

PROGRAM

MANA International Symposium 2011

2nd - 4th March, 2011

Venue: *Tsukuba International Congress Center EPOCHAL TSUKUBA*

(Address: 2-20-3, Takezono, Tsukuba, Ibaraki, 305-0032, Japan)

March 2nd

Opening

(Chair: Yoshio Bando)

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| 9:00 - 9:10 | Opening Address
Sukekatsu Ushioda (Chief Project Officer of MANA; President of NIMS) |
| 9:10 - 9:15 | Greetings
Mami Oyama (Director of Science and Technology Policy Bureau, MEXT) |
| 9:15 - 9:25 | Greetings
Toshio Kuroki (Program Director of WPI Program;
Deputy Director of Research Center for Science Systems, JSPS) |
| 9:25 - 9:35 | Molecular Design for Organic (Super) conductors --- Real Space vs. k-Space---
Gunzi Saito (Program Officer of WPI Program; Professor, Meijo University) |
| 9:35 - 9:50 | Outline of MANA
Masakazu Aono (Director-general of MANA, NIMS) |
| 9:50 - 10:05 | Special Speech
Heinrich Rohrer (Nobel Laureate in Physics 1986) |
| 10:05 - 10:10 | <i>Group Photograph at the Main Entrance</i> |
| 10:10 - 10:30 | <i>Coffee Break</i> |
| 10:30 - 10:50 | Progress of Nano-Materials Field
Takayoshi Sasaki (Field Coordinator of MANA, NIMS) |
| 10:50 - 11:10 | Progress of Nano-System Field
Masakazu Aono (Field Coordinator of MANA, NIMS) |
| 11:10 - 11:30 | Progress of Nano-Green Field
Kohei Uosaki (Field Coordinator of MANA, NIMS) |
| 11:30 - 11:50 | Progress of Nano-Bio Field
Takao Aoyagi (Field Coordinator of MANA, NIMS) |

11:50 - 13:20 *Lunch*

Special Lecture

(Chair: Masakazu Aono)

13:20 - 14:00 Two-dimensional carbon devices

Klaus von Klitzing (Nobel Laureate in Physics 1985)

14:00 - 14:20 *Coffee Break*

S-1 Nano-Materials 1

(Chair: Takayoshi Sasaki & Nobuo Kimizuka)

14:20 - 14:50 Novel materials for light conversion (**Invited**)

Anthony K. Cheetham (Professor, Univ. of Cambridge)

14:50 - 15:10 Hand-Operating Nanotechnology: Supramolecular Trick

Katsuhiko Ariga (MANA Principal Investigator, NIMS)

15:10 - 15:25 MOCAs

Kentaro Tashiro (MANA Scientist, NIMS)

15:25 - 15:40 Synthesis and Characterization of Indium-Based Perovskites

Alexei A. Belik (MANA Independent Scientist, NIMS)

15:40 - 16:00 *Coffee Break*

S-2 Nano-Materials 2

(Chair: Katsuhiko Ariga & Anthony K. Cheetham)

16:00 - 16:30 Self-Assembly and Interfacial Characteristics of Soft-Coordination Systems (**Invited**)

Nobuo Kimizuka (Professor, Kyushu University)

16:30 - 16:50 Nanotube Strength Probed in TEM

Dmitri Golberg (MANA Principal Investigator, NIMS)

16:50 - 17:05 Electrochromic Display Devices with Organic-Metallic Hybrid Polymers

Masayoshi Higuchi (MANA Independent Scientist, NIMS)

March 3rd

S-3 Nano-System 1

(Chair: Tomonobu Nakayama & Lars Samuelson)

9:00 - 9:30 Novel properties of topological insulator thin films of Bi₂Te₃ and Bi₂Se₃ prepared by molecular beam epitaxy (**Invited**)

Qi-kun Xue (Professor and Chair, Department of Physics Dean, School of

Sciences, Tsinghua University)

- 9:30 - 10:00 Spin pumping dc voltage in Py/Pt: Theory and Experiment (**Invited**)
Sergio M. Rezende (Professor, Universidade Federal de Pernambuco)
- 10:00 - 10:20 Self-organized Critical Electronics Using Fractally Wired Atom Switches
James K. Gimzewski (MANA Satellite Principal Investigator; Professor, UCLA)
- 10:20 - 10:40 New Types of Atomic Switches for Beyond von Neumann Computer
Tsuyoshi Hasegawa (MANA Principal Investigator, NIMS)
- 10:40 - 10:55 Electromagnetic standing waves in nano-objects
Tadaaki Nagao (MANA Independent Scientist, NIMS)
- 10:55 - 11:10 *Coffee Break*

S-4 Nano-System 2

(Chair: Kazuhito Tsukagoshi & James Gimzewski)

- 11:10 - 11:40 Semiconductor Nanowires: from Materials Physics to Device Applications (**Invited**)
Lars Samuelson (Professor, Head of the Nanometer Structure Consortium at Lund University)
- 11:40 - 12:00 Novel Synthesis and Nanoscale Characterization of Single-layer Graphene
Daisuke Fujita (MANA Principal Investigator, NIMS)
- 12:00 - 12:15 Spectral properties near the Mott transition in one-dimensional electron systems
Masanori Kohno (MANA Scientist, NIMS)
- 12:15 - 12:30 Doping and characterization of boron and phosphorus atoms in Ge nanowires
Naoki Fukata (MANA Independent Scientist, NIMS)
- 12:30 - 13:30 *Lunch*

S-5 ICYS 1

(Chair: Noboru Miura & Shunichi Hishita)

- 13:30 - 13:45 Novel ZnS nanostructures: From synthesis to applications
Xiaoseng Fang (ICYS Researcher, NIMS)
- 13:45 - 14:00 Numerical Analysis of Population Switching of Two-Level Quantum Dots in Photonic Crystals
Hiroyuki Takeda (ICYS Researcher, NIMS)
- 14:00 - 14:15 Novel Approach for the Development of Multifunctional Nanostructures
Pavuluri Srinivasu (ICYS Researcher, NIMS)
- 14:15 - 14:30 Hollow Mesoporous Silica Spheres for Drug Delivery

Yufang Zhu (ICYS Researcher, NIMS)

14:30 - 14:50 *Coffee Break*

14:50 - 17:00 *Poster Presentations* (Chair: Tsuyoshi Hasegawa)

17:00 - 18:30 *Poster Sessions*

19:00 - *Banquet*

March 4th

S-6 ICYS 2 (Chair: Daisuke Fujita & Koichi Tsuchiya)

9:00 - 9:15 Nano-interface engineering for deposition control of oxide thin films

-Two-dimensional nanosheet seed layer technique-

Tatsuo Shibata (ICYS Researcher, NIMS)

9:15 - 9:30 Fabrication of graded nano-micro-structured surface layer on metallic materials by surface severe plastic deformation

Qingsong Mei (ICYS Researcher, NIMS)

9:30 - 9:45 Nanomechanical Membrane-type Surface Stress Sensor (MSS)

Genki Yoshikawa (ICYS Researcher, NIMS)

9:45 - 10:00 The recombination of photo generated excited states in Dye-sensitized Solar Cells

Xudong Yang (ICYS Researcher, NIMS)

10:00 -10:30 *Coffee Break*

S-7 Nano-Bio 1 (Chair: Takao Aoyagi & Françoise M. Winnik)

10:30 - 11:00 Smart Polymers in Diagnostics and Drug Delivery (**Invited**)

Allan S. Hoffman (Professor, Univ. of Washington)

11:00 - 11:20 Nanoparticle-assisted Neutron Capture Therapy

Yukio Nagasaki (MANA Satellite Principal Investigator;
Professor, University of Tsukuba)

11:20 – 11:35 Cell Patterning Technology Based on Photocleavable Compounds

Jun Nakanishi (MANA Independent Scientist, NIMS)

11:35 - 13:00 *Lunch*

S-8 Nano-Bio 2

(Chair: Yukio Nagasaki & Allan S. Hoffman)

13:00 - 13:30 Quantum dots and gold nanoparticles: a mechanistic study of the factors affecting their cytotoxicity **(Invited)**

Françoise M. Winnik (Professor, University of Montreal)

13:30 - 13:50 Recent progress in smart biomaterials

Takao Aoyagi (MANA Principal Investigator, NIMS)

13:50 - 14:05 Cytocompatibility evaluation of biodegradable magnesium alloys

Akiko Yamamoto (MANA Scientist, NIMS)

14:05 - 14:35 *Coffee Break*

S-9 Nano-Green 1

(Chair: Enrico Traversa & Susumu Kitagawa)

14:35 - 15:05 Self-Assembled Organic Nanostructures for Solar Energy Conversion **(Invited)**

Michael R. Wasielewski (Professor, Northwestern University;
Director, ANSER Center)

15:05 - 15:25 Interfacial design in solid-state lithium battery

Kazunori Takada (MANA Principal Investigator, NIMS)

15:25 - 15:40 Structure of water at electrochemical interfaces studied by sum frequency generation spectroscopy

Hidenori Noguchi (MANA Scientist, NIMS)

15:40 - 15:45 *Coffee Break*

S-10 Nano-Green 2

(Chair: Kohei Uosaki & Michael R. Wasielewski)

15:45 - 16:15 Integrated Functional Pores by Soft Porous Crystals **(Invited)**

Susumu Kitagawa (Professor, Deputy Director of iCeMS, Kyoto University)

16:15 - 16:35 Piezotronics and Piezo-phototronics

Zhong Lin Wang (MANA Satellite Principal Investigator; Professor, GIT)

16:35 - 16:55 Improving the performance of intermediate temperature solid oxide fuel cells based on BaZrO₃ proton conducting electrolytes

Enrico Traversa (MANA Principal Investigator, NIMS)

16:55 - 17:10 New structure of Dye-sensitized Solar Cells with Back Contact Electrode

Masatoshi Yanagida (MANA Scientist, NIMS)

17:10 - 17:15 Closing Remarks

Yoshio Bando (MANA Chief Operating Officer, NIMS)