20th Anniversary
MHS 2009 & Micro-Nano Global COE
2009 International Symposium on Micro-NanoMechatronics and Human Science
(From Micro & Nano Scale Systems to Robotics & Mechatronics Systems)
Symposium on “COE for Education and Research of Micro-Nano Mechatronics”
The Global COE Program, Nagoya University
Symposium on “System Cell Engineering by Multi-scale Manipulation”
Scientific Research of Priority Areas, MEXT, Japan
Symposium on “Next-Generation Actuators Leading Breakthroughs”
Scientific Research of Priority Areas, MEXT, Japan

November 8 (Sun)
Location: Noyori Conference Hall

18th International Micro Robot Maze Contest 2009
Categories
Category 0: Micro Robot Racer
Category 1: Mountain Climbing Micro Robot Maze
Category 2: Autonomous Micro Robot Maze
Category 3: Micro Biped Robot

10:00 Opening Ceremony
10:20 <Preliminary Heat>
12:00 Lunch Break
13:00 < Preliminary & Final Heat>
16:00 Break & Demonstration
16:30 Award and Closing Ceremony

Optional Events
9:00-12:30 Micro Robotics School for Elementary School Children
November 9 (Mon)
Location: Toyoda Auditorium Nagoya University Symposion

Opening Remarks
Chairperson: Goro Obinata, Nagoya University

9:30-9:50
President Michinari Hamaguchi, Nagoya University, Japan
Prof. Toshio Fukuda, Nagoya University, Japan
Prof. Toshiro Higuchi, University of Tokyo, Japan
Mr. Fumio Hasegawa, Deputy Director-General, Industry & Distribution, Civic & Economic Affairs Bureau, City of Nagoya
Mr. Hiroyuki Kobayashi, Senior Managing Director, Chubu Industrial and Regional Advancement Center

Plenary Lecture
Chairperson: Toshio Fukuda, Nagoya University

9:50-10:35 Plenary Lecture 1
Development of Evolutionary and Self-Assembling Robot-Organisms
Prof. Paul Levi, University of Stuttgart, Germany

10:35-10:45 Coffee Break

Chairperson: Kazuo Sato, Nagoya University

10:45-11:30 Plenary Lecture 2
Micro-optical Medical Monitoring
Prof. Hans Zappe, University of Freiburg, Germany

11:30-12:15 Plenary Lecture 3
Microfluidic Systems for Fast Diagnosis
Prof. Gwo-Bin Lee, National Cheng Kung University, Taiwan

12:15-13:20 Lunch

Poster Session
Chairperson: Masahiro Ohka, Nagoya University
13:20-14:40

P1-1 Fabrication of High Aspect Ratio Microcoils for Electromagnetic Actuators
Daiji Noda, Masaru Setomoto, and Tadashi Hattori, University of Hyogo, Japan

P1-2 Examination of High Luminance Light Guide Plate by Accumulating Method
Takaya Fujimoto, Yuta Okayama, Kenji Yamashita, Satoshi Nishida, Yoshitaka Sawa, Daiji Noda, and Tadashi Hattori, University of Hyogo, Japan

P1-3 3 Axes Rotational and Frequency Characteristics of a Hexahedron-Octahedron based Spherical Stepping Motor
Yongsu Um, Tomoaki Yano, Advanced Industrial Science and Technology, Japan, and Boyoung Hur

P1-4 Fault Tolerance Analysis of MEMS Holographic Memory for DORGAs
Daisaku Seto and Minoru Watanabe, Shizuoka University, Japan

P1-5 Piezoresistive Effect in Silicon Nanowires -A Comprehensive Analysis Based on First-Principles Calculations
Koichi Nakamura, Dzung Viet Dao, Bui Thanh Tung, Yoshiyuki Toriyama, and Susumu Sugiyama, Ritsumeikan University, Japan

P1-6 A Novel Optimization Procedure for Designing of High-Sensitivity Piezoresistive Accelerometers Utilizing MNA Method
Tan Duc Tran, College of Technology, VNUH, Vietnam, Tung Thanh Bui, and Thuy Phu Nguyen

P1-7 Adsorbed Surfactant Thickness on a Si Wafer Dominating Etching Properties of TMAH Solution
Bin Tang, Miguel A. Gosalvez, Prem Pal, Shintaro Itoh, Hirotaka Hida, Mitsuhiro Shikida, and Kazuo Sato, Nagoya University, Japan

P1-8 The Reconstitution of the Membrane Cytoskeleton using a Lipid Layer
Shiho Minakata, Micro-Nano Global COE, Nagoya University, Japan, and Jiro Usukura

P1-9 Development of Micro Particles Separation Device with Piezo-Ceramic Vibrator
Katsutoshi Ooe and Toshio Fukuda, Micro-Nano Global COE, Nagoya University, Japan

P1-10 Gait Estimation Using Foot-Pressure Sensors
Kazuto Miyawaki, Akita National College of Technology, Japan, Takehiro Iwami, Toshiki Matsunaga, Yoichi Shimada, and Goro Obinata

P1-11 Model Simulation of FES for the Treatment of Shoulder Subluxation
Takehiro Iwami, Akita University, Japan, Toshiaki Aizawa, Kazuto Miyawaki, Toshiki Matsunaga, Yoichi Shimada, and Goro Obinata

P1-12 Evaluation of Human Sense by Biological Information Analysis
Xiaojie Zhuang, Kousuke Sekiyama, and Toshio Fukuda, Nagoya University, Japan
P1-13  Multiple Object Detection for Intelligent Robot Vision by Using Growing Neural Gas
       Hironobu Sasaki, Nagoya University, Japan, Naoyuki Kubota, Kousuke Sekiyama, and
       Toshio Fukuda

P1-14  Hybrid Vision-Force Guided Fault Tolerant Robotic Assembly for Electric Connectors
       Pei Di, Nagoya University, Japan, Fei Chen, Hironobu Sasaki, and Toshio Fukuda

P1-15  Evolutionary Artificial Potential Field Method Based Manipulator Path Planning for Safe
       Robotic Assembly
       Fei Chen, Pei Di, Nagoya University, Japan, Jian Huang, Hironobu Sasaki, and Toshio
       Fukuda

P1-16  Risk Management System based on Uncertainty Estimation by Multi-Agent
       Daichi Kato, Kousuke Sekiyama, and Toshio Fukuda, Nagoya University, Japan

P1-18  Scaling Effects of Ferroelectric Nanoparticles Studied by Synchrotron Radiation X-ray
       Diffraction
       Jun Kano, University of Tsukuba, Japan, Tomoaki Karaki, Masatoshi Adachi, and Seiji
       Kojima

Micro-Nano GCOE Posters

P1-19  Oxidizing Potential of Electro-hydraulic Discharges
       S. Potocky, N. Saito, and O. Takai, Nagoya University, Japan

P1-20  Surface Patterning for Brittle Amorphous Material using Nanoindenter-based
       Mechanochemical Nanofabrication
       Chae Moon Lee, Nagoya University, Japan

P1-21  A Three Dimensional Coupled Fluid-Structure Analysis for CMP Process - Consideration
       on Damping Effect of Polishing Pad -
       Yohei Hashimoto, Nagoya University, Japan

P1-22  High Accuracy Analysis of Regenerative Chatter Vibration with Process Damping -
       Identification of Process Damping Parameter by Inverse Analysis of Chatter Vibration -
       Yusuke Kurata, Nagoya University, Japan

P1-23  Simultaneous Ag Nanoparticles Impregnation and Template Removal of Mesoporous
       Silica using Solution Plasma
       P. Pootawang, N. Saito and O. Takai, Nagoya University, Japan

P1-24  Synthesis of the Silica Particles with Solution Plasma
       Taibou Yamamoto, Junko Hieda, Nagahiro Saito, and Osamu Takai, Nagoya University,
       Japan
P1-25 Fabrication of Biodegradable Nano-Meshed Microcapsules via Phase Separation Incorporated Electrospraying
Masashi Ikeuchi, Ryosuke Tane, Muneaki Fukuoka, and Koji Ikuta, Nagoya University, Japan

P1-26 The Coating Process of Titania on Titanium Substrate and the Osteoconductivity
Dai Yamamoto, Nagoya University, Japan

P1-27 Preparation of SrTiO₃ Thin Films on Si Substrate by Ion Beam Sputtering
Gasidit Panomsuwan, Tatsuru Shirafuji, Nagahiro Saito, and Osamu Takai, Nagoya University, Japan

P1-28 Concept Sharing between Different Concept Representation Robots
Junji Takahashi, Nagoya University, Japan, Kosuke Sekiyama, and Toshio Fukuda

P1-29 Three-Dimensional Bipedal Walking Control by means of PDAC-based Stabilization
Tadayoshi Aoyama, Kosuke Sekiyama, Nagoya University, Japan, Yasuhiisa Hasegawa, and Toshio Fukuda,

P1-30 Hierarchical Modeling of Driving Behavior using Dynamics-based Segmentation
Hiroyuki Okuda and Tatsuya Suzuki, Nagoya University, Japan

P1-31 Parametric Excitation Walking with Delayed Feedback Control
Yuji Harata, Nagoya University, Japan, Fumihiko Asano, Kouichi Taji and Yoji Uno

P1-32 Path Following Control for Port-Hamiltonian Systems: Application to Electro-mechanical Systems
Mitsuru Taniguchi and Kenji Fujimoto, Nagoya University, Japan

P1-33 The Development of Upper Limbs Rehabilitation Robot System Based on the Motor Performance
Keunyoung Park and Goro Obinata, Nagoya University, Japan

P1-34 Development of a Highly Sensitive Temperature-Sensitive Paint for Measurements under Ambient (0 – 60 °C) Conditions
Y. Egami, Nagoya University, Japan, Chr. Klein, U. Henne, M. Bruse, V. Ondrus, and U. Beifuss

P1-35 Area Scaling for Laser Propulsion
John Elihu Sinko and Akihiro Sasoh, Nagoya University, Japan

P1-36 Design and Fabrication of a Flexible Tactile Sensor for Intelligent Robot Fingers
Jeong Il Lee, Hirotaka Hida, Mitsuhiro Shikida, and Kazuo Sato, Nagoya University, Japan
P1-37 Bi-directional Transmission Between Peripheral Nerves and Electronic Circuits Through Artificial Nerve Ending
Chikara Nagai, Shigeru Kurimoto, YoungWoo Kim, Hitoshi Hirata, and Goro Obinata, Nagoya University, Japan

P1-38 Reconstitution of Biological Clock into Phospholipid-Coated Microdroplet
Masaru Kojima, Masae Ohno, Masahiro Nakajima, Michio Homma, Kingo Takiguchi, Takao Kondo, and Toshio Fukuda, Nagoya University, Japan

P1-39 Transient TWEAK Overexpression Leads to a General Salivary Epithelial Cell Proliferation
Takayuki Sugito, Nagoya University, Japan

P1-40 Human Blood Pressure Simulation for Stress Analysis in Model of Vasculature using Photoelastic Effect
Carlos Tercero, Seiichi Ikeda, Nagoya University, Japan, Erick Tijerino, Motoki Matsushima, Toshio Fukuda, Makoto Negoro, and Ikuo Takahashi

P1-41 Patient-Specific IVR Endovascular Simulator with Augmented Reality for Medical Training and Medical Robot Evaluation
Seiichi Ikeda, Nagoya University, Japan

P1-42 Analysis of Wound Repair Mechanism
Naomi Nishio and Ken-ichi Isobe, Nagoya University, Japan

P1-43 Correlative Observation Methods in Light and Electron Microscopy for Arresting Dynamics of Membrane Cytoskeleton During Cell Cycle
Yuichiro Ishida and Jiro Usukura, Nagoya University, Japan

P1-44 A Pilot Study for the Assessment on a Biological Toxicity Caused by Nano-particles
T. Tsuji, and J. Usukura, Nagoya University, Japan

P1-45 Nanorheological Measurement of Monolayer Lubricant Films using an Oscillating Optical Fiber Probe
Yuya Hamamoto, Nagoya University, Japan

P1-46 A Remote Method to Measure and Evaluate Pipe Wall-thinning Using Microwaves
Lingsheng Liu, and Yang Ju, Nagoya University, Japan

P1-47 Nanowear Properties of Carbon Nanotube Film Made by Surface Decomposition of SiC
Yosuke Tsukiyama, Noritsugu Umehara, and Michiko Kusunoki, Nagoya University, Japan

P1-48 Dynamic Observation of Nano-thick Lubricant with a High-resolution Ellipsometric Microscope
Yosuke Kajihara, Kenji Fukuzawa, Tomohiko Yoshida, Shintaro Itoh, and Hedong Zhang, Nagoya University, Japan
P1-49  The Research on Fabrication and Electrical Properties Evaluation of High-Density Metallic Nanowires
Yumei Yue, Nagoya University, Japan

P1-50  Continuous Cellular Automaton for the Propagation of Advancing Fronts Featuring Surface Morphologies: Realistic Simulation of Wet Etching for MEMS Applications
M. A. Gosalvez, Nagoya University, Japan, Y. Xing, and K. Sato

P1-51  Finite Element Simulations of Anderson Localization in Random Systems
Garuda Fujii, Toru Takahashi, and Toshiro Matsumoto, Nagoya University, Japan

P1-52  Synchronizing Ideal Turbulence and an Application to Communications
Masayasu Suzuki, Kazutoshi Naito and Noboru Sakamoto, Nagoya University, Japan

P1-53  Homogenized Elastic-Viscoplastic Behavior of Plate-Fin Structures and Macroscopic Constitutive Modeling
Masatoshi Tsuda and Nobutada Ohno, Nagoya University, Japan

14:40-14:50  Coffee Break

Plenary Lecture

Conference Room 1

Chairperson: Kenichi Yoshikawa, Kyoto University

14:50-15:35  Plenary Lecture 4
Intelligent Gels –An Approach to Artificial Muscles and Soft Tissue-
Prof. Yoshihito Osada, RIKEN, Advanced Science Institute, Japan

15:35-15:45  Coffee Break

Chairperson: Akihito Sano, Nagoya University of Technology

15:45-16:30  Plenary Lecture 5
MEMS with Five Senses for IRT
Prof. Isao Shimoyama, The University of Tokyo, Japan

16:30-17:15  Plenary Lecture 6
Systems Biomimetism: Artificial Cells in a Living World, Living Cells in an Artificial World
Prof. Damien Baigl, Ecole Normale Superieure, France

17:15-19:00  Beer Party  Lobby on the mid-2F floor in Symposion
Technical Sessions

Session TA-1 (Organized Session): Bio Manipulation A02, A03, Part □

Conference Room 1

Chairperson: Kenji Inoue, Yamagata University
               Akihiko Ichikawa, National Institute of Advanced Industrial Science and Technology

9:00-9:15 The Effects of the Current Stimulation on Electrical Activity in Dissociated Neurons
          Minori Tokuda, Ai Kiyohara, Kwansei Gakuin University, Japan, Takahisa Taguchi, and
          Suguru N. Kudoh

9:15-9:30 Development of Cell-Sheet Handling Tool for Measurement of Cell Sheet Adhesion
          Force
          Kaoru Uesugi, Tokyo University of Agriculture and Technology, Japan, Yoshikatsu
          Akiyama, Masayuki Yamato, Teruo Okano, Takayuki Hoshino, and Keisuke Morishima

9:30-9:45 Regulations of Size and Shape of the Bioengineered Tooth by a Cell Manipulation
          Method
          Kazuhisa Nakao, Tokyo University of Science, Japan, Mayumi Murofushi, Miho Ogawa,
          and Takashi Tsuji

9:45-10:00 On-Chip Disposable Compact Vision System
          Huseyin Uvet, Akiyuki Hasegawa, Kenichi Ohara, Tomohito Takubo, Yasushi Mae, and
          Tatsuo Arai, Osaka University, Japan

10:00-10:15 Micro Valve System for Individual Cell Transportation in Microfluidic Chip
            Akiyuki Hasegawa, Huseyin Uvet, Kenichi Ohara, Tomohito Takubo, Yasushi Mae, and
            Tatsuo Arai, Osaka University, Japan

10:15-10:30 On-demand Generation of Droplet in Size Over a Wide Range by Microfluidic Control
            Lin Feng, Yoko Yamanishi, and Fumihito Arai, Tohoku University, Japan

Session TA-2 (Organized Session): Bio Manipulation A01

Conference Room 2

Chairperson: Masatoshi Kataoka, National Institute of Advanced Industrial Science and Technology
             Masatoshi Ichikawa, Kyoto University

9:15-9:30 Structural Properties of Yeast Chromatin Fiber Examined by AFM and in vitro
          Reconstitution System
          Eloise Prieto, Kohji Hizume, Kunio Takeyasu, and Shige H. Yoshimura, Kyoto University,
          Japan

9:30-9:45 Crosstalk between Giant DNA and Actin Filament in a Model Cellular System
          Makiko Negishi, Kyoto University Japan, Takahiro Sakaue, Kingo Takiguchi, and Kenichi
          Yoshikawa
9:45-10:00  Spontaneous Formation of Giant Unilamellar Vesicles from Microdroplets of a Polyion Complex by Focused Infrared Laser Irradiation
   Hidehiro Oana, Akihiro Kishimura, Yuichi Yamasaki, Masao Washizu, and Kazunori Kataoka, The University of Tokyo, Japan

10:00-10:15  Giant Liposome Sorting/Collection Device: for Individual Analysis of Artificial Cell-models
   Shin-ichiro M. Nomura, Li Liu, Yong Chen, Kyoto University, Japan, Hisataka Maruyama, and Fumihito Arai

10:15-10:30  Photochemical Control on Morphologies of a Cell-sized Synthetic Vesicle
   Tsutomu Hamada, Ken-ichi Ishii, Ryoko Sugimoto, Japan Advanced Institute of Science & Technology, Japan, Takeshi Nagasaki, and Masahiro Takagi

10:30-10:50  Coffee Break

Plenary Lecture

Conference Room 1

Chairperson: Osamu Suzuki, Tohoku University

10:50-11:40  Plenary Lecture 7
   Use of Cytometry Technology for the Study of Stem Cell Biology
   Prof. Hiromitsu Nakauchi, The University of Tokyo, Japan

11:40-13:00 Lunch

Poster Session

Poster Area (1st floor)

Chairperson: Masahiro Ohka, Nagoya University

13:00-14:40

P2-1  Interaction of Genome-size DNA with Phospholipid Membrane in a Cell-sized Micro-Watersphere as a Model Cellular System
   Ayako Kato, Josai University, Japan, Akihiko Tsuji, Kazuhiko Juni, Yasunori Morimoto, and Kenichi Yoshikawa

P2-2  Extension and Measurements on Multicomponent Phospholipid Vesicles by use of Dual-beam Optical Tweezers
   Masatosi Ichikawa, Kyoto University, Japan, Yoko Shitamichi, and Yasuyuki Kimura

P2-3  GFP Synthesis in Giant Liposomes using the in Vitro Translation System of Thermococcus Kodakaraensis
   Kazuaki Yamaji, Tamotsu Kanai, Shin-ichiro M. Nomura, Kyoto University, Japan, Kazunari Akiyoshi, Makiko Negishi, Haruyuki Atomi, Kenichi Yoshikawa, and Tadayuki Imanaka
P2-4 Nonviral gene Administration by means of the Epstein-Barr Virus (EBV)-based Episomal Vectors and it Application to Gene Therapy and Regenerative Medicine
Osam Mazda, Tsunao Kishida, Masahiro Matsui, Hiroshi Nakano, Koichiro Yoshimoto, Taketoshi Shimada, Shigeru Nakai, Jiro Imanishi, and Yasuo Hisa, Kyoto Prefectural University of Medicine, Japan

P2-5 Functional Analysis of a Chromosomal Passenger Protein, Borealin, by Multiphoton Excitation-evoked Chromophore-assisted Laser Inactivation
Yoshinori Harada, Ping Dai, and Tetsuro Takamatsu, Kyoto Prefectural University of Medicine, Japan

P2-6 Specific Formation of Trypsin Resistant Micelle Structure on a Hydrophobic Peptide Observed with Triton X-100 but Not with Ocytglucoside
Chie Katsuda, Kanami Niiyama, Eriko Obana, Takenori Yamamoto, Taisuke Matsuo, University of Tokushima, Japan, Kazuto Ohkura, Masatoshi Kataoka, and Yasuo Shinohara

P2-7 Real-World Modeling of Artificial Motile Cell
Kingo Takiguchi, Nagoya University, Japan, Makiko Negishi, Yohko Tanaka-Takiguchi, Michio Homma, and Kenichi Yoshikawa

P2-8 G protein Coupled Receptors (GPCRs) Reconstituted on Recombinant Proteoliposomes using Baculovirus-Liposome Membrane Fusion
Kanta Tsumoto, Koki Kamiya, Sayaka Kitaoka, Shin Ogata, Masahiro Tomita, and Tetsuro Yoshimura, Mie University, Japan

P2-9 The Size of the Pore in Lipid Membranes Induced by Antimicrobial Peptide Magainin 2
Hirotaka Ariyama, Yukihiro Tamba, Victor Levadny, and Masahito Yamazaki, Shizuoka University, Japan

P2-10 Purification of Wheat Factors Involving in Translation Initiation for Reconstitution of Protein Synthesis
Hikaru Nagano, Satoshi Fukada, Hisanori Takagi, Tomio Ogasawara, Yaeta Endo, and Kazuyuki Takai, Ehime University, Japan

P2-11 Model-membrane Morphological Transformations Induced by Different Amyloid Molecular Assemblies
Masamune Morita, Mun'delanji Vestergaard, Tsutomu Hamada, and Masahiro Takagi, Japan Advanced Institute of Science and Technology, Japan

P2-12 Preparation of Cytochromes b₅ with an Extended COOH-terminal Hydrophilic Segment: Interaction of Modified Tail-anchored Proteins with Liposomes in Different Cholesterol Content
Yoichi Sakamoto, Kobe University, Japan, Fusako Takeuchi, Masahiro Miura, Sam-Yong Park, and Motonari Tsubaki
P2-13 Enzymatic and Crystallographic Characterization of Archaeal tRNA Splicing Endonuclease
Tsubasa Kitajima, Akira Hirata, Chikako Iwashita, Ehime University, Japan, Shin-ichi Yokobori, and Hiroyuki Hori

P2-14 Assembly of Functional Nanodevice using Platinum/Tungsten Nanowire
Zhan Yang, Masahiro Nakajima, and Toshio Fukuda, Nagoya University, Japan

P2-15 Thermal Gel Actuated Device for Spout/Suction inside Semi-closed Microchip
Masaru Takeuchi, Masahiro Nakajima, and Toshio Fukuda, Micro-Nano Global COE, Nagoya University, Japan

P2-16 Pico-liter Injection Control to Individual Nano-liter Solution Coated by Lipid Layer
Yuta Matsuno, Masahiro Nakajima, Masaru Kojima, Yohko Tanaka-Takiguchi, Kingo Takiguchi, Kousuke Nogawa, Michio Homma, and Toshio Fukuda, Nagoya University, Japan

P2-17 Single Live-Bacterial Cell Assay of Promoter Activity and Regulation: Escherichia coli gel promoter
Jun Teramoto, Hosei University, Japan, Yoko Yamanishi, El-Shimy H. Magdy, Akiko Hasegawa, Masahiro Nakajima, Tomohiro Shimada, Fumihito Arai, Toshio Fukuda and Akira Ishihama

P2-18 Genomic SELEX for the Genome-wide Search of Regulation Targets by Transcription Factors: SELEX-clos and SELEX-chip Procedures
Tomohiro Shimada, Hosei University, Japan, Nobuyuki Fujita, Kaneyoshi Yamamoto and Akira Ishihama

P2-19 Regulation of the E. coli csgD Gene Encoding the Master Regulator of Biofilm Formation: Interplay between Multiple Transcription Factors
Hiroshi Ogasawara, Ayako Kori, Kayoko Yamada, Kaneyoshi Yamamoto, and Akira Ishihama, Hosei University, Japan

P2-20 Analysis of Cellular Membrane Changing Induced by Influenza Virus Infection
Takuro Takahata, Shinichiro Kume, Hosei University, Japan, Hideaki Miyoshi, Tadao Sugitira, and Ayae Honda

P2-21 Analysis of Promoter Binding Proteins of Ebp1 that is Inhibitor Protein of Influenza Virus RNA Polymerase
Masahiro Mukai and Ayae Honda, Hosei University, Japan

P2-22 User Friendly Two-Fingered Cell Manipulation System
Daiki Kawakami, Kenichi Ohara, Yasushi Mae, Tomohito Takubo, Osaka University, Japan, Tamio Tanikawa, and Tatsuo Arai

P2-23 Novel Fluorescent Probe for Measurement of Extracellular Matrix Degradation
Toshiyuki Murai, Osaka University, Japan, and Hiroto Kawashima
P2-24 Fluorescent Observation of Individual DNA Molecules on Phospholipid Bilayers and its Application to Analysis of DNA-protein Interactions
Hirofumi Kurita, Tatsuya Takata, Hachiro Yasuda, Kazunori Takashima, and Akira Mizuno, Toyohashi University of Technology, Japan

P2-25 Functional shRNA Expression System with Reduced Off-target Effects
Yuki Naito, Kenji Nishi, Aya Juni, and Kumiko Ui-Tei, University of Tokyo, Japan

P2-26 Reduced Base-base Interactions Between the DNA Seed and RNA Target are the Major Determinants of a Significant Reduction in the Off-target Effect due to DNA-seed-containing siRNA
Kumiko Ui-Tei, Kenji Nishi, Yuki Naito, Shuhei Zenno, Aya Juni, and Kaoru Saigo, University of Tokyo, Japan

P2-27 Controlling the Higher-Order Structure of DNA-Protamine Complex
Yuko Yoshikawa, Ritsumeikan University, Japan, Naoko Makita, Mari Suzuki, Eri Shindo, Chika Watanabe, Tamotsu Kanai, Tadayuki Imanaka, Toshio Kanbe, and Kenichi Yoshikawa

P2-28 Detection and Collection System of Target Single Cell Based on Respiration and Metabolic Activity
Masayasu Suzuki, Hiroyuki Tanaka, and Yasunori Iribe, University of Toyama, Japan

P2-29 A Viscous Micropump using a Spinning Microrotor Driven by a Laguerre-Gaussian Beam
Shoji Maruo and Yohei Saito, Yokohama National University, Japan

P2-30 Three-dimensional Spheroids Forming Lab-on-a-chip using Micro-rotation Flow
Hiroki Ota, Ryosuke Yamamoto, Koji Deguchi, and Norihisa Miki, Keio University, Japan

P2-31 Manipulating Behaviors of Targeted Single Cells in Vivo by using IR-LEGO
Motoshi Suzuki, Nagoya University, Japan, Yasuhiro Kamei, Shunsuke Yuba, and Shin Takagi

P2-32 Suck-and-Blow Master-Slave System for Micro-manipulation based on Body Image Embedding
Hiromi Mochiyama, Yuki Shirato, University of Tsukuba, Japan, Hisato Kobayashi, Junya Tatsuno, and Hiroyuki Kawai

P2-33 Fabrication of Functional Gel-Nanotool for Intracellular Measurement
Hisataka Maruyama and Fumihito Arai, Tohoku University, Japan

P2-34 On-chip Particle-laden Droplet Dispensing by Disposable Inkjet System
Takehito Mizunuma, Yoko Yamanishi, Shinya Sakuma, Hisataka Maruyama, Fumihito Arai, Tohoku University, Japan
P2-35  Fabrication of Biodegradable Scaffold by Powder Sintering Process  
*Taro Itoyama, Takuma Nakano, Tohoku University, Japan, Seiichi Ikeda, Toshio Fukuda, Takehisa Matsuda, Makoto Negoro, and Fumihito Arai*

P2-36  Development of Biodegradable Scaffolds by Leaching Self-assembled Magnetic Sugar Particles  
*Ryo Takamatsu, Hiroyuki Oura, Tomoyuki Uchida, Seiichi Ikeda, University of Nagoya, Japan, Fumihito Arai, Makoto Negoro, Motoharu Hayakawa, Ikuo Takahashi, and Toshio Fukuda*

P2-37  Development of a pH Indicator Immobilized-gel-sheet for Microenvironment Analysis  
*Taisuke Masuda, Hisataka Maruyama, Fumihito Arai, Takahisa Anada, Tohoku University, Japan, Toshio Fukuda, and Osamu Suzuki*

P2-38  Shear Stress Induces Arterial Differentiation of Murine ES Cells  
*Tomomi Masumura, Kimiko Yamamoto, University of Tokyo, Japan, and Joji Ando*

P2-39  Development of the Maskless Photolithography Device with an LCD-projector for Fabrication of Micropatterned Surfaces  
*Kazuyoshi Itoga, Jun Kobayashi, Masayuki Yamato, and Teruo Okano, Tokyo Women's Medical University, Japan*

P2-40  Features of Ultra Thin Poly(N-isopropylacrylamide) Grafted onto Glass Cover Slips  
*Yoshikatsu Akiyama, Tokyo Women's Medical University, Japan, Kazuhiro Fukumori, Masayuki Yamato, Kiyotaka Sakai, and Teruo Okano*

P2-41  Skeletal Muscle Tissue Engineering Using Functional Magnetite Nanoparticles  
*Akira Ito, Hirokazu Akiyama, Yasunori Yamamoto, Yoshinori Kawabe, and Masamichi Kamihira, Kyushu University, Japan*

P2-42  Fabrication of Self Organized Structure by Controlling Growth Direction of Plant Cells  
*Kenta Yamamoto and Keisuke Morishima, Tokyo University of Agriculture and Technology, Japan*

P2-43  Design of Bio-manipulation with Micro Water Jet  
*Yalikun Yaxar, Takayuki Hoshino, and Keisuke Morishima, Tokyo University of Agriculture and Technology, Japan*

P2-44  Mechanical Stress Induces the Activation of TAK1 and its Downstream Pathways in Pre-osteoblastic Cells  
*Naoto Fukuno, Hiroyuki Matsui, Tohoku University, IDAC, Japan, Osamu Suzuki, Keiichi Sasaki, Takayasu Kobayashi, and Shinri Tamura*

P2-45  Rapid Immunosensing Based on Accumulation of Microparticles by Negative Dielectrophoresis  
*Tomoyuki Yasukawa, University of Hyogo, Japan, Hyun Jung Lee, Javier Ramon-Azcon, Yusuke Yoshida, Hitoshi Shiku, Tomokazu Matsue, and Fumio Mizutani*
P2-46 Remote Visitor Robot through the Internet
Tatsuya Kawai, Takahisa Fukuda, Mikiko Nako, Yuki Yasuda, Eiichi Murata, Eishin Kaku, and Kyoichi Tatsuno, Meijo University, Japan

P2-47 Development of a Semi-Autonomous Remote Maintenance Robot
Akihiro Hibino, Tatsuya Kawai, Mikiko Nako, Yingxin He, Kazuki Aoyama, Yuta Iwata, Taisuke Isogai, Shinichi Takeuchi, and Kyoichi Tatsuno, Meijo University, Japan

P2-48 Associative Motion Generation for Humanoid Robots Based on Analogy with Indication
Satona Motomura, Shohei Kato, and Hidenori Itoh, Nagoya Institute of Technology, Japan

P2-49 Fuzzy PID Control of A Wearable Rehabilitation Robotic Hand Driven by Pneumatic Muscles
Jun Wu, Jian Huang, Yongji Wang, Kexin Xing, and Qi Xu, Huazhong University of Science and Technology, China

P2-50 Discreet Controller Structure For Robust Oscillating Nonlinear Stable System
M. Said Abdel Moteleb, Electronics Research Institute, Egypt, and S. Kozak

P2-51 Visualization and Statistical Analysis of Fuzzy-Neuro Learning Vector Quantization Based on Particle Swarm Optimization for Recognizing Mixture Odors
Wisnu Jatmiko, Rochmatulloh, Benyamin Kusumoputro, H.R. Sanabila, University of Indonesia, Indonesia, Kosuke Sekiyama, and Toshio Fukuda

P2-52 Genetic Algorithm Based Parameters Adjustments for Micron-Order Image Analysis of Metal Fracture
Masanobu Mizoguchi, Koichi Obata, Yuki Kato, and Kazuya Ogata, Daido University, Japan

14:40-15:00 Coffee Break

Technical Sessions

Session TP1-1 (Organized Session): Bio Manipulation A02, A03, Part I Conference Room1

Chairperson: Suguru N. Kudoh, Kwansei Gakuin University
Akira Mizuno, Toyohashi University of Technology

15:00-15:15 In-Situ Single Cell Manipulation via Nanorobotic Manipulation System Inside E-SEM
Yajing Shen, Masahiro Nakajima, Mohd Ridzuan Ahmad, Seiji Kojima, Michio Homma, and Toshio Fukuda, Nagoya University, Japan

15:15-15:30 Local Stiffness Evaluation for Alive C. Elegans by Environmental-SEM Nanorobotic Manipulation System
Masahiro Nakajima, Mohd Ridzuan Ahmad, Masaru Kojima, Seiji Kojima, Michio Homma, and Toshio Fukuda, Nagoya University, Japan
15:30-15:45 Manipulation of Micro-Scale Objects Using Micro Hand with Two Rotational Fingers
Yuki Matsuzaki, Kenji Inoue, and Suwoong Lee, Yamagata University, Japan

15:45-16:00 A New Multi-Scale Micromanipulation System with Dexterous Motion
Ebubekir Avcı, Kenichi Ohara, Tomohito Takubo, Yasushi Mae, and Tatsuo Arai, Osaka University, Japan

16:00-16:15 Micro-manipulator using Laminate Hinge Mechanism
Akihiko Ichikawa, Tamio Tanikawa, and Kohtaro Ohba, Advanced Industrial Science and Technology, Japan

16:15-16:30 Microfluidic Chip with World-to-Chip Interface for Temperature Detection in Micro-nanoscale
Naoki Inomata, Hisataka Maruyama, Takahiro Kato, and Fumihito Arai, Tohoku University, Japan

Session TP1-2 Sensors and Actuators
Chairperson: Shoji Maruo, Yokohama National University
Daiji Noda, University of Hyogo

15:00-15:15 Micro-encapsulation of Bio-actuator using Insect Dorsal Vessel
Yuta Touyama, Takayuki Hoshino, Kikuo Iwabuchi, and Keisuke Morishima, Tokyo University of Agriculture and Technology, Japan

15:15-15:30 Characterization of the Piezoresistive Effect and Temperature Coefficient of Resistance in Single Crystalline Silicon Nanowires
Tung Thanh Bui, Dzung Viet Dao, Koichi Nakamura, Toshiyuki Toriyama, and Susumu Sugiyama, Ritsumeikan University, Japan

15:30-15:45 Ultra Miniature \( \mu \)-Accelerometer for Wearable Physical Activity Monitoring Systems
Ranjith Amarasinghe, Dzung Viet Dao, and Susumu Sugiyama, Ritsumeikan University, Japan

15:45-16:00 Application of Stiffness Control Algorithm for Dexterous Robot Grasping using Optical Three-Axis Tactile Sensor System
Hanafiah Yussof and Masahiro Ohka, Nagoya University, Japan

16:00-16:15 Miniaturization of a Wide Range Load Sensor Using AT-Cut Quartz Crystal Resonator
Keisuke Narumi, Tohoku University, Toshio Fukuda, and Fumihito Arai

16:15-16:30 Human Blood Pressure Simulation for Photoelastic Stress Analysis in Models of Vasculature
Carlos Tercero, Seiichi Ikeda, Motoki Matsushima, Toshio Fukuda, Nagoya University, Japan, Erick Tijerino, Makoto Negoro, and Ikuo Takahashi
16:30-16:50 **Coffee Break**

**Technical Sessions**

**Session TP2-1 (Organized Session): Bio Manipulation A02, A03, Part †**

*Conference Room 1*

**Chairperson:**
Keisuke Morishima, Tokyo University of Agriculture and Technology
Tamio Tamikawa, National Institute of Advanced Industrial Science and Technology

16:50-17:05 **Anaerobiosis-Induced Novel Nucleoid Protein of Escherichia coli: Architectural Role in Genome DNA Compaction**
Jun Teramoto, Kayoko Yamada, Maplo Kobayashi, Ayako Kori, Hosei University, Japan,
Shige H. Yoshimura, Kunio Takeyasu, and Akira Ishihama

17:05-17:20 **On-chip Magnetically Driven Micro-robot for Enucleation of Oocyte**
Naoki Inomata, Takehito Mizunuma, Yoko Yamanishi, Shogo Kudo, and Fumihito Arai,
Tohoku University, Japan

17:20-17:35 **Thermo-Sensitive Sol-Gel Transition and Mechanical Properties of Poly (Depsipeptide-co-Lactide)-g-PEG Copolymers**
Yuichi Ohya, Koji Nagahama, Yuichiro Imai, Teppei Nakayama, and Tatsuro Ouchi,
Kansai University, Japan

17:35-17:50 **Rotational Speed Control of Na+-driven Flagellar Motor by Local Ion Concentration Changes with Multiple Nano/Micro Pipettes**
Kousuke Nogawa, Masaru Kojima, Masahiro Nakajima, Michio Homma, and Toshio Fukuda,
Nagoya University, Japan

17:50-18:05 **Reconstitution of Biological Clock into Phospholipid-Coated Microdroplet**
Masaru Kojima, Masae Ohno, Masahiro Nakajima, Michio Homma, Kingo Takiguchi,
Takao Kondo, and Toshio Fukuda, Nagoya University, Japan

18:05-18:20 **Micro Orifice based Cell Pairing and Fusion on Microfluidic Chip**
Murat Gel, Y. Mori, Y. Kimura, The University of Tokyo, Japan, O. Kurosawa, B.
Techaumnat, H. Oana, and M. Washizu

**Session TP2-2 Robotics and System Integration Part †**

*Conference Room 2*

**Chairperson:**
Masanobu Mizoguchi, Daido University
Kazuya Ogata, Daido University

16:50-17:05 **The Development of Upper Limbs Rehabilitation Robot System Based on the Difference of Motor Performance**
Keunyoung Park, YoungWoo Kim, and Goro Obinata, Nagoya University, Japan
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| 17:05-17:20  | **Influence of Lift Walker for Human Walk and Suggestion of Walker Device with Power Assistance**<br>
*Kazuya Kubo, Takanori Miyoshi, Kazuhiko Tarashima, Toyohashi University of Technology, Japan* |
| 17:20-17:35  | **Wheelchair Driving Control with Sway Suppression of Passenger's Posture and Evaluation of Comfortable Ride by Emotional Sweating**<br>
*Yoshiyuki Noda, Daisuke Yamagami, and Kazuhiko Terashima, Toyohashi University of Technology, Japan* |
| 17:35-17:50  | **Human's Weight Perception and Load Force Characteristics in Lifting Objects with a Power Assist Robot**<br>
*S.M. Mizanoor Rahman, Ryojun Ikeura, Masaya Nobe, and Hideki Sawai, Mie University, Japan* |
| 17:50-18:05  | **A Study of Human-Human Cooperative Characteristic based on Task Direction**<br>
*Shahriman Abu Bakar, Ryojun Ikeura, Ahmad Faizal Salleh, and Takemi Yano, Mie University, Japan* |
| 18:30-20:30  | **Reception Party**<br>
*Universal Club* |
November 11 (Wed)
Location: Toyoda Auditorium Nagoya University Symposion

Technical Sessions
Session WA-1: Microfabrication and Systems

Conference Room 1

Chairperson:  
Eiji Shamoto, Nagoya University  
Mitsuhiro Shikida, Nagoya University

9:15-9:30 Chatter Suppression in Milling with Anisotropic Tools
Yusuke Kurata, Norikazu Suzuki, Rei Hino, and Eiji Shamoto, Nagoya University, Japan

9:30-9:45 Wet Etched Complex Three Dimensional MEMS Structures
Prem Pal and Kazuo Sato, Nagoya University, Japan

9:45-10:00 Study on Optimization of Exposure Energy Distribution for Fabrication of Arbitrary 3-D Microstructure by Shaped Beam Using Synchrotron Radiation
Mitsuhiro Horade and Susumu Sugiyama, Ritsumeikan University, Japan

10:00-10:15 Study on an Efficient Fabrication Process for PMMA Movable Microstructures Based on Hot Embossing and Polishing Processes
Satoshi Amaya, TOWA Corporation, Japan, Dzung Viet Dao, and Susumu Sugiyama

10:15-10:30 Mesoscale-object Handling by Temperature Modulation of Surface Stresses
Emir Vela, Moustapha Hafez, CEA LIST, France, Stephane Regnier, and Sylvain Bouchigny

Session WA-2: Robotics and System Integration Part I

Conference Room 2

Chairperson:  
Kyouichi Tatsuno, Meijo University  
Wisnu Jatmiko, University of Indonesia

9:00-9:15 Acoustic Wave Approach for Multi-Touch Tactile Sensing
Yuan Liu, Jean-Pierre Nikolovski, Moustapha Hafez, CEA LIST, France, Nazih Mechbal, and Michel Verge

9:15-9:30 Three Dimensional Bipedal Walking Locomotion Using Dynamic Passivization of Joint Control
Minoru Ishida, Shohei Kato, Nagoya Institute of Technology, Japan, Masayoshi Kanoh, and Hidenori Itoh

9:30-9:45 Acquisition and Modification of Motion Knowledge using Continuous HMMs for Motion Imitation of Humanoids
Yuki Okuzawa, Shohei Kato, Nagoya Institute of Technology, Japan, Masayoshi Kanoh, and Hidenori Itoh

9:45-10:00 A New Decision Making Criteria of ROI Evaluation in Video Sequences and Comparison with Human Evaluation Psychology
Md. Rokunuzzaman, Kosuke Sekiyama, and Toshio Fukuda, Nagoya University, Japan
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| 10:00-10:15| Distributed Traffic Control with Swarm-Self Organizing Map in Jakarta: Simulation and Measurement  
*Wisnu Jatmiko, Ferry Heriyadi, Adila Alfa Krisnadhi, University of Indonesia, Indonesia, Isao Takagawa, Kosuke Sekiyama, and Toshio Fukuda* |
| 10:15-10:30| Localizing Multiple Odor Sources in Dynamic Environment using Ranged Subgroup PSO with Flow of Wind Based on Open Dynamic Engine Library  
*Wisnu Jatmiko, Wulung Pambuko, P. Mursanto, University of Indonesia, Indonesia, A. Muis, Benyamin Kusumoputro, Kosuke Sekiyama, and Toshio Fukuda* |
| 10:30-10:50| **Coffee Break**                                                        |

**Invited Talk**

*Chairperson: Kenji Fukuzawa, Nagoya University*

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| 10:50-11:20| Microactuator Using Tensile Thin Film  
*Prof. Minoru Sasaki, Toyota Technological Institute, Japan* |

**Award Ceremony**

*Conference Room 1*

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<tr>
<td>12:00-13:30</td>
<td><strong>Lunch</strong></td>
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<tr>
<td>13:30-15:00</td>
<td><strong>Laboratory Tour</strong></td>
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*Nagoya University*