MHS2011 & Micro-Nano Global COE

2011 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 “Hyper Bio Assembler for 3D Cellular System Innovation”
Grant-in-Aid for Scientific Research on Innovative Areas, MEXT, Japan
Nov. 6 - 9, 2011, Nagoya, Japan

November 6 (Sun)
Location: Noyori Conference Hall

20th International Micro Robot Maze Contest 2011

Categories:
Category 0:  Micro Robot Racer
Category 1:  Mountain Climbing Micro Robot Maze
Category 2:  Autonomous Micro Robot Maze
Category 3:  Micro Biped Robot

Time Schedule:
09:30  Opening Ceremony
09:45  Category 0
11:30  Category2a
12:00  Category3a
12:20  Lunch Break
13:00  Category4
13:15  Category1
14:15  Category2b
15:25  Category3b
16:00  Break
16:30  Award Ceremony and Closing

Optional Events
14:00-17:30 on November 5
Micro Robotics School for Junior and High School Students

9:00-12:30 on November 6
Micro Robotics School for Elementary School Children
November 7 (Mon)
Location: Noyori Conference Hall

Opening Remarks
Chairperson: Tomohide Niimi, Nagoya University
9:30-9:50
President Michinari Hamaguchi, Nagoya University, Japan
Prof. Toshio Fukuda, Nagoya University, Japan
Prof. Tatsuo Arai, Osaka University, Japan

Plenary Lecture
Chairperson: Eiji Shamoto, Nagoya University
9:50-10:40 Plenary Lecture 1
Automation of Nanoscale Manipulation
Prof. Sergej Fatikow, University of Oldenburg, Germany
10:40-10:50 Coffee Break
Chairperson: Kazuo Sato, Nagoya University
10:50-11:40 Plenary Lecture 2
12 Years of Resonator: from Telephone to Atomic Force Microscopy
Prof. Lionel Buchaillot, IEMN-CNRS, France
11:40-13:30 Lunch

Poster Session I
Chairperson: Masahiro Ohka, Nagoya University
13:30-15:00
Micro-Nano GCOE Posters

P1-1 Driving System for Micro Gear by Using Bacteria Sheet
Masaru Kojima, Tatsuya Miyamoto, Masahiro Nakajima, Michio Homma, and Toshio Fukuda

P1-2 High-Speed Single Cell Dispensing System
Tomohiro Kawahara, Tatsuhiko Hirano, Lin Feng, Huseyin Uvet, Masaya Hagiwara, Yoko Yamanishi, and Fumihito Arai

P1-3 An in Vitro Blood Vessel Model with Augmented Reality for IVR Surgery Training
Seiichi Ikeda and Carlos Tercero

P1-4 On-chip High Speed Microrobot made of Ni-Si Composite Structure with Three-dimensionally Patterned Surface
*M. Hagiwara, T. Kawahara, T. Iijima, T. Masuda, Y. Yamanishi, and F. Arai*

P1-5 The Proposal of Roadmap Incorporating Velocity Information
*J. Xiang, Y. Tazaki, and T. Suzuki*

P1-6 Response for Perturbation to Dampen Hand Vibration During Walking
*Shunta Togo, Takahiro Kagawa, and Yoji Uno*

P1-7 Homogenized Elastic-Viscoplastic Simulation of Plate-Fin Structures Using an Extended Duplex Model
*Masatoshi Tsuda and Nobutada Ohno*

P1-8 Study on Transition from Photonic-Crystal Laser to Random Laser
*Garuda Fujii, Toshiro Matsumoto, Toru Takahashi, and Tsuyoshi Ueta*

P1-9 Equivalent Circuit of MEMS Electrostatic Actuator Considering Air Damping Effect
*Hideta Oiso, Hirotaka Hida, Mitsuhiro Shikida, and Kazuo Sato*

P1-10 Homogenized Elasto-viscoplastic Behavior of Thick Perforated Plates at High Temperature
*Kazutaka Ikenoya, Nobutada Ohno, and Naoto Kasahara*

P1-11 Simulations of Adhesion between Two Solid Surfaces Intermediated by Nanometer-Thick Lubricant Films using Coarse-Grained Molecular Dynamics
*Motoo Fukuda, Takahiro Ishiguro, Hedong Zhang, Kenji Fukuzawa, and Shintaro Itoh*

P1-12 FEM Modeling of a Rotor System with the Open Crack and Vibration Diagnosis
*Nobuhiro Nagata*

P1-13 Development of an New Ellipsometric Microscopy to Visualize Shearing Nanometer-thick Lubricant films
*Yosuke Kajihara, Kenji Fukuzawa, Shintaro Itoh, and Hedong Zhang*

P1-14 Development of a Combined PSP/TSP Sensor using CdSe/ZnS Quantum Dot
*T. Kameya, Y. Matsuda, Y. Egami, L. Huaxia, H. Yamaguchi, and T. Niimi*

P1-15 Microwave-AFM Probe: Measuring the Electrical Information of Under-layer Materials on Nanometer Scale
*Lan Zhang, Yang Ju, and Atsushi Hosoi*

P1-16 Non-contact Nanometric Positioning of Probe Tip for Continuous Stiffness Measurement System
*S. Sakuma and F. Arai*

P1-17 Formation of Oxide Coatings on Beta-Ti Alloys using Anodizing in Concentrated Phosphoric Acid and their Osteoconductivity
Dai Yamamoto, Kensuke Kuroda, Ryoichi Ichino, and Masazumi Okido

P1-18 Chemical Structures and Mechanical Properties of Amorphous Carbon Films by Shielding Arc Ion Plating Using Bias Conditions
Hoontseung Lee, Nagahiro Saito, and Osamu Takai

P1-19 Infrared Spectroscopic Characterization of Bound Water in Mesoporous Silica
Yoshie Aoki, Tomonaga Ueno, Nobuyuki Zettsu, and Nagahiro Saito

P1-20 Orientation Control of Textured SrTiO\textsubscript{2} Thin Films Grown on Platinized (0001)-Al\textsubscript{2}O\textsubscript{3} Substrates by Ion Beam Deposition
Gasidit Panomsuwan, Nagahiro Saito, and Osamu Takai

P1-21 Copper Oxide Nanowires Growing on Various Copper Substrates
Yumei Yue

P1-22 New Function of Stress Inducible Protein GADD34
Naomi Nishio, Sachiko Ito, Thanasegaran Suganya, and Ken-ichi Isobe

P1-23 Spatial Structure of Cytoskeleton Associated with Nuclear Membrane
Shiho Minakata and Jiro Usukura

P1-24 Changes in Membrane Cytoskeleton Induced by Several Inhibitors of Actin Polymerization
Yuichiro Ishida

P1-25 The Effect of Stent Design in Cerebral Aneurysm Hemodynamics: Computational Fluid Dynamics Study
Masahiro Kojima, Keiko Irie, Carlos R. Tercero, Toshio Fukuda, Fumihito Arai, and Makoto Negoro

P1-26 Endocytic Mechanism on Targeted Drug Delivery using Transferrin-conjugated Submicron Particles
Takuma Tsuji, Hiroshi Yoshitomi, and Jiro Usukura

P1-27 Umbilical Cord Wharton’s Jelly: A New Potential Cell Source of Mesenchymal Stem Cell for Wound Healing
Ryutaro Shohara, Sachiko Takikawa, Akihito Yamamoto, Hideharu Hibi, Fujio Masahito, Kiyoshi Sakai, Mari Yamagata, Maki Goto, Akira Iwase, Fumitaka Kikkawa, and Minoru Ueda

P1-28 Engrafted Dental Pulp Stem Cells Promoted Functional Recovery of Completely Transected Rat Spinal Cord
Kiyoshi Sakai

P1-29 SH-CM Enhances Recovery of Focal Cerebral Ischemia in Rats
Takanori Inoue, Masahiko Sugiyama, Hisashi Hattori, and Minoru Ueda

P1-30 Wound Healing Acceleration by Stem Cell-Derived Growth Factor
Masayuki Tamari, Yudai Nishino, Noriyuki Yamamoto, and Minoru Ueda

P1-31 MISM Restores Motor Function in Denervated Rats

P1-32 Lack of Immunogenicity of Induced Pluripotent Stem Cells
Thanasegaran Suganya, Zhao Cheng, Sachiko Ito, Naomi Nishio, and Ken-ichi Isobe

P1-33 Electrical Stimulations of Tactile Sensory Feedback for Dexterous Handling with Artificial Hands
Chikara Nagai

P1-34 Automatic Estimation of Mental Workload Using Saccadic Eye Movements
Satoru Tokuda, Goro Obinata, Evan Palmer, and Alex Chaparro

P1-35 Task Based Design Method for Multi-joint Prosthetic Hand
Shoichiro Kamada, Youngwoo Kim, and Goro Obinata

P1-36 Bilateral Transfer in Active and Passive Guidance-reproduction Based Bimanual Tasks: Effect of Proprioception and Handedness
Keunyoung Park, Youngwoo Kim, Chikara Nagai, and Goro Obinata

15:00-15:10 Coffee Break

Plenary Lecture
Conference Room 1

Chairperson: Susumu Sugiyama, Ritsumeikan University

15:10-16:00 Plenary Lecture 3
Methodology of Evaluation for Medical Devices Using In-vitro/In-silico Biomodel
Prof. Makoto Ohta, Tohoku University, Japan

16:00-16:15 Coffee Break

Technical Sessions
Session MP-1 (Organized Session): Young Researchers in Bioengineering
Conference Room 1

Chairperson: Taisuke Masuda, Nagoya University
Kazuyoshi Tsuchiya, Tokai University

16:15-16:30 Application of Feedback System Control (FSC) to Identify the Optimized Osteogenic Drug Cocktails.
Yoshitomo Honda, Xiating Ding, Federico Mussan, Akira Wiberg, Chih-ming Ho and Ichiro Nishimura, UCLA School of Dentistry, USA

16:30-16:45 Microfluidic Hydrostatic Deposition Patterning for a Confined Hepatocyte-Biliary
Epithelial Cell Co-Culture System
Yuyang Lee, Ryo Sudo, Tomoya Komatsu, Norihisa Miki, Toshihiro Mitaka, Mariko Ikeda and Kazuo Tanishita, Keio University, Japan

16:45-17:00 Micropillar-integrated Device for Monitoring Dynamic Regulation of Traction Forces during Cell Migration
Eijiro Maeda, Akito Sugawara, Justin J. Cooper-White and Toshiro Ohashi, Hokkaido University, Japan

17:00-17:15 Flow and Nitric Oxide Increase Hepatic Function in Co-culturing Hepatocytes with Hepatic Stellate Cells and Endothelial Cells
Tateki Sumii, Ryouuke Fujita, Kazuo Tanishita and Susumu Kudo, Shibaura Institute of Technology, Japan

17:15-17:30 Formation of Toroidal Multicellular Aggregate of Cardiomyocytes
Taisuke Masuda, Natsuki Takei and Fumihito Arai, Nagoya University, Japan

17:30-17:45 Establishment of Pain Evaluation Test on the Expression of Substance P during Injection
Mohd Yusri, Kazuyoshi Tsuchiya, Kagemasa Kajiwara and Minoru Kimura, Tokai University, Japan

Session MP-2 (Organized Session): Young Researchers in Micro-Nano Systems
Conference Room 2

Chairperson: Akihiko Ichikawa, Nagoya University
Yoshitake Akiyama, Tokyo University of Agriculture and Technology

16:15-16:30 Simulation and Experimental Verification of Bacteria-driven Micromotors
T. Sawada, Y. Hiratsuka, and S. Maruo, Yokohama National University, Japan

16:30-16:45 Cell Fixation and Release by Noncontact Pressure Control of Untethred On-chip Robot
Akihiko Ichikawa and Fumihito Arai, Nagoya University, Japan

16:45-17:00 Long-Lifetime Measurement and Control of Local Temperature Using Functional Gel-Tool Containing Quantum dot by Color Analysis of Fluorescent Spectrum
Hisataka Maruyama, Taisuke Masuda, Ryo Kariya and Fumihito Arai, Nagoya University Japan

17:00-17:15 Spheroid Array Formation by Non-label Cell Manipulation Using Magneto-Archimedes Effect
Yoshitake Akiyama and Keisuke Morishima, Tokyo University of Agriculture & Technology, Japan

17:15-17:30 Vertical-Objective-based Ellipsometric Microscope for Backside Illuminated Real-time Visualization of nm-Thick Lubricant Films
Qingqing Liu, Kenji Fukazawa, Yosuke Kajihara, Hedong Zhang and Shintaro Itoh, Nagoya University, Japan
17:30-17:45  MEMS Components with Perfectly Protected Edges and Corners in Si\{110\} Wafers
*Prem Pal, Kazuo Sato and Hirotaka Hida, Indian Institute of Technology Hyderabad, India*

17:45-19:00  *Beer Party*
November 8 (Tue)
Location: Noyori Conference Hall

Technical Sessions
Session TA1-1 (Organized Session): Hyper Bio Assembler for 3D Cellular Innovation

Conference Room 1

Chairperson: Yasushi Mae, Osaka University
Masumi Yamada, Chiba University

9:00-9:15 Noncontact Nanometric Positioning of Probe Tip for Continuous Stiffness Measurement System
S. Sakuma and F. Arai, Nagoya University, Japan

9:15-9:30 Design of a Compact 3-DOF Microhand System with Large Workspace
Toru Ejima, Kenichi Ohara, Tomohito Takubo, Yasushi Mae, Tamio Tanikawa and Tatsuo Arai, Osaka University, Japan

9:30-9:45 Nanotool Exchanger System using Low-melting Metal under Environmental SEM
Masahiro Nakajima, Takuya Kawamoto, Masaru Kojima and Toshio Fukuda, Nagoya University, Japan

9:45-10:00 Fabrication of Functional Hydrogel Microbeads Utilizing Non-equilibrium Microfluidics for Biological Applications
Sari Sugaya, Ayaki Miyama, Masumi Yamada and Minoru Seki, Chiba University, Japan

10:00-10:15 Size-Dependent Sorting of Corneal Limbal Epithelial Cell with Microfluidic Chip
Akiyuki Hasegawa, Masumi Yamada, Minoru Seki, Masayuki Yamato and Teruo Okano, Tokyo Women’s Medical University, Japan

10:15-10:30 Coffee Break
Session TA2-1 (Organized Session): Micro-Nano Fluidics and Biomedical Applications

Conference Room 1

Chairperson: Yoko Yamanishi, Nagoya University
Koji Matsuura, Okayama University

10:30-10:45 Cross-Sectional of Capacitance Measurement In-Transition of Particle Concentration in Microchannel System
Nur Tantiyani Ali Othman, Je-Eun Choi, Hiromichi Obara and Masahiro Takei, Nihon University, Japan

10:45-11:00 Micro Droplet Generation using Micropore Plates oscillated by Ultrasonic Torsional Transducers
Yusuke Kiyama, Yoshiyuki Tominaga, Takefumi Kanda, Koichi Suzumori, Yoshiaki Yamada and Norihisa Seno, Okayama University, Japan

11:00-11:15 Micro-rotation Flow Chamber Rapidly Forming Collagen GEL-mediated Hetero-Spheroids
Hiroki Ota, Taiga Kodama, Masayuki Yamato, Teruo Okano and Norihisa Miki, Tokyo Women’s Medical University, Japan

11:15-11:30 Development of Observation System to Investigate both Intracellular Calcium Concentration and Mechanical Stimuli to Mammalian Embryos
Koji Matsuura, Koyo Watanabe, Mieko Kodama, Yuka Kuroda and Keiji Naruse, Okayama University, Japan

11:30-11:45 3DOF Dual-Arm Microrobots Enabling Force Sensing in a Microfluidic Chip
Masakuni Sugita, Tomohiro Kawahara, Masaya Hagiwara, Yoko Yamanishi and Fumihito Arai, Nagoya University, Japan

11:45-12:00 On-chip High Speed Microrobot Made of Ni-Si Composite Structure with Three-Dimensionally Patterned Surface
M. Hagiwara, T. Kawahara, T. Iijima, T. Masuda, Y. Yamanishi and F. Arai, Nagoya University, Japan

12:00-12:15 Local Ablation by Plasma Blade Using On-chip Micro-electrode
Yoko Yamanishi, Hiroki Kuriki, Shinya Sakuma, Masaya Hagiwara, Tomohiro Kawahara and Fumihito Arai, Nagoya University, Japan

Session TA2-2 (Organized Session): Interactive Robot

Conference Room 2

Chairperson: Kosuke Sekiyama, Nagoya University
Winsu Jatmiko, Universitas Indonesia

10:30-10:45 Optimized Distributed Self-Organizing Control for Coordinated Traffic Signal in Jakarta
Adi Wibowo, W. Jatmiko, T. Fukuda and K. Sekiyama, Diponegoro University, Indonesia

10:45-11:00 Communicative Humanoid Robot Control System Reflecting Human Body Movement
Akinori Wakabayashi, Satona Motomura and Shohei Kato
Collective Error Detection of Onboard Intelligent Compasses by Consensus Agreement Algorithm
Masao Kubo, Hiroshi Sato and Takashi Matsubara, National Defense Academy of Japan, Japan

Cooperative Distributed Object Classification for Multiple Robots with Audio Features
D. McGibney, T. Umeda, K. Sekiyama, H. Mukai and T. Fukuda, Washington University, USA

Suggestion of Probabilistic Reward-Independent Knowledge for Dynamic Environment in Reinforcement Learning
Nodoka Shibuya, Yoshiki Miyazaki and Kentarou Kurashige, Muroran Institute of Technology, Japan

Position Estimation of Distributed Sensor Node Robots by their Communication Connectivity
Sumiaki Ichikawa, Tokyo University of Science, Japan

Multi-scale Intelligent Information Processing for Multi-robot System based on Human-friendly Tele-operation
Naoyuki Kubota, Yuichiro Toda and Shintaro Suzuki, Tokyo Metropolitan University, Japan

Lunch

Chairperson: Tatsuo Arai, Osaka University

Plenary Lecture 4
Microfluidics and Microfabrication Technology for Highly Precise Cell Manipulation and Cultivation
Prof. Minoru Seki, Chiba University, Japan

Coffee Break

Poster Session II (MHS)

Chairperson: Masahiro Ohka, Nagoya University
Fumihito Arai, Nagoya University

Fabrication of Thermoresponsive Surface for Cell Sheet Harvest by Photopolymerization
Kazuyoshi Itoga, Jun Kobayashi, Masayuki Yamato and Teruo Okano, Tokyo Women’s Medical University, Japan
P2-2 Fabrication of Microfluidic Device on Temperature-responsive Cell Culture Surface for Studying the Shear Stress-dependent Cell Detachment
Zhonglan Tang, Yoshikatsu Akiyama, Kazuyoshi Itoga, Jun Kobayashi and Teruo Okano, Tokyo Women's Medical University, Japan

P2-3 Novel Device for Transplantation of Cell Sheet and Evaluation of Thin Polymer Films by Atomic Force Microscopy
Ryohei Takeuchi, Kazuhiro Fukumori, Katsuhisa Sakaguchi, Yutaka Terajima, Tatsuya Shimizu, Teruo Okano and Mitsuo Umezu, Waseda University, Japan

P2-4 Fabrication of a Dynamic Compression Stimulus Microdevice to Cells for Evaluating Real-time Cellular Response
Yuta Nakashima, Yin Yang and Kazuyuki Minami, Yamaguchi University, Japan

P2-5 Hydrogel-supported Skeletal Muscle Cell-based Bioassay System
Kuniaki Nagaminea, Shingo Otania, Mai Takeda, Makoto Kanzaki and Matsuhiko Nishizawa, Tohoku University, Japan

P2-6 Synthesis of Gold Nanoparticles on Petal-Shaped Silica by Solution Plasma
Taibou Yamamoto, Tomonaga Ueno, Nobuyuki Zettsu, Osamu Takai and Nagahiro Saito, Nagoya University, Japan

P2-7 Rotation of Micro Gear by Moving Bacteria Sheet
Tatsuya Miyamoto, Masaru Kojima, Masahiro Nakajima and Toshio Fukuda, Nagoya University, Japan

P2-8 Arbitrary Microstructure Fabrication Embedding Yeast Cells Patterned by Dielectrophoresis
Tao Yue, Masahiro Nakajima, Masaru Kojima and Toshio Fukuda, Nagoya University, Japan

P2-9 Measurement of Body Volume of Live C. elegans by Microchip
Jaehoon Jung, Masahiro Nakajima, Masaru Kojima and Toshio Fukuda, Nagoya University, Japan

P2-10 Method to Study the Single Cell’s Time-variation Adhesion Strength during the Manipulation inside ESEM
Yajing Shen, Masahiro Nakajima, Zoran Najdovski, Zhan Yang, Masaru Kojima, Seiji Kojima, Michio Homma and Toshio Fukuda, Nagoya University, Japan

P2-11 Selective Nano-Injection using Nano-Probe based on Nanomanipulation under Hybrid Microscope
Takahiro Hirano, Masahiro Nakajima, Masaru Kojima, Naoki Hisamoto, Michio Homma and Toshio Fukuda, Nagoya University, Japan

P2-12 Fabrication and Evaluation of Pt and Au Hybrid and Geometric Pt Nano Vehicle
Jingjing Bao, Masahiro Nakajima, Zhan Yang and Toshio Fukuda, Nagoya University, Japan
<table>
<thead>
<tr>
<th>Session Code</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2-13</td>
<td>Cytocompatibility Evaluation of Ferrite and NdFeB Magnetic Sugar Particles for Vasculature</td>
<td>Chengzhi Hu, Carlos Tercero, Seiichi Ikeda, Katsutoshi Ooe, Toshio Fukuda, Fumihito Arai,</td>
</tr>
<tr>
<td></td>
<td>Scaffold Fabrication</td>
<td>Kenichi Isobe and Makoto Negoro, Nagoya University, Japan</td>
</tr>
<tr>
<td>P2-14</td>
<td>Synthesis and Material Properties of Magnetic Fluid Coated with PEGylated Chondroitin</td>
<td>Seiichi Sugimoto, Yuichi Hadate, Kazuo Yagi, Masataka Kubo, Naohiro Yazu and Tadashi Inaba,</td>
</tr>
<tr>
<td></td>
<td>Sulfate</td>
<td>Nagoya University, Japan</td>
</tr>
<tr>
<td>P2-15</td>
<td>Application of Interpolation for DBIM Reconstruction of Ultrasound Tomography</td>
<td>Tan Tran-Duc and Anh Nguyen-Tien, VNU University of Engineering and Technology, Vietnam</td>
</tr>
<tr>
<td>P2-16</td>
<td>Modeling of Skeletal Musculature based on MRI – Calculation of the Moment Arm about the</td>
<td>Kazuto Miyawaki, Takehiro Iwami, Hiroki Miura, Toshiki Matsunaga, Yoichi Shimada and Goro</td>
</tr>
<tr>
<td></td>
<td>Pronation-of-Forearm and the Forearm Supinate–</td>
<td>Obinata, Akita National College of Technology, Japan</td>
</tr>
<tr>
<td>P2-17</td>
<td>Modification of Activity Pattern Induced by Synaptic Enhancements in a Semi-Artificial</td>
<td>Masaaki Murata, Hidekatsu Ito, Teppei Taenaka and Suguru N. Kudoh, Kwansei Gakuin University,</td>
</tr>
<tr>
<td></td>
<td>Network of Living Neurons</td>
<td>Japan</td>
</tr>
<tr>
<td>P2-18</td>
<td>Dynamic Deformation of Stretched Membrane in Drum-Type Micromirror</td>
<td>Subrata Kumar Kundu, Akiyoshi Hikita, Shinya Kumagai and Minoru Sasaki, Toyota Technological</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Institute, Japan</td>
</tr>
<tr>
<td>P2-19</td>
<td>Locomotion Mechanism and Control Method for a Microrobot Using the Difference in the</td>
<td>Masahiro Isogai, Aichi University of Technology, Japan</td>
</tr>
<tr>
<td></td>
<td>Vibration Characteristics of the Legs (Fabrication of a Prototype Microrobot; Preliminary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiments and Experiments in Turning Control)</td>
<td></td>
</tr>
<tr>
<td>P2-20</td>
<td>Positioning of an Inchworm Type Actuator with Five Degrees of Freedom</td>
<td>Tomohiro Yamada, Akihiro Torii and Akiteru Ueda, Aichi Institute of Technology, Japan</td>
</tr>
<tr>
<td>P2-21</td>
<td>Inchworm type Microrobot Using Friction Force Control Mechanisms</td>
<td>Yuki Itatsu, Akihiro Torii and Akiteru Ueda, Aichi Institute of Technology, Japan</td>
</tr>
<tr>
<td>P2-22</td>
<td>Design of High Functional Ring Type PZT for Micropump by Using FEM Analysis</td>
<td>Eiichi Aizawa, Kazuyoshi Tsuchiya and Yasutomo Uetsuji, Tokai University, Japan</td>
</tr>
<tr>
<td>P2-23</td>
<td>Development of Sputtering Conditions for PZT Micro Actuator with High Piezoelectric</td>
<td>Rikiya Takita, Kazuyoshi Tsuchiya and Yasutomo Uetsuji, Tokai University, Japan</td>
</tr>
<tr>
<td></td>
<td>Property by Au-Pt Buffer Layer</td>
<td></td>
</tr>
<tr>
<td>P2-24</td>
<td>On-Chip High-Speed and On-Demand Single Microbeads Loading</td>
<td></td>
</tr>
</tbody>
</table>
L. Feng, U. Huseyin, T. Kawahara, M. Hagiwara, Y. Yamanishi and F. Arai, Nagoya University, Japan

P2-25  Bionic Design of Microjoint for Minimally Invasive Surgical Instrument
Hirofumi Owaki, Tomohiro Kawahara and Fumihito Arai, Nagoya University, Japan

P2-26  Fabrication of 3D Capillary Vessel Simulator Using Femtosecond Laser and Mask Hybrid Exposure
Kyohei Tomita, Takuma Nakano, Kazuhisa Onda, Toshio Fukuda, Takehisa Matsuda, Makoto Negoro and Fumihito Arai, Nagoya University, Japan

P2-27  High Sensitivity Vasculature Models and Catheter Trajectory Reconstruction Using a Bi-Planar Vision System
Carlos Tercero, Seiichi Ikeda, Toshio Fukuda, Fumihito Arai, Makoto Negoro and Ikuo Takahashi, Nagoya University, Japan

P2-28  Nano-Gyroscope Assembly Using Carbon Nanotube based on Nanorobotic Manipulation
Zhan Yang, Masahiro Nakajima, Yajing Shen and Toshio Fukuda, Nagoya University, Japan

P2-29  Speech Assistance Devices Controlled by Neck Myoelectric Signal
Katsutoshi Ooe, Carlos Rafael Tercero Villagran, Kosuke Sekiyama and Toshio Fukuda, Nagoya University, Japan

P2-30  A New Sliding Micro Valve Generating/Separating Slug Flow in Micro Chemical Process
Yoshiro Kawakami, Nobuhiro Kadowaki and Koichi Suzumori, Okayama University, Japan

P2-31  Polymeric Micromachines Driven by Laser-Induced Negative Dielectrophoresis
Shoji Maruo and Naoki Yoshimura, Yokohama National University, Japan

P2-32  Texture Feature based Fingerprint Recognition for Low Quality Images
Zin Mar Win and Myint Myint Sein, University of Computer Studies, Myanmar

P2-33  Experiments on Power Distribution Maintenance Robot System
-Select Parameter to Insert a Bolt on Power Distribution Maintenance Robot System-
Takahiro Kataoka, Kazuki Aoyama, Naoki Maekawa and Yusuke Yamamoto, Meijo University, Japan

P2-34  Task Performance Test on Power Distribution Line Maintenance Robot System-Remove Insulator-
Kazuki Aoyama, Naoki Maekawa, Yusuke Yamamoto, Kyoichi Tatsuno and Takahiro Kataoka, Meijo University, Japan

P2-35  Arrhythmia Classification from Wavelet Feature on FGPA
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2-36</td>
<td>Arrhythmia Heart Beats Classification Using Mahalanobis Generalized Learning Vector Quantization (Mahalanobis GLVQ)</td>
<td>Elly Matul I., I Md Agus Setiawan, A. Febrian and Wisnu Jatmiko, Universitas Negeri Surabaya, Indonesia</td>
</tr>
<tr>
<td>P2-37</td>
<td>Autonomous Telecommunication Networks Coverage Area Expansion in Disaster Area using Mobile Robots</td>
<td>E. Budianto, A. Hafidh, F. Al Afif, A. Wibowo, W. Jatmiko, B. Hardian, P. Mursanto and A. Muis, Universitas Indonesia, Indonesia</td>
</tr>
<tr>
<td>P2-40</td>
<td>Missing Value Imputation Method Using Bayesian Network for Decision-making on HCR</td>
<td>Yoshihiro Miyakoshi and Shohei Kato, Nagoya Institute of Technology, Japan</td>
</tr>
<tr>
<td>P2-41</td>
<td>Evolutionary Approach of Reward Function for Reinforcement Learning using Genetic Programming</td>
<td>Shota Sumino, Atsuko Mutoh and Shohei Kato, Nagoya Institute of Technology, Japan</td>
</tr>
<tr>
<td>P2-42</td>
<td>A Novel Fall Prevention Scheme for Intelligent Cane Robot by Using a Motor Driven Universal Joint</td>
<td>Pei Di, Jian Huang, Kosuke Sekiyama and Toshio Fukuda, Nagoya University, Japan</td>
</tr>
<tr>
<td>P2-43</td>
<td>3-D Biped Walking Using Double Support Phase based on the Assumption of Point-Contact</td>
<td>Tadayoshi Aoyama, Kosuke Sekiyama, Yasuhisa Hasegawa and Toshio Fukuda, Nagoya University, Japan</td>
</tr>
<tr>
<td>P2-44</td>
<td>Vertical Ladder Climbing down Motion with Internal Stress Adjustment for a Multi-Locomotion Robot</td>
<td>Zhiguo Lu, Tadayoshi Aoyama, Kosuke Sekiyama, Yasuhisa Hasegawa and Toshio Fukuda, Nagoya University, Japan</td>
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<tr>
<td>P2-45</td>
<td>Deformable PCB based on Connector Mating Method by Using iHand for Improving HRC Performance Efficiency</td>
<td>Fei Chen, Kosuke Sekiyama, Jian Huang and Toshio Fukuda, Nagoya University, Japan</td>
</tr>
<tr>
<td>P2-46</td>
<td>Virtual Building Blocks Using a 2.5D-display Generating of Tactile and Force Sensations</td>
<td>Satoshi Tsuboi and Masahiro Ohka, Nagoya University, Japan</td>
</tr>
</tbody>
</table>
P2-47  Skill-based Vibration Suppression in Manipulation of Deformable Linear Objects  
Feng Ding, Jian Huang, Takayuki Matsuno and Toshio Fukuda, Huazhong University of Science and Technology, China

P2-48  Grasping Strategy of Two Robot Arms based on Tactile and Slippage Sensation of Optical Three-Axis Tactile Sensor System  
Hanafiah Yussof, Sukarmur Che Abdullah, Jiro Wada and Masahiro Ohka, Universiti Teknologi MARA, Malaysia

P2-49  Estimation of Tongue Movement based on Suprahyoid Muscle Activity  
Makoto Sasaki, Takayuki Arakawa, Atsushi Nakayama, Goro Obinata and Masaki Yamaguchi, Iwate University, Japan

15:50-16:00  Coffee Break

Technical Sessions
Session TP1-1 (Organized Session): Innovative Micro/Nano Mechatronics for Bio-medical Applications I
Conference Room 1
Chairperson: Masahiro Nakajima, Nagoya University  
Futoshi Iwata, Shizuoka University

16:00-16:15  Giant Liposomes as Microcapsules with Large Trapping Volumes: Downsizing through Various Membrane Filters and Analysis with a Calcein Quenching Method  
Kanta Tsumoto, Yuki Nakamura, Mina Yamazoe and Masahiro Tomita, Mie University, Japan

16:15-16:30  Evaluation of Bacteria Behavior in Micro-channel for Bacteria Driven Liposome  
Masaru Kojima, Zhiqin Wang, Tatsuya Miyamoto, Masahiro Nakajima, Michio Homma and Toshio Fukuda, Nagoya University, Japan

16:30-16:45  Thermo-Responsiveness of Auto-oxidized Cholesterol-containing Lipid Membranes, Observed in Real-Time  
Mun’delanji C. Vestergaard, Tsuyoshi Yoda, Tsutomu Hamada, Yoko Akazawa (Ogawa), Yasukazu Yoshida and Masahiro Takagi, Japan Advanced Institute of Science and Technology, Japan

16:45-17:00  Morphological and Topological Transformations That are Induced into Cell-Sized Giant Liposomes  
Kingo Takiguchi, Fumimasa Nomura and Shuichi Takeda, Nagoya University, Japan

17:00-17:15  Dynamic Transformation of a Cell-sized Liposome Containing Ganglioside  
Shruti Dhingra, Masamune Morita, Tsuyoshi Yoda, Mun’delanji C. Vestergaard, Tsutomu
Hamada and Masahiro Takagi, Japan Advanced Institute Of Science and Technology, Japan
Session TP1-2 (Organized Session): Young Researchers in Robotics I

Conference Room 2

Chairperson: Tomohiro Kawahara, Nagoya University
            Jun Okamoto, Tokyo Women's Medical University

16:00-16:15 Evaluation of Grasp Efficiency based on Muscle Activity Estimation by Anthropomorphic Robot Fingers
            Yuichi Kurita, Atsutoshi Ikeda, Tadashi Matsumoto and Tsukasa Ogasawara, Hiroshima University, Japan

16:15-16:30 Alternative Dexterous Object Manipulation using Torsional Fingertip Joints of Multifingered Hand
            Kenji Tahara, Keigo Maruta and Motoji Yamamoto, Kyushu University, Japan

16:30-16:45 High-Speed Single Cell Dispensing System
            Tomohiro Kawahara, Tatsuhiko Hirano, Lin Feng, Huseyin Uvet, Masaya Hagiwara,
            Yoko Yamanishi and Fumihito Arai, Nagoya University, Japan

16:45-17:00 Finger Mechanism Equipped Omnidirectional Driving Roller
            Kenjiro Tadakuma, Riichiro Tadakuma, Mitsuhiro Higashimori and Makoto Kaneko, Osaka University, Japan

17:00-17:15 Levitation Control System of the Manned Experimental Wing-in-Ground Effect Vehicle ART003R
            Yusuke Sugahara, Satoshi Kikuchi, Kazuhiro Kosuge and Yasuaki Kohama, Tohoku University, Japan

17:15-17:30 Coffee Break

Technical Sessions

Session TP2-1 (Organized Session): Innovative Micro/Nano Mechatronics For Bio-medical Applications II

Conference Room 1

Chairperson: Masaru Kojima, Nagoya University
            Kanta Tsumoto, Mie University

17:30-17:45 Improvement of Motility of Bacterium-driven Microobject Fabricated by Optical Tweezers
            Kousuke Nogawa, Masaru Kojima, Masahiro Nakajima, Michio Homma, Fumihito Arai
            and Toshio Fukuda, Nagoya University, Japan

17:45-18:00 ANN Generation According to a Connection Map of Cultured Network of Living Neurons on a Dish
            Teppei Taenaka, Hidekatsu Ito, Masaaki Murata and Suguru N. Kudoh, Kwansei Gakuin University
18:00-18:15 Single Molecule Analysis of Transcription Factor-DNA Complexes using Atomic Force Microscopy
Masahiro Nakano, Jun Teramoto, Tomohiro Shimada, Kaneyoshi Yamamoto and Akira Ishihama, Hosei University, Japan

18:15-18:30 Interactive Nano Manipulator based on an Atomic Force Microscope for Scanning Electron Microscopy
Masaki Takahashi, Hideyuki Ko, Tatsuo Ushiki, and Futoshi Iwata, Shizuoka University, Japan

18:30-18:45 Development of the Measurement System of Upper Abdominal Palpation
Takashi Kato, Leow Chi Cheng, Jun Ito and Koji Ikuta, Nagoya University, Japan

Session TP2-2 : Young Researchers in Robotics II
Conference Room 2

Chairperson: Tomohiro Kawahara, Nagoya University
Yuichi Kurita, Hiroshima University

17:30-17:45 Load-sensitive Continuously Variable Transmission Using an Oblique Feed Screw for parallel-Jaw Grippers
Takesi Takaki, Toru Yamasaki and Idaku Ishii, Hiroshima University, Japan

17:45-18:00 Design of Scout Robot as a Robotic Module for Symbiotic Multi-Robot Organisms
Kanako Harada, Sheila Russo, Tommaso Ranzani, Arianna Menciassi and Paolo Dario, The University of Tokyo, Japan

18:00-18:15 Development of the Medical Systems Using Mechatronics for Improvement of Accuracy and Quantitative Reliability of Medical Treatments
Jun Okamoto, Tokyo Women’s Medical University, Japan

18:15-18:30 Bipedal Gait Like Motions of a Thin Viscoelastic Object
Ixchel G. Ramirez-Alpizar, Mitsuru Higashimori and Makoto Kaneko, Osaka University, Japan

18:30-18:45 Investigation of Conditions Generating Velvet Hand Illusion Toward Tactile Displays
Rajaei Nader, Yuji Kawabe, Masahiro Ohka and Tetsu Miyaoka, Nagoya University, Japan

18:45-20:45 Reception Party
Universal Club
November 9 (Wed)
Location: Engineering and Science Building

**Invited Talk**

**Chairperson:** Kenji Fukuzawa, Nagoya University

9:30-10:10 Invited Talk
Development of Novel Nanomanipulators based on Scanning Probe Microscopes
Prof. Futoshi Iwata, Shizuoka University, Japan

**Chairperson:** Noritsugu Umehara, Nagoya University

10:10-10:50 Invited Talk
A Chip-based System for Cell Manipulation and Cellular Function Analysis
Prof. Takayuki Shibata, Toyohashi University of Technology, Japan

10:50-11:00 **Coffee Break**

**Invited Talk**

**Chairperson:** Fumihito Arai, Nagoya University

11:00-11:40 Invited Talk
In Silico Design of Guiding Tracks for Molecular Shuttles Powered by Motor Proteins
Prof. Takahiro Nitta, Gifu University, Japan

11:40-12:00 **Award Ceremony**

12:00-13:30 **Lunch**

13:30-15:00 **Laboratory Tour**
Nagoya University