

2011 International Symposium on Micro-NanoMechatronics and Human Science

(MHS 2011)

**Nagoya, Japan
6 – 9 November 2011**



**IEEE Catalog Number: CFP11768-PRT
ISBN: 978-1-4577-1360-6**

Table of Contents

Plenary Lecture

- 9:50-10:40 Plenary Lecture 1
Automation of Nanoscale Manipulation(0000223)
Prof. Sergej Fatikow, University of Oldenburg, Germany
- 10:50-11:40 Plenary Lecture 2
12 Years of Resonator: from Telephone to Atomic Force Microscopy(0000224)
Prof. Lionel Buchaillot, IEMN-CNRS, France

Plenary Lecture

- 15:10-16:00 Plenary Lecture 3
Methodology of Evaluation for Medical Devices Using In-vitro/In-silico Biomodel(0000225)
Prof. Makoto Ohta, Tohoku University, Japan

Technical Sessions

Session MP-1 (Organized Session): Young Researchers in Bioengineering

- 16:15-16:30 Application of Feedback System Control (FSC) to Identify the Optimized Osteogenic Drug Cocktails.(0000226)
Yoshitomo Honda, Xianting 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(0000232)
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(0000238)
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(0000242)
Tateki Sumii, Ryosuke Fujita, Kazuo Tanishita and Susumu Kudo, Shibaura Institute of Technology, Japan
- 17:15-17:30 Formation of Toroidal Multicellular Aggregate of Cardiomyocytes(0000246)
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(0000249)

Mohd Yusri, Kazuyoshi Tsuchiya, Kagemasa Kajiwara and Minoru Kimura, Tokai University, Japan

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

- 16:15-16:30 Simulation and Experimental Verification of Bacteria-driven Micromotors(0000254)
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(000025):
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(0000263)
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(0000267)
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(0000273)
Qingqing Liu, Kenji Fukuzawa, 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(0000277)
Prem Pal, Kazuo Sato and Hirotaka Hida, Indian Institute of Technology Hyderabad, India

Technical Sessions

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

- 9:00-9:15 Noncontact Nanometric Positioning of Probe Tip for Continuous Stiffness Measurement System(0000282)
S. Sakuma and F. Arai, Nagoya University, Japan
- 9:15-9:30 Design of a Compact 3-DOF Microhand System with Large Workspace(0000285)
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(000028);
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(0000297)
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⁽⁰⁰⁰⁰⁾²⁹;
Akiyuki Hasegawa, Masumi Yamada, Minoru Seki, Masayuki Yamato and Teruo Okano, Tokyo Women's Medical University, Japan

Session TA2-1 (Organized Session): Micro-Nano Fluidics and Biomedical Applications

10:30-10:45 Cross-Sectional of Capacitance Measurement In-Transition of Particle Concentration in Microchannel System⁽⁰⁰⁰⁰⁾²: 5
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⁽⁰⁰⁰⁰⁾² :
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⁽⁰⁰⁰⁰⁾²; 6
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⁽⁰⁰⁰⁰⁾²; ;
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⁽⁰⁰⁰⁰⁾³²⁷
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⁽⁰⁰⁰⁰⁾³²:
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⁽⁰⁰⁰⁰⁾³³⁵
Yoko Yamanishi, Hiroki Kuriki, Shinya Sakuma, Masaya Hagiwara, Tomohiro Kawahara and Fumihito Arai, Nagoya University, Japan

Session TA2-2 (Organized Session): Interactive Robot

10:30-10:45 Optimized Distributed Self-Organizing Control for Coordinated Traffic Signal in Jakarta⁽⁰⁰⁰⁰⁾³³⁸
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⁽⁰⁰⁰⁰⁾³⁴⁴
Akinori Wakabayashi, Satona Motomura and Shohei Kato Nagoya Institute of Technology, Japan

- 11:00-11:15 Collective Error Detection of Onboard Intelligent Compasses by Consensus Agreement Algorithm⁰⁰⁰⁰³⁴:
Masao Kubo, Hiroshi Sato and Takashi Matsubara, National Defense Academy of Japan, Japan
- 11:15-11:30 Cooperative Distributed Object Classification for Multiple Robots with Audio Features⁰⁰⁰⁰⁵⁶
D. McGibney, T. Umeda, K. Sekiyama, H. Mukai and T. Fukuda, Washington University, USA
- 11:30-11:45 Suggestion of Probabilistic Reward-Independent Knowledge for Dynamic Environment in Reinforcement Learning⁰⁰⁰⁰⁶²
Nodoka Shibuya, Yoshiki Miyazaki and Kentarou Kurashige, Murooran Institute of Technology, Japan
- 11:45-12:00 Position Estimation of Distributed Sensor Node Robots by their Communication Connectivity⁰⁰⁰⁰⁶⁸
Sumiaki Ichikawa, Tokyo University of Science, Japan
- 12:00-12:15 Multi-scale Intelligent Information Processing for Multi-robot System based on Human-friendly Tele-operation⁰⁰⁰⁰⁷⁴
Naoyuki Kubota, Yuichiro Toda and Shintaro Suzuki, Tokyo Metropolitan University, Japan
- 13:30-14:10 Plenary Lecture 4
Microfluidics and Microfabrication Technology for Highly Precise Cell Manipulation and Cultivation⁰⁰⁰⁰⁷⁷:
Prof. Minoru Seki, Chiba University, Japan

Poster Session II (MHS)

- 14:20-15:50
- P2-1 Fabrication of Thermoresponsive Surface for Cell Sheet Harvest by Photopolymerization⁰⁰⁰⁰⁷⁷:
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 Detachment⁰⁰⁰⁰⁸⁴
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 Microscopy⁰⁰⁰⁰⁸⁸:
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~~(0000)~~96
Yuta Nakashima, Yin Yang and Kazuyuki Minami, Yamaguchi University, Japan
- P2-5 Hydrogel-supported Skeletal Muscle Cell-based Bioassay System~~(0000)~~: 2
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~~(0000)~~: 8
Taibou Yamamoto, Tomonaga Ueno, Nobuyuki Zettsu, Osamu Takai and Nagahiro Saito, Nagoya University, Japan
- P2-7 Rotation of Micro Gear by Moving Bacteria Sheet~~(0000)~~; 4
Tatsuya Miyamoto, Masaru Kojima, Masahiro Nakajima and Toshio Fukuda, Nagoya University, Japan
- P2-8 Arbitrary Microstructure Fabrication Embedding Yeast Cells Patterned by Dielectrophoresis~~(0000)~~; :
Tao Yue, Masahiro Nakajima, Masaru Kojima and Toshio Fukuda, Nagoya University, Japan
- P2-9 Measurement of Body Volume of Live *C. elegans* by Microchip~~(0000)~~26
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~~(0000)~~32
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~~(0000)~~38
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~~(0000)~~44
Jingjing Bao, Masahiro Nakajima, Zhan Yang and Toshio Fukuda, Nagoya University, Japan
- P2-13 Cytocompatibility Evaluation of Ferrite and NdFeB Magnetic Sugar Particles for Vasculature Scaffold Fabrication~~(0000)~~4:
Chengzhi Hu, Carlos Tercero, Seiichi Ikeda, Katsutoshi Ooe, Toshio Fukuda, Fumihito Arai, Kenichi Isobe and Makoto Negoro, Nagoya University, Japan
- P2-14 Synthesis and Material Properties of Magnetic Fluid Coated with PEGylated Chondroitin Sulfate~~(0000)~~56
Seiichi Sugimoto, Yuichi Hadate, Kazuo Yagi, Masataka Kubo, Naohiro Yazu and Tadashi Inaba, Nagoya University, Japan

- P2-15 Application of Interpolation for DBIM Reconstruction of Ultrasound Tomography(0000)62
Tan Tran-Duc and Anh Nguyen-Tien, VNU University of Engineering and Technology, Vietnam
- P2-16 Modeling of Skeletal Musculature based on MRI – Calculation of the Moment Arm about the Pronation-of-Forearm and the Forearm Supinate–(0000)66
Kazuto Miyawaki, Takehiro Iwami, Hiroki Miura, Toshiki Matsunaga, Yoichi Shimada and Goro Obinata, Akita National College of Technology, Japan
- P2-17 Modification of Activity Pattern Induced by Synaptic Enhancements in a Semi-Artificial Network of Living Neurons(0000)72
Masaaki Murata, Hidekatsu Ito, Teppei Taenaka and Suguru N. Kudoh, Kwansei Gakuin University, Japan
- P2-18 Dynamic Deformation of Stretched Membrane in Drum-Type Micromirror(0000)77
Subrata Kumar Kundu, Akiyoshi Hikita, Shinya Kumagai and Minoru Sasaki, Toyota Technological Institute, Japan
- P2-19 Locomotion Mechanism and Control Method for a Microrobot Using the Difference in the Vibration Characteristics of the Legs (Fabrication of a Prototype Microrobot; Preliminary Experiments and Experiments in Turning Control)(0000)83
Masahiro Isogai, Aichi University of Technology, Japan
- P2-20 Positioning of an Inchworm Type Actuator with Five Degrees of Freedom(0000)89
Tomohiro Yamada, Akihiro Torii and Akiteru Ueda, Aichi Institute of Technology, Japan
- P2-21 Inchworm type Microrobot Using Friction Force Control Mechanisms(0000)95
Yuki Itatsu, Akihiro Torii and Akiteru Ueda, Aichi Institute of Technology, Japan
- P2-22 Design of High Functional Ring Type PZT for Micropump by Using FEM Analysis(0000)9;
Eiichi Aizawa, Kazuyoshi Tsuchiya and Yasutomo Uetsuji, Tokai University, Japan
- P2-23 Development of Sputtering Conditions for PZT Micro Actuator with High Piezoelectric Property by Au-Pt Buffer Layer(0000): 7
Rikiya Takita, Kazuyoshi Tsuchiya and Yasutomo Uetsuji, Tokai University, Japan
- P2-24 On-Chip High-Speed and On-Demand Single Microbeads Loading(0000); 3
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(0000); 9
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(0000)522
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 System⁰⁰⁰⁵²⁵
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 Manipulation⁰⁰⁰⁵²;
Zhan Yang, Masahiro Nakajima, Yajing Shen and Toshio Fukuda, Nagoya University, Japan
- P2-29 Speech Assistance Devices Controlled by Neck Myoelectric Signal⁰⁰⁰⁵³⁷
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 Process⁰⁰⁰⁵⁴³
Yoshiro Kawakami, Nobuhiro Kadowaki and Koichi Suzumori, Okayama University, Japan
- P2-31 Polymeric Micromachines Driven by Laser-Induced Negative Dielectrophoresis⁰⁰⁰⁵⁴⁹
Shoji Maruo and Naoki Yoshimura, Yokohama National University, Japan
- P2-32 Texture Feature based Fingerprint Recognition for Low Quality Images⁰⁰⁰⁵⁵⁵
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-⁰⁰⁰⁵⁵;
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-⁰⁰⁰⁵⁶⁷
Kazuki Aoyama, Naoki Maekawa, Yusuke Yamamoto, Kyoichi Tatsuno and Takahiro Kataoka, Meijo University, Japan
- P2-35 Arrhythmia Classification from Wavelet Feature on FGPA⁰⁰⁰⁵⁶;
W. Jatmiko, P. Mursanto, A. Febrian, M. Fajar, W.T. Anggoro, R.S. Rambe, M.I. Tawakal, Fauzi, F. Jovan and M. Eka S., Universitas Indonesia, Indonesia
- P2-36 Arrhythmia Heart Beats Classification Using Mahalanobis Generalized Learning Vector Quantization (Mahalanobis GLVQ)⁰⁰⁰⁵⁷⁷
Elly Matul I., I Md Agus Setiawan, A. Febrian and Wisnu Jatmiko, Universitas Negeri Surabaya, Indonesia
- P2-37 Autonomous Telecommunication Networks Coverage Area Expansion in Disaster Area using Mobile Robots⁰⁰⁰⁵⁸³
E. Budianto, A. Hafidh, F. Al Afif, A. Wibowo, W. Jatmiko, B. Hardian, P. Mursanto and A. Muis, Universitas Indonesia, Indonesia

- P2-38 Enhanced Adaptive Traffic Signal Control System Using Camera Sensor and Embedded System(000589)
F. Al Afif, M. Febrian Rachmadi, A. Wibowo, W. Jatmiko, P. Mursanto and M. Anwar Ma'sum, Universitas Indonesia, Indonesia
- P2-39 Building Automation Tools to Calculate Trichloroethylene Level in Human Liver Using – Case Study: Images of White Mouse Liver(000595)
A. Febrian, Elly Matul I., I Md. Agus S., M. Fajar, W. Jatmiko, D.H. Ramdhan, A. Bowolakso and P. Mursanto, Universitas Indonesia, Indonesia
- P2-40 Missing Value Imputation Method Using Bayesian Network for Decision-making on HCR(00059);
Yoshihiro Miyakoshi and Shohei Kato, Nagoya Institute of Technology, Japan
- P2-41 Evolutionary Approach of Reward Function for Reinforcement Learning using Genetic Programming(0005: 7
Shota Sumino, Atsuko Mutoh and Shohei Kato, Nagoya Institute of Technology, Japan
- P2-42 A Novel Fall Prevention Scheme for Intelligent Cane Robot by Using a Motor Driven Universal Joint(0005; 3
Pei Di, Jian Huang, Kosuke Sekiyama and Toshio Fukuda, Nagoya University, Japan
- P2-43 3-D Biped Walking Using Double Support Phase based on the Assumption of Point-Contact(0005; 9
Tadayoshi Aoyama, Kosuke Sekiyama, Yasuhisa Hasegawa and Toshio Fukuda, Nagoya University, Japan
- P2-44 Vertical Ladder Climbing down Motion with Internal Stress Adjustment for a Multi-Locomotion Robot(000625
Zhiguo Lu, Tadayoshi Aoyama, Kousuke Sekiyama, Yasuhisa Hasegawa and Toshio Fukuda, Nagoya University, Japan
- P2-45 Deformable PCB based on Connector Mating Method by Using iHand for Improving HRC Performance Efficiency(00062;
Fei Chen, Kosuke Sekiyama, Jian Huang and Toshio Fukuda, Nagoya University, Japan
- P2-46 Virtual Building Blocks Using a 2.5D-display Generating of Tactile and Force Sensations(000637
Satoshi Tsuboi and Masahiro Ohka, Nagoya University, Japan
- P2-47 Skill-based Vibration Suppression in Manipulation of Deformable Linear Objects(000643
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(000649
Hanafiah Yussof, Sukarnur Che Abdullah, Jiro Wada and Masahiro Ohka, Universiti Teknologi MARA, Malaysia
- P2-49 Estimation of Tongue Movement based on Suprahyoid Muscle Activity(000655

Makoto Sasaki, Takayuki Arakawa, Atsushi Nakayama, Goro Obinata and Masaki Yamaguchi, Iwate University, Japan

Technical Sessions

Session TPI-1 (Organized Session): Innovative Micro/Nano Mechatronics for Bio-medical

Applications I

- 16:00-16:15 Giant Liposomes as Microcapsules with Large Trapping Volumes: Downsizing through Various Membrane Filters and Analysis with a Calcein Quenching Method⁰⁰⁰⁰⁶⁵;
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 Liposome⁰⁰⁰⁰⁶⁷
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-Time⁰⁰⁰⁰⁷³
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 Liposomes⁰⁰⁰⁰⁷⁸
Kingo Takiguchi, Fumimasa Nomura and Shuichi Takeda, Nagoya University, Japan
- 17:00-17:15 Dynamic Transformation of a Cell-sized Liposome Containing Ganglioside⁰⁰⁰⁰⁸³
Shruti Dhingra, Masamune Morita, Tsuyoshi Yoda, Mun'delanji C. Vestergaard, Tsutomu Hamada and Masahiro Takagi, Japan Advanced Institute Of Science and Technology, Japan

Session TPI-2(Organized Session): Young Researchers in Robotics I

- 16:00-16:15 Evaluation of Grasp Efficiency based on Muscle Activity Estimation by Anthropomorphic Robot Fingers⁰⁰⁰⁰⁸⁸
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 Hand⁰⁰⁰⁰⁸⁸;
Kenji Tahara, Keigo Maruta and Motoji Yamamoto, Kyushu University, Japan
- 16:30-16:45 High-Speed Single Cell Dispensing System⁰⁰⁰⁰⁹⁴

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 Roller⁰⁰⁰⁶97
Kenjiro Tadakuma, Riichiro Tadakuma, Mitsuru Higashimori and Makoto Kaneko, Osaka University, Japan
- 17:00-17:15 Levitation Control System of the Manned Experimental Wing-in-Ground Effect Vehicle ART003R⁰⁰⁰⁶9;
Yusuke Sugahara, Satoshi Kikuchi, Kazuhiro Kosuge and Yasuaki Kohama, Tohoku University, Japan

Technical Sessions

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

- 17:30-17:45 Improvement of Motility of Bacterium-driven Microobject Fabricated by Optical Tweezers⁰⁰⁰⁶: 4
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 Dish⁰⁰⁰⁶: 8
Tepei Taenaka, Hidekatsu Ito, Masaaki Murata and Suguru N. Kudoh, Kwansei Gakuin University, Japan
- 18:00-18:15 Single Molecule Analysis of Transcription Factor-DNA Complexes using Atomic Force Microscopy⁰⁰⁰⁶: 2
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 Microscopy⁰⁰⁰⁶: 7
Masaki Takahashi, Hideyuki Ko, Tatsuo Ushiki, and Futoshi Iwata, Shizuoka University, Japan
- 18:30-18:45 Development of the Measurement System of Upper Abdominal Palpation⁰⁰⁰⁷23
Takashi Kato, Leow Chi Cheng, Jun Ito and Koji Ikuta, Nagoya University, Japan

Session TP2-2 : Young Researchers in Robotics II

- 17:30-17:45 Load-sensitive Continuously Variable Transmission Using an Oblique Feed Screw for parallel-Jaw Grippers⁰⁰⁰⁷29
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 Organisms⁰⁰⁰⁷33
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 Treatments⁰⁰⁰⁷³⁶
Jun Okamoto, Tokyo Women's Medical University, Japan
- 18:15-18:30 Bipedal Gait Like Motions of a Thin Viscoelastic Object⁰⁰⁰⁷³;
Ischel G. Ramirez-Alpizar, Mitsuru Higashimori and Makoto Kaneko, Osaka University, Japan
- 18:30-18:45 Investigation of Conditions Generating Velvet Hand Illusion Toward Tactile Displays⁰⁰⁰⁷⁴⁵
Rajaei Nader, Yuji Kawabe, Masahiro Ohka and Tetsu Miyaoka, Nagoya University, Japan

Invited Talk

- 9:30-10:10 Invited Talk
Development of Novel Nanomanipulators based on Scanning Probe Microscopes⁰⁰⁰⁷⁴;
Prof. Futoshi Iwata, Shizuoka University, Japan
- 10:10-10:50 Invited Talk
A Chip-based System for Cell Manipulation and Cellular Function Analysis⁰⁰⁰⁷⁵²
Prof. Takayuki Shibata, Toyohashi University of Technology, Japan
- 11:00-11:40 Invited Talk
In Silico Design of Guiding Tracks for Molecular Shuttles Powered by Motor Proteins⁰⁰⁰⁷⁵³
Prof. Takahiro Nitta, Gifu University, Japan