

NIMS Conference 2010 Program at a glance (Final Version)

		Main Convention Hall			
July 12th	AM	NIMS Award	10:00~10:05	Welcome Address Prof. Sukekatsu Ushioda, President of NIMS	
			10:05~10:20	NIMS Award Ceremony	
			10:20~11:20	NIMS Award Lecture	Prof. Jean Marie Tarascon University of Picardie Jules Verne (France)
			11:20~12:10	Keynote Lecture	Prof. Akira Fujishima President of Tokyo University of Science (Japan)
	PM	Prospective Review Lectures	14:00~14:20	Prospective Review Lecture 1	Prof. Sukekatsu Ushioda President of NIMS
			14:20~15:10	Prospective Review Lecture 2	Prof. Prashant Kamat University of Notre Dame (USA)
			15:10~16:00	Prospective Review Lecture 3	Dr. Takahisa Ohno Managing Director of ICNSEE, NIMS
			16:00~16:20	Coffee Break	
			16:20~17:10	Prospective Review Lecture 4	Dr. Hideki Iba Toyota Corp. (Japan)
			17:10~18:00	Prospective Review Lecture 5	Dr. Sebastian Fiechter Helmholtz-Zentrum Berlin (Germany)
		18:30~20:30	Banquet (Okura Frontier Hotel)		
July 13th	AM	Rm. 201		Rm. 406	
		9:00~12:20 <u>OS-1</u> Theoretical and Computational Studies for the Materials Development (Dr. Sasaki)		9:00~12:30 <u>OS-2</u> Rechargeable Batteries (Dr. Takada)	
	PM	Rm. 201	Rm. 406	Rm. 102	
		14:00~17:30 <u>OS-3</u> Photovoltaics (Dr. Han)	13:30~17:30 <u>OS-4</u> Design of High Quality Fuel Cell Materials and Devices (Dr. Mori, Dr. Kim)	13:45~17:30 <u>OS-5</u> Nano Photocatalysis: Possibilities and Challenges (Dr. Ye)	
July 14th	AM	Rm. 201		Rm. 202	
		9:00~12:25 <u>OS-6</u> Nano Interface Characterization for E&E Materials (Dr. Fujita)		/	
PM	14:00~17:15 <u>OS-7</u> Practical Social Needs for Thermoelectric Power Devices (Dr. Shinohara, Dr. Isoda)		14:00~17:30 <u>OS-8</u> Environmental Catalysts and Materials (Dr. Takeuchi)		

Detailed Program (Final Version)

Day 1: July 12th, Monday

Main convention hall

- 10:00-10:05 **Welcome Address**
Prof. Sukekatsu Ushioda, President of NIMS
- 10:05-10:20 **NIMS Award Ceremony**
- 10:20-11:20 **NIMS Award Lecture**
Prof. Jean Marie Tarascon, University of Picardie Jules Verne (France)
"Recent materials advances for sustainable Li-ion batteries"
- 11:20-12:10 **Keynote Lecture**
Prof. Akira Fujishima, President of Tokyo University of Science (Japan)
"TiO₂ photocatalysis and related surface phenomena"
- 12:10-14:00 Lunch
- 14:00-14:20 **Prospective Review Lecture 1**
Prof. Sukekatsu Ushioda, President of NIMS
"Challenges of nanomaterials science to solve environment and energy problems"
- 14:20-15:10 **Prospective Review Lecture 2**
Prof. Prashant Kamat, University of Notre Dame (USA)
"Exploitation of nanostructure interface for light energy conversion"
- 15:10-16:00 **Prospective Review Lecture 3**
Dr. Takahisa Ohno, Managing Director of ICNSEE, NIMS
"Development of nanomaterials simulation technology and its challenges towards the solution of environment and energy problems"
- 16:00-16:20 Coffee Break
- 16:20-17:10 **Prospective Review Lecture 4**
Dr. Hideki Iba, Toyota Corp. (Japan)
"Expectations on innovative batteries"
- 17:10-18:00 **Prospective Review Lecture 5**
Dr. Sebastian Fiechter, Helmholtz-Zentrum Berlin (Germany)
"Nanostructured materials for light-induced water splitting, batteries and fuel cell"
- 18:30-20:30 **Banquet (Okura Frontier Hotel)**

Day 2: July 13th, Tuesday

Conference room 201

OS-1 Theoretical and Computational Studies for the Materials Development

Organizer: Dr. Sasaki

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| 9:00-9:05 | Opening remarks (Dr. Taizo Sasaki) |
| 9:05-9:55 | OS1-1 Dr. Jim A. Warren, National Institute of Standards and Technology (USA)
"Phase field modeling of reactive wetting" |
| 9:55-10:25 | OS1-2 Dr. Machiko Ode, NIMS (Japan)
"Simulation of reaction-diffusion phenomena occurring between Ir coating and Ni-Al alloy substrate using phase-field model" |
| 10:25-10:55 | OS1-3 Dr. Masato Shimono, NIMS (Japan)
"Atomic diffusion in alloys studied by molecular dynamics simulations" |
| 10:55-11:15 | Coffee break |
| 11:15-11:45 | OS1-4 Dr. Masanori Kohyama, AIST Osaka (Japan)
"First-Principles study of materials interfaces in energy and environment devices in collaboration with electron microscopy observations" |
| 11:45-12:15 | OS1-5 Prof. Osamu Sugino, ISSP, The University of Tokyo (Japan)
"First-Principles simulation of the electrocatalysis" |
| 12:15-12:20 | Closing remarks (Dr. Taizo Sasaki) |

Conference room 406

OS- 2 Rechargeable Battery Materials

Organizer: Dr. Takada

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| 9:00-9:40 | OS2-1 Dr. Kuniaki Tatsumi, AIST (Japan)
"Study on surface change of layered-oxide positive electrode materials containing Ni for Li-ion batteries during degradation tests" |
| 9:40-10:20 | OS2-2 Prof. Atsuo Yamada, The University of Tokyo (Japan)
"Electrode function and its mechanisms of lithium transition metal oxyanion compounds" |
| 10:20-15:40 | Coffee break |
| 10:40-11:20 | OS2-3 Dr. Yoshikatsu Seino, Idemitsu Kosan Co., Ltd. (Japan)
"High-rate capability of all-solid-state batteries using phosphorous sulfide solid electrolyte" |
| 11:20-11:55 | OS2-4 Dr. Tsuyoshi Ohnishi, NIMS (Japan)
"High rate and high quality LiCoO ₂ thin film synthesis by composition tuned pulsed laser deposition" |
| 11:55-12:30 | OS2-5 Dr. Xiaoxiong Xu, NIMS (Japan)
"Electrode performance of LiNiO ₂ -based materials in all-solid-state lithium batteries" |

Conference room 201**OS- 3 Photovoltaics****Organizer: Dr. Han**

- 14:00-14:35 **OS3-1** Dr. Shigeru Niki, Research Center for Photovoltaics, AIST (Japan)
"Current status and future prospects of the CIGS solar cell technology"
- 14:35-15:10 **OS3-2** Prof. Susumu Yoshikawa, Kyoto University (Japan)
"Improved photovoltaic performances of hybrid organic/inorganic solar cells using 1-D nanomaterials"
- 15:10-15:45 **OS3-3** Prof. Gerald J. Meyer, Department of Chemistry, Johns Hopkins University (USA)
"Visible light generation of chemical bonds in Fluid solution and at sensitized TiO_2 interfaces"
- 15:45-16:00 Coffee break
- 16:00-16:30 **OS3-4** Dr. Akira Sasahara, Japan Advanced Institute of Science and technology (Japan)
"Scanning probe microscope studies of dye-adsorbed titanium dioxide surfaces"
- 16:30-17:00 **OS3-5** Dr. Ivan Mora Sero, Universitat Jaume I (Spain)
"Semiconductor sensitized solar cell: limiting factors and some perspectives"
- 17:00-17:30 **OS3-6** Prof. Taro Toyoda, University of Electro-Communications (Japan)
"Semiconductor quantum dot-sensitized solar cells and photoexcited carrier dynamics"

Conference room 406**OS- 4 Design of high quality fuel cell materials and devices****Organizer: Dr. Mori, Dr. Kim**

- 13:30-13:50 **OS4-1** Dr. Toshiyuki Mori, Fuel cell materials center, NIMS (Japan)
"Design of nano-structured fuel cell materials"
- 13:50-14:10 **OS4-2** Dr. Takuya Masuda, ICNSEE, NIMS (Japan)
"In situ XAFS study on Pt/C and Pt/CeO₂/C catalysts during oxygen reduction reaction"
- 14:10-14:30 **OS4-3** Prof. Alastair N. Cormack, Alfred University (USA)
"Nano-scale structures in SOFC electrolyte materials"
- 14:30-14:50 **OS4-4** Prof. Vladimir Matolin, Charles University (Czech Republic)
"Carbon nanotube coating by rf-sputtering: cerium oxide based catalysts for proton exchange membrane fuel cell"
- 14:50-15:10 **OS4-5** Prof. Sea-Fue Wang, National Taipei University of Technology (Taiwan)
"Effects of the thickness of bi-layer cathode on the performance of IT-SOFCs"
- 15:10-15:30 **OS4-6** Prof. Tatsumi Ishihara, Kyushu University (Japan)
"Metal support solid oxide fuel cells using LaGaO₃ thin film"
- 15:30-15:50 **OS4-7** Dr. Je-deok Kim, Fuel cell materials center, NIMS (Japan)
"Anhydrous Nafion-1,2,3-Triazole membrane using room temperature solution processing"
- 15:50-16:10 **OS4-8** Prof. Hee-Woo Rhee, Sogang University (Korea)
"Polymer electrolyte membranes for high temperature PEMFC"

- 16:10-16:30 **OS4-9** Prof. Choi Young Woo, Korea Institute of Energy Research (Korea)
"Anion and cation conducting polymer electrolyte pore-filling membranes for electrochemical cells"
- 16:30-16:50 **OS4-10** Prof. Hiroyoshi Kawakami, Tokyo Metropolitan University (Japan)
"Aligned electrospun nanofiber composite membranes for fuel cell electrolytes"
- 16:50-17:10 **OS4-11** Dr. Morihiro Saito, Doshisha University (Japan)
"Development of anion-exchange membrane fuel cells with metal oxide-based cathode catalysts"
- 17:10-17:30 **OS4-12** Dr. Akimitsu Ishihara, Yokohama National University (Japan)
"Development of non-precious metal oxide-based compounds as new cathode for PEFC"

Conference room 102

OS-5 Nano Photocatalysis: Possibilities and Challenges

Organizer: Dr. Ye

- 13:45-13:55 **Opening** (Dr. Prof. Jinhua Ye)
- 13:55-14:25 **OS5-1** Prof. Detlef W. Bahnemann, Wilhelm Leibniz Universitaet Hannover (Germany)
"Novel catalysts and mechanisms for photocatalysis"
- 14:25-14:55 **OS5-2** Prof. Akihiko Kudo, Tokyo University of Science (Japan)
"Development of photocatalysts for solar hydrogen production"
- 14:55-15:25 **OS5-3** Prof. Zhigang Zou, Nanjing University (China)
"Researches on photocatalysts in the ecomaterials and renewable energy research center of Nanjing University"
- 15:25-15:45 Coffee break
- 15:45-16:15 **OS5-4** Prof. Craig Grimes, The Pennsylvania State University (USA)
"Towards photonic fuels: Photocatalytic conversion of CO₂ and water vapor to hydrocarbon fuels"
- 16:15-16:40 **OS5-5** Dr. Tatsuki Morimoto, Tokyo Institute of Technology (Japan)
"Photocatalytic and photophysical properties of rhenium(I) complexes modulated by inter-ligand aromatic interaction"
- 16:40-17:05 **OS5-6** Dr. Tanja Cuk, Lawrence Berkeley National Laboratory (USA)
"The helios solar energy research center at Berkeley: A materials approach to renewable fuels from sunlight"
- 17:05-17:30 **OS5-7** Dr. Naoto Umezawa, NIMS (Japan)
"Theoretical design of photocatalysts"
- 17:30- **Closing**

Day 3: July 14th, Wednesday

Conference room 201

OS-6 Nano Interface Characterization for E&E Materials

Organizer: Dr. Fujita

- 9:00-9:20 **Opening** (Dr. Daisuke Fujita)
- 9:20-10:00 **OS6-1** Dr. Jinghua Guo, Lawrence Berkeley National Laboratory (USA)
"Soft X-ray spectroscopic study of nanostructured materials: An emerging probe for renewable energy science"
- 10:00-10:40 **OS6-2** Prof. Shu Yamaguchi, The University of Tokyo (Japan)
"Atomic switch: Ananoionicsdevice using ion migration in nanospace"
- 10:40-11:00 Coffee break
- 11:00-11:40 **OS6-3** Dr. Artur Braun, EMPA (Switzerland)
"Some applications of synchrotron and neutron scattering and spectroscopy to energy materials research"
- 11:40-12:20 **OS6-4** Prof. Kohei Uosaki, NIMS (Japan)
"Surface X-ray scattering study on interfacial structure of single crystalline pt electrodes in solution and in contact with PEM"
- 12:20-12:25 **Closing remarks** (Dr. Masaki Takeguchi)

Conference room 201

OS-7 Practical Social Needs for Thermoelectric Power Devices

Organizer: Dr. Shinohara, Dr. Isoda

- 14:00-14:05 **Opening address** (Dr. Yoshikazu Shinohara)
- 14:05-14:30 **OS7-1** Dr. Shuichi Hase, SANGO Co. Ltd. (Japan)
"Thermo-electric generation for automotive waste heat recovery: Prospects and requirements for series applications"
- 14:30-14:55 **OS7-2** Prof. Hideo Kawahara, Institute of National Colleges of Technology, Japan
Oshima College of Maritime Technology (Japan)
"Heat-recoverable technology using thermoelectric generator for ship (-Hybrid conversion of a large car ferry-)"
- 14:55-15:20 **OS7-3** Prof. Isamu Todo, Ueyama-Shisui Co., Ltd. (Japan)
"Consideration of the thermoelectric modules expected to be used for the generation of electricity of the hot spring use"
- 15:20-15:30 Coffee break
- 15:30-15:55 **OS7-4** Prof. Takeyuki Kawaguchi, Tokyo Institute of Technology (Japan)
"Recent trends in research and development of new energy harvesting devices composed of nano-fiber materials"
- 15:55-16:20 **OS7-5** Dr. Masafumi Miyajima, BOSCH (Japan)
"Thermoelectric conversion as power source for automotive electronic components"

- 16:20-16:45 **OS7-6** Dr. Yuma Horio, YAMAHA (Japan)
"Thermoelectric material and application technology for energy harvester"
- 16:45-17:10 **OS7-7** Dr. Yasuyuki Nakamura, Frontier Material (Japan)
"Challenge to wide applications by low powered thermoelectric generator"
- 17:10-17:15 **Closing address** (Dr. Yukihiro Isoda)

Conference room 202

OS-8 Environmental Catalysts and Materials

Organizer: Dr. Takeuchi

- 14:00-14:05 **Opening remarks**
- 14:05-14:35 **OS8-1** Prof. Yoshimasa Watanabe, Hokkaido University (Japan)
"Mechanism and control of irreversible membrane fouling in water purification"
- 14:35-15:05 **OS8-2** Prof. James L. McGrath, University of Rochester (USA)
"Porous nanocrystalline silicon (pnc-Si) membranes as highly efficient filters and pumps"
- 15:05-15:35 **OS8-3** Dr. Izumi Ichinose, NIMS (Japan)
"Ultrathin free-standing nanoporous membranes for environmental applications"
- 15:35-15:50 Coffee break
- 15:50-16:20 **OS8-4** Prof. Takafumi Ueno, iCeMS, Kyoto University (Japan)
"Catalytic reactions designed using protein scaffolds from artificial enzymes to protein nanocage reactors"
- 16:20-16:50 **OS8-5** Prof. Yasuhiro Uozumi, Institute for Molecular Science (Japan)
"Organic molecular transformations in water with recyclable transition metal catalysts"
- 16:50-17:20 **OS8-6** Prof. Kimihisa Yamamoto, Tokyo Institute of Technology (Japan)
"Synthesis of fine-controlled metallodendrimers"
- 17:20-17:30 **Closing remarks**