Session on International Students Collaboration

TACHIBANA

November 16, 2005

16:40-16:45	**Opening Address**
16:45-17:50	**Short Oral Presentation** (6 min presentation + 1 min PC preparation for each university)
OS4-1	**Institut National des Sciences Appliquées de Lyon (INSA-Lyon)** Adrien Badel (INSA-Lyon, France)
OS4-2	**Kungliga Tekniska Högskolan (KTH)** Veronica Eliasson (KTH, Sweden)
OS4-3	**Moscow State University** Olga Volkova (Moscow State University, Rusia)
OS4-4	**Seoul National University** Cheol-Ju Shin (Seoul National University, Korea)
OS4-5	**Korea Advanced Insititute of Science and Technology (KAIST)** Jang Hee Park (KAIST, Korea)
OS4-6	**The University of Sydney** Nicholas Williamson (The University of Sydney, Australia)
OS4-7	**The University of New South Wales** Graham Doig (The University of New South Wales, Australia)
OS4-8	**Syracuse University** Shailesh S. Ozarkar (Syracuse University, U.S.A.)
OS4-9	**Tohoku University** Atsushi Sakurai (Tohoku University, Japan)

SAKURA1&2 **Students / Young Birds Friendship Night and Poster Session**
18:00-19:30

Poster

OS4P-1 **Groupe d'Etude de Métallurgie Physique et de Physique des Matériaux (GEMPPM), Institut National des Sciences Appliquées de Lyon (INSA-Lyon)**
Stephanie Deschanel

OS4P-2 **Kungliga Tekniska Högskolan (KTH)**
Veronica Eliasson (KTH, Sweden)

OS4P-3 **Moscow State University**
Olga Volkova (Moscow State University, Rusia)

OS4P-4 **School of Material Sicience and Engineering, Seoul National University**
Cheol-Ju Shin (Seoul National University, Korea)

OS4P-5 **Seoul National University**
Jin-Sub Kim (Seoul National University, Korea)

OS4P-6 **Korea Advanced Insititute of Science and Technology (KAIST)**
Jang Hee Park (KAIST, Korea)

OS4P-7 **The University of Sydney**
Nicholas Williamson (The University of Sydney, Australia)

OS4P-8 **The University of New South Wales**
Graham Doig (The University of New South Wales, Australia)

OS4P-9 **Syracuse University**
Shailesh S. Ozarkar (Syracuse University, U.S.A.)

OS4P-10 **Rensselaer Polytechnic Institute (RPI), Syracuse Univeristy**
Marcus Ciuryla (Syracuse University, U.S.A.)

OS4P-11 **Tohoku University**
Atsushi Sakurai (Tohoku University, Japan)

OS5: Nano-mega Bubble Dynamics

ROOM 7

November 17, 2005

13:00-13:10 **OS5 Opening Remarks**
Yasuaki Kohama (Tohoku University, Japan)

OS5-1 **Nano Bubble Research and the Possible Applications**
13:10-13:30 Yasuaki Kohama (Tohoku University, Japan)

OS5-2 **Dynamics of Air Bubbles as a Drag Reduction Device for Ships**
13:30-14:00 (Invited)
Y. Kodama, M. Hinatsu, M. Makino, T. Hori, H. Kawashima (National Maritime Research Institute, Japan)

OS5-3 **Stability of Natural Convection Boundary Layer Flow on an Evenly**
14:00-14:20 **Heated Vertical Plate**
T. Aberra, S. W. Armfield and M. Behnia (The University of Sydney, Australia)

14:20-14:40 Break

OS5-4 **Monodispersed Nanobubble Formation using Porous Glass Membrane**
14:40-15:10 (Invited)
Masato Kukizaki (Miyazaki Prefecture Industrial Technology Center, Japan)

OS5-5 **Generation of Nano-Size Bubble Using SPG Membrane**
15:10-15:30 Jun Song, Shuya Yoshioka, Takuma Kato, Yasua Kohama (Tohoku University, Japan)

OS5-6 **Effect of Micro-nano Bubble on Aquatic Living Organisms, Especially**
15:30-15:50 **Attached Organisms**
Akihiro Kijima, Yasuaki Kohama, Takaharu Hosoda and Hiratsuka Toyokazu (Tohoku University, Japan)

15:50-16:10 Break

OS5-7 16:10-16:30	**Flows of Bubbly Liquids in a Vertical Pipe: Theory and Experiments** S. S. Ozarkar, A. S. Sangani (Syracuse University), Y. H. Tshang and D. L. Koch (Cornell University)
OS5-8 16:30-16:50	**Bubble Dynamics near Bio-materials in an Ultrasound Field - A Numerical Analysis** Fong Siew Wan, Klaseboer Evert (The Capricorn), Khoo Boo Cheong (National University of Singapore and Singapore-MIT Alliance), Hung Kin Chew (The Capricorn)
OS5-9 16:50-17:10	**The Effect of Rotational Degree of Freedom on Bubble Nucleation in Liquid Oxygen** T. Tokumasu and K. Ohira (Tohoku University, Japan)
OS5-10 17:10-17:30	**Application of Cavitating Jet to Improvement of Aqueous Environment** V. A. Truong, H. Iwabuchi and T. Ikohagi (Tohoku University, Japan)
OS5-11 17:30-17:50	**Overview of a New Large Cavitation Tunnel for Naval Hydroacoustics Research** T. Mori, S. Nagaya, K. Naganuma and S. Mishima (1st research center TRDI/Japan Defense Agency, Japan)
17:50-18:00	**OS5 Closing Remarks** Yasuaki Kohama (Tohoku University, Japan)

OS6: Multi-scale Functional Fluids Flow Dynamics

ROOM 1

November 17, 2005

13:00-13:05 **OS-6 Opening**
H. Nishiyama (Tohoku University, Japan)

[Plasma Flow] Chair: Prof. H. Nishiyama and Prof. M. Okubo

OS6-1 **Interphase Momentum and Heat Exchange in Turbulent Dust-laden**
13:05-13:45 **Plasma Jet under Continuous Radial Powder Injection** (Invited)
O. P. Solonenko and A. L. Sorokin (Siberia Branch of Russian Academy of Sciences, Russia)

13:45-14:00 Break

OS6-2 **Effects of Shapes and Orientations of the Substrates on the Three-**
14:00-14:20 **Dimensional Flow Fields and Particle Behaviors in a Thermal Plasma Spray Process**
H.-P. Li and X. Chen (Tsinghua University, China)

OS6-3 **Prediction on Temperature Decay of Ar Induction Thermal Plasmas by**
14:20-14:40 **Injection of PTFE Powders**
Y. Tanaka, Y. Takeuchi, Y. Uesugi (Kanazawa University, Japan) S. Kaneko and S. Okabe (Tokyo Electirc Power Company, Japan)

OS6-4 **Evaluation of Non-equilibrium for Dissociation and Ionization in**
14:40-15:00 **Induction Thermal Plasmas**
T. Watanabe, N. Atsuchi, and M. Shigeta (Tokyo Institute of Technology, Japan)

OS6-5 **Numerical Simulation on Nonthermal Plasma Induced by a**
15:00-15:20 **Nanosecond Pulsed Barrier Discharge**
M. Okubo and T. Yamamoto (Osaka Prefecture University, Japan)

15:20-15:35 Break

[Arc] Chair: Prof. T. Watanbe and Prof. M. Tanaka

OS6-6 **Electric Power of Torch Plasma Forced with High-Speed Cross-Wind**
15:35-15:55 S. I. Tanaka, A. Ito (Chuo University, Japan), T. Iwao (Musashi Institute of Technology, Japan) and T. Inaba (Chuo University, Japan)

OS6-7 **Prediction of Energy Source Properties of Hollow Cathode Arc**
15:55-16:15 S. Tashiro, M. Tanaka, (Osaka University, Japan) M. Nakatani, K. Tani and M. Furubayashi (Hitachi Zosen Corporation, Japan)

OS6-8 **Optimization of Thermal Puffer Chambers Using Multidisciplinary Simulation Techniques**
16:15-16:35 J. C. Lee, T. A. Kim and Y. J. Kim (Sungkyunkwan University, Korea)

OS6-9 **Virtual Experiment on Transient Gas Cooling Process in Compact Gas Circuit Breaker**
16:35-16:55 H. Takana (Tohoku University, Japan), T. Uchii, H. Kawano (Toshiba Corp., Japan) and H. Nishiyama (Tohoku University, Japan)

OS6-10 **Mass Spectrum Analysis of Emitted Gas during Organic Contaminant Removal from Metal Surface with an Arc in a Low Vacuum**
16:55-17:15 M. Sugimoto and K. Takeda (Akita Prefectural University, Japan)

November 18, 2005

[Magnetic Fluid and ER Fluids] Chair: Prof. S. Sudo

OS6-11 **Non-Newtonian Ferrofluid Flow in an Oscillating Magnetic Field**
9:00-9:40 (Invited)
S. Kamiyama (Tohoku University, Japan), A. Krekhov (University of Bayreuth, Germany) and M. Shliomis (Ben-Gurion University of the Negev, Israel)

OS6-12 **ER Properties and Flow Behavior of an ER Fluid Between Two Parallel Disks in Oscillatory Squeeze Flow Mode**
9:40-10:00 M. Nakano, S. Koizumi and K. Tsuge (Yamagata University, Japan)

OS6-13 **Rheology of Highly-concentrated Emulsions with Dispersed Phase of Super Cooled Inorganic Salt**
10:00-10:20 I. Masalova (Cape Peninsula University of Technology, South Africa)

OS6-14 **Influence of Magnetic Particle Concentration on Ultrasonic Propagation Velocity in a Magnetic Fluid**
10:20-10:40 M. Motozawa, Y. Matsumoto and T. Sawada (Keio University, Japan)

10:40-11:00 Break

[Functional Energy System] Chair: Prof. T. Sawada

OS6-15 **Hydrodynamic Performance of Two-Phase MHD Power Generation**
11:00-11:20 **System Using Cavitating Flow of Electrically Conducting Magnetic Fluid**
J. Ishimoto (Tohoku University, Japan)

OS6-16 **Swing Motion of Magnetic Fluid Actuators Driven by Wireless Energy**
11:20-11:40 **Supply System**
S. Sudo, T. Kashiwagi, T. Yano, H. Honma (Akita Prefectural University, Japan) and H. Nishiyama (Tohoku University, Japan)

OS6-17 **Experimental Performance Analysis of Supercritical CO_2 Rankine**
11:40-12:00 **Cycle Powered by Solar Energy**
X. R. Zhang, H. Yamaguchi (Doshisha University, Japan), K. Fujima (Mayekawa MFG. Co., Ltd., Japan), M. Enomoto (Showa Denko K. K., Japan) and N. Sawada (Showa Tansan Co., Ltd., Japan)

12:00-12:05 **OS-6 Closing**

OS7: Sonic-boom-less Flight

ROOM 6

November 17, 2005

13:00-13:10 **OS-7 Opening Speech**

OS7-1 **Flight Demonstration Projects for Supersonic Technology in JAXA**
13:10-14:00 (Invited)
Akira Murakami (Japan Aerospace Exploration Agency, Japan)

14:00-14:20 Break

OS7-2 **Aerodynamic Design of Low Boom and Low Drag Supersonic Biplane**
14:20-14:45 Daigo Maruyama, Kisa Matsushima, Kazuhiro Kusunose, and Kazuhiro Nakahashi (Tohoku University, Japan)

OS7-3 **Wing Tip Effects of Busemann's Biplane**
14:45-15:10 Masahito Yonezawa, Hiroshi Yamashita, Yuichiro Goto, Kazuhiro Kusunose, and Shigeru Obayashi (Tohoku University, Japan)

15:10-15:25 Break

OS7-4 **CFD Analysis of Shock Waves for Busemann's Biplane**
15:25-15:50 Hiroshi Yamashita, Masahito Yonezawa, Yuichiro Goto, Shigeru Obayashi and Kazuhiro Kusunose (Tohoku University, Japan)

OS7-5 **Sonic Boom Study Using Low-Muzzle-Blast Gas Gun**
15:50-16:15 Shin Oshiba and Akihiro Sasoh (Tohoku University, Japan)

OS8: Dynamics and Diagnostics of Supersonic Flows with Chemical Reaction

ROOM 2

November 17, 2005

OS8-1
13:00-13:20
Analytical and Experimental Studies for Pressure Recovery Performances of Constant Area Mixing Ducts of Ejector-Jets
E. Kitamura (Tohoku University, Japan), T. Mitani, N. Sakuranaka (Japan Aerospace Exploration Agency, Japan), S. Watanabe (Foundation for Promotion of Japanese Aerospace Technology, Japan), and G. Masuya (Tohoku University, Japan)

OS8-2
13:20-13:40
The Starting Behavior of a Supersonic Ejector Equipped with a Second-Throat
Geun Hong Park and Sejin Kwon (Korea Advanced Institute of Science and Technology, Korea)

OS8-3
13:40-14:00
Effects of Diverging Angle of Ducts on Pseudo-Shock Wave
Goro Masuya, Minho Han, Masahiro Amano, and Kenichi Takita (Tohoku University, Japan)

14:00-14:10 Break

OS8-4
14:10-14:30
An Analytical Study of Scramjet Combustion at Mach 6 Flight Conditions
T. Kishida (Tokyo Institute of Technology, Japan), S. Tomioka, T. Hiraiwa, K, Kobayashi (Japan Aerospace Exploration Agency, Japan) and H. Yamasaki (Tokyo Institute of Technology, Japan)

OS8-5
14:30-14:50
Chemical Kinetics and Radiative Property of Ablation Products in Hyperbolic Planetary Entries
Kazuhisa Fujita (Japan Aerospace Exploration Agency, Japan)

OS8-6
14:50-15:10
Experimental Study of Combined Cycle Engine Combustor in Scramjet Mode
Kanenori Kato, Takeshi Kanda, Kenji Kudo, Atsuo Murakami (Japan Aerospace Exploration Agency, Japan)

15:10-15:20 Break

OS8-7 15:20-15:50 **Force Measurement of a Large-scale Scramjet Model in Free Piston Shock Tunnels** (Invited)
H. Tanno, T. Komuro, K. Sato, K. Itoh (Japan Aerospace Exploration Agency, Japan)

OS8-8 15:50-16:10 **Observation of the Processes of Ignition and Combustion Flowfield Formation in a Supersonic Combustor with Presence of Streamwise Vortices**
Tetsuji Sunami, Katsuhiro Itoh, Kazuo Sato, Tomoyuki Komuro, Tokitada Hashimoto (Japan Aerospace Exploration Agency, Japan)

16:10-16:30 Break

OS8-9 16:30-16:50 **Three-Dimensional Flow Filed Produced by Twin Jets Injected into Supersonic Flow**
Shunsuke Koike, Koichi Tanaka, Mitsutomo Hirota, Kenichi Takita, Goro Masuya (Tohoku University, Japan)

OS8-10 16:50-17:10 **Measurement of Supersonic Flow Field Based on Transdisciplinary Approach Using Particle Tracking Velocimetry and Numerical Simulation**
H. Nakamura, N. Sato, H. Kobayashi, G. Masuya (Tohoku University, Japan)

OS8-11 17:10-17:30 **Acetone PLIF Measurement of Transverse Injection into Supersonic Flow**
H. Takahashi, M. Hirota, G. Masuya (Tohoku University, Japan)