

The 4th Sweden-Japan Workshop on Bio-Nanotechnology

November 13 (Mon) – 14 (Tue), 2006

National Institute for Materials Science, Tsukuba, Japan

November 13

09:00-09:20

Opening remarks

Lars Rask, Swedish Foundation for Strategic Research

Masayuki Takahashi, Ministry of Education, Culture, Sports, Science and
Technology

Thomas Laurell, Lund University

Masuo Aizawa, Tokyo Institute of Technology

Opening Session

Session Chair: Prof. Thomas Laurell

09:20-09:40

Masuo Aizawa, Tokyo Institute of Technology

Advances and Challenges of Bio-Nanotechnology / Nano-Biotechnology

Session I

Nano-bioelectronics

Session Chair: Prof. Thomas Laurell

09:40-10:05

Agneta Richter-Dahlfors, Karolinska Institute

Recording and Regulating Cell Signalling by Organic Electronics

10:05-10:25

Coffee break

10:25-10:45

Yuji Miyahara, National Institute for Materials Science

Detection of Biomolecular Recognition using Bio-transistor

10:45-11:10

Olle Inganäs, Linköping University

Decorated DNA - Templates for Organic Nanoelectronics

Session II

Manipulation and analysis of cell and biomolecules on chip

Session Chair: Prof. Yuji Miyahara

11:10-11:30

Takehiko Kitamori, The University of Tokyo

Nano Space Chemistry on Microchip

11:30-12:40

Lunch

12:40-13:05

Thomas Laurell, Lund University

Cell Manipulation and Separation in Microfluidic Systems

13:05-13:25

Osamu Niwa, National Institute of Advanced Industrial Science and
Technology

On-chip Enzyme Immunoassay of a Cardiac Marker Combined with
Portable Surface Plasmon Resonance (SPR) System

13:25-13:50 **Helene Andersson**, Royal Institute of Technology
High Throughput Single Cell Clone Analysis

Session III *Biomedical Application*

Session Chair: **Prof. Olle Inganäs**

13:50-14:10 **Teruo Okano**, Tokyo Women's Medical University
Three Dimensional Tissue Regeneration by Cell Sheet Engineering

14:10-14:35 **Martin Wiklund**, Royal Institute of Technology
Ultrasonic Standing Waves in Lab-on-chip Systems: A Flexible and Gentle Manipulation Tool in Cell- and Bead-based Biotechnology Applications

14:35-14:55 **Kazunori Kataoka**, The University of Tokyo
Smart Supra-macromolecular Assemblies as Nanocarriers for Gene and Drug Delivery

14:55-15:25 *Coffee break*

15:25-15:50 **Fredrik Nikolajeff**, Uppsala University
Nanotechnology as an Enabling Tool for Biochemical Analysis

15:50-16:10 **Yoshiki Katayama**, Kyushu University
New Concept for Gene Therapy using Intracellular Signal-Responsive Gene Regulation System

Session IV *Nanoscience and Nanomaterials for Biotechnology*

Session Chair: **Prof. Kazunori Kataoka**

16:10-16:35 **Fredrik Höök**, Lund University
Immobilized Lipid Vesicles for Nanoscale Sensing Applications

16:35-16:55 **Tadashi Matsunaga**, Tokyo University of Agriculture and Technology
Development of Nano-scale Engineered Biomagnetite for Biosensing

16:55-17:20 **Mats Nilsson**, Uppsala University
Amplified Single-molecule Detection for Bioanalytical and Single-cell Biology Studies

17:20-17:40 **Yoshinobu Baba**, Nagoya University
Nanodevice and Nanomaterials for Bioanalysis

November 14

Session I ***Biomimetics material and bio-sensing application***

Session Chair: Prof. Per Kjellbom

09:00-09:20 **Toshimi Shimizu**, National Institute of Advanced Industrial Science and Technology

Supramolecular Nanotube Hosts for Encapsulation of Biomacromolecules

09:20-09:40 **Eiry Kobatake**, Tokyo Institute of Technology

Design of Functional Protein Materials for Biosensing

09:40-10:05 **Igor Zoric**, Chalmers University of Technology

Supported Metallic Nanodisks for

Plasmon Mediated Chemistry and High Sensitivity Optical Biosensing

10:05-10:25 **Tetsuya Haruyama**, Kyushu Institute of Technology

Nano-structured Artificial Enzyme Membrane and its Application for Bio-surveillant-sensor

10:25-10:45 *Coffee break*

Session II ***Biomolecular detection***

Session Chair: Prof. Teruo Okano

10:45-11:05 **Hideki Kambara**, Hitachi, Ltd.

From Genomic and Other -omic Analysis to a Life-surveyor

11:05-11:30 **Mikael Käll**, Chalmers University of Technology

Plasmonics for Molecular Detection at the Nanoscale

11:30-12:45 *Lunch*

12:45-13:05 **Yoshio Ishimori**, Toshiba Corp.

Eco-sensor and Eco-chip

13:05-13:25 **Shozo Fujita**, Fujitsu Laboratories Ltd.

Protein Detection Technology Using Nanometer-scale Functional DNA Units

Session III ***Cell and protein based device***

Session Chair: Prof. Mikael Käll

13:25-13:50 **Per Kjellbom**, Lund University

Molecular Gating Mechanism of Water Channel Proteins – Water Homeostasis & Technological Applications

13:50-14:10 **Keiichi Torimitsu**, NTT Basic Research Laboratories

Receptor Protein Conformation/Function and its Device Application

Session IV *Poster Session*

Session Chair: Prof. Tetsuya Haruyama

- 14:10-14:40 Preview of the poster session(Three minutes each)
P1. **Mikako Saito**, Tokyo University of Agriculture and Technology
Quantitative Gene Introduction into Single-cells by Nanoinjection system
P2. **Naoya Takeda**, Waseda University
Individual Single Cell Manipulation with Versatile Microfluidic Chamber Array
P3. **Hisakage Funabashi**, Cornell University
Enzymatic Mass Production of Branched DNA Using Rolling Circle
Amplification
P4. **Michiya Matsusaki**, Osaka University
Nanosphere Induces Specific Gene Expression in Human Dendritic Cells
P5. **Junji Watanabe**, Osaka University
Biom mineralization of Hydrogels for Implantable Materials
P6. **Yuki Tanaka**, Tokyo Women's Medical University
Development of Cell-based Micro Chemistry Systems
P7. **Toshiro Ohashi**, Tohoku University
Measurement of Traction Forces in Smooth Muscle Cells
using Matrix Devices and Mechanical Role of Cytoskeletons
P8. **Kae Sato**, The University of Tokyo
Microchip-based Osteosis System
- 14:40-16:10 Poster Session
- 16:10-16:30 **Closing remarks**
Thomas Laurell, Lund University
Masuo Aizawa, Tokyo Institute of Technology