

PROGRAM

MANA International Symposium 2014

5th March - 7th March, 2014

Venue: *Tsukuba International Congress Center EPOCHAL TSUKUBA*

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

March 4th

18:00 - Reception

March 5th

Opening

(Chair: Yoshio Bando)

9:00 - 9:10 Opening Address

Sukekatsu Ushioda (President of NIMS)

9:10 - 9:15 Greetings

Yoshiaki Ando (Director, Basic Research Promotion Division,
Research Promotion Bureau, MEXT)

9:15 - 9:25 Greetings

Akira Ukawa (Deputy Program Director of WPI Program;
Professor, University of Tsukuba)

9:25 - 9:35 Greetings

Gunzi Saito (Program Officer of WPI Program; Professor, Meijo University)

9:35 - 9:55 Outline of MANA

Masakazu Aono (Director-general of MANA, NIMS)

Special Session to Celebrate the 50th Anniversary of Tsukuba Science City

(Chair: Masakazu Aono)

9:55 - 10:35 Special Lecture : What did I explore in half a century of research?

Leo Esaki (Nobel Laureate in Physics 1973)

10:35 - 11:15 Special Lecture : 50 years of CP violation

Makoto Kobayashi (Nobel Laureate in Physics 2008)

11:15 - 11:20 Group Photograph at the Main Entrance

11:20 - 11:40 Coffee Break

S-1 Nano-Power 1

(Chair: Samuel S. Mao, Omar Yaghi)

11:40 - 12:10 A key-step for water oxidation in artificial photosynthesis upon visible light irradiation.

Haruo Inoue (Professor, Tokyo Metropolitan University) **(Invited)**

12:10 - 12:40 Coupling magnetism to electricity in multiferroic heterostructures **(Invited)**

Ramamoorthy Ramesh (Deputy Director for Science and Technology, ORNL)

12:40 - 13:00 Theoretical prediction and experimental proof of electrocatalytic activity of boron nitride for oxygen reduction reaction

Kohei Uosaki (MANA PI, NIMS)

13:00 - 14:00 *Lunch*

S-2 Nano-Power 2

(Chair: Louis Schlapbach, Jinhua Ye)

14:00 - 14:30 Fundamental aspects of disorder-engineered black TiO₂ nanocrystals (**Invited**)

Samuel S. Mao (Director of CEEC, Lawrence Berkeley National Laboratory)

14:30 - 14:50 Bandgap science for organic thin-film solar cells (**Invited**)

Masahito Hiramoto (Professor, Institute for Molecular Science, NINS)

14:50 - 15:10 Nano-MOFs as supercapacitors

Omar Yaghi (Professor, UC Berkeley, MANA PI)

15:10 - 15:25 Additive effect on reductive decomposition and binding of carbonate-based solvent toward solid electrolyte interphase formation in lithium-ion battery

Yoshitaka Tateyama (MANA Group Leader, NIMS)

15:25 - 15:45 *Coffee Break*

15:45 - 17:15 **Poster Presentations**

(Chair: Tomonobu Nakayama)

17:15 - 17:20 *Break*

17:20 - 19:00 **Poster Sessions**

March 6th

S-3 Nano-Life 1

(Chair: Oren Scherman, Francoise Winnik)

9:00 - 9:30 Spreading and spontaneous motility of cellular aggregates (**Invited**)

Francoise Brochard Wyart (Professor, Institut Curie)

9:30 - 10:00 Precise control of surface properties by polyelectrolyte brush immobilization (**Invited**)

Atsushi Takahara (Professor, WPI-I₂CNER, Kyushu University)

10:00 - 10:20 On-off switchable nano-fibrous structured materials for cancer therapy

Mitsuhiro Ebara (MANA Scientist, NIMS)

10:20 - 10:40 *Coffee Break*

S-4 Nano-Life 2

(Chair: Atsushi Takahara, Takao Aoyagi)

- 10:40 - 11:10 Dynamic host-guest interactions at the interface between supramolecular chemistry and materials science (**Invited**)
Oren Scherman (Director of the Melville Laboratory, University of Cambridge)
- 11:10 - 11:40 Fishnet-like microstructures for efficient trapping of rare cells in blood (**Invited**)
Yong Chen (Professor, WPI-iCeMS, Kyoto University)
- 11:40 - 12:00 New forays into softmatter self-assembly through nanoarchitectonics
Francoise Winnik (Professor, Université de Montréal, MANA Satellite PI)
- 12:00 - 13:00 *Lunch*

S-5 Nano-Materials 1

(Chair: Toshiaki Enoki, Yoshio Bando)

- 13:00 - 13:30 Semiconductor nanowires for artificial photosynthesis (**Invited**)
Peidong Yang (Professor, UC Berkeley)
- 13:30 - 14:00 Inorganic nanotubes and fullerene-like nanoparticles at the crossroad between materials science and nanotechnology (**Invited**)
Rashef Tenne (Professor, Weizmann Institute of Science)
- 14:00 - 14:30 Carbon nanotubes ~Toward designing the safer nanomaterial~ (**Invited**)
Morinobu Endo (Professor, Shinshu University)
- 14:30 - 14:50 Laser compatible in-situ transmission electron microscopy
Dmitri Golberg (MANA PI, NIMS)
- 14:50 - 15:10 *Coffee Break*

S-6 Nano-Materials 2

(Chair: Morinobu Endo, Toyohiro Chikyo)

- 15:10 - 15:40 Interplay of geometry and chemistry in the electronic structure of graphene nanostructures.
Toshiaki Enoki (Professor, Tokyo Institute of Technology) (**Invited**)
- 15:40 - 16:10 Templated nano/microstructured materials - Block copolymers and coiled algae –
Tomokazu Iyoda (Professor, Tokyo Institute of Technology) (**Invited**)
- 16:10 - 16:30 Super-tunneling?
Christian Joachim (Professor, CEMES-CNRS, MANA Satellite PI)
- 16:30 - 16:45 Redoxable transition-metal hydroxide nanostructures
Renzhi Ma (MANA Scientist, NIMS)
- 16:45 - 17:00 All-metal nanospace materials toward electrochemical applications
Yusuke Yamauchi (MANA Independent Scientist, NIMS)

18:30 - *Banquet*

March 7th

S-7 Nano-System 1

(Chair: Nicolas Lorente, Tomonobu Nakayama)

- 9:30 - 10:00 High-speed force microscopy - with a light touch (**Invited**)
Mervyn John Miles (Professor, University of Bristol)
- 10:00 - 10:30 Mapping intermolecular force-fields with sub-angstrom resolution (**Invited**)
Phillip Moriarty (Professor, University of Nottingham)
- 10:30 - 10:50 *Coffee Break*

S-8 Nano-System 2

(Chair: Philip Moriarty, Christian Joachim)

- 10:50 - 11:20 Coherent computing by OPO phase transition (**Invited**)
Yoshihisa Yamamoto (Professor, Stanford University)
- 11:20 - 11:50 Amoeba-inspired nanoarchitectonic computing (**Invited**)
Masashi Aono (Associate Professor, WPI-ELSI, Tokyo Tech)
- 11:50 - 12:10 EXOSOMES
James Gimzewski (UCLA)
- 12:10 – 13:10 *Lunch*

S-9 Nano-System 3

(Chair: Mervyn John Miles, James K. Gimzewski)

- 13:10 - 13:40 Spin correlations of supported nano-objects (**Invited**)
Nicolas Lorente (Professor, CIN2, CSIC)
- 13:40 - 14:10 Physics and application of spin currents (**Invited**)
Eiji Saitoh (Professor, WPI-AIMR, Tohoku University)
- 14:10 - 14:30 Antiferromagnetic Topological Insulator with Spin-Polarized Zero-Resistance Edge Current
Xiao Hu (MANA PI, NIMS)
- 14:30 - 14:40 Closing Remarks
Yoshio Bando (MANA Chief Operating Officer, NIMS)