

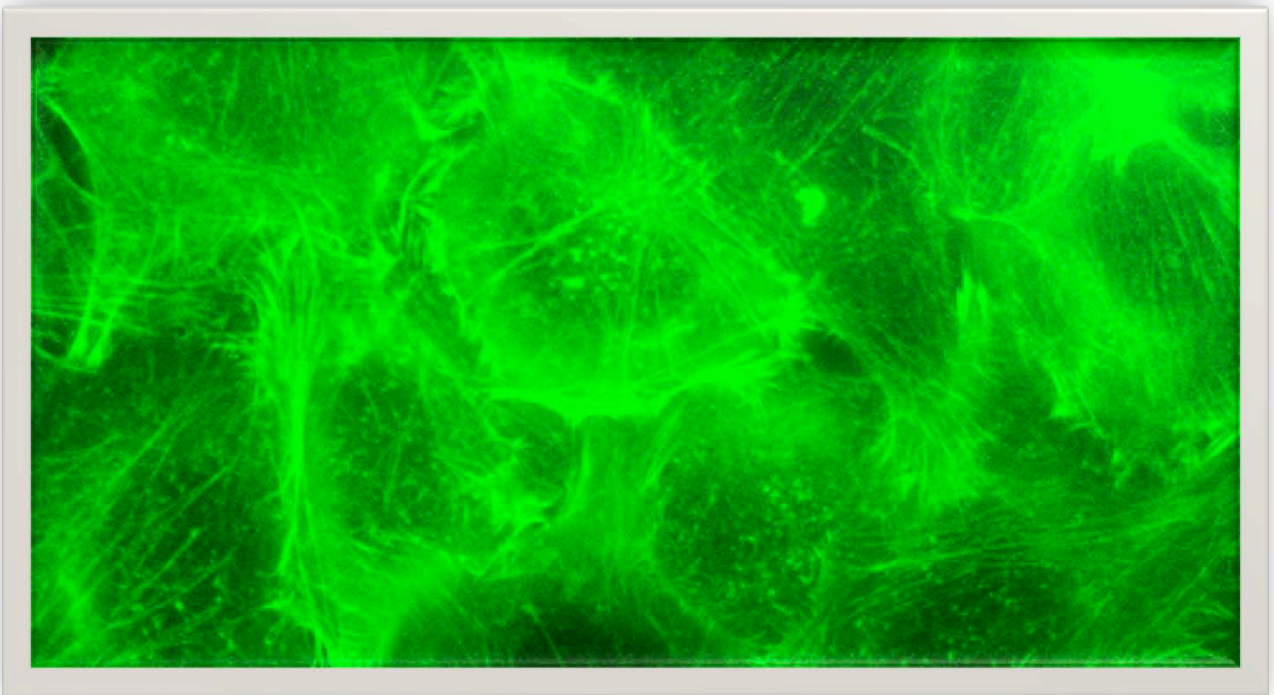
# Nano · Biomedicine Symposium

ナノ・バイオメディシン シンポジウム

第4回ナノ・バイオメディカル学会大会

February 21-22, 2011

Noyori Conference Hall, Nagoya University



Sponsored by:

EcoTopia Science Institute, Nagoya University

Global COE for Education and Research in Micro-Nano Mechatronics

Uehara Foundation

## Plenary remarks

February 21, 2011

- 9:30 – 9:35 Opening Remarks  
Fumio WATARI President of Nano-Biomedical Society
- 9:35 - 9:45 Greeting & Introduction about GCOE  
Goro OBINATA Vice Director of EcoTopia Science Institute  
GCOE Secretary General

## Scientific program

Session 1 Nano Risk 1

- Key note lecture 1 Chair Shinya TOYOKUNI
- 9:40 – 10:10 *Gaku ICHIHARA, Takahiro KOBAYASHI, Seiji OMURA, Yuji FUJITANI, Weihua LI, Xuncheng DING, Qiangyi WANG, Ying LIU, Yusuke HIRAKU, Sahoko ICHIHARA (Graduate School of Medicine, Nagoya University)*  
Occupational health survey on factory handling Titanium dioxide.
- 10:10 – 10:50 *Ilje YU (Toxicological Research Center, Hoseo University, Korea)*  
Safety Assessment of Nanomaterials

10:50 – 11:05 Intermission (休憩)

- Key note lecture 2 Chair Ilje YU
- 11:05 – 11:35 *Shinya TOYOKUNI, Li JIANG, Qian HU, Hirotaka NAGAI, Yasumasa OKAZAKI, Yoriko YAMASHITA, Shinya AKATSUKA (Graduate School of Medicine, Nagoya University)*  
Molecular mechanisms of asbestos-induced mesothelial carcinogenesis
- 11:35 – 12:15 *Lang TRAN (Institute of Occupational Medicine, Edinburgh, UK)*  
Risk assessment of multi wall carbon nanotubes.

12:15 – 13:45 Lunch (昼食)

## Session 2 Nano Risk 2

Chair Gaku ICHIHARA

13:45 – 14:00 Naomi HISANAGA, Kiyoshi SAKAI, Eiji SHIBATA, Michihiro KAMIJIMA, Hisao NAITO, Gaku ICHIHARA  
(Aichi University of Education)

Are nonasbestos nanofibers detected in human lung tissue in Japan mesotheliomagenic?

14:00 – 14:15 Shigeaki ABE, Nobuki IWADERA, Sachiko ITOH, Kosuke ISHIKAWA, Tsukasa AKASAKA, Motohiro UO, Yasutaka YAWAKA, Yoshinori KUBOKI, Fumio WATARI, Daisuke HAYASHI, Tomoya TAKADA and Tetsu YONEZAWA  
(Graduate School of Dental Medicine, Hokkaido University)  
Biodistribution of several micro-/nano- materials in mice and their biocompatibility

14:15 – 14:30 Kun'ichi MIYAZAWA (National Institute for Materials Science)  
Synthesis, structure and properties of fullerene nano-whiskers

## Session 3 Stem Cell and Cell Culture

Key note lecture 3

Chair Fumio WATARI

14:30 – 15:00 Minoru UEDA (Graduate School of Medicine, Nagoya University)  
Stem cell based cytokine therapy for central nerve Injury

15:00 – 15:15 Rena MATSUMOTO, Masanori NISHI, Toshimasa UEMURA, Isamu YAMAGUCHI, Yasuaki TAKAGI, HarukiKANEDA, Toshiyuki IKOMA Junzo TANAKA (Nanosystem Reseach Institute, AIST)  
Tilapia scale collagen facilitate the osteoblastic differentiation of human mesenchymal stem cells

15:15 – 15:30 Tsukasa AKASAKA, Shigeaki ABE, Motohiro UO, Fumio WATARI  
(Graduate School of Dental Medicine, Hokkaido University)  
Cell culture on thin films of carbon nanotubes

15:30 – 15:45 Toshimasa UEMURA, Reiko KANGOORI  
(Nanosystem Reseach Institute, AIST)  
Three Dimensional Cancer Tissue Cultured by RWV Bioreactor and the Effect of Anticancer Drug

15:45 – 16:00 Koichi IMAI, Fumio WATARI, Tetsunari NISHIKAWA, Akio TANAKA and Shoji TAKEDA (Department of Biomaterials, Osaka Dental University)  
In Vitro study of cell differentiation by mouse embryo

stem cells on C60 fullerene

16:00–16:15 Intermission (休憩)

#### Session 4 Mechano-biology

Key note lecture 4

Chair Koji IKUTA

16:15 – 16:45 Masahiro SOKABE (*Graduate School of Medicine, Nagoya University*)

Nano-mechanobiology: Sensing mechanical stimuli and substrate rigidity

16:45 – 17:00 Tomoyuki KAWAHARA, Masaya HAGIWARA, Yoko YAMANISHI, Fumihito ARAI (*Graduate School of Engineering, Nagoya University*)

Stimulus response measurement of microorganisms by magnetically driven microtool in a microfluidic chip

17:00 – 17:15 Madoka YAMAGUCHI, Masahiro NAKANO, Hiroyuki MARUYAMA, Shige H. YOSHIMURA, Kaori HIRAHARA, Yoshikazu NAKAYAMA (*Graduate School of Engineering, Osaka University*)

Single-molecule-measurement of the specific interaction force between proteins using a carbon nanotube probe

#### Session 5 Mechatronics

Key note lecture 5

Chair Masahiro SOKABE

17:15– 17:45 Koji IKUTA (*Graduate School of Information Science and Technology, University of Tokyo*)

Nano /Micro Robotics Fabricated by Micro/Nano Stereolithography for Future Biomedicine

17:45 – 18:00 Masaru KOJIMA, Masahiro NAKAJIMA, Michio HOMMA, Kingo TAKIGUCHI, Takao KONDO, Toshio FUKUDA (*Graduate School of Engineering, Nagoya University*)

Evaluation of biological clock activity capsulated by phospholipid-coated microdroplet

18:00 – 18:15 Shuji YAMAZAKI, Sungho LEE, Keiichi INUKAI, Katsuya KATO, Toshihiro KASUGA (*Department of Frontier Materials, Nagoya Institute of technology*)

Synthesis of imogolite and its possibility for biomedical applications

18:30 -20:00 MIXER 懇親会 (於：レストラン花の木)

February 22, 2011

## Session 6 Drug delivery

Key note lecture 6

Chair Nobutaka HANAGATA

9:00 – 9:40 Daniel T. KAMEI (*Department of Bioengineering, UCLA, USA*)  
Engineering Transferrin for Targeted Drug Delivery

9:40 – 9:55 Takuma TSUJI, Ricky Y. T. CHIU, and Daniel T. Kamei  
(*Graduate School of Engineering, Nagoya University*)  
Investigation of systemic drug delivery applications for  
a transferrin variant

9:55 – 10:10 Yufang ZHU, Nobutaka HANAGATA (*International Center for  
Young Scientist, NIMS*)  
 $\text{Fe}_3\text{O}_4@ \text{SiO}_2$  hollow mesoporous spheres as potential  
carriers for anticancer drug delivery

10:10 – 10:25 Hisataka MARUYAMA, Naoya INOUE, Taisuke MASUDA, Fumihto  
ARAI (*Department of Mechanical Engineering, Nagoya University*)  
Optical pH regulation for selective injection of nanotool  
into a specific cell using photochromic chemical

10:10 – 10:30 Intermision (休憩)

Chair Daniel KAMEI

10:45 – 11:00 Chunyi ZHI, Wenjun MENG, Tomohiko YAMAZAKI, Yoshio  
BANDO, Dmitri GOLBERG, Chengchun TANG, Nobutaka  
HANAGATA (*International Center for Materials, Nanoarchitectonics,  
NIMS*)  
BN nanospheres as CpG ODN carrier for activation of  
toll-like receptor 9

11:00 – 11:15 Ling ZHANG, Y. KAIZUKA, Nobutaka HANAGATA (*NIMS*)  
Molecular organizations at the live cell-biomembrane  
interface

11:15 – 11:30 Wenjun MENG, Tomohiko YAMAZAKI, Nobutaka HANAGATA  
(*NIMS*)  
Construction of nuclease-resistance phosphodiester CpG  
oligonucleotides for pollinosis therapy

11:30 – 11:45 Tetsunari NISHIKAWA, Kazuya MASUNO, Kazuya TOMINAGA, Masahiro WATO, Mayu KOKUBU, Koichi IMAI, Shoji TAKEDA, Michio HIDAHA, Akio TANAKA (Department of Oral Pathology, Osaka dental University)  
Tissue affinity and chemical characteristics of coral

11:45 – 13:15 Lunch (昼食)

Session 7 Biomaterial and others

Key note lecture 7

Chair Fumio NOGATA

13:15 – 13:45 Fumio WATARI  
Nanomaterial to induce nano-level bioreaction

13:45 – 14:00 Masaya SUZUKI, Eri SAKAYORI, Chieko IKEDA, Keiko NAGAYOSHI, Keiichi INUKAI, Masayoshi MAEDA, Katsuhiko TSUKIMURA, Toshi NISHIMOTO, Terufumi NAKA, Taro SANOU, Kenji HIROOKA, Katsuhiko INAMOTO Masateru YOSHIKAWA, Katsuhiko KITAMURA. (AIST)  
Role of Nano material in carbon dioxide supply system for facilities gardening cultivation

14:00–14:15 Yoshinori KUBOKI Toshitake FURUSAWA Masaaki SATOU, Sun YONGUN, Hiderou UNUMA, Shigeaki ABE, Tsukasa AKASAKA, Motohiro UO, Fumio WATARI, Hiroko TAKITA (Hokkaido University)  
Analysis of interaction between titanium and serum proteins by chromatography

14:15 – 14:30 Intermission (休憩)

Chair Jiro USUKURA

14:30 – 14:45 Fumio NOGATA, Yasunari YOKOTA (R&D Center for Human Medical Engineering, Gifu University)  
A new technique for real time visualization of the human Heartbeat

14:45 – 15:00 Chiaki TERASHIMA, Yasuhiro MIYAHARA, Nagahiro SAITO, Osamu TAKAI (Graduate School of Engineering, Nagoya University)  
Fabrication of surface modification for the selective immobilization of bacteria

- 15:00 – 15:15 *Taichi TENKUMO* Tsutomu SUGAYA, Masamitsu KAWANAMI, Fumio WATARI (Graduate School of Dental Medicine, Hokkaido University)  
Development of nano-hydroxyapatite-collagen composite with fibrinogen
- 15:15 – 15:30 *Xiong LU, Yan-nan GUO, Fumio WATARI* (School of Material Science and Engineering, Southwest Jiaotong University, China)  
Computer simulation of the interaction between aspartic acid and titanium oxide surfaces
- 15:30 – 15:45 *Ke Cao, Keiko Tamiya-Koizumi, Kouji Tanaka, Mamoru Kyogashima, Mitsuhiro Nakamura, Yoshiko Banno, Yuji Komizua, Ryuichi Ueoka, Motoshi Suzuki* (Graduate School of Medicine, Nagoya University)  
Alteration of lipid constituent in cancer cell membrane induced by hybrid liposome