

## PROGRAM

### MANA International Symposium 2013

27<sup>th</sup> February - 1<sup>st</sup> March, 2013

Venue: *Tsukuba International Congress Center EPOCHAL TSUKUBA*

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

#### **February 26<sup>th</sup>**

18:00 - Reception

#### **February 27<sup>th</sup>**

#### **Opening**

(Chair: Yoshio Bando)

9:00 - 9:05 Opening Address

**Sukekatsu Ushioda** (President of NIMS)

9:05 - 9:10 Greetings

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

9:10 - 9:20 Greetings

**Toshio Kuroki** (Program Director of WPI Program;  
Senior Advisor of Research Center for Science Systems, JSPS)

9:20 - 9:30 Greetings

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

9:30 - 9:50 Director Speech

**Masakazu Aono** (Director-General of MANA, NIMS)

#### **Special Lecture 1**

(Chair: Masakazu Aono)

9:50 - 10:35 Cross-coupling reactions of organoboranes: An easy way for carbon-carbon bonding

**Akira Suzuki** (Nobel Laureate in Chemistry 2010)

10:35 - 10:40 *Group Photograph at the Main Entrance*

10:40 - 10:55 *Coffee Break*

#### **S-1 Nano-Power 1**

(Chair: Andrew A. Gewirth, Kohei Uosaki)

10:55 - 11:25 Sunlight-driven hydrogen formation by membrane-supported photoelectrochemical water splitting (**Invited**)

**Nathan S. Lewis** (Director; Joint Center for Artificial Photosynthesis, CalTech)

11:25 - 11:55 Photoinduced charge separation for energy and biological applications (**Invited**)



10:00 - 10:20 Nanoarchitectonics-driven interfaces and nanoparticles for therapeutic applications  
**Francoise Winnik** (MANA Satellite Principal Investigator;  
 Université de Montréal)

10:20 - 10:35 Photoactivatable nanopatterned surface to explore cellular nanoarchitectonics in collective migration  
**Jun Nakanishi** (MANA Independent Scientist; NIMS)

10:35 - 10:55 *Coffee Break*

**S-4 Nano-Life 2**

(Chair: Buddy Ratner, Takao Aoyagi)

10:55 - 11:25 Supramolecular nanoscale architectures for energy and medicine (**Invited**)  
**Samuel I. Stupp** (Professor of Materials Science, Chemistry, and Medicine  
 Northwestern University)

11:25 - 11:55 Engineering neo-biomimetics: Materials engineering based on biological diversity and self-organization. A brief introduction of “Engineering Neo-Biomimetics” (**Invited**)  
**Masatsugu Shimomura** (Professor; WPI-AIMR, Tohoku University)

11:55 - 12:15 Oral redox polymer therapeutics  
**Yukio Nagasaki** (MANA Satellite Principal Investigator; University of Tsukuba)

12:15 - 12:30 Dynamic regulation of stem cell behavior through materials nanoarchitectonics: the role of Hippo pathway in stem cell mechanosensing  
**Giancarlo Forte** (MANA Scientist; NIMS)

12:30 - 13:30 *Lunch*

**S-5 Nano-Materials 1**

(Chair: Seiji Shinkai, Katsuhiko Ariga)

13:30 - 14:00 Nanostructured inorganic-organic framework materials (**Invited**)  
**Anthony K. Cheetham** (Professor; University of Cambridge)

14:00 - 14:30 Advanced molecular design of functional organic materials (**Invited**)  
**Takuzo Aida** (Professor; University of Tokyo)

14:30 – 14:50 Nanogenerators as new energy technology and piezotronics for functional systems  
**Zhong Lin Wang** (MANA Satellite Principal Investigator; Georgia Tech)

14:50 - 15:10 *Coffee Break*

**S-6 Nano-Materials 2**

(Chair: Anthony K. Cheetham, Zhong Lin Wang)

15:10 - 15:40 Dynamic polymer-polymer recognition inspired by helix-forming polysaccharides

(Invited)

- Seiji Shinkai** (Professor; Kyushu University, Kyushu ISIT, Sojo University)  
 15:40 - 16:10 From polyelectrolyte multilayers to "Soft" nanomaterials and -devices (**Invited**)  
**Gero Decher** (Professor; Université de Strasbourg and CNRS)  
 16:10 - 16:30 Hand-operating nanotechnology: Mechanically tunable molecular recognition  
**Katsuhiko Ariga** (MANA Principal Investigator; NIMS)  
 16:30 - 16:50 *Coffee Break*

**S-7 Nano-Materials 3**

(Chair: Gero Decher, Louis Schlapbach)

- 16:50 - 17:20 Next generation communication system utilizing high-speed graded index plastic optical fiber and high-definition large display (**Invited**)  
**Yasuhiro Koike** (Professor; Keio University)  
 17:20 - 17:35 Oriented assembly of polyhedral plasmonic nanoparticle clusters: Nanoscale interparticle gaps, fano resonances and highly uniform SERS enhancement factors  
**Joel Henzie** (MANA Independent Scientist; NIMS)  
 17:35 - 17:50 Optically- and electrically-driven dual-gate organic-thin-film transistor  
**Ryoma Hayakawa** (MANA Independent Scientist; NIMS)  
 19:00 - *Banquet*

**March 1<sup>st</sup>**

**Special Lecture 2**

(Chair: Masakazu Aono)

- 9:00 - 9:45 High Tc Superconductivity - after a quarter century - a technology ready for Take Off  
**J. Georg Bednorz** (Nobel Laureate in Physics 1987)  
 9:45 - 9:50 *Break*

**S-8 Nano-System 1**

(Chair: Michelle Y. Simmons, Xiao Hu)

- 9:50 - 10:20 Skyrmion – particle in helical magnets (**Invited**)  
**Naoto Nagaosa** (Professor; University of Tokyo)  
 10:20 - 10:50 Electrical control of magnet (**Invited**)  
**Teruo Ono** (Professor; Kyoto University)

10:50 - 11:05 Surface-molecular hybrid superconductors: Towards realization of majorana fermions  
**Takashi Uchihashi** (MANA Scientist, NIMS)

11:05 - 11:25 *Coffee Break*

**S-9 Nano-System 2**

*(Chair: Rodney Ruoff, James K. Gimzewski)*

11:25 - 11:55 Quantum computing in silicon with donor electron spins (**Invited**)  
**Michelle Y. Simmons** (Professor; CQC2T, School of Physics,  
 University of New South Wales)

11:55 - 12:25 Deterministic doping for nanoelectronics and the application to biological system (**Invited**)  
**Takahiro Shinada** (Senior Officer; AIST)

12:25 - 12:40 Tuning of magnetic and conducting properties of nanoscale graphene  
**Katsunori Wakabayashi** (MANA Independent Scientist; NIMS)

12:40 - 13:40 *Lunch*

**S-10 Nano-System 3**

*(Chair: Teruo Ono, Tsuyoshi Hasegawa)*

13:40 - 14:10 Graphene-based, graphene-derived, and new carbon materials (**Invited**)  
**Rodney Ruoff** (Professor; University of Texas at Austin)

14:10 - 14:40 Molecular theory about underwater stones in graphene material science (**Invited**)  
**Elena Sheka** (Professor; Peoples' Friendship University of Russia)

14:40 - 15:00 Self-crystallization of organic semiconductor for high performance field-effect transistors on any substrate  
**Kazuhiro Tsukagoshi** (MANA Principal Investigator, NIMS)

15:00 - 15:20 TBA  
**James K. Gimzewski** (MANA Satellite Principal Investigator, UCLA)

**Closing**

15:20 - 15:30 Closing Remarks  
**Yoshio Bando** (MANA Chief Operating Officer, NIMS)