

Mon. Aug 29, 2022

Room A

Oral presentation | Robotics

Robotics 1

Chair: Kazuo Kiguchi (Kyushu University), Jia-Yang

Juang (National Taiwan University)

10:00 AM - 11:00 AM Room A (Toyoda Auditorium Hall / Zoom room A)

[A1-1-01] [Keynote speech] Human-Machine Interface for Intuitive Control and Embodiment of Robotic Finger

*Yasuhisa Hasegawa¹ (1. Nagoya University)

10:00 AM - 10:30 AM

[A1-1-02] Full Mechanical Walking Assistive Device aims to Offer Normal Gait Postures due to Unhealthy Gait

*Xiuyuan Wu¹, Asagi Ide¹, Keisuke Osawa¹, Eiichiro Tanaka¹ (1. Waseda University Information, Production, & System)

10:30 AM - 10:45 AM

[A1-1-03] A Control Method for Walking Assistance Robot Considering Emotion and Body Condition

Yunfan Li¹, *Mingyang Xu¹, Keisuke Osawa¹, Eiichiro Tanaka¹ (1. Graduate School of Information, Production and Systems, Waseda University)

10:45 AM - 11:00 AM

Room B

Oral presentation | Micro/Nano System Science and Technology

Micro/Nano System Science and Technology 1

Chair: Motohisa Hirano (Hosei University)

10:00 AM - 11:00 AM Room B (Toyoda Auditorium Symposium / Zoom room B)

[B1-1-01] [Keynote speech] Tribology of molecularly-thin liquid films studied using the surface forces apparatus: a brief review

*Shinji Yamada¹ (1. Kao Corp.)

10:00 AM - 10:30 AM

[B1-1-02] Effects of polarity of polyalkylmethacrylate (PAMA) polymer additives on film formation ability during sliding

*Yuxi Song¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Naoki Azuma¹, Hedong Zhang¹ (1. Nagoya University)

10:30 AM - 10:45 AM

[B1-1-03] Effect of electric current on friction behavior of lubricant molecules

*Renguo LU¹, Kazufumi Kontani¹, Hiroshi Tani¹, Shohei Kawada¹, Shinji Koganezawa¹, Norio Tagawa¹ (1. Kansai University)

10:45 AM - 11:00 AM

Room C

Oral presentation | Micro/Nano Mechanical Systems

Micro/Nano Mechanical Systems 1

Chair: Gen Hashiguchi (Shizuoka University), Ja Choon

Koo (Sungkyunkwan University)

10:00 AM - 11:00 AM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

[C1-1-01] [Keynote speech] Controlling thermal radiation in micro and nanosystems

*Sebastian VOLZ¹ (1. CNRS - The University of Tokyo)

10:00 AM - 10:30 AM

[C1-1-02] Stretching DNA molecule using pressure flow in a microchannel and its super-resolution imaging

*Ryotaro Suzuki¹, Naoki Azuma¹, Kenji Fukuzawa¹, Shintaro Itoh, Hedong Zhang (1. Nagoya University)

10:30 AM - 10:45 AM

[C1-1-03] Development of single cell trapping method using centrifugal force for chromosome stretching analysis

*Kosuke Yamada¹, Takaaki Suzuki¹, Yuya Tanaka¹ (1. Gunma Univ.)

10:45 AM - 11:00 AM

Room D

Oral presentation | Science and Technology of Flexible Media Handling and Printable/Wearable Devices

Science and Technology of Flexible Media Handling and Printable/Wearable Devices 1

Chair: Kazushi Yoshida (Sanyo-onoda City University)

10:00 AM - 11:00 AM Room D (Noyori Conference Hall / Zoom room D)

[D1-1-01] [Keynote speech] Introduction of R2R

printing technology for submicron resolution electrodes and applied devices

*Masayuki Abe¹ (1. Asahi Kasei Corporation)

10:00 AM - 10:30 AM

- [D1-1-02] Experimental Verification of Predictive Model for PET Films during Heat Treatment
*Takeki Shoji¹, Toshimitsu Kanda², Mohd Danial Ibrahim^{3,4,5}, Yuta Sunami^{1,2,6} (1. Tokai University, 2. Research Institute of Science and Technology, 3. Universiti Malaysia Sarawak, 4. Institute of Social Informatics and Technology Innovation, 5. Centre for Renewable Energy, 6. Micro/Nano Technology Center)

10:30 AM - 10:45 AM

- [D1-1-03] Theoretical and Experimental Study on Winding Slippage Using PET Film
*Yuta Sasamoto¹, Toshimitsu Kanda¹, Danial Ibrahim², Yuta Sunami¹ (1. Tokai Univ., 2. Malaysia Sarawak Univ.)

10:45 AM - 11:00 AM

Room A

Oral presentation | Robotics

Robotics 2

Chair:Yasuhisa Hasegawa(Nagoya University)

11:30 AM - 12:15 PM Room A (Toyoda Auditorium Hall / Zoom room A)

- [A1-2-01] Motor power distribution mechanism for simultaneous independent control of multiple cable tensions for humanoid robot hand
*Daigo Tokunaga¹, Satoshi Nishikawa¹, Kazuo Kiguchi¹ (1. Kyushu University)

11:30 AM - 11:45 AM

- [A1-2-02] Robotic wheelchair navigation using pattern and configuration of augmented reality markers
*Hiroshi Maeda¹, Reiri Abe¹, Masato Inoue¹, Kiyotaka Izumi¹, Takeshi Tsujimura¹ (1. Saga Univ.)

11:45 AM - 12:00 PM

- [A1-2-03] Standing, Walking, and Sitting Support Robot That Operate Based on User State Estimation
*Mizuki Takeda¹, Kaiji Sato¹ (1. Toyohashi University of Technology)

12:00 PM - 12:15 PM

Room B

Oral presentation | Micro/Nano System Science and Technology

Micro/Nano System Science and Technology 2

Chair:Shinjiro Umezu(Waseda University)

11:30 AM - 12:15 PM Room B (Toyoda Auditorium Symposion / Zoom room B)

- [B1-2-01] Visualization of Complex Motions of Fluorescence Particles with Different Diameters in the Near-Wall Region of a Solid Wall using Evanescent Light Field
*Masahiro Yajima¹, Katsuaki Shirai¹, Hideaki Kato¹, Kazuki Hirai¹ (1. Shibaura institute of technology)

11:30 AM - 11:45 AM

- [B1-2-02] Fluorescent image tracking of nanoparticle for obtaining fluid flow velocity profile in nanometer-sized gap
*Hidetaka Ozeki¹, Katsuki Miki¹, Naoki Azuma¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Hedong Zhang¹ (1. Nagoya University)

11:45 AM - 12:00 PM

- [B1-2-03] Squeeze force measurement of nano-confined liquid by a measurement method with an accurate-gap control using a quartz oscillator
*Chikara Shiota¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Naoki Azuma¹, Hedong Zhang¹ (1. Nagoya University)

12:00 PM - 12:15 PM

Room C

Oral presentation | Micro/Nano Mechanical Systems

Micro/Nano Mechanical Systems 2

Chair:Isaku Kanno(Kobe University), Jen-Yuan Chang(National Tsing Hua University)

11:30 AM - 12:30 PM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

- [C1-2-01] Machine Learning-based Experiment Planning of Potassium-ion SiO₂ Electret Forming
*Refaldi Intri Dwi Putra¹, Hiroaki Honma¹, Hiroshi Toshiyoshi¹ (1. Institute of Industrial Science, The University of Tokyo)

11:30 AM - 11:45 AM

- [C1-2-02] Autonomous IoT wireless sensor node driven by 1 mW MEMS electrostatic energy harvester

*Hiroaki Honma¹, Shunsuke Yamada², Hiroshi

Toshiyoshi¹ (1. The University of Tokyo, 2. Tohoku University)
11:45 AM - 12:00 PM

[C1-2-03] Using MEMS Accelerometer with Edge computing for Intelligent Vibration-Based Diagnostics system

Hui-Chun Tseng², Hung-Tsai Wu², *TseYi Tu¹ (1. Chung Yuan Christian University, 2. Industrial Technology Research Institute)

12:00 PM - 12:15 PM

[C1-2-04] Power generation characteristic of a metamaterial PVEH device with directional misalignment between external and device vibration

*Kota Morishita¹, Vivek Anand Menon³, Gen Hashiguchi², Hiroshi Toshiyoshi³, Takaaki Suzuki¹ (1. Gunma Univ., 2. Shizuoka Univ., 3. Univ. of Tokyo)

12:15 PM - 12:30 PM

Room D

Oral presentation | Science and Technology of Flexible Media Handling and Printable/Wearable Devices

Science and Technology of Flexible Media Handling and Printable/Wearable Devices 2

Chair:Masahiro Watanabe(Aoyama Gakuin University)
11:30 AM - 12:15 PM Room D (Noyori Conference Hall / Zoom room D)

[D1-2-01] Continuous Micropore Processing Into Nanosheets Using Imprint Method

*Kanna Matsumoto¹, Danial Ibrahim², Yuta Sunami¹ (1. Tokai Univ., 2. Malaysia Sarawak Univ.)

11:30 AM - 11:45 AM

[D1-2-02] Experimental Study on Static Characteristics Using Web Floating Device

*Wataru Shimoji¹, Kenshiro Ito², Kyohei Kawasaki², Ibrahim Danial Mohd³, Yuta Sunami^{1,4,5} (1. Tokai University., 2. TANKEN SEAL SEIKO CO., LTD. , 3. Universiti Malasia Sarawak, 4. Research Institute of Science and Technology, 5. Micro/Nano Technology Center)

11:45 AM - 12:00 PM

[D1-2-03] Lateral motion of a flat belt in the open-end belt system with in-plane misalignment

*Kazuhi Yoshida¹, Shoma Takeda¹ (1. Sanyo-onoda City University)

12:00 PM - 12:15 PM

Room A

Oral presentation | Robotics

Robotics 3

Chair:Satoshi Nishikawa(Kyushu University), Kyoung-Su Park(Gachon University)

2:00 PM - 3:15 PM Room A (Toyoda Auditorium Hall / Zoom room A)

[A1-3-01] A compact adsorption mechanism with the negative pressure for a miniaturized multi-legged robot

*Mitsutoshi Watanabe¹, Masato Mizukami¹, Naohiko Hanajima¹, Yoshinori Fujihira¹ (1. Muroran Institute of Technology)

2:00 PM - 2:15 PM

[A1-3-02] Underactuated Adaptive Gripper with Rapid Changeable Fingers integrated Suction System

*Jyun-Wei Huang¹, Jen-Yuan (James) Chang¹ (1. National Tsing Hua University, Department of Power Mechanical Engineering)

2:15 PM - 2:30 PM

[A1-3-03] Underactuated Anthropomorphic Robotic Finger using Pneumatic Cylinder and Linkage System

*Puwarin Wu¹, Jen-Yuan (James) Chang¹ (1. National Tsing Hua University, Department of Power Mechanical Engineering)

2:30 PM - 2:45 PM

[A1-3-04] Recognition model for getting in and out of cars toward developing assist devices

*Naohisa Togami¹, Geunho Lee¹, Yusuke Hayakawa¹, Ryota Murakami¹ (1. University of Miyazaki)

2:45 PM - 3:00 PM

[A1-3-05] A new underwater robot that imitates the swimming movement of shrimp

*Teppey Inoue¹, Geunho Lee¹, Kakeru Shiki¹ (1. University of Miyazaki)

3:00 PM - 3:15 PM

Room B

Oral presentation | Micro/Nano System Science and Technology

Micro/Nano System Science and Technology 3

Chair:Kenji Suzuki(Kogakuin University)

2:00 PM - 3:30 PM Room B (Toyoda Auditorium Symposion / Zoom room B)

[B1-3-01] Dynamical System in atomistic friction model

*Motohisa Hirano¹, Hiroataka Inoue¹, Rentaro Shimizu¹, Yusaku Kubota¹ (1. Department of Mechanical Engineering Faculty of Science and Engineering Hosei University)

2:00 PM - 2:15 PM

[B1-3-02] Scaling law of Moiré contact and superlubricity at twisted graphene interface

Kanae Hirao¹, *Naruo Sasaki¹ (1. The University of Electro-Communications)

2:15 PM - 2:30 PM

[B1-3-03] Load dependence of friction and fracture of self-assembled sumanene monolayer based on molecular dynamics simulation

Reona Minowa¹, Hidehiro Sakurai², *Naruo Sasaki¹ (1. The University of Electro-Communications, 2. Osaka University)

2:30 PM - 2:45 PM

[B1-3-04] Boundary Lubrication Properties of Nanometer-Thick Hydrated Polymer Brush Films and Layer Structure Analysis of the Films by X-ray Reflectometry

*Kiyosuke Mochizuki¹, Shintaro Itoh^{1,2}, Kenji Fukuzawa¹, Naoki Azuma^{1,3}, Hedong Zhang¹ (1. Nagoya University, 2. JST PRESTO, 3. JST ACT-X)

2:45 PM - 3:00 PM

[B1-3-05] Control of Electric Double Layer formed in Ionic Liquids at Frictional Interface

Shunsuke TANJI², *Shouhei KAWADA¹, Masaaki MIYATAKE², Shinya SASAKI² (1. Kansai University, 2. Tokyo University of Science)

3:00 PM - 3:15 PM

[B1-3-06] Study on correction method for Dynamic Measurements by Optical lever AFM (Effects of ambient fluid and surface force)

*Yuki Hanamitsu¹, Ken Ozawa¹, Takumi Ishikawa¹, Hiroshige Matsuoka¹ (1. Tottori University)

3:15 PM - 3:30 PM

Room C

Oral presentation | Micro/Nano Mechanical Systems

Micro/Nano Mechanical Systems 3

Chair:Hiroshi Toshiyoshi(The University of Tokyo), Kenta Nakazawa(Shizuoka University)

2:00 PM - 3:15 PM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

[C1-3-01] High-sensitivity and low-power-consumption MEMS thermal conductivity CO₂ sensor with 61-ppm resolution

for indoor air quality monitoring

*Fumitaka Ishibashi¹, Masayuki Matsutake¹, Ping Wang¹, Yoshihiko Kurui¹, Hiroaki Yamazaki¹ (1. Corporate Research &Development Center, Toshiba Corporation)

2:00 PM - 2:15 PM

[C1-3-02] A Sub-1 Hz Resonance Frequency MEMS Seismometer with Low Parasitic Coupling

*Jun Wu¹, Yoshito Nozaki², Hideyuki Maekoba³, Arnaud Parent³, Tamio Ikehashi¹ (1. Waseda University, Graduate School of Information Production and Systems, Fukuoka, Japan, 2. Waseda University, Research Organization for Nano &Life Innovation, Tokyo, Japan, 3. Coventor, A Lam Research Company, Fremont, CA, USA)

2:15 PM - 2:30 PM

[C1-3-03] Development of a High-performance Velocity Transducer for Mössbauer Spectroscopy

*Joanne Yoon², Jaegi Lee³, Sung-Joon Ye², Young-bong Bang¹ (1. Seoul National University Hospital, 2. Seoul National University, 3. Korea Atomic Energy Research Institute)

2:30 PM - 2:45 PM

[C1-3-04] Characterization of gap-distance dependency on field emission at nanogap between silicon cleavage surfaces by numerical calculations

*Yuki Akura¹, Masaki Shimofuri¹, Amit Banerjee¹, Jun Hirotsu^{1,2}, Toshiyuki Tsuchiya¹ (1. Kyoto Univ., 2. JST PRESTO)

2:45 PM - 3:00 PM

[C1-3-05] Fabrication and Dynamic Characterization of Ultrathin Si NEMS Resonators

*WEI YU¹, Amit Banerjee¹, Jun Hirotsu¹, Toshiyuki Tsuchiya¹ (1. Department of Micro Engineering, Kyoto University)

3:00 PM - 3:15 PM

Room D

Oral presentation | Science and Technology of Flexible Media Handling and Printable/Wearable Devices

Science and Technology of Flexible Media Handling and Printable/Wearable Devices 3

Chair: Kenichi Nomura (National Institute of Advanced Industrial Science and Technology)

2:00 PM - 3:30 PM Room D (Noyori Conference Hall / Zoom room D)

[D1-3-01] Wetting Phenomena of Photo-curable Liquid Films in Nano-Gaps revealed by Nanofluidic Devices

*Yusuke Hosoi¹, Shintaro Itoh^{1,2}, Yusuke Nakanishi¹, Kenji Fukuzawa¹, Naoki Azuma^{1,3}, Hedong Zhang¹ (1. Nagoya University, 2. JST PRESTO, 3. JST ACT-X)

2:00 PM - 2:15 PM

[D1-3-02] Shear response of liquid film confined in nano-gaps measured by vertical-objective-type ellipsometric microscopy

*Tsuyoshi Kato¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Naoki Azuma¹, Hedong Zhang¹ (1. Nagoya University)

2:15 PM - 2:30 PM

[D1-3-03] Visualization of Skin Layer Formation Process on the Surface of Aqueous Colloidal Solutions in the Inkjet Nozzle by Using Dynamic Light Scattering Method

*Yoshihiro Harada^{1,2}, Norika Okochi², Kazuyoshi Fushinobu² (1. Ricoh company, Ltd., 2. Tokyo Institute of Technology)

2:30 PM - 2:45 PM

[D1-3-04] Microscale Heat Flux Measurement Method Using Stacked Temperature Sensitive Paints

*Julien Sauvageot¹, Takashiro Tsukamoto¹, Shuji Tanaka¹ (1. Tohoku University)

2:45 PM - 3:00 PM

[D1-3-05] Three-dimensional non-destructive inspection of film winding conditions using optical coherence tomography: A feasibility study with film roll samples

*Yu Nakamichi¹, Kazushi Yoshida¹ (1. Sanyo-Onoda City University)

3:00 PM - 3:15 PM

[D1-3-06] Paper feeding velocity distribution at the nip region in paper feeding system revealed by optical coherence tomography.

*Hikaru Nakayama¹, Yu Nakamichi¹, Kazushi Yoshida (1. Sanyo-Onoda City University)

3:15 PM - 3:30 PM

Room A

Oral presentation | Robotics

Robotics 4

Chair: Eiichiro Tanaka (Waseda University), Haoyuan Mu (Western Digital Corporation)

4:00 PM - 5:15 PM Room A (Toyoda Auditorium Hall / Zoom room A)

[A1-4-01] Analysis of vibrations in a multi-DOFs robot arm

*Peeraya Pongpanyaporn¹, Jen-Yuan Chang¹ (1. National Tsing Hua University)

4:00 PM - 4:15 PM

[A1-4-02] Positioning and Recovering of Fixed-Wing UAV Using Updating Final State Control and Adaptive Nonstationary Control

*Susumu Hara¹, Mizuki Hirai¹ (1. Nagoya University)

4:15 PM - 4:30 PM

[A1-4-03] Development of a Simulator for Garment Handling using Dual Manipulators

*Yukuan ZHANG¹, Jose Victorio SALAZAR Luces¹, Yasuhisa Hirata¹ (1. Tohoku University)

4:30 PM - 4:45 PM

[A1-4-04] Optomechanical feedback system to adjust optical axis for aerial laser communication

*Kota Watanabe¹, Takuto Koyama¹, Hiroshi Koga¹, Kiyotaka Izumi¹, Takeshi Tsujimura¹ (1. Saga Univ.)

4:45 PM - 5:00 PM

[A1-4-05] Velocity Profile Planning of Wafer Transfer Robot under Multi Objective Conditions

Kwan Sik Yoon¹, Dong Jun Oh¹, *Ja Choon Koo¹ (1. Mechanical Engineering, Sung Kyun Kwan University, Suwon, Korea)

5:00 PM - 5:15 PM

Room B

Oral presentation | Micro/Nano System Science and Technology

Micro/Nano System Science and Technology 4

Chair: Yuki Shimizu (Hokkaido University)

4:00 PM - 5:30 PM Room B (Toyoda Auditorium Symposium / Zoom room B)

[B1-4-01] On-chip method for characterizing dynamic

responses to gravity in growing plants

*Hiroataka Hida¹, Shiho Miyabayashi¹, Isaku Kanno¹
(1. Kobe University)

4:00 PM - 4:15 PM

[B1-4-02] Development of cell counting app using two-directional macro-scale images of cell aggregates

*Chikahiro Imashiro¹, Yuta Tokuoka², Kaito Kikuhara², Takahiro G Yamada², Kenjiro Takemura², Akira Funahashi² (1. Tokyo Women's Medical University, 2. Keio University)

4:15 PM - 4:30 PM

[B1-4-03] Anisotropic Wetting Properties on Asymmetric Microstructured Surfaces

*Kenji Suzuki¹, Daiki Hakamada¹, Xiaoqi Song¹ (1. Kogakuin University)

4:30 PM - 4:45 PM

[B1-4-04] A Bio-inspired Wall-climbing Robot Using Surface Tension

*Shoki Sawamura¹, Kenji Suzuki¹, Xiaoqi Song¹ (1. Kogakuin Univ.)

4:45 PM - 5:00 PM

[B1-4-05] DLP 3D-printed Swab with Cover for Precision Diagnosis

*Kewei Song¹, Fan Huang¹, Hirose Kayo², Shinjiro Umezū¹ (1. Waseda University, 2. The University of Tokyo Hospital)

5:00 PM - 5:15 PM

[B1-4-06] Improvement of the signal quality of a heat flow-type reading head for a linear encoder based on a micro thermal sensor

*Yuki Shimizu¹, Ayaka Ishida², Wei Gao² (1. Hokkaido University, 2. Tohoku University)

5:15 PM - 5:30 PM

Room C

Oral presentation | Advanced Simulation in Science and Engineering

Advanced Simulation in Science and Engineering 1

Chair:Hitoshi Washizu(University of Hyogo), Kenji

Fukuzawa(Nagoya University)

4:00 PM - 5:00 PM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

[C1-4-01] [Keynote speech] Large-Scale Molecular Dynamics Simulations by Supercomputer Gives Paradigm Shifts on Theoretical Research on Tribology

*Momoji Kubo¹ (1. Tohoku University)

4:00 PM - 4:30 PM

[C1-4-02] Mesoscale SPH Simulation of Seizure Process

*Natsuko Sugimura^{1,2,3}, Yuji Mihara², Hitoshi Washizu³ (1. National Institute of Technology, Kagoshima College, 2. Tokyo City University, 3. University of Hyogo)

4:30 PM - 4:45 PM

[C1-4-03] Analysis of Friction in Polyethylene Using Coarse-Grained Molecular Dynamics Simulation

*Masaki Hayama¹, Yuji Higuchi², Hitoshi Washizu¹
(1. Univ. of Hyogo, 2. The Univ. of Tokyo)

4:45 PM - 5:00 PM

Room D

Oral presentation | Science and Technology of Flexible Media Handling and Printable/Wearable Devices

Science and Technology of Flexible Media Handling and Printable/Wearable Devices 4

Chair:Yasuyuki Kusaka(National Institute of Advanced Industrial Science and Technology)

4:00 PM - 5:30 PM Room D (Noyori Conference Hall / Zoom room D)

[D1-4-01] Electrophoresis of DNA molecules adsorbed on polymer brush surface made by surface-initiated graft polymerization

*Shota Ogasawara¹, Shintaro Itoh^{1,2}, Kenji Fukuzawa¹, Naoki Azuma^{1,3}, Hedong Zhang¹ (1. Nagoya University, 2. JST PRESTO, 3. JST ACT-X)

4:00 PM - 4:15 PM

[D1-4-02] Time-resolved analysis of femtosecond laser-induced cobalt precipitation in cobalt direct printing

*Mizue Mizoshiri¹, Kazuki Yamamoto¹, Ryusei Sugawara¹, Tomoji Ohishi² (1. Nagaoka University of Technology, 2. Shibaura Institute of Technology)

4:15 PM - 4:30 PM

[D1-4-03] An electromigration-based injection system manufactured by microfabrication

*Sota Nakashima¹, Yasuhiro Kimura¹, Yuhki Toku¹, Yang Ju¹ (1. Nagoya University)

4:30 PM - 4:45 PM

[D1-4-04] Fabrication of metallic nanogaps using grain boundary diffusion based on

electromigration

*Yu Nobuoka¹, Yasuhiro Kimura¹, Yuhki Toku¹,

Yang Ju¹ (1. Nagoya University)

4:45 PM - 5:00 PM

[D1-4-05] Evaluation of Adhesion of PDLLA Nanosheets

*Shunsuke Nakano¹, Danial Ibrahim², Yuta Sunami¹

(1. Tokai Univ., 2. Malaysia Sarawak Univ.)

5:00 PM - 5:15 PM

[D1-4-06] Fabrication and control of carbon nanotube
films

*Yusaku Abe¹, Fumiyuki Toshimitsu², Yu Matsuda¹

(1. Waseda Univ., 2. Kyushu Univ.)

5:15 PM - 5:30 PM

Tue. Aug 30, 2022

Room A

Oral presentation | Robotics

Robotics 5

Chair: Kazuo Kiguchi (Kyushu University), Guoxiao Guo (Western Digital Corporation)

9:00 AM - 10:30 AM Room A (Toyoda Auditorium Hall / Zoom room A)

- [A2-1-01] Active Vibration Control based on Fixture with Piezo for Robotic Deburring
*Che Shu¹, Jen-Yuan (James) Chang¹ (1. National Tsing Hua University, Department of Mechanical Engineering)
9:00 AM - 9:15 AM
- [A2-1-02] Low-Cost Magnetic-Based Tactile Sensor Array on Bionic Gripper for Estimating the Weight of Objects
*Chun-Tse Lee¹, Han-Cheng Yao¹, Chung-Ta King¹, Jen-Yuan James Chang¹ (1. National Tsing Hua University)
9:15 AM - 9:30 AM
- [A2-1-03] Sliding mode control with High Gain Observer design for an arc-shaped Shape Memory Alloy actuator
*Abdul Manan Khan¹, Youngshik Kim¹, Buhyun Shin¹, Bongjo Ryu¹ (1. Hanbat National University, Daejeon, South Korea)
9:30 AM - 9:45 AM
- [A2-1-04] Integral sliding mode control (ISMC) with an extended state observer for an arc-shaped SMA actuator
*Abdul Manan Khan¹, Youngshik Kim¹, Buhyun Shin¹, Bongjo Ryu¹ (1. Hanbat National University, Daejeon, South Korea)
9:45 AM - 10:00 AM
- [A2-1-05] Haptic display to control vibrotactile and frictional force independently involving visual feedback
*Keiya Kato¹, Kiho Yamaguchi², Aichi Inoue², Yoshihiro Tanaka¹ (1. Nagoya Institute of Technology, 2. AGC Inc.)
10:00 AM - 10:15 AM
- [A2-1-06] Linear multi-degree of freedom variable stiffness actuator for various tasks
*Ji Min Baek¹, Min Guk Han¹, Ja Choon Koo¹ (1. Sungkyunkwan University)

10:15 AM - 10:30 AM

Room B

Oral presentation | Micro/Nano System Science and Technology

Micro/Nano System Science and Technology 5

Chair: Takayuki Tokoroyama (Nagoya University)

9:00 AM - 10:15 AM Room B (Toyoda Auditorium Symposium / Zoom room B)

- [B2-1-01] A study of correlation between Raman spectra of graphene FETs and target molecular detection signals
*Miyu Nagai¹, Akiko Yuzawa¹, Hideyuki Tomizawa¹, Yoshiaki Sugizaki¹ (1. TOSHIBA CORPORATION)
9:00 AM - 9:15 AM
- [B2-1-02] A facile and versatile fabrication process for AgNW/GZO heterogeneous transparent electrodes for photovoltaic applications by atmospheric pressure plasma jet
*Yu-Tang Luo¹, Jia-Yang Juang¹ (1. National Taiwan University)
9:15 AM - 9:30 AM
- [B2-1-03] Low-temperature direct bonding of thin parylene film for the integrated ultrathin electronics
*Masahito Takakuwa^{1,2}, Daishi Inoue², Kenjiro Fukuda², Takao Someya², Shinjiro Umezumi¹ (1. Waseda Univ., 2. RIKEN)
9:30 AM - 9:45 AM
- [B2-1-04] Development of High Concentration Oxygen Water Generator based on Nano Bubble
*Ning Zhu¹ (1. Shizuoka Institute of Science and Technology)
9:45 AM - 10:00 AM
- [B2-1-05] Jumping phenomenon of the vanes in a rotary vane compressor considering fluid film lubrication between vanes and cylinder wall
*Gwanghee Hong¹, Gunhee Jang¹ (1. Hanyang University)
10:00 AM - 10:15 AM

Room C

Oral presentation | Micro/Nano Mechanical Systems

Micro/Nano Mechanical Systems 4

Chair: Takaaki Suzuki (Gunma University), Yuan Ma (Texas A&M University)

9:00 AM - 10:15 AM Room C (Toyoda Auditorium Meeting room)

1/ Zoom room C)

- [C2-1-01] Measurement of viscosity of confined in nano-meter gap using combination of micro fluidic device and fluorescence correlation spectroscopy
*Junpei Takashima¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Naoki Azuma¹, Hedong Zhang¹ (1. Nagoya University)
9:00 AM - 9:15 AM
- [C2-1-02] Rectification of electro-osmotic flow via colloidal nano-valves
*Hiroaki Yoshida¹, Shihori Koyama¹ (1. Toyota Central R&D Labs., Inc.)
9:15 AM - 9:30 AM
- [C2-1-03] Proposal of integrated micro fluidic device for measurement of viscosity of confined in nano-meter gap with accurate gap control
*Kou Hiraiwa¹, Yuta Oshitani¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Naoki Azuma¹, Hedong Zhang¹ (1. Nagoya University)
9:30 AM - 9:45 AM
- [C2-1-04] Dynamic Pinning Condition of Nano-liter Droplets on Thin Film
*Xiguang Feng¹, YoungHoon Kim¹, ByeongGeon Kim¹, Kyoung-Su Park¹ (1. Gachon University)
9:45 AM - 10:00 AM
- [C2-1-05] Thickness control method for nm-thick liquid with micro fluidic device using balance between intermolecular interaction force and applied pressure
*Takumi Matsukawa¹, Yuki Saitoh¹, Kenji Fukuzawa¹, Shintaro Itoh, Naoki Azuma¹, Hedong Zhang¹ (1. Nagoya University)
10:00 AM - 10:15 AM

Room D

Oral presentation | Biomedical Mechatronic Systems

Biomedical Mechatronic Systems 1

Chair:Kenta Kuwana(Tokyo Denki University)

9:00 AM - 10:30 AM Room D (Noyori Conference Hall / Zoom room D)

- [D2-1-01] [Keynote speech] Echocardiography/Prenatal Checkup Robots for Pre-disease Improvement Medicine
*Hiroyasu Iwata¹ (1. Waseda University)

9:00 AM - 9:30 AM

- [D2-1-02] Development of Delta-Type Haptic Device Using Twin-driven MR Fluid Actuator
*Asaka Ikeda¹, Tetsumasa Takano¹, Isao Abe², Takehito Kikuchi², Hiromitsu Mimata³, Masafumi Inomata³ (1. Graduate School of Eng, Oita Univ, 2. Faculty of Sci &Tech, Oita Univ, 3. Faculty of Med, Oita Univ)

9:30 AM - 9:45 AM

- [D2-1-03] Skin vibration of finger during haptic perception on a silicon surface with micropillar arrays
*Fengchang Lin¹, Yoshihiro Tanaka², Shintaro Itoh^{1,3} (1. Nagoya University, 2. Nagoya Institute of technology, 3. JST PRESTO)

9:45 AM - 10:00 AM

- [D2-1-04] Fusion of Textures in Phantom Sensation
*Ryo Watanabe¹, Hiroshi Igarashi¹ (1. Tokyo Denki University)

10:00 AM - 10:15 AM

- [D2-1-05] Measurement of fingertip mechanical properties by optical coherence tomography for analysis of individual differences in roughness tactile perception

*Shota Kawaminami¹, Takahiro Hara¹, Takeshi Okuyama¹, Mami Tanaka¹ (1. Tohoku Univ.)

10:15 AM - 10:30 AM

Room A

Oral presentation | Machine Learning and Intelligent Mechanical Systems

Machine Learning and Intelligent Mechanical Systems 1

Chair:Hiroshi Igarashi(Tokyo Denki University), Masahiro Ohka(Nagoya University)

11:00 AM - 12:30 PM Room A (Toyoda Auditorium Hall / Zoom room A)

- [A2-2-01] [Keynote speech] Intelligent Assistive Robots Operating in Human Environments: Directions and Challenges

*Genci Capi¹ (1. Hosei University)

11:00 AM - 11:30 AM

- [A2-2-02] [Keynote speech] Edge and endpoint intelligence: smart video

*Shaomin Xiong¹ (1. Western Digital)

11:30 AM - 12:00 PM

[A2-2-03] A non-linear SAW resonator as a reservoir computing node

*Claude Meffan¹, Amit Banerjee¹, Jun Hirotsu¹,
Toshiyuki Tsuchiya¹ (1. Kyoto University)
12:00 PM - 12:15 PM

[A2-2-04] Human-based Evaluation for Tactile
Reproduction by Parametric Equalizer

*Keisuke Tozuka¹, Ryo Watanabe¹, Hiroshi
Igarashi¹ (1. Tokyo Denki Univ.)
12:15 PM - 12:30 PM

Room B

Oral presentation | Mechatronics and Tribology of Information Storage Systems

**Mechatronics and Tribology of Information
Storage Systems 1**

Chair:Junguo Xu(Western Digital Corporation), Koji
Sonoda(Toshiba Electronic Devices &Storage Corporation)
11:00 AM - 12:30 PM Room B (Toyoda Auditorium Symposium /
Zoom room B)

[B2-2-01] [Keynote speech] Energy Assisted Magnetic
Recording: The Golden Era in Tribology

*Qing Dai¹, Robert Smith¹ (1. Western Digital
Corporation)
11:00 AM - 11:30 AM

[B2-2-02] External electric field effect to head smear
generated from disk with PFPE lubricant film
in heat-assisted magnetic recording

*Hiroshi Tani¹, Makoto Toyoda², Shouhei Kawada¹,
Renguo Lu¹, Shinji Koaganezawa¹, Norio Tagawa¹
(1. Kansai University, 2. Graduate School of
Kansai University)
11:30 AM - 11:45 AM

[B2-2-03] Effects of Oxygen Concentration on Smear
Formation in HAMR System

*Kenji Yakata¹, Hiroshi Kurafuji¹, Hiroshi Tani²,
Renguo Lu², Shinji Koganezawa², Shouhei Kawada²,
Norio Tagawa² (1. Graduate School of Kansai
University, 2. Kansai University)
11:45 AM - 12:00 PM

[B2-2-04] Smear creation mechanism on heat-assisted
magnetic recording using surface-enhanced
Raman spectroscopy

*Masahiro Yanagisawa¹, Masahiro Kunimoto¹,
Morten Bertz¹, Takayuki Homma¹ (1. Waseda
University)

12:00 PM - 12:15 PM

Room C

Oral presentation | Micro/Nano Mechanical Systems

Micro/Nano Mechanical Systems 5

Chair:Toshiyuki Tsuchiya(Kyoto University), Kyoung-Su
Park(Gachon University)
11:00 AM - 12:15 PM Room C (Toyoda Auditorium Meeting
room 1/ Zoom room C)

[C2-2-01] Development of atmospheric pressure plasma
jet etching for trimming of micro-machined
devices

*Takeru Tomita¹, Kenta Nakazawa¹, Takahiro
Hiraoka², Yuichi Otsuka², Kensuke Nakamura²,
Futoshi Iwata³ (1. Graduate School of Integrated
Science and Technology, Shizuoka Univ., 2. Ushio
Inc., 3. Research Institute of Electronics, Shizuoka
Univ.)

11:00 AM - 11:15 AM

[C2-2-02] Development of a parasitic capacitance
reduction process by forming embedded
dielectric structures

*Yuki Yamamoto¹, Yasushi Shibata¹, Gen
Hashiguchi¹ (1. Shizuoka University)
11:15 AM - 11:30 AM

[C2-2-03] Optimal feeding profile and control of wafer
back grinding considering subsurface damage
and productivity

*ByeongGeon Kim¹, ByungHyun Hwang¹, Kyoung-Su
Park¹ (1. Department of Mechanical Engineering,
Gachon University)
11:30 AM - 11:45 AM

[C2-2-04] Alternating a-C:H Coating Effect on
Torsional Strength of Silicon Beam for
Micromirrors

*Yuanlin Xia¹, Amit Banerjee¹, Jun Hirotsu¹,
Toshiyuki Tsuchiya¹ (1. Kyoto University)
11:45 AM - 12:00 PM

[C2-2-05] Highly Sensitive Slip Sensors Using Flexible
and High Aspect Ratio Micro-Wall Structure
Arrays

*Masato Suzuki¹, Shoki Kotani¹, Motoki Ohashi¹,
Tomokazu Takahashi¹, Seiji Aoyagi¹ (1. Kansai
University)
12:00 PM - 12:15 PM

Room D

Oral presentation | Biomedical Mechatronic Systems

Biomedical Mechatronic Systems 2

Chair:Yasuaki Ohtaki(Kanagawa Institute of Technology)

11:00 AM - 12:30 PM Room D (Noyori Conference Hall / Zoom room D)

- [D2-2-01] Soft Wearable Tactile Sensor Involving Physician's Sensorimotor Control for Internal Examination
*Masaki Asano¹, Tomohiro Udo¹, Hiroshi Miura², Yukihiro Terada², Yoshihiro Tanaka¹ (1. Nagoya Institute of Technology, 2. Akita Univ.)
11:00 AM - 11:15 AM
- [D2-2-02] Feasibility Study of Photoacoustic Measurement of Velocity using Sinusoidal Linear Motion towards Blood Flow Measurement
*Kotaro Fujinami¹, Jun Okaniwa¹, Katsuaki Shirai¹ (1. Shibaura Institute of Technology)
11:15 AM - 11:30 AM
- [D2-2-03] Uniform Current Density of tDCS Using Sponge Model with Multi-Porous Layers
*Xiguang Feng¹, ByeongGeon Kim¹, Kyoung-Su Park¹ (1. Gachon University)
11:30 AM - 11:45 AM
- [D2-2-04] Design and Implementation of PPG Based Motion Artifact Reduction Algorithm for Heart Rate Estimation
Smriti Thakur¹, *Cheng-Han Tsai¹, and Paul C. -P. Chao¹ (1. Nation Yang ming Chaio tung University(NYCU))
11:45 AM - 12:00 PM
- [D2-2-05] Robot-Assisted Prostate Cancer detection: A validation study on prostate phantoms
*Francis Chikweto¹, Takeshi Okuyama², Mami Tanaka¹ (1. Tohoku University -Graduate School of Biomedical Engineering, 2. Tohoku University, Department of Robotics, Graduate School of Engineering)
12:00 PM - 12:15 PM
- [D2-2-06] Tracking Needle Posture with IMU is Useful for Revealing Hemodialysis Punctuation Skillfulness
*Yasuaki Ohtaki¹, Fumiya Kobayashi¹ (1. Kanagawa Institute of Technology)
12:15 PM - 12:30 PM

Wed. Aug 31, 2022

Room A

Oral presentation | Machine Learning and Intelligent Mechanical Systems

Machine Learning and Intelligent Mechanical Systems 2

Chair: Akihiro Matsumoto (Toyo University), Shaomin Xiong (Western Digital Corporation)

9:00 AM - 10:30 AM Room A (Toyoda Auditorium Hall / Zoom room A)

[A3-1-01] System identification of non-linear 1-dof system which subjected to white noise excitation based on the maximum likelihood estimation using the analytical solution of Fokker-Plank equation

*Kaito Araki², Soichiro Takata¹ (1. National Institute of Technology, Tokyo College., 2. National Institute of Technology, Tokyo College, advanced course, Mechanical and Information System Engineering.)

9:00 AM - 9:15 AM

[A3-1-02] Optimizing Convolutional Neural Networks to Control the Robotic Hand using Brain Signals

*Satoki Sugiyama¹, Eneo Petoku¹, Ryota Takahashi¹, Genci Capi¹ (1. Hosei University)

9:15 AM - 9:30 AM

[A3-1-03] Assisting Slumber to Awakening using Thermal Presentation during A Nap

*Yugo Yoshida¹, Ryo Watanabe¹, Hiroshi Igarashi¹ (1. Tokyo Denki Univ.)

9:30 AM - 9:45 AM

[A3-1-04] Development of the Control Method of Kinesthetic Illusion Considering Physical Information towards AI-based Rehabilitation

*Hiraku Komura¹, Masahiro Ohka² (1. Kyushu Institute of Technology, 2. Nagoya university)

9:45 AM - 10:00 AM

[A3-1-05] Speech Recognition Control of Remote Rehabilitation Simulation for Upper Limb Based on Neural Network and Unity3D

*Zhonghao Wang¹, Taiqi Wang¹, Keisuke Osawa¹, Eiichiro Tanaka¹ (1. Graduate School of Information, Production and Systems, Waseda University)

10:00 AM - 10:15 AM

[A3-1-06] Effects of Conversation Changes on Speaker Speech Features

*Yuzuki Baba¹, Ryo Watanabe¹, Hiroshi Igarashi¹ (1. Tokyo Denki Univ.)

10:15 AM - 10:30 AM

Room B

Oral presentation | Mechatronics and Tribology of Information Storage Systems

Mechatronics and Tribology of Information Storage Systems 2

Chair: Takashi Yamaguchi (RICOH), Ming Feng (University of Science and Technology Beijing)

9:00 AM - 10:30 AM Room B (Toyoda Auditorium Symposion / Zoom room B)

[B3-1-01] Write Once and Read Once Data Storage Device

*Shaomin Xiong¹, Robert Smith¹, Erhard Schreck¹, Toshiki Hirano¹ (1. Western Digital Company)

9:00 AM - 9:15 AM

[B3-1-02] Advance Piezo-Actuator Technologies for Hard Disk Drive Applications

*Yanning Liu¹ (1. Western Digital)

9:15 AM - 9:30 AM

[B3-1-03] Sampled-data polydyne feedforward for reducing coupled vibrations in a dual actuator hard drive

*Takehiko Eguchi¹ (1. Western Digital)

9:30 AM - 9:45 AM

[B3-1-04] Study on Damper for Flexure of HDD Suspension

*Tatsuhiko Nishida¹, Hiroshi Nakayama¹, Masao Hanya¹ (1. NHK SPRING Co., LTD.)

9:45 AM - 10:00 AM

[B3-1-05] On the attempt of topology analysis on the complex flow driven by corotating disks mounted in a non-axisymmetric enclosure

*Mizuki Sakamoto¹, Katsuaki Shirai¹ (1. Shibaura Institute of Technology)

10:00 AM - 10:15 AM

[B3-1-06] A Study of Milli Actuator Design for Tape Drive

*Ryo Kuwata¹, Tatsuhiko Nishida¹, Gaku Nashimoto¹, Masao Hanya¹ (1. NHK SPRING co., LTD.)

10:15 AM - 10:30 AM

Room C

Oral presentation | Mechanical Systems of Consumer Electronics and Optical Imaging Devices

Mechanical Systems of Consumer Electronics and Optical Imaging Devices

Chair:Hiroshi Ohno(Toshiba Corporation), Toshihiro

Arisaka(Hitachi Academy Co., Ltd.)

9:00 AM - 10:00 AM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

[C3-1-02] Burr Position Detection with Laser Profiler to Guide 6-axis Manipulator for Deburring Processing

*Yi-An Chen¹, Jen-Yuan (James) Chang¹ (1. National Tsing Hua University, Department of Power Mechanical Engineering)

9:15 AM - 9:30 AM

[C3-1-03] LiDAR System with Wide Field of View Based on 2D Linear Actuation of Single Lens

*Tano Kim¹, Seung-Ye Heo², Wan-Chin Kim², No-Cheol Park¹ (1. Yonsei University, Korea, 2. Hanbat National University, Korea)

9:30 AM - 9:45 AM

[C3-1-04] Realtime pose estimation of conveyance object by photoelectric sensors for autonomous sorting

*Jiro Hashizume¹, Kiyoto Ito¹ (1. Robotics Research Department, Research and Development Group, Hitachi Ltd.)

9:45 AM - 10:00 AM

Room D

Oral presentation | Biomedical Mechatronic Systems

Biomedical Mechatronic Systems 3

Chair:Minoru Morita(Yamaguchi University)

9:00 AM - 10:30 AM Room D (Noyori Conference Hall / Zoom room D)

[D3-1-01] Study on invitro blood vessel coagulation incision experimental method using opposite-phase vibration type ultrasonic scalpel

*Minoru Morita¹, Shunsuke Morikawa¹, JIANG Zhongwei¹ (1. Yamaguchi University)

9:00 AM - 9:15 AM

[D3-1-02] Research on reducing friction heat for flexible ultrasonic propagation stranded wire

*Yukiko Kawasumi¹, Minoru Morita¹, Zhongwei

Jiang¹ (1. Yamaguchi University)

9:15 AM - 9:30 AM

[D3-1-03] Analysis of vibration mode conversion of scissor type actuator for crushing thrombus in cerebral vascular interventional therapy

*Jingjing Yang¹, Minoru Morita², Zhongwei Jiang², Benyang Rong¹, Xiaomeng Dai¹, Yifan Jiang¹, Zhijie Mao³ (1. Faculty of Civil Aviation and Aeroautics, Kunming University of Science and

Technology,Kunming, China, 2. Yamaguchi University, Tokiwadai 2-16-1, Ube, Yamaguchi, Japan, 3. Faculty of Art and Communication, Kunming University of Science and Technology, Kunming, China)

9:30 AM - 9:45 AM

[D3-1-04] A Portable Multifunctional Ophthalmic Device for Remote Self-Examination of the Eye

Philip Schwinn¹, Benjamin Suen², Aravind Srinath², Zachary Daley², Brian Lee², Franz Irlinger¹, Gerrit Melles³, *Frank Talke² (1. Technical University of Munich, Mimed, 2. University of California San Diego, MAE, 3. Netherlands Institute for Innovative Ocular Surgery)

9:45 AM - 10:00 AM

[D3-1-05] Optimal Design and Implement of a Droplet Generator of Droplet Digital Polymerase Chain Reaction via Taguchi Method

*TungYu Lee¹, YungPin Lee², YiChen Wu¹, Hui-Chuan Chiu¹, TseYi Tu¹ (1. Mechanical Engineering, Chung Yuan Christian University, Taoyuan, 320, Taiwan, 2. Industrial Technology Research Institute, Hsinchu, 310, Taiwan)

10:00 AM - 10:15 AM

[D3-1-06] A Novel Heteropolar Bearingless Slice Motor with a PM-free Rotor for a Centrifugal Blood Pump application

*Zeqiang HE¹, Jianpeng Zhong¹, Naohiro Sugita¹, Tadahiko Shinshi¹ (1. Tokyo Institute of Technology)

10:15 AM - 10:30 AM

Room A

Oral presentation | Machine Learning and Intelligent Mechanical Systems

Machine Learning and Intelligent Mechanical

Systems 3

Chair:Hikaru Komura(Kyushu Institute of Technology), Qian Zhong(Western Digital Corporation)
11:00 AM - 12:30 PM Room A (Toyoda Auditorium Hall / Zoom room A)

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- [A3-2-01] The Work Environment Influence on The Generation of Solo Task Models for Teamwork Evaluation
*Kota Kobayashi¹, Ryo Watanabe², Hiroshi Igarashi² (1. Department of Electronic Engineering Graduate School of Engineering, Tokyo Denki Univ., 2. Department of Electrical Engineering School of Engineering, Tokyo Denki Univ.)
11:00 AM - 11:15 AM
- [A3-2-02] Precision Differences among Three CNN Models of a Three-axis Fingernail-color Sensor
*Yandong Chen¹, Keisuke Watanabe¹, Hiraku Komura², Masahiro Ohka¹ (1. Nagoya University, 2. Kyushu Institute of Technology)
11:15 AM - 11:30 AM
- [A3-2-03] Defect inspection of cylindrical products using CNN with data augmentation
*Akihiro Matsumoto¹, Akitomo Ota¹ (1. Toyo University)
11:30 AM - 11:45 AM
- [A3-2-04] Synchronize and Control of Sshared Rhythms among Multiple People
*Shuto Watanabe¹, Hiroshi Igarashi¹, Ryo Watanabe¹ (1. Tokyo Denki Univ.)
11:45 AM - 12:00 PM
- [A3-2-05] Effect of number of electrodes on gesture recognition: A robotic hand implementation
*Kazuma Iiazawa¹, Takuto Soeda¹, Aya Shirai¹, Genci Capi¹ (1. Hosei University)
12:00 PM - 12:15 PM
- [A3-2-06] Development of Machine Learning Model based on Vision System for Soft Object Recognition
Tsung-Liang Wu¹, *Yu-Tang Cao¹ (1. National Kaohsiung University of Science and Technology)
12:15 PM - 12:30 PM

Room B

Oral presentation | Mechatronics and Tribology of Information Storage

Systems

Mechatoronics and Tribology of Information

Storage Systems 3

Chair:Yasuo Sakane(MORESCO), Masayuki Ochiai(Tokai university)
11:00 AM - 12:15 PM Room B (Toyoda Auditorium Symposion / Zoom room B)

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- [B3-2-01] Analytical Study of Touchdown Characteristics of Head Slider for Quasi-contact Recording
*Kyosuke OK Ono¹ (1. Tokyo Institute of Technology (retired))
11:00 AM - 11:15 AM
- [B3-2-02] A study of bouncing and surfing during touch down test
*Isamu Kuchiwaki¹, Tatsuhiko Nishida¹, Masao Hanya¹ (1. NHK SPRING co., LTD.)
11:15 AM - 11:30 AM
- [B3-2-03] Effects of withdrawal speed on adhesion force at very low speed
*Kazuyoshi tanaka¹, Hayato Kobayashi², Massayuki Hasegawa², Takahisa Kato³, Takumi Ishikawa¹, Hiroshige Matsuoka¹ (1. Tottori Univ., 2. ELIONIX inc., 3. The University of Tokyo)
11:30 AM - 11:45 AM
- [B3-2-04] Theoretical analyses of interaction forces acting between solid surfaces considering one-dimensional periodic material distribution (Effects of radius of spherical surface)
*daisuke fujiwara¹, Satoshi Nakabayashi¹, Takumi Ishikawa¹, Hiroshige Matsuoka¹ (1. Tottori univercity)
11:45 AM - 12:00 PM
- [B3-2-05] Measurement of friction and contact behavior between sliding surfaces lubricated with molecularly thin liquid films
*Jinchi Hou¹, Yurun Li¹, Hedong Zhang¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Naoki Azuma¹ (1. Nagoya Univ.)
12:00 PM - 12:15 PM

Room C

Oral presentation | Advanced Simulation in Science and Engineering
Advanced Simulation in Science and Engineering 2
Chair:Hedong Zhang(Nagoya University), Kosar Khajeh(University of Hyogo)

11:00 AM - 12:30 PM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

- [C3-2-01] Friction behavior analysis of graphene oxide sheet by molecular dynamics simulation
*Yuya Okabe¹, Yoshiki Ishii¹, Hitoshi Washizu¹ (1. Univ. of Hyogo)
11:00 AM - 11:15 AM
- [C3-2-02] Pressure-driven flows of dense particle-liquid mixtures: a Stokesian DEM-CFD approach
*Ryohei Seto¹, Zhao Zhao¹, Jeffrey Morris², Masao Doi¹, (1. Wenzhou Institute, University of Chinese Academy of Sciences, 2. Benjamin Levich Institute and Department of Chemical Engineering, CUNY City College of New York)
11:15 AM - 11:30 AM
- [C3-2-03] Shear deformation and friction behavior in the hierarchical structure of cellulose microfibrils and water: a molecular dynamics study
*Ken-ichi Saitoh¹, Yukihiro Izumi², Shin Miyake³ (1. Kansai University, 2. Daio Paper Corporation, 3. Graduate School, Kansai University)
11:30 AM - 11:45 AM
- [C3-2-04] Structural Order of Water Molecules around the Polyrotaxane onto Gold surface by Molecular Dynamics Simulation.
*Tue Minh Nhu Le¹, Sang Van Le¹, Hitoshi Washizu¹ (1. University of Hyogo)
11:45 AM - 12:00 PM
- [C3-2-05] Friction behavior analysis of water molecules on silicon surfaces by Reactive Force Field
*Keitaro Katayama¹, Yoshiki Ishii¹, Hitoshi Washizu¹ (1. Univ. of Hyogo)
12:00 PM - 12:15 PM
- [C3-2-06] Surface adsorption analysis of sulfur extreme pressure additives to metal surfaces using molecular dynamics.
*Riku Araki¹, Hiroaki Koushima², Yoshiki Ishii¹, Hitoshi Washizu¹ (1. Univ. of Hyogo, 2. Idemitsu Kosan Co.,Ltd)
12:15 PM - 12:30 PM

Room D

Oral presentation | IoT and Smart Maintenance

IoT and Smart Maintenance 1

Chair: Isaku Kanno(Kobe University), Aravind Murthy(Western Digital Corporation)

11:00 AM - 12:30 PM Room D (Noyori Conference Hall / Zoom room D)

- [D3-2-01] [Keynote speech] MEMS Vibrational Energy Harvester for IoT Sensors
*Hiroshi Toshiyoshi¹ (1. Institute of Industrial Science, The University of Tokyo)
11:00 AM - 11:30 AM
- [D3-2-02] Application of High Sensitive AC Field Modulation Magnetic Sensor Module to a Magnetic Field Microscope
*Akira Kikitsu¹, Yoshihiro Higashi¹, Yoshinari Kurosaki¹, Satoshi Shirotori¹, Takehiro Nagatsuka², Kazuhiro Suzuki², Yuji Terui² (1. Toshiba Corp., 2. Toshiba Nanoanalysis Corp.)
11:30 AM - 11:45 AM
- [D3-2-03] Reduction of eddy current loss of diamagnetically-levitated resonators by dice-and-fill processing
*Sota Kimura¹, Arata Masuda¹, Nanako Miura¹ (1. Kyoto Institute of Technology)
11:45 AM - 12:00 PM
- [D3-2-04] An Azimuth Detection Method Based on the Mode-Matched MEMS Gyroscope Module with Force Rebalance Control
*Fumito Miyazaki¹, Daiki Ono¹, Shiori Kaji¹, Kengo Uchida¹, Hiroki Hiraga¹, Kei Masunishi¹, Etsuji Ogawa¹, Tazuko Tomioka¹, Yasushi Tomizawa¹ (1. Toshiba Corporation)
12:00 PM - 12:15 PM
- [D3-2-05] PZT thin-film actuators on German silver foils for haptic applications
*Patrick Bach¹, Sang Hyo Kweon¹, Hiroataka Hida¹, Isaku Kanno¹ (1. Kobe University)
12:15 PM - 12:30 PM

Room A

Oral presentation | Machine Learning and Intelligent Mechanical Systems

Machine Learning and Intelligent Mechanical Systems 4

Chair: Yoshiaki Hayashi(Saga University), Genci Capi(Hosei University)

2:00 PM - 3:15 PM Room A (Toyoda Auditorium Hall / Zoom room A)

[A3-3-01] A study on the method of presenting the attention position for the car driver
*Hiroshi Takahashi¹ (1. Shonan Institute of Technology)
2:00 PM - 2:15 PM

[A3-3-02] The Effect of Adjusting Stiffness on Assistant System
*Hikaru Nishimura¹, Ryo Watanabe², Hiroshi Igarashi² (1. Department of Electronic Engineering Graduate School of Engineering, Tokyo Denki Univ., 2. Department of Electrical Engineering School of Engineering, Tokyo Denki Univ.)
2:15 PM - 2:30 PM

[A3-3-03] Evaluation for Accident Risk of Autonomous Car Using AI Autonomous Model Car
*Hiroshi Kuniyuki¹, You Yamamoto¹, Kazuhisa Karasawa¹ (1. Suwa University of Science)
2:30 PM - 2:45 PM

[A3-3-04] On-Line Optimization of Virtual Dynamics to Maximize Machine Operation Performance and Minimize Stress Levels
*Yutaka Inoue¹, Ryo Watanabe², Hiroshi Igarashi² (1. Department of Electronic Engineering Graduate School of Engineering, Tokyo Denki Univ., 2. Department of Electrical Engineering School of Engineering, Tokyo Denki Univ.)
2:45 PM - 3:00 PM

[A3-3-05] Multi-Agent for Adaptive Guidance of Unknown Targets
*Kotaro Kobayashi¹, Hiroshi Igarashi¹, Ryo Watanabe¹ (1. Tokyo Denki University)
3:00 PM - 3:15 PM

Room B

Oral presentation | Mechatronics and Tribology of Information Storage Systems

Mechatronics and Tribology of Information Storage Systems 4

Chair: Isamu Kuchiwaki (NHK SPRING co., LTD.), Tomoko Hirayama (Kyoto University)

2:00 PM - 3:30 PM Room B (Toyoda Auditorium Symposium / Zoom room B)

[B3-3-01] Elastic Modulus Measurement of Ultrathin Diamond-Like Carbon Film Using Gas Cluster Ion Beam

*Norio Tagawa¹, Hiroshi Tani¹, Shinji Koganezawa¹, Renguo Lu¹ (1. Kansai University)
2:00 PM - 2:15 PM

[B3-3-02] 3D coating of *ta*-C films using FCVA method (The mechanical properties of *ta*-C films deposited on the sidewall)
*Yuto Tameno¹, Takumi Ishikawa¹, Toyohiro Kato², Kotaro Kawai², Hiroki Akasaka², Yuki Hirata², Naoto Ohtake², Hiroshige Matsuoka¹ (1. Tottori University, 2. Tokyo Institute of Technology)
2:15 PM - 2:30 PM

[B3-3-03] Study on the surface properties of *ta*-C films deposited by FCVA method on the trench-shaped target
*Hayata Fujimoto¹, Takumi Ishikawa¹, Kotaro Kawai², Toyohiro Kato², Hiroki Akasaka², Yuki Hirata², Naoto Ohtake², Hiroshige Matsuoka¹ (1. Tottori University, 2. Tokyo Institute of Technology)
2:30 PM - 2:45 PM

[B3-3-04] Mechanochemical Reactions of Perfluoropolyether Lubricant Films in the Presence of Water and Oxygen Molecules: A Reactive Molecular Dynamics Study
*Xingyu Chen¹, Koya Inayoshi¹, Takumi Aoto¹, Hedong Zhang¹, Kenji Fukuzawa¹, Shintaro Itoh¹, Naoki Azuma¹ (1. Nagoya University)
2:45 PM - 3:00 PM

[B3-3-05] Thermal and frictional properties of new ionic liquid lubricants
*Hirofumi Kondo¹ (1. MORESCO Corporation)
3:00 PM - 3:15 PM

[B3-3-06] Analysis of Interface Resistance between Silicone Sheet with Groove Structure and Sliding Water Droplet on the Sheet
*Chinatsu Saito¹, Kenji Yanagisawa², Norihiro Okumura², Wataru Iwashita³, Hiroo Taura⁴ (1. Tottori University, 2. National Institute of Technology, Nagano College, 3. Osaka University, 4. Kindai University)
3:15 PM - 3:30 PM

Room C

Oral presentation | Advanced Simulation in Science and Engineering

Advanced Simulation in Science and Engineering 3

Chair: Kentaro Tanaka (Tokyo University of Marine Science and

Technology), Natsuko Sugimura(National Institute of Technology, Kagoshima College)
2:00 PM - 3:00 PM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

[C3-3-01] Simulation of write process of nano-scale ferroelectric recording
*Kenji Fukuzawa¹, Yoshiomi Hiranaga², Yasuo Cho²
(1. Nagoya University, 2. Tohoku University)
2:00 PM - 2:15 PM

[C3-3-02] Fatigue Life Prediction of Board-Level BGA Solder Joints Under Automobile Random Vibration by Using Steinberg's Three Band Method
*Hyunsik Jeong¹, Gunhee Jang¹ (1. Hanyang University)
2:15 PM - 2:30 PM

[C3-3-03] On the aggregation and thermodynamic properties of organophosphate-based additives in a base oil observed by molecular dynamics simulation
*Yoshiki Ishii¹, Kyosuke Kawakita¹, Hiroaki Koshima², Hitoshi Washizu¹ (1. Univ. Hyogo, 2. Idemitsu Kosan Co.,Ltd.)
2:30 PM - 2:45 PM

[C3-3-04] Effect of functional group and chain length on the structure and strength of adsorbed films of TEMPO-based organic friction modifiers: a computational study
*Kimberly Ming-Xia Foo¹, Juntao Yang¹, Xingyu Chen¹, Koji Yasuda¹, Nobuaki Koga¹, Hedong Zhang¹ (1. Nagoya University)
2:45 PM - 3:00 PM

Room D

Oral presentation | IoT and Smart Maintenance

IoT and Smart Maintenance 2

Chair:Gen Hashiguchi(Shizuoka University), Arata Masuda(Kyoto Institute of Technology)

2:00 PM - 3:30 PM Room D (Noyori Conference Hall / Zoom room D)

[D3-3-01] Evaluation of Magnetic Shielding performance by Ferrite Powder on a Metallic Smart Gear
*Takeru Inoue¹, Daisuke Iba¹, Mac Thanh-Tung¹, Nanako Miura¹, Arata Masuda¹ (1. Kyoto Institute of Technology)

2:00 PM - 2:15 PM

[D3-3-02] A study of the relationship between physical conditions and return loss of smart gear during operation
*Thanh-Tung Mac¹, Daisuke Iba¹, Takeru Inoue¹, Naoya Fujita¹, Nanako Miura¹, Takashi Iizuka¹, Arata Masuda¹ (1. Kyoto Institute of Technology)

2:15 PM - 2:30 PM

[D3-3-03] Proposal of control and signal processing method for realization of pipe inspection system based on ring mode of forced vibration
*Naoko Watanabe¹, Soichiro Takata² (1. National Institute of Technology, Tokyo college, advanced course, Mechanical and Information System Engineering, 2. National Institute of Technology, Tokyo college)

2:30 PM - 2:45 PM

[D3-3-04] Diagnosis and Control Method based on Digital Twin
*Daisuke Nishibayashi¹, Tadao Kawai¹ (1. Osaka City Univ.)

2:45 PM - 3:00 PM

[D3-3-05] Automatically discriminations system of landslide disaster sign based on detection of resonance longitudinal vibration
*Shuya Kubota¹, Soichiro Takata² (1. National Institute of Technology, Tokyo college, advanced course, Mechanical and Information System Engineering, 2. National Institute of Technology, Tokyo college)

3:00 PM - 3:15 PM

[D3-3-06] Wireless AE Sensor System for Structural Health Monitoring with Time-of-Event Estimation
*Yuki Ueda¹, Kazuo Watabe¹ (1. TOSHIBA CORPORATION)

3:15 PM - 3:30 PM

Room A

Oral presentation | Machine Learning and Intelligent Mechanical Systems

Machine Learning and Intelligent Mechanical Systems 5

Chair:Hiroshi Igarashi(Tokyo Denki University), Genki

Sasaki(Tokyo Denki University)

4:00 PM - 5:00 PM Room A (Toyoda Auditorium Hall / Zoom room A)

[A3-4-01] A Study of Operation Process of Parallel Wire Mechanism in Smart Aerial Hand
*Yoshiaki Hayashi¹, Go Inoue¹, Yudai Yamaguchi¹
(1. Saga University)
4:00 PM - 4:15 PM

[A3-4-02] Deep learning for bin picking by robotic hand suction with two vacuum cups
*Ping Jiang¹, Junji Oaki¹, Yoshiyuki Ishihara¹, Junichiro Ooga¹, Haifeng Han¹, Atsushi Sugahara¹, Seiji Tokura¹, Haruna Eto¹, Kazuma Komoda¹, Akihito Ogawa¹ (1. Toshiba Corporation)
4:15 PM - 4:30 PM

[A3-4-03] Determination of Sense of Agency in Machine Operation
*Taiga Kassai¹, Ryo Watanabe¹, Hiroshi Igarashi¹
(1. Tokyo Denki Univ.)
4:30 PM - 4:45 PM

[A3-4-04] Design and Implementation of AI Models Classifying and Minimizing Muras of a Micro-LED Display
Yi-Chang Lee¹, *Jen-Yi Hsu¹, Paul C.-P. Chao (1. National Yang Ming Chiao Tung University)
4:45 PM - 5:00 PM

Room B

Oral presentation | Mechatronics and Tribology of Information Storage Systems

Mechatronics and Tribology of Information Storage Systems 5

Chair:Toshihiro Arisaka(Hitachi Academy Co., Ltd.), Hedong Zhang(Nagoya University)

4:00 PM - 5:00 PM Room B (Toyoda Auditorium Symposion / Zoom room B)

[B3-4-01] Material development for efficiently detecting the contact state of sulfide-based solid lubricants
*Tomohiro Sato¹, Masaki Yoshihara², Ken-ichi Saitoh¹, Masanori Takuma¹, Yoshimasa Takahashi¹
(1. Kansai Univ., 2. Fuji Electric Co., LTD.(former. Graduate School of Kansai Univ.))
4:00 PM - 4:15 PM

[B3-4-02] Theoretical analyses of thrust bearing using slip difference of fluid molecules on solid

walls

*Ryo Yamasaki¹, Takumi Ishikawa¹, Hiroshige Matsuoka¹ (1. Tottori university)
4:15 PM - 4:30 PM

[B3-4-03] Research on the application of foil air bearings to small spindle motors
*Masayuki Ochiai¹, Masaharu Arakawa¹ (1. Tokai University)
4:30 PM - 4:45 PM

[B3-4-04] Effect of Altitude on the Start-up Characteristic of Air Hydrodynamic Thrust Bearing with Spiral Grooves
*Tianming Ren¹, Ming Feng¹ (1. University of Science and Technology Beijing)
4:45 PM - 5:00 PM

Room C

Oral presentation | Advanced Simulation in Science and Engineering

Advanced Simulation in Science and Engineering 4

Chair:Ken-ichi Saitoh(Kansai University), Yoshiki Ishii(University of Hyogo)

4:00 PM - 4:45 PM Room C (Toyoda Auditorium Meeting room 1/ Zoom room C)

[C3-4-01] Dynamics of polymers in the simple shear flow: Multi-scale investigation
*Kosar Khajeh¹, Gentaro Sawai², Hitoshi Washizu³
(1. Appointed Assistant Professor, 2. Master student, 3. Professor)
4:00 PM - 4:15 PM

[C3-4-02] SPH simulation of surface tension oscillation of satellite droplet generated by capillary bridge breakup method
*Kentaro Tanaka¹ (1. Tokyo Univ.of Marine Sci. and Tech.)
4:15 PM - 4:30 PM

[C3-4-03] Coarse graining simulation for behavior analysis of micelles under shear flow
*Tomoya Hasegawa¹, Natsuko Sugimura¹, Hitoshi Washizu¹ (1. Univ. of Hyogo)
4:30 PM - 4:45 PM

Room D

Oral presentation | IoT and Smart Maintenance

IoT and Smart Maintenance 3

Chair:Yasushi Tomizawa(Toshiba Corporation), Alejandro Rodriguez Mendez(Western Digital Corporation)

4:00 PM - 5:00 PM Room D (Noyori Conference Hall / Zoom room D)

[D3-4-01] A Synthesizable Clock Recovering Circuit from Clock Glitch Attack for Ring-Oscillator-Based TRNG

*Chun-Heng You¹, Shuen-Ming Tsai¹, Chang-Po Chao¹ (1. National Yang Ming Chiao Tung University, Hsinchu, Taiwan)

4:00 PM - 4:15 PM

[D3-4-02] A Novel transfer learning method based on MEDA and Multi-Kernel for intelligent bearing fault diagnosis

*HAIHONG TANG^{1,2}, YANMI TANG³, KUN ZHANG¹, TANGSHAO DUAN¹, XUEWEI SONG¹, PENG CHEN¹, DUNWEN ZUO⁴, YI SHENG⁴ (1. Mie University, 2. Zhejiang Ocean University, 3. Beihua University, 4. Nanjing Xinhe Institute of Precision Intelligent Manufacturing)

4:15 PM - 4:30 PM

[D3-4-03] A self-powered piezoelectric transponder for elastic field-based smart sensor networks

*Arata Masuda¹, Ryu Sakai¹, Atsuya Hirota¹, Nanako Miura¹ (1. Kyoto Institute of Technology)

4:30 PM - 4:45 PM

[D3-4-04] Internet of Robotic Things (IoRT) for Intelligent Intervention in Autism Telerehabilitation

*Muhammad Aliff Rosly^{1,2}, Hanafiah Yussof², Syamimi Shamsuddin³, Nur Ismarrubie Zahari⁴, Ahmad Zamir Che Daud⁵ (1. School of Mechanical Engineering, College of Engineering, Universiti Teknologi MARA (UiTM), Cawangan Terengganu Kampus Bukit Besi, 2. School of Mechanical Engineering, College of Engineering, Universiti Teknologi MARA (UiTM), Shah Alam, 3. Faculty of Manufacturing Engineering, Universiti Teknikal Malaysia Melaka (UTeM), 4. Faculty of Engineering, Universiti Putra Malaysia (UPM), 5. Faculty of Health Sciences, Universiti Teknologi MARA (UiTM), Cawangan Selangor Kampus Puncak Alam)

4:45 PM - 5:00 PM