

MHS2018

*2018 International Symposium on Micro-NanoMechatronics and Human Science
(From Micro & Nano Scale Systems to Robotics & Mechatronics Systems)
Symposium on “Understanding brain plasticity on body representations to promote their adaptive
functions” Grant-in-Aid for Scientific Research on Innovative Areas, MEXT, Japan
Dec. 9 - 12, 2018, Nagoya, Japan*

December 10 (Mon)

Location: Noyori Conference Hall

Opening Remarks

Conference Room 1

Chairperson: *Fumihito Arai, Nagoya University*

9:00-9:20 *Prof. Toshio Fukuda, Meijo University, Japan (Honorary Chair)
Prof. Fumihito Arai, Nagoya University, Japan (General Co-Chair)
Prof. Jun Ota, The University of Tokyo, Japan (General Co-Chair)*

Plenary Talks

Conference Room 1

Chairperson: *Fumihito Arai, Nagoya University*

9:20-10:05 **Plenary Talk1**
Functionalized Light Robotics
Jesper Glückstad, Technical University of Denmark

10:05-10:20 ***Coffee Break***

***Session MA1-1: (Organized Session 8) :
Micro-Nano Bio Platform and Its Applications***

Conference Room 1

Chairperson: *Masaru Kojima, Osaka University*

10:20-10:50 **Robotic Microscope System for Studying the Basic Principles of Brain
Function**
Koutarou D. Kimura and Koichi Hashimoto, Nagoya City University

- 10:50-11:05 Implementation of Local Environmental Control System on the
Microhand
*Kazuma Koshide, Masaru Kojima, Yasushi Mae and Tatsuo Arai, Osaka
University*
- 11:05-11:20 Strategies of Stable Grasp and Accurate Release for Dual-finger
Micromanipulator
*Xiaoming Liu, Junnan Chen, Yuqing Lin, Masaru Kojima, Qing Shi,
Qiang Huang, Toshio Fukuda and Tatsuo Arai, Beijing Institute of
Technology*
- 11:20-11:35 Mechanical Characterization of a Single Yeast Cell using a Robot
Integrated Microfluidic Chip
*Di Chang, Shinya Sakuma and Chihiro Uehara, Nobuyuki Uozumi and
Fumihito Arai, Nagoya University*
- 11:35-11:50 Separated Co-culture of Heterotypic Cells using Microfabricated Thin
ECM Membranes
*Hideki Iwadate, Naoki Kimura, Rina Hashimoto, Yuya Yajima, Masumi
Yamada, Rie Utoh and Minoru Seki, Chiba University*

***Session MA2-1: (Organized Session6)
Human Assistive Technology***

Conference Room 2

Chairperson: *Yasuhisa Hasegawa, Nagoya University*

- 10:20-10:50 Clinical Neuro-mechanics for Design and Analysis of Motor Assistive
Devices
Hideki Kadone, University of Tsukuba
- 10:50-11:05 Cooperative Movement in Grasping and Development of
Grasping-training Robot
*Shotaro Okajima, Fady S Alnajjar, Shingo Shimoda and Yasuhisa
Hasegawa, Nagoya University*
- 11:05-11:20 An Exoskeleton Brake Unit for Children with Crouch Gait Supporting the
Knee Joint During Stance
*Takumi Yamada, Hideki Kadone, Yukiyo Shimizu and Kenji Suzuki,
University of Tsukuba*
- 11:20-11:35 Development of Vietnamese Voice Chatbot with Emotion Expression
*Thanh Nhu Vo and Hideyuki Sawada, The University of Danang -
University of Science and Technology*

11:50-12:50 **Lunch**

Poster Session I

Poster Area (1st Floor)

Chairperson: *Ohka Masahiro, Nagoya University*
Yasuhisa Hasegawa, Nagoya University

12:50-13:50

- MP-01 **Patients Simulator for Transsphenoidal Surgery**
Taisuke Masuda, Seiji Omata, Akio Morita, Taichi Kin, Nobuhito Saito, Juli Yamashita, Kiyoyuki Chinzei, Akiyuki Haswgawa, Toshio Fukuda and Harada Kanako, Nagoya University
- MP-02 **Ultrafast Fabrication of Microneedle Array for Transdermal Ion Detection**
Ganesh Kumar Mani, Dhivya Ponnusamy and Kazuyoshi Tsuchiya, Tokai University
- MP-03 **Vanadium Oxide Nanoparticles for Dimethylamine Vapour Detection**
Veena Mounasamy, Ganesh Kumar Mani, Sujithra Sukumaran, Dhivya Ponnusamy, Kazuyoshi Tsuchiya, Arun K Prasad and Sridharan Madanagursamy, Tokai University
- MP-04 **Skin Adhesive Type pH Sensor for Heatstroke Detection**
Yuka Nimura, Ganesh Kumar Mani, Dhivya Ponnusamy and Kazuyoshi Tsuchiya, Tokai University
- MP-05 **Development of Intranasal Sensor for Lung Cancer Detection**
Yuta Isono, Ganesh Kumar Mani, Dhivya Ponnusamy and Kazuyoshi Tsuchiya, Tokai University
- MP-06 **Analysis of Nanba Walking**
Masahiro Isogai, Masashi Suzuki and Kazuto Miyawaki, Aichi University of Technology
- MP-07 **CAHT for Habilitation of Children with Disorders**
Tomoya Tanaka, Yuzi Handa, Taku Miyamura, Hiroaki Matsutani, Toshie Asahi and Toshio Fukuda, Aichi High School of Technology and Engineering Advanced Course

- MP-08 Research on Walking Support Method using Cooperative Motion of Cane Robot
Masafumi Kojima, Masahiro Kato, Kento Yamada, Takahiro Ikeda, Akihiko Ichikawa, Masanori Tanimoto, Izumi Kondo and Toshio Fukuda, Meijo University
- MP-09 Stabilization of Walking with Walking-Aid Cane Robot Applying Light Touch Effect
Masahiro Kato, Akihiko Ichikawa, Izumi Kondo and Fukuda Toshio, Meijo University
- MP-10 Experimental Evaluation of Haptic Visualization Interface for Robot Teleoperation using Onomatopoeia in a Haptic Recognition Task
Maika Ando, Jotaro Chiba, Shunki Itadera, Jun Nakanishi, Tadayoshi Aoyama and Yasuhisa Hasegawa
- MP-11 Human Detection by a Load Sensor using Quartz Crystal Resonator
Yuichi Murozaki, Takuya Nishi and Fumihito Arai, Nagoya University
- MP-12 Development of Light Weight 3Dof Manipulator on UAV System for Infrastructure Inspection
Satoshi Minamiyama, Kenichi Ohara, Takahiro Ikeda, Akihiko Ichikawa, Satoshi Asizawa, Takeo Oomichi and Toshio Fukuda, Meijo University
- MP-13 Verification Concerning Load Distribution for Distributed Control Actuation Module
Kenichi Ohara and Ryota Hamanaka, Meijo University
- MP-14 Development of Pasted Sheet Sensor using P(VDF-TrFE)
Yuya Kumakiri, Ganesh Kumar Mani and Kazuyoshi Tsuchiya, Tokai University
- MP-15 Cell Stiffness Measurement by Two-fingered Micro-hand System with Plate Shaped End Effector
Masaru Kojima, Taisei Tanaka, Yasushi Mae, Toshihiko Ogura and Tatsuo Arai, Osaka University
- MP-16 Tongue Training Robot Development for Swallowing Rehabilitation
Junpei Kumagai, Makoto Sasaki, Katuhiro Kamata and Atsushi Nakayama, Iwate University
- MP-17 Development of Tongue Movement Training Device using a Pneumatic Balloon Actuator
Makoto Sasaki, Tatsuya Watanabe and Isamu Shibamoto, Iwate University

- MP-18 A Wearable Finger Exoskeleton based on the Crank-Rocker Mechanism for Rehabilitation
Ang Ke, Jian Huang, Luyao Chen and Jiping He, Huazhong University of Science and Technology
- MP-19 Optimized Convolutional Gabor using Particle Swarm Optimization
Bariqi Abdillah, Grafika Jati, Machmud Roby Alhamidi and Wisnu Jatmiko, Faculty Computer Science-Universitas Indonesia Depok, Indonesia
- MP-20 Development and Evaluation of an Electric Walking Machine
Kazuto Miyawaki, Ryo Saito, Ayuko Saito, Yoshikazu Kobayashi, Satoru Kizawa and Goro Obinata, National Institute of Technology, Akita College
- MP-21 A Study on Joint Trajectory Planning of Multilegged Robot with Redundant Degrees of Freedom Legs using the Screw Theory
Yoichi Shigematsu, Naoya Yoshinaga, Hitoshi Inabe, Ryoichiro Tamura, Tomoya Fujii, Souta Okada and Nobuto Hirakoso, National Institute of Technology, Gunma College
- MP-22 Development of the Experimental System that can Acquire the Gait Data Online in a Quadruped Robot
Yuichiro Ishii, Hiroki Yamamoto, Sungi Kim and Yusuke Ikemoto, Meijo University
- MP-23 Brain Signal Acquisition Methods in BCIs to Estimate Human Motion Intention – a survey
Sanjaya Bandara and Kazuo Kiguchi, Kyushu University
- MP-24 Variational Mode Decomposition with Nonlocal Means Technique for Robust Denoising ECG Signal
Indra Hermawan, Grafika Jati and Wisnu Jatmiko, Universitas Indonesia
- MP-25 In-Situ Observation of Fracture Behavior of Silicon in a Transmission Electron Microscope
Kohei Okada, Syugo Tanaka, Kensuke Nakata, Masahiro Nakajima and Taeko Ando, Ritsumeikan University

Plenary Talks

Chairperson: Kenji Fukuzawa, Nagoya University

13:50-14:35 Plenary Talk2
Strength of Single-walled Carbon Nanotubes: Size and Structure
Dependence
Takahiro Namazu, Aichi Institute of Technology

14:35-14:50 ***Coffee Break***

Session MPI-1: (Organized Session5)

Functional Interfaces and Hydro-Electrochemical Mechatronics

Conference Room 1

Chairperson: *Yoko Yamanishi, Kyushu University*
Akira Yamada, Aichi Institute of Technology

14:50-15:20 Robots based on Chemical System
Shingo Maeda, Shibaura Institute of Technology

15:20-15:35 Printed Self-oscillatory Mechanism Inspired by an Electric Bell
Hiroki Shigemune, Shingo Maeda, Akihiro Imai, Shuji Hashimoto, Shigeki Sugano and Hideyuki Sawada, Waseda University

15:35-15:50 Study of Low Energy Micro EHD Pump by Designed Electric Field
Tasuku Sato, Shingo Maeda and Yoko Yamanishi, Kyushu University

15:50-16:05 Evaluation of the Strength Characteristics of Biodegradable Polymer
Structures Fabricated by a 3D Printer using Different Nozzle Scan Patterns
*Miho Suzuki, Asahi Yonezawa, Kohei Takeda and Akira Yamada, Aichi
Institute of Technology*

16:05-16:20 Uniform Transfection: Shock Wave Generation in Laser Ablation and
Microcontact Printing
*Harsh Gupta, Naoki Iwasaki, Keisuke Funahashi, Toshiki Minemura,
Shin Sawai, Pallavi Shinde, Tuhin Subhra Santra, Takayuki Shibata and
Moeto Nagai, Toyohashi University of Technology*

Session MP2-1: (Organized Session 14)
Cognitive Robotics

Conference Room 2

- Chairperson: *Naoyuki Kubota, Tokyo Metropolitan University*
- 14:50-15:20 **Intelligent Technology for Socially Embedded Robot Partners**
Jinseok Woo and Naoyuki Kubota, Tokyo Metropolitan University
- 15:20-15:35 **Human Elbow Joint Motion Change Induced by Tonic Vibration Reflex with Vibration Stimulation**
Koki Honda and Kazuo Kiguchi, Kyushu University
- 15:35-15:50 **Body Parts Estimation for Motion Capture System using Multiple Depth Sensors**
Ryuichiro Sakata, Futoshi Kobayashi and Hiroyuki Nakamoto, Kobe University
- 15:50-16:05 **Self-Generation of Reward by Inputs from Multi Sensors -Integration of Evaluations for Inputs to Avoid Danger-**
Masaya Ishizuka and Kentarou Kurashige, Muroran Institute of Technology
- 16:05-16:20 **An Episodic Memory Model with Slow Features Extraction for Topological Map Building**
Wei Hong Chin, Yuichiro Toda, Jinseok Woo, Naoyuki Kubota and Chu Kiong Loo, Tokyo Metropolitan University

Session MPI-2: (Organized Session 3)
Cytoanalysis and Biomonitoring

Conference Room 1

- Chairperson: *Taisuke Masuda, Nagoya University*
Seiji Omata, Nagoya University
- 16:35-17:05 **Toward the Development of in Vitro Bioassay Systems Integrated with Electrochemical Biosensors**
Kikuo Komori, Univeristy of Tokyo
- 17:05-17:20 **Spatiotemporal Control of Cell Culture Microenvironment by Microfluidic Probe Integrated Device**
Kenta Shinha and Hiroshi Kimura, Tokai University

- 17:20-17:35 A Pillar-based Microfluidic Chip for Detection of T-cells and B-cells using Machine Learning
Bilal Turan, Taisuke Masuda, Wu Lei, Anas Mohd Noor, Koji Horio, Toshiki Saito, Yasuyuki Miyata and Fumihito Arai, Nagoya University
- 17:35-17:50 A Cellular Contractility Monitoring System Allowing For High-throughput and Long-term Analysis
Tsubasa S. Matsui and Shinji Deguchi, Osaka University
- 17:50-18:05 Reconstituting a Bilayer Cellular System using an Artificial Matrigel Basement Membrane Achieved by the Micromesh Technique
Kennedy Omondi Okeyo, Kai Yamada, Osamu Kurosawa, Hidehiro Oana and Masao Washizu, Kyoto University
- 18:05-18:20 Estimation of Bound Water Ratio in Extracellular Matrices using Terahertz Time-domain Spectroscopy
Tetsuri Kuwazuru, Atsushi Tsujimoto, Ayaka Kamada, Katsuko Furukawa, Seiji Nishizawa and Takashi Ushida, The University of Tokyo

Session MP2-2: (Organized Session 7)

Intelligent Robot System

Conference Room 2

Chairperson: *Kenichi Ohara, Meijo University*

- 16:35-17:05 Perception and Decision Making for the Autonomous Driving System
Tsuyoshi Tasaki, Meijo University
- 17:05-17:20 Intoning Speech Performance of the Talking Robot for Vietnamese Language Case
Thanh Nhu Vo and Hideyuki Sawada, The University of Danang - University of Science and Technology
- 17:20-17:35 Enhanced Bayesian Tracker for Various Condition using Thermal Infrared Imagery
Umi Chasanah, Grafika Jati and Wisnu Jatmiko, Universitas Indonesia
- 17:35-17:50 Improvement CNN Performance by Edge Detection Preprocessing for Vehicle Classification Problem
Bariqi Abdillah, Grafika Jati and Wisnu Jatmiko, Universitas Indonesia

17:50-18:05 Improvement of Contact Condition between Bridge Inspecting Aerial
Manipulator by Applying Compliance Mechanism
*Takahiro Ikeda, Shogo Yasui, Kenichi Ohara, Akihiko Ichikawa, Satoshi
Ashizawa, Akihisa Okino, Takeo Oomichi and Toshio Fukuda, Meijo
University*

18:30-19:30 ***Beer Party***

December 11 (Tue)

Location: Noyori Conference Hall

Plenary Talks

Chairperson: Hisataka Maruyama, Nagoya University

9:00-9:45 Plenary Talk3
Bio-Cyber Systems: Enabling Next -Gen Analytical Tools from
Monitoring Mini-Organs to Fitbits for Plants
Michael A. Daniele, NC State University

***Session TA1-1: (Organized Session 1-1)
Advanced Micro-Nano Systems for Biomedical Applications***

Conference Room 1

Chairperson: *Akihiko Ichikawa, Meijo University*

10:00-10:30 Cell Injection Microrobot Development and Evaluation in Microfluidic
Chip
Qiang Zhou, Bin Song, Yanmin Feng and Lin Feng, Beihang University

10:30-10:45 Microscopic Laser Interferometry to Measure the Displacement of
Micromechanical Objects
Hiroataka Sugiura, Shinya Sakuma and Fumihito Arai, Nagoya University

10:45-11:00 Extended Flow Reduction Mechanism
Shinya Sakuma, Yusuke Kasai and Fumihito Arai, Nagoya University

11:00-11:15 Nano-Dispenser: A Microfluidic Liquid Handler with the Help of a
Pneumatic Controlled Transparent Micronozzle Array
*Gaurav Pandey, Rohit Bhardwaj, Kentaro Tanagi, Takayuki Shibata and
Moeto Nagai, Toyohashi University of Technology*

11:15-11:30 Sequential Trapping and Parallel Ejection of Droplets Through
Pneumatically Controlled Micronozzle Array for 3D Single Cell
Assembly
*Rohit Bhardwaj, Kentaro Tanagi, Gaurav Pandey, Takayuki Shibata and
Moeto Nagai, Toyohashi University of Technology*

- 11:30-11:45 Studing Making Micro Structure with Biodegradable Materials
Taro Kozuka, Masaru Takeuchi, Akiyuki Hasegawa, Eunhye Kim, Akihiko Ichikawa and Toshio Fukuda, Meijo University
- 11:45-12:00 Micro Channel Design for Cancer Screening using C.elegnas
Satoshi Tomita, Masaru Takeuchi, Akihiko Ichikawa, Akiyuki Hasegawa and Toshio Fukuda, Meijo University

Session TA2-1: (Organized Session1-2)
Advanced Micro-Nano Systems for Biomedical Applications

Conference Room 2

- Chairperson: *Hisataka Maruyama, Nagoya University*
- 10:00-10:15 Patch-type Wireless Forehead Vital Sensing Device
Hiroki Ota, Yutaka Isoda and Go Inamori, Yokohama National University
- 10:15-10:30 Fabrication of Micro-gel Robot Having a Soft-rigid Hybrid Structure
Tomoki Watanabe, Yoshiyuki Yokoyama and Takeshi Hayakawa, Chuo University
- 10:30-10:45 Preparation of Microvasculature-embedding Porous Hydrogels for 3D-Cell Culture
Aruto Hori, Yuki Watabe, Yuya Yajima, Masumi Yamada, Rie Utoh and Minoru Seki, Chiba University
- 10:45-11:00 Construction of Detection System for Intracellular Changes using a Micro Single-sided Transient Hot Rectangle Method
Yoshiyuki Takashima, Yuta Yagami, Takashi Katayama, Kaoru Uesugi and Keisuke Morishima, Osaka University
- 11:00-11:15 Multimodal Measurement of Cell Culture Conditions using Hydrogel Culture Substrate having Fluorescence Microsensors
Hisataka Maruyama, Seiji Omata, Taisuke Masuda and Fumihito Arai, Nagoya University
- 11:15-11:30 Application of Stimulation to Biological Sample using Flexible Structure Deformation
Hiroki Miyashiro, Kaoru Uesugi and Keisuke Morishima, Osaka University
- 11:30-12:00 Biomechanical Force Measurement of Hierarchical Living Materials
Kaoru Uesugi and Keisuke Morishima, Osaka University

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

Poster Session II

Poster Area (1st Floor)

Chairperson: *Ohka Masahiro, Nagoya University*
Seiichi Hata, Nagoya University

13:00-14:00

- TP-01 Effect of PPh₄Cl on Micro-nano Vesicles Structure induced by Antagonistic Salts
Takushi Higashiyama, Kyouhei Doai, Kazuma Nakajima, Ryo Kato, Hiroyuki Maki, Takahiro Kenmotsu, Kenichi Yoshikawa and Koichiro Sadakane, Doshisha University
- TP-02 Constructing Stable Cellular Assemblies in the Presence of Biopolymer: Application of Laser Tweezing in a Crowding Medium
Takehiro Yamazaki, Koichiro Sadakane, Takahiro Kenmotsu and Kenichi Yoshikawa, Doshisha University
- TP-03 Specific Localization of Living Cells in Water/Water Microdroplets toward the Spontaneous Generation of 3D Cell-assembly: Experiments with Red Blood Cells and NAMRU Mouse Mammary Gland Epithelial Cells
Yusuke Hoda, Tadasu Fujimoto, Kenichi Yoshikawa and Kanta Tsumoto, Doshisha University
- TP-04 Cultured Muscles with Tendon Structures for Modular Bio-Actuators
Takuto Nomura, Masaru Takeuchi, Akihiko Ichikawa, Eunhye Kim, Akiyuki Hasegawa and Toshio Fukuda, Meijo University
- TP-05 A Soft Robot Mimicking Snail's Foot
Jun Takeyama, Akihiko Ichikawa, Akiyuki Hasegawa, Eunhye Kim and Toshio Fukuda, Meijo University
- TP-06 Aggregation of Charged Microgels by Relatively Diamagnetic Assembly
Hisae Suenaga, Haruka Minato, Daisuke Suzuki and Yoshitake Akiyama, Shinshu University
- TP-07 Newly Established Three Dimensional Magnetically Controlling System
Yuguo Dai, Lin Feng and Abdulrahman Mousa, Beihang University

- TP-08 Intraoral pH Measurement: A Cool Way to Recognize Stress
Yuki ITO, Ganesh Kumar Mani, Yutaka Yasoda and Kazuyoshi Tsuchiya, Tokai University
- TP-09 Characteristic Cracking Pattern Generated on Tissue Slice as a Useful Index for Medical Diagnosis
Natsumi Okoso, Keisuke Danno, Naohiko Nakamura, Kohta Iguchi, Masaya Ikegawa, Takahiro Kenmotsu and Kenichi Yoshikawa, Doshisha University
- TP-10 Design and Production Method of Diameter 1mm ONE PART Grasping Forceps for Catheter
Kyoya Ichiraku and Makoto Nokata, Ritsumeikan University
- TP-11 Photo-oxidative Cell Membrane Perforation and Applied Cellular Level Neural Interface and Electrophysiological Recording in Animal Cells
Mizuki Fujiwara, Kyoichi Ono and Takashi K. Saito, Akita Prefectural University
- TP-12 Evaluation of Living Tissue Model based on Force Measurement
Keisuke Uchida, Akihiko Ichikawa, Akiyuki Hasegawa, Eunhye Kim, Masaru Takeuchi and Toshio Fukuda, Meijo University
- TP-13 Study of a Precise Dura Mater Model for Precise Human Analogue Model
Shusaku Hayakawa, Akihiko Ichikawa, Akiyuki Hasegawa, Masaru Takeuchi and Toshio Fukuda, Meijo University
- TP-14 Fabrication of the Brain Model with Soft Material for Surgical Simulator
Naoki Kotani, Akihiko Ichikawa and Akiyuki Hasegawa, Masaru Takeuchi and Toshio Fukuda, Meijo University
- TP-15 Eye Surgery Simulator for Evaluation of Surgical Technique
Seiji Omata, Kazuki Ohashi, Kanako Harada, Mamoru Mitsuishi, Koichiro Sugimoto, Takashi Ueta, Kiyoto Totsuka, Fumiyuki Araki, Muneyuki Takao and Makoto Aihara, Nagoya University
- TP-16 Grasps under Artificially-limited Thumb's Joint Range of Motion --Posture Analysis with ROM Boundary and Muscle Loads--
Reiko Takahashi, Natsuki Miyata, Yusuke Maeda and Koji Fujita, Yokohama National University
- TP-17 Motor Learning through Cooperative Motor Experience
Kotaro Nishimura, Yoshikatsu Hayashi, Shiro Yano and Toshiyuki Kondo, Tokyo University of Agriculture and Technology

- TP-18 A Three-dimensional Evaluation of Body Representation Change of Human Upper Limb Focused on Sense of Ownership and Sense of Agency
Shunsuke Hamasaki, Athushi Yamashita and Hajime Asama, The University of Tokyo
- TP-19 Analysis of Rockers during the Stance Phase of Gait for Feature Extraction
Kaito Tsunetomo, Shouhei Shirafuji and Jun Ota, The University of Tokyo
- TP-20 How does Antagonistic Salt Exhibit Surfactant-like Characteristics in Water?
Kyohei Doai, Takushi Higashiyama, Kazuma Nakajima, Ryo Kato, Takahiro Kenmotsu, Yoshikawa Kenichi and Koichiro Sadakane, Doshisha University
- TP-21 Estimation of Mechanism for Esophageal Speech Method Aimed to Realize the Esophageal Speech Training System
Katsutoshi Oe, Ryoya Nakamura and Kazutaka Hosokawa, Daiichi Institute of Technology
- TP-22 Weight Scale using Quartz Crystal Resonator Having Wide Dynamic Range
Yusuke Nakanishi, Yuichi Murozaki and Fumihito Arai, Nagoya University

Plenary Talks

Chairperson: Toshiyuki Kondo, Tokyo University of Agriculture and Technology

14:00-14:45 Plenary Talk4
Dynamics-driven Control Laws for Robust and Fast Adaption in Reaching Tasks
Yoshikatsu Hayashi, University of Reading, UK

14:45-15:00 ***Coffee Break***

Session TP1-1: (Organized Session2)
Bionic Humanoid and Surgical Systems

Conference Room 1

- Chairperson: *Fumihito Arai, Nagoya University*
Mamoru Mitsuishi, The University of Tokyo
- 15:00-15:30 Machine Learning for Intelligent Medical Devices
Kensaku Mori, Nagoya University
- 15:30-15:45 Design of Micro-hole Array for Fixing Ultra-thin Membrane in Tensile
Tests based on Fluid Analysis
*Yuhao Gao, Shinya Sakuma, Yuichi Murozaki and Fumihito Arai, Nagoya
University*
- 15:45-16:00 Surgical Simulator for Training of Minimally Invasive Glaucoma Surgery
*Mahmoud Gallab, Seiji Omata, Fumihito Arai, Kanako Harada, Mamoru
Mitsuishi, Kiyohito Totsuka, Fumiyuki Araki, Muneyuki Takao and Makoto
Aihara, Nagoya University*
- 16:00-16:15 Development of a Precision-grip based Interface for 4-Dof Articulated
Forceps
*Keisuke Ohara, Jacinto E. Colan Zaita, Daisuke Uozumi, Tadayoshi
Aoyama, Jun Nakanishi and Yasuhisa Hasegawa, Nagoya University*
- 16:15-16:30 Haptic Virtual Fixtures to Assist Endonasal Micro Robotic Surgery
through Virtual Reality Simulation
*Saul Alexis Heredia Perez, Kanako Harada and Mamoru Mitsuishi, The
University of Tokyo*

Session TP2-1: (Organized Session12)
Micro-Nano Structures and Instrumentation Technology

Conference Room 2

- Chairperson: *Masaru Takeuchi, Nagoya University*
Futoshi Iwata, Shizuoka University
- 15:00-15:30 Evaluation of Delamination Strength of Bonded Micro-components:a
Nano-indenter Technique Combined with Environmental Microscopy
*Yoshimasa Takahashi, Kaname Kishimoto, Kimitaka Higuchi, Yuta
Yamamoto, Shigeo Arai and Shunsuke Muto, Kansai University*
- 15:30-15:45 Micro Fabrication Technique for Three-dimensional Structures based on

Localized Electrophoretic Deposition using a Scanning Ion Conductance Microscope

Masayoshi Yoshioka and Futoshi Iwata, Shizuoka University

15:45-16:00 Surface Potential Measurement of a Silicon Fast Recovery Diode under Applied Bias Voltages by Kelvin Probe Force Microscopy
Takeshi Uruma, Nobuo Satoh, Hidekazu Yamamoto and Futoshi Iwata, Shizuoka University

16:00-16:15 Evaluation of Local Dielectric Constant of Biomaterial Based on the Force-distance-curve Measured by Microwave Atomic-force Microscope
Minji Zhao, Bo Tong, Yuhki Toku, Yasuyuki Morita and Yang Ju, Nagoya University

16:30-16:45 **Coffee Break**

**Session TP1-2: (Organized Session13)
Technologies for Time-resolved Characterization of Single Cell,
Cell Community and Tissues**

Conference Room 1

Chairperson: *Shinya Sakuma, Nagoya University*
Yoshitaka Shirasaki, The University of Tokyo

16:45-17:15 Bio Heritage: Enucleation of Red Blood Cell
Makoto Kaneko, Osaka University

17:15-17:30 Measurement of the Cell Migration and Cytokine Secretion Activity with Real-time Imaging System
Yumiko Tanaka, Nobutake Suzuki, Kazuyo Moro, Jun Mizuno, Shuichi Shoji, Sotaro Uemura and Yoshitaka Shirasaki, The University of Tokyo

17:30-17:45 A Bioreactor Utilizing High-resolution Three Dimensional Microchannel for On-chip Platelet Production
Hiroki Kumon, Shinya Sakuma, Yusuke Kasai, Sou Nakamura, Koji Eto and Fumihito Arai, Nagoya University

17:45-18:00 High-speed On-chip Mixing Utilizing Vortex Generation by Ultra-high-speed Local Flow
Yusuke Kasai, Shinya Sakuma and Fumihito Arai, Nagoya University

18:00-18:15 Size Separation Method of Microparticles based on Vibration-induced Flow
Naoki Kitada and Takeshi Hayakawa, Chuo University

Session TP2-2: (Organized Session4)

- Chairperson: *Shinya Aoi, Kyoto University*
- 16:45-17:15 Application of Computational Neuroscience to Robotic Rehabilitation: a Conceptual Study
Jun Izawa, University of Tsukuba
- 17:15-17:30 Musculoskeletal Simulations to Investigate Influences of Muscle Weakness and Sensory Noise to Postural Control with High Stiffness
Kohei Kaminishi, Ryosuke Chiba, Kaoru Takakusaki and Jun Ota, The University of Tokyo
- 17:30-17:45 Construction of Experimental Environment for Muscle Synergy Analysis of Bipedal Walking in Rats
Ryutaro Sakai, Tetsuro Funato, Soichiro Fujiki, Akira Konosu, Shinya Aoi and Dai Yanagihara, The University of Electro-Communications
- 17:45-18:00 Investigation of Phase Resetting Effect on Phase Response Curve in Human Walking using a Neuromusculoskeletal Model
Daiki Tamura, Shinya Aoi, Tetsuro Funato, Soichiro Fujiki, Kei Senda and Kazuo Tsuchiya, Kyoto University
- 18:00-18:15 Towards the Exploitation of External Constraints with Robots Actuated by Pneumatic Artificial Muscles
Arne Hitzmann, Shuhei Ikemoto and Koh Hosoda, Osaka University
- 19:00-21:00 ***Reception***

December 12 (Wed)

Location: Noyori Conference Hall

Session WA1-1: (Organized Session 11)

Micro-Nano Sensing/Manipulation and Its Biological Applications

Conference Room 1

Chairperson: *Masaru Takeuchi, Nagoya University*
Tadayoshi Aoyama, Nagoya University

9:00-9:30 Force-visualization based Sensing System Facilitates Medical Operation in Deep Area
Tetsuyou Watanabe, Kanazawa University

9:30-9:45 Microscopic Image Presentation Apparatus for Micro Manipulation based on the View Expansion Microscope System
Sarau Takeno, Tadayoshi Aoyama, Masaru Takeuchi, Yasuhisa Hasegawa and Idaku Ishii, Nagoya University

9:45-10:00 Peripheral Nerve Stimulation Device Enabling Adjustment of Stimulation Voltage
Takahiro Miyamoto, Masaru Takeuchi, Tadayoshi Aoyama, Yasuhisa Hasegawa, Tomonori Nakano, Shigeru Kurimoto and Hitoshi Hirata, Nagoya University

10:00-10:15 Toward High-throughput Sorting of Single Spheroids Based on Mechano-index on a Microfluidic Chip
Kou Nakahara, Shinya Sakuma and Fumihito Arai, Nagoya University

10:15-10:30 Magnetic Assembly of Hydrogel Fiber for Constructing Three-dimensional Hepatic Lobule-like Channel Network
Eunhye Kim, Masaru Takeuchi, Taro Kozuka, Takuto Nomura, Ryohei Sakurai, Akiyuki Hasegawa, Akihiko Ichikawa and Toshio Fukuda, Meijo University

Session WA2-1: (Organized Session 10)

Micro-Nano Processing and Devices

Conference Room 2

- Chairperson: *Junpei Sakurai, Nagoya University*
Mizue Mizoshiri, Nagaoka University of Technology
- 9:00-9:30 **Laser Lift-off Process for Additive Micropatterning of Functional Particles and Films**
Aiko Narazaki, Tadatake Sato, Hiroyuki Niino, Yoshiki Nakata, Tatsuya Shoji, Yasuyuki Tsuboi, Ayako Oyane and Hirofumi Miyaji, National Institute of Advanced Industrial Science and Technology (AIST)
- 9:30-9:45 **Basic Research on Micro Processing Characteristics of Reverse Lift-off Process**
Yuki Nakagawa, Kyohei Yamada, Mizue Mizoshiri, Chiemi Oka, Junpei Sakurai and Seiichi Hata, Nagoya University
- 9:45-10:00 **Fabrication of Plasmon Filters for Highly Sensitive Observation of Magnetic Domains by Magneto-optical Kerr Effect**
Takumi Hasegawa, Mizue Mizoshiri, Kenta Takagi and Kimihiro Ozaki, Nagoya University
- 10:00-10:15 **Hydrogel Heart Model Having Temperature Indicating Function**
Yuki Yokota, Hisataka Maruyama and Fumihito Arai, Nagoya University
- 10:15-10:30 **Fabrication of Miniaturized Capacitive Pressure Sensor using Thin Film Metallic Glass**
Shohei Uejima, Chiemi Oka, Seiichi Hata and Junpei Sakurai, Nagoya University
- Plenary Talks**
- Chairperson: Yasuhisa Hasegawa, Nagoya University
- 10:45-11:30 **Plenary Talk5**
3S Laser Processing: Integrating Soft Materials and Metal Microstructures
Mitsuhiro Terakawa, Keio University
- 11:30-11:45 **Coffee Break**

11:45-12:10 *Award Ceremony*

12:10-13:30 *Lunch*

13:30-15:00 *Laboratory Tour (at Nagoya University)*