

# **IIP/ISPS Joint MIPE2009 Conference Schedule**

Tsukuba International Congress Center, Ibaraki, Japan  
6/17 (Wed.) – 20 (Sat.)

## 6/17 (Wed.)

17:00 to 20:00	<b>Registration</b>
18:00 to 20:00	<b>Welcome reception at Restaurant (1F)</b>

## 6/18 (Thur.)

7:30 - <b>Participants' Briefing</b>				
8:00 to 17:00 <b>Registration</b>				
8:50 to 9:00 <b>Opening Remarks from Prof. Fukui at Room1</b>				
	Room1 (201A)	Room2 (201B)	Room3 (202A)	Room4 (202B)
9:00 to 10:40	<b>Intelligent Machines I</b>  Oral Presentations (INT-01 to 05)	<b>Servo Control I</b>  Oral Presentations (SVC-01 to 05)	9:20 to 10:40 <b>Head/Disk Interface and Tribology I</b>  Oral Presentations (HDI-01 to 04)	<b>Flexible Media Feeding and Handling Machines I</b>  Oral Presentations (FMF-01 to 05)
10:40 to 11:00 BREAK				
11:00 to 12:20	<b>Intelligent Machines II</b>  Keynote Address (Prof. OHKA) Oral Presentations (INT-06 to 07)	<b>Servo Control II</b>  Keynote Address (Prof. CALLAFON) Oral Presentations (SVC-06 to 07)	<b>Head/Disk Interface and Tribology II</b>  Oral Presentations (HDI-05 to 08)	<b>Flexible Media Feeding and Handling Machines II</b>  Oral Presentations (FMF-06 to 09)
12:20 to 13:50 LUNCH				
13:50 to 15:10	<b>Poster Session at Room5 (406, 4F)</b>			
15:10 to 15:30 BREAK				
15:30 to 16:50	<b>Intelligent Machines III</b>  Oral Presentations (INT-08 to 11)	<b>Micro/Nanosystem Science and Technology I</b>  Oral Presentations (MNS-01 to 04)	<b>Head/Disk Interface and Tribology III</b>  Oral Presentations (HDI-09 to 12)	<b>Flexible Media Feeding and Handling Machines III</b>  Keynote Address (Prof. HASHIMOTO) Oral Presentations (FMF-10 to 11)
16:50 to 17:10 BREAK				
17:10 to 18:30	<b>Intelligent Machines IV</b>  Oral Presentations (INT-12 to 15)	<b>Micro/Nanosystem Science and Technology II</b>  Oral Presentations (MNS-05 to 08)	17:10 to 18:10 <b>Head/Disk Interface and Tribology IV</b>  Oral Presentations (HDI-13 to 15)	<b>Flexible Media Feeding and Handling Machines IV</b>  Oral Presentations (FMF-12 to 15)

6/19 (Fri.)

7:30 - <b>Participants' Briefing</b>				
8:00 to 17:00 <b>Registration</b>				
	Room1 (201A)	Room2 (201B)	Room3 (202A)	Room4 (202B)
9:00 to 10:40	<b>Drive Mechanisms I</b>  Oral Presentations (DVM-01 to 05)	<b>Micro/Nanosystem Science and Technology III</b>  Oral Presentations (MNS-09 to 13)	9:00 to 10:20 <b>MM/Micro/Nano Precision Equipments I</b> Keynote Address (Prof. OOHIRA) Oral Presentations (PRE-01 to 02)	<b>Bio-medical Equipments I</b>  Keynote Address (Prof. MASAMUNE) Oral Presentations (BIO-01 to 03)
			10:40 to 11:00 BREAK	
11:00 to 12:20	<b>Drive Mechanisms II</b>  Oral Presentations (DVM-06 to 09)	<b>Micro/Nanosystem Science and Technology IV</b> Keynote Address (Dr. NAKANO) Oral Presentations (MNS-14 to 15)	<b>MM/Micro/Nano Precision Equipments II</b>  Oral Presentations (PRE-03 to 06)	<b>Bio-medical Equipments II</b>  Oral Presentations (BIO-04 to 07)
12:20 to 13:50 LUNCH				
13:50 to 18:00	<b>Workshop at Convention Hall 300 (3F)</b>			
18:00 to 18:30 <b>Photography at Entrance Hall (1F)</b>				
18:30 to 20:30 <b>Banquet at Multi-Purpose Hall (1F)</b>				

6/20 (Sat.)

7:30 - <b>Participants' Briefing</b>				
8:00 to 16:00 <b>Registration</b>				
	Room1 (201A)	Room2 (201B)	Room3 (202A)	Room4 (202B)
9:00 to 10:40	9:40 to 10:40 <b>Drive Mechanisms III</b>  Oral Presentations (DVM-10 to 12)	<b>Simulations of Micro/Nano Scale Phenomena I</b>  Keynote Address (Dr. SASAKI) Oral Presentations (SIM-01 to 03)	9:40 to 10:40 <b>MM/Micro/Nano Precision Equipments III</b>  Oral Presentations (PRE-07 to 09)	<b>Bio-medical Equipments III</b>  Oral Presentations (BIO-08 to 12)
11:00 to 12:20	<b>Drive Mechanisms IV</b>  Oral Presentations (DVM-13 to 16)	<b>Simulations of Micro/Nano Scale Phenomena II</b>  Oral Presentations (SIM-04 to 07)	<b>MM/Micro/Nano Precision Equipments IV</b>  Oral Presentations (PRE-10 to 13)	<b>Micro/Nanomechatronics I</b>  Keynote Address (Prof. WASHIZU) Oral Presentations (MCH-01 to 02)
12:20 to 13:50 LUNCH				12:20 to 13:20 LUNCH
13:50 to 15:10	13:50 to 14:30 <b>Imaging and Printing Technologies I</b> Oral Presentations (IMG-01 to 02)	13:50 to 15:10 <b>Simulations of Micro/Nano Scale Phenomena III</b>  Oral Presentations (SIM-08 to 11)	13:50 to 15:10 <b>Optical Storage/Optical Devices for Storage I</b> Keynote Address (Dr. MATSUMOTO) Oral Presentations (OPT-01 to 02)	13:20 to 14:20 <b>Micro/Nanomechatronics II</b> Oral Presentations (MCH-03 to 05)
	14:20 to 14:30 BREAK			
15:30 to 16:50	14:30 – 14:50 BREAK	15:30 to 16:30 <b>Simulations of Micro/Nano Scale Phenomena IV</b>  Oral Presentations (SIM-12 to 14)	15:30 to 16:50 <b>Optical Storage/Optical Devices for Storage II</b>  Oral Presentations (OPT-03 to 06)	14:30 to 15:50 <b>Micro/Nanomechatronics III</b> Oral Presentations (MCH-06 to 9)
	15:50 to 16:00 BREAK			
15:10 to 15:30 BREAK				16:00 to 17:00 <b>Micro/Nanomechatronics IV</b> Oral Presentations (MCH-10 to 12)

# **Workshop**

**6/19 (Fri.) 13:50 – 18:00 (Convention Hall 300)**

## **For a construction of future technology -From “micro-nano” to “intelligence”-**

Organizers: T. Sato (Tokyo Denki Univ.), S. Saegusa (Hiroshima Univ.), K. Toma (Panasonic),  
S. Shen (Univ. of Washington), N. Schirle (HGST)

One of the fundamental fields related to this international conference is Micro-Nano Science and Engineering. This field together with MEMS/NEMS technologies can be used as a basis for constructing ultra-precision devices for information processing and other applications. Information-processing devices are an example of how information and precision-element technologies can progress by combining basic research in the micro/nano field with micro/nano technologies. A rich information-based society can be created through the systematic convergence and synthesis of various types of information-related devices. Information and precision-element technologies will also pave the way to the development of intelligent systems. Finally, linking intelligent machines with human brain research is important for the advancement of intelligent systems and the creation of even better man-machine interfaces.

In this workshop, we will hear from well-known researchers in representative technologies that are part of this stream, and about future directions for these technologies. It will conclude with comprehensive discussions examining this development stream from an overall perspective.

Co-Chairs: Professor Hiroshi Takahashi, Shonan Institute of Technology, Japan  
Professor Frank E. Talke, UCSD, USA

13:50 – 14:00

### **Opening Address**

**Kazushi Yoshida (Hitachi Ltd., Chair of IIP division, Japan)**

14:00 – 14:40 WS-01

### **Science in MEMS: a Plenty of Room for Multidisciplinary Research**

**Kazuo Sato (Professor, Nagoya University, Japan)**

Textbooks and common sense still have to be rewritten in MEMS areas, because knowledge is not matured in micro/nano science. Examples are presented in wet etching of silicon and fracture of silicon microstructures. It is argued that interdisciplinary research collaboration is quite effective and essential for solving such problems.

14:40 – 15:20 WS-02

### **MEMS/NEMS Technologies for Information Devices**

**Liwei Lin (Chancellor's Professor, University of California at Berkeley, USA)**

In the past decades, the application of microelectronic technology to the fabrication of mechanical devices stimulated emerging research in micro/nano sensors and actuators. The versatility of semiconductor materials and the miniaturization of VLSI patterning techniques promise new systems with better capabilities and improved performance-to-cost ratio over those of conventionally machined devices. This talk will discuss MEMS/NEMS technologies and its applications to information devices, such as the design, fabrication and testing of MEMS/NEMS force and strain sensors to monitor disk/head contacts. Specifically, a micro pressure sensor and a pitch and roll motion sensor have been designed, fabricated and tested for possibly applications in the field of information devices.

15:20 – 16:00 WS-03

**HDD Technology: A Forward Look**

**Nils Larson (Sr. Director of Mechanical Engineering, Western Digital, USA)**

Rotating magnetic data storage systems are providing solutions in a growing digital world, facing expanding challenges in satisfying end-user needs. Various critical customer attributes are explored and how HDD mechanical technology is evolving to meet these needs.

(16:00 – 16:20 BREAK)

16:20 – 17:00 WS-04

**Multi-layered Intelligent Support for Active Safety of Human-Machine Systems**

**Toshiyuki Inagaki (Professor, University of Tsukuba, Japan)**

This paper discusses the need for multi-layered support for assuring active safety of transport systems. It also argues that a machine-initiated trading of authority may be indispensable even in the framework of human-centered automation.

17:00 – 17:40 WS-05

**Measurement of Electromagnetic Signals Generated from the Human Brain**

**Yoshinori Uchikawa (Professor, Tokyo Denki University, Japan)**

The measurement of electromagnetic fields, using SQUID magnetometer, generated by activation of the human brain and application to the interface technology of the human adaptive mechatronics (HAM) system are introduced.

17:40 – 18:00

**Panel Discussion**

**Closing Address**

## ***Technical Program of Oral Presentations***

**6 / 18**

**Room 1 (201A)**

6 / 18 Room 1 (201A)

### **Intelligent Machines I (9:00 – 10:40)**

Chair: Prof. Hiroshi TAKAHASHI (Shonan Institute of Technology, Japan)

9:00 - 9:20 INT-01

A STUDY ON A SUBLIMINAL ALARM FOR CAREFUL DRIVING

Hiroshi TAKAHASHI

Shonan Institute of Technology, Japan

9:20 - 9:40 INT-02

CONTROL OF HUMAN GENERATING FORCE BY USE OF ACOUSTIC INFORMATION - STUDY ON ARTIFICIAL SOUNDS FOR SMALL FORCE CONTROLS

Miki IIMURA<sup>1</sup>, Taichi SATO<sup>1</sup>, Kihachiro TANAKA<sup>2</sup>

1: Tokyo Denki University, Japan

2: Saitama University, Japan

9:40 - 10:00 INT-03

HUMAN BEHAVIOR RECOGNITION BY USING FOOT PRESSURE SENSING SHOES

Chika SUGIMOTO, Kenji OZAKI, Ryosuke EZOE, Hiroshi HOSAKA, Hiroyuki YAMATO

The University of Tokyo, Japan

10:00 - 10:20 INT-04

ADAPTIVE COOPERATION USING INTERACTION OF MULTI-AGENT SYSTEM

Yoshihiro MURATA, Hiroshi IGARASHI

Tokyo Denki University, Japan

10:20 - 10:40 INT-05

DEVELOPMENT OF TRIPOD PARALLEL MECHANISM

Yoshito TANAKA<sup>1</sup>, Yasunobu HITAKA<sup>1</sup>, Yutaka TANAKA<sup>2</sup>, Ken ICHIRYU<sup>3</sup>

1: Kitakyushu National College of Technology, Japan

2: Hosei University, Japan

3: Kikuchi Seisakusho, Japan

(10:40 – 11:00 BREAK)

6 / 18 Room 1 (201A)

### **Intelligent Machines II (11:00 – 12:20)**

Chair: Prof. Hiroshi IGARASHI (Tokyo Denki University, Japan)

11:00 - 11:40 INT-K ***Keynote Address***

INTELLIGENT TACTILE SENSING INSPIRED BY COMPLEX SYSTEMS SCIENCE

Masahiro OHKA

Nagoya University, Japan

11:40 - 12:00 INT-06

STUDY ON EFFICIENT PHS POSITION TRACKING SYSTEM FOR TRANSPORT EQUIPMENTS USING ACCELEROMETER AND SUPERVISED MACHINE LEARNING

Hiroshi YOSHIDA, Yasuhiro KAWAHARA, Hiroshi HOSAKA  
The University of Tokyo, Japan

12:00 - 12:20 INT-07

PRECISE POSITIONING METHOD FOR LOGISTIC TRACKING SYSTEMS USING PHS BASED ON MAHALANOBIS DISTANCE

Naoaki YOKOI, Yasuhiro KAWAHARA, Hiroshi HOSAKA  
The University of Tokyo, Japan

(12:20 – 13:50 LUNCH)

**13:50 – 15:10 POSTER SESSION**

(15:10 – 15:30 BREAK)

6 / 18 Room 1 (201A)

**Intelligent Machines III (15:30 – 16:50)**

Chair: Prof. Jen-Yuan Chang (Massey University, New Zealand)

15:30 - 15:50 INT-08

DEVELOPMENT OF INTELLIGENT HARDNESS MEASUREMENT MACHINE

Montree PAKKRATOKE, Tassanai SANEPONPUT, Rugkanawan KONGKAVITUL,  
Apichaya MEESAPLAK  
National Institute of Metrology, Thailand

15:50 - 16:10 INT-09

CONTROL METHOD FOR PZT PIEZOELECTRIC ACTUATOR USING MULTI-LAYER NEURAL NETWORK INCLUDING FEEDBACK CONNECTION

Masahiro OHKA<sup>1</sup>, Kazuya ESUMI<sup>1</sup>, Yasuhiro SAWAMOTO<sup>2</sup>  
1: Nagoya University, Japan  
2: Molex Japan Co. Ltd., Japan

16:10 - 16:30 INT-10

TWO-WHEELED ACTIVE INERTIA CONTROLLED ROBOT FOR AGRICULTURE PEST CONTROL APPLICATION

Hamid Reza MEMARBASHI, Jen-Yuan (James) CHANG  
Massey University, New Zealand

16:30 - 16:50 INT-11

MANIPULATOR CONTROL WITH FLEXIBLE OBJECTS MODEL BY NEURAL NETWORK

Mitsutoshi TOGASAKI, Hiroshi IGARASHI  
Tokyo Denki University, Japan

(16:50 – 17:10 BREAK)

6 / 18 Room 1 (201A)

**Intelligent Machines IV (17:10 – 18:30)**

Chair: Prof. Masahiro OHKA (Nagoya University, Japan)

17:10 - 17:30 INT-12

COOPERATIVE TRANSPORTATION TASK BY MULTI-ROBOTS WITH LEADER SELECTION

Yoshitaka TOHYAMA, Hiroshi IGARASHI  
Tokyo Denki University, Japan

17:30 - 17:50 INT-13

EXTERNAL SKELETON TYPE UPPER-LIMBS MOTION INSTRUCTION SYSTEM

Ryota SAKAMOTO<sup>1</sup>, Yuki YOSHIMURA<sup>1</sup>, Tokuhiro SUGIURA<sup>2</sup>, Yoshihiko NOMURA<sup>3</sup>

1: Mie University, Faculty of Engineering, Japan

2: Mie University, Center for Information Technologies and Networks, Japan

3: Mie University, Japan

17:50 - 18:10 INT-14

DEVELOPMENT OF AN ON-LINE DIGITAL OPTICAL BENCH TESTER WITH CONOSCOPY FOR LENS QUALITY EVALUATION

Lun-De LIAO, Wei-Huesh HSU, Paul C.-P, CHAO, Yan-Pean HUANG

National Chiao Tung University, Taiwan

18:10 - 18:30 INT-15

DEVELOPMENT OF GUIDE-DOG ROBOT (SECOND REPORT), - LEADING AND RECOGNIZING A VISUALLY HANDICAPPED PERSON USING LRF-

Shozo SAEGUSA<sup>1</sup>, Yuya YASUDA<sup>1</sup>, Yoshitaka URATANI<sup>1</sup>, Eiichirou TANAKA<sup>2</sup>, Toshiaki MAKINO<sup>3</sup>

1: Hiroshima University, Japan

2: Shibaura Institute of Technology, Japan

3: Tokuyama National College of Technology, Japan

**6 / 18**  
**Room 2 (201B)**

6 / 18 Room 2 (201B)

**Servo Control I (9:00 – 10:40)**

Chair: Prof. Raymond A. de Callafon (University of California, San Diego, USA)

9:00 - 9:20 SVC-01

FINAL-STATE CONTROL USING SAMPLED-DATA POLYNOMIAL FOR HARD DISK DRIVES

Mitsuo HIRATA, Fujimaru UENO  
Utsunomiya University, Japan

9:20 - 9:40 SVC-02

FEEDFORWARD CONTROL DESIGN FOR SEEK CONTROL USING NME PROFILER AND INPUT SHAPING

Yoshihito KINOSHITA<sup>1</sup>, Yuichi CHIDA<sup>1</sup>, Yoshiyuki ISHIHARA<sup>2</sup>  
1: Shinshu University, Japan  
2: Toshiba, Japan

9:40 - 10:00 SVC-03

STABLE PEAK FILTERING METHOD TO REJECT HIGH FREQUENCY DISTURBANCE IN HARD DISK DRIVES

Fan HONG, Chunling DU  
Data Storage Institute, Singapore

10:00 - 10:20 SVC-04

A RUN-OUT ORIENTED CONTROLLER DESIGN FOR NANOSCALE SERVO SYSTEMS OF HARD DISK DRIVES

Jun ISHIKAWA  
Tokyo Denki University, Japan

10:20 - 10:40 SVC-05

SERVO PREDICTION AND HIGH POSITION UPDATE RATE TO SUPPORT 10 TERABIT/SQ-IN PATTERNED MEDIA TECHNOLOGY

Wai Ee WONG, Fan HONG, Jul Nee TEOH, Songhua ZHANG, Yu LIN  
Data Storage Institute, Singapore

(10:40 – 11:00 BREAK)

6 / 18 Room 2 (201B)

**Servo Control II (11:00 – 12:20)**

Chair: Prof. Mitsuo Hirata (Utsunomiya University, Japan)

11:00 - 11:40 SVC-K **Keynote Address**

ROBUST ESTIMATION AND ADAPTIVE CONTROLLER TUNING FOR VARIANCE MINIMIZATION IN SERVO SYSTEMS

Raymond Arnaud de CALLAFON  
University of California, San Diego, USA

11:40 - 12:00 SVC-06

A SIGNIFICANT IMPROVEMENT TO TAPE DRIVE PES BY CANCELING LTM WITH A ROBUST, HIGH PERFORMANCE CONTROLLER

Charles Edward KINNEY, Raymond Arnaud de CALLAFON  
University of California, San Diego, USA



12:00 - 12:20 SVC-07

MODELING AND CONTROL OF A DUAL STAGE ACTUATOR HARD DISK DRIVE

Uwe BOETTCHER, Raymond Arnoud de CALLAFON, Frank E. TALKE  
University of California, San Diego, USA

(12:20 – 13:50 LUNCH)

**13:50 – 15:10 POSTER SESSION**

(15:10 – 15:30 BREAK)

6 / 18 Room 2 (201B)

**Micro/Nanosystem Science and Technology I (15:30 – 16:50)**

Chair: Prof. Kenji SUZUKI (Kogakuin University, Japan)

15:30 - 15:50 MNS-01

REDUCTION OF ADHESION BETWEEN STEEL AND GRILLED FISH PROTEIN WITH ULTRA-HYDROPHOBIC DLC

Naoko HONDA<sup>1</sup>, Makoto KAJIYA<sup>2</sup>, Young-Jun JANG<sup>1</sup>, Hiroyuki Kousaka<sup>1</sup>, Noritsugu UMEHARA<sup>1</sup>

1: Nagoya University, Department of Mechanical Science and Engineering, Japan

2: Nagoya University, Department of Mechanical and Aerospace engineering, Japan

15:50 - 16:10 MNS-02

THE EFFECT OF ULTRAVIOLET RAY IRRADIATION ON CN<sub>x</sub> COATING'S TRIBOLOGICAL PROPERTY

Takayuki TOKOROYAMA<sup>1</sup>, Makoto KAMIYA<sup>1</sup>, Noritsugu UMEHARA<sup>1</sup>, Yoshio FUWA<sup>2</sup>

1: Nagoya University, Japan

2: Toyota Motors Co., Ltd., Japan

16:10 - 16:30 MNS-03

THE EFFECT OF MICRO-TEXTURING ON TRIBOLOGICAL PROPERTIES

Miki NAKANO<sup>1</sup>, Koji MIYAKE<sup>1</sup>, Atsushi KORENAGA<sup>1</sup>, Yasuhisa ANDO<sup>1</sup>, Shinya SASAKI<sup>1,2</sup>

1: National Institute of Advanced Industrial Science and Technology (AIST), Japan

2: Tokyo University of Science, Japan

16:30 - 16:50 MNS-04

MECHANICAL AND TRIBOLOGICAL PROPERTIES OF NANOSTRUCTURED Cr-C-N<sub>x</sub> FILMS GROWN AT VARYING NITROGEN CONCENTRATION

Anand VYAS<sup>1</sup>, Lawrence LI<sup>2</sup>

1: The Hong Kong Polytechnic University, Hong Kong

2: City University of Hong Kong, Hong Kong

(16:50 - 17:10 BREAK)

6 / 18 Room 2 (201B)

## **Micro/Nanosystem Science and Technology II (17:10 – 18:30)**

Chair: Dr. Takayuki TOKOROYAMA (Nagoya University, Japan)

**17:10 - 17:30 MNS-05**

**ENHANCED RAMAN SPECTROSCOPIC ANALYSIS OF ULTRA-THIN PLASMA CVD DIAMOND-LIKE CARBON FILMS USING MOLECULAR SENSOR WITH PLASMON ANTENNA**

Masahiro YANAGISAWA<sup>1</sup>, Naonobu SHIMAMOTO<sup>2</sup>, Toshiyuki AIDA<sup>1</sup>, Mikiko SAITO<sup>2</sup>, Kunio KATO<sup>2</sup>, Masaki SUZUKI<sup>3</sup>, Tetsuya OSAKA<sup>4</sup>, Naoto OHTAKE<sup>3</sup>

- 1: Waseda University, Institute for Biomedical Engineering, Japan
- 2: Waseda University, Nanotechnology Research Laboratory, Japan
- 3: Tokyo Institute of Technology, Japan
- 4: Waseda University, Faculty of Science and Engineering, Japan

**17:30 - 17:50 MNS-06**

**DEVELOPMENT OF VAN DER POL-TYPE SELF-EXCITED FM-AFM (VDP-AFM)**

Masaharu KURODA<sup>1</sup>, Takashi SOMEYA<sup>2</sup>, Hiroshi YABUNO<sup>3</sup>

- 1: National Institute of Advanced Industrial Science and Technology (AIST), Japan
- 2: Mitsubishi Heavy Industries Ltd., Japan
- 3: Keio University, Japan

**17:50 - 18:10 MNS-07**

**FREE VIBRATION ANALYSIS OF CARBON NANOTUBES AND GRAPHENE SHEETS USING MOLECULAR STRUCTURAL MECHANICS APPROACH**

Ramin VATANKHAH, Kamyar HASHEMNIA, Mehrdad FARID  
Shiraz University, Iran

**18:10 - 18:30 MNS-08**

**NANOWEAR CHARACTERISTICS OF CARBON NANOTUBE FILM MADE BY SURFACE DECOMPOSITION OF SiC**

Yosuke TSUKIYAMA<sup>1</sup>, Noritsugu UMEHARA<sup>1</sup>, Michiko KUSUNOKI<sup>2</sup>

- 1: Nagoya University, Department of Mechanical Science and Engineering, Japan
- 2: Nagoya University, EcoTopia Science Institute, Japan

**6 / 18**  
**Room 3 (202A)**

6 / 18 Room 3 (202A)

**Head / Disk Interface and Tribology I (9:20 – 10:40)**

Chair: #####

9:20 - 9:40 HDI-01

" DAMPING SLIDER " AIR-BEARING DESIGN CONCEPTS AND SLIDER DEVELOPMENT

Yuki SHIMIZU, Junguo XU, Jianhua LI, Kyosuke ONO

Hitachi Ltd., Japan

9:40 - 10:00 HDI-02

AIR BEARING DESIGN SUPPRESSING REVERSE FLOW FROM THE TRAILING EDGE OF THE SLIDER

Jianhua LI, Junguo XU, Yuichi AOKI

Hitachi Ltd., Japan

10:00 - 10:20 HDI-03

AN ANALYSIS OF THE DIMPLE/GIMBAL CONTACT IN A HARD DISK DRIVE SUSPENSION

Longqiu LI<sup>1</sup>, Izhak ETSION<sup>2</sup>, Edmund B. FANSLAU<sup>3</sup>, Frank TALKE<sup>4</sup>

1: Harbin Institute of Technology, China.

2: Technion-Israel Institute of Technology, Israel

3: NHK International Corp., USA

4: University of California, San Diego, USA

10:20 - 10:40 HDI-04

THERMAL - MECHANICAL ANALYSIS OF DFH CONSIDERING ABS SHAPES AND ABS PRESSURE

Hidetoshi MATSUI, Zhisheng DENG

1. TDK Corporation Technical Center, Japan

2. SAE Magnetism (H.K.) Ltd., Hong Kong

(10:40 – 11:00 BREAK)

6 / 18 Room 3 (202A)

**Head / Disk Interface and Tribology II (11:00 – 12:20)**

Chair: #####

11:00 - 11:20 HDI-05

HIGH-SPEED TRIBOLOGICAL MEASUREMENT OF PFPE LUBRICANT FILM BY USING OSCILLATING OPTICAL FIBER PROBE

Koki IMAI<sup>1</sup>, Shintaro ITOH<sup>1</sup>, Kenji FUKUZAWA<sup>1</sup>, Yuya HAMAMOTO<sup>1</sup>, Hedong ZHANG<sup>2</sup>

1: Nagoya University, Graduate School of Engineering, Japan

2: Nagoya University, Graduate School of Information Science, Japan

11:20 - 11:40 HDI-06

EFFECT OF ULTRAVIOLET IRRADIATION ON ADHESIVE FORCE AND ELONGATION OF MONOLAYER LUBRICANT FILMS COATED ON MAGNETIC DISK SURFACE

Yasuji OHSHIMA<sup>1</sup>, Takashi SUMI<sup>2</sup>, Hedong ZHANG<sup>2</sup>, Yasunaga MITSUYA<sup>3</sup>, Kenji FUKUZAWA<sup>2</sup>

1: Aichi Konan College, Japan

2: Nagoya University, Japan

3: Nagoya Industrial Science Research Institute, Japan

11:40 - 12:00 HDI-07

CONFORMATION AND FUNDAMENTAL PROPERTIES OF NOVEL LUBRICANT TA-30 FOR NEAR CONTACT MAGNETIC RECORDING

Norio TAGAWA, Hiroshi TANI  
Kansai University, Japan

12:00 - 12:20 HDI-08

STABILITY AND DEFORMATION OF THIN LIQUID FILM SURFACE (THREE-DIMENSIONAL ANALYSES FOR FREE SURFACE BETWEEN OPPOSED SOLID SURFACES)

Fumihiko SAEKI<sup>1</sup>, Shigehisa FUKUI<sup>2</sup>, Hiroshige MATSUOKA<sup>2</sup>

1: Tottori University, Graduate School of Engineering, Department of Design and Information Engineering, Japan

2: Tottori University, Graduate School of Engineering, Department of Mechanical and Aerospace Engineering, Japan

(12:20 – 13:50 LUNCH)

**13:50 – 15:10 POSTER SESSION**

(15:10 – 15:30 BREAK)

6 / 18 Room 3 (202A)

### Head / Disk Interface and Tribology III (15:30 – 16:50)

Chair: #####

15:30 - 15:50 HDI-09

APPLICATION OF SQP METHOD IN DESIGNING THRUST AIR BEARING FOR HARD DISK DRIVE SPINDLE MOTOR

Mohd Danial IBRAHIM<sup>1</sup>, Tadashi NAMBA<sup>1</sup>, Masayuki OCHIAI<sup>2</sup>, Hiromu HASHIMOTO<sup>2</sup>

1: Tokai University, Graduate School of Science and Engineering, Japan

2: Tokai University, Department of Mechanical Engineering, Japan

15:50 - 16:10 HDI-10

DAMAGE ON DISCRETE TRACK RECORDING MEDIA BY NORMAL / FRICTIONAL CONTACT

Yeoungchin YOON, Frank E. TALKE

University of California, San Diego, USA

16:10 - 16:30 HDI-11

AN EFFICIENT SIMULATION SCHEME FOR UNLOADING PROCESSES WITH APPLICATION TO PARAMETRIC STUDIES AND TREND ANALYSIS

Yan LIU, Hejun DU, Shao WANG

Nanyang Technological University, Singapore

16:30 - 16:50 HDI-12

THE ULTRA-THIN FILM LUBRICATION AT THE HEAD-DISK INTERFACE DURING LOAD/UNLOAD PROCESS OF HARD DISK DRIVES

Haodong WEI, Hongrui AO, Hongyuan JIANG

Harbin Institute of Technology, China

(16:50 – 17:10 BREAK)

6 / 18 Room 3 (202A)

### Head / Disk Interface and Tribology IV (17:10 – 18:10)

Chair: #####

17:10 - 17:30 HDI-13

INVESTIGATIONS OF MAGNETIC HEAD TOUCH DOWN BEHAVIOR ON WAVY SURFACE

Lizhi SU, Zhisheng DENG, Ringo Wing Kwong NG

SAE Magnetics (H.K.) Ltd, Hong Kong

17:30 - 17:50 HDI-14

EFFECTS OF ENVIRONMENTAL CONDITIONS ON TRIBOLOGICAL CHARACTERISTICS OF THIN-FILM DISKS

Kiyoto GYOURIKI<sup>1</sup>, Youichi KAWAKUBO<sup>2</sup>

- 1: Shinshu University, Graduate School of Engineering, Japan
- 2: Shinshu University, Department of Mechanical Systems Engineering, Japan

17:50 - 18:10 HDI-15

ELECTRIC FIELD ASSISTED DIP COATING PROCESS OF ULTRA-THIN PFPE LUBRICANT FILM FOR MAGNETIC DISKS

Hiroshi TANI<sup>1</sup>, Masami KUBOTA<sup>2</sup>, Masayuki KANDA<sup>2</sup>, Motohiro TERAOKA<sup>2</sup>, Norio TAGAWA<sup>1</sup>

- 1: Kansai University, Japan
- 2: Kubota Comps Co., Japan

**6 / 18**  
**Room 4 (202B)**

6 / 18 Room 4 (202B)

**Flexible Media Feeding and Handling Machines I (9:00 – 10:40)**

Chair: #####

9:00 - 9:20 FMF-01

HIGH-SPEED SHEET FEEDING TECHNIQUE USING ULTRASONIC VIBRATION

Yuko KOBAYASHI, Kiminori TOYA, Hideki NUKADA, Masaki TAKAHASHI, Takehiko SUZUKI  
Toshiba Corporation, Japan

9:20 - 9:40 FMF-02

EXPERIMENTAL INVESTIGATION OF AIR-BREATHING MECHANISM TO ENHANCE  
PROXIMITY BETWEEN TRAVELING TAPE AND ACTIVE GUIDER

Riichi NAGAO, Jen-Yuan (James) CHANG,  
Massey University, New Zealand

9:40 - 10:00 FMF-03

TESTING AND VALIDATION METHODS FOR COMPLEX MEDIA HANDLING SYSTEMS

Jongwoo KIM, Kiyoungh KIM  
Nautilus Hyosung Inc., Republic of Korea

10:00 - 10:20 FMF-04

NUMERICAL ANALYSIS ON PAPER SHEET SEPARATION USING THE OVERLAP SEPARATION  
MECHANISM

Hui CHENG, Hiroshi IKEDA, Kazushi YOSHIDA  
Hitachi Ltd., Japan

10:20 - 10:40 FMF-05

PIEZO-ELECTRICALLY ACTUATED HIGH BANDWIDTH VIBRATION COMPENSATION FOR  
MOVING MEDIA

Venkataraman KARTIK, Mark A. LANTZ, Evangelos ELEFThERIOU  
IBM Zurich Research Laboratory, Switzerland

(10:40 - 11:00 BREAK)

6 / 18 Room 4 (202B)

**Flexible Media Feeding and Handling Machines II (11:00 – 12:20)**

Chair: #####

11:00 - 11:20 FMF-06

CONTACT CHARACTERISTICS OF A RUBBER ROLLER AND A FLEXIBLE MEDIUM

Kyosuke ONO  
KO Dynamics Laboratory, Japan

11:20 - 11:40 FMF-07

CHARACTERISTICS OF PAPER FEEDING MECHANISM WITH A SHORT-RUBBER ROLLER  
AND A FLAT PLATE

Hiroshi UMANO, Hiroshi YAMAURA  
Tokyo Institute of Technology, Japan

11:40 - 12:00 FMF-08

WEB FLUTTER OF A THIN FILM IN A NARROW PASSAGE

Gaku KUDO, Masahiro WATANABE, Kensuke HARA  
Aoyama Gakuin University, Japan

12:00 - 12:20 FMF-09

ACTIVE FEEDBACK CONTROL OF A WEB FLUTTER IN A NARROW PASSAGE

Yusuke HAYASHI, Masahiro WATANABE, Kensuke HARA  
Aoyama Gakuin University, Japan

(12:20 – 13:50 LUNCH)

**13:50 – 15:10 POSTER SESSION**

(15:10 – 15:30 BREAK)

6 / 18 Room 4 (202B)

**Flexible Media Feeding and Handling Machines III (15:30 – 16:50)**

Chair: #####

15:30 - 16:10 FMF-K

***Keynote Address***

(TO BE DETERMINED)

Hiromu HASHIMOTO  
Tokai University, Japan

16:10 - 16:30 FMF-10

CHARACTERISTICS OF AIR FILM SPACING AND FLOW VISUALIZATION FOR  
TRANSPORTING FILM

Katsumi AOKI, Hiromu HASHIMOTO  
Tokai University, Japan

16:30 - 16:50 FMF-11

THEORETICAL AND EXPERIMENTAL INVESTIGATIONS INTO GENERATION OF  
WRINKLING AND SLIP IN PLASTIC-FILMS UNDER TRANSPORTATION

Hiromu HASHIMOTO  
Tokai University, Japan

(16:50 – 17:10 BREAK)

6 / 18 Room 4 (202B)

**Flexible Media Feeding and Handling Machines IV (17:10 – 18:30)**

Chair: #####

17:10 - 17:30 FMF-12

IMPROVEMENT OF SLIPPAGE AND WRINKLING OF TRANSPORTING WEBS USING  
MICRO-GROOVED ROLLERS

Shinji HIKITA<sup>1</sup>, Hiromu HASHIMOTO<sup>2</sup>  
1: Fujifilm Corporation, Japan  
2: Tokai University, Japan

17:30 - 17:50 FMF-13

PREVENTION OF WOUND ROLL DEFECT OF COATED WEB

Toshimitsu KANDA<sup>1</sup>, Shoko AKEMINE<sup>1</sup>, Hiromu HASHIMOTO<sup>2</sup>  
1: LINTEC Corporation, Japan  
2: Tokai University, Japan

**17:50 - 18:10 FMF-14**

**OPTIMUM WINDING TENSION AND NIP-LOAD INTO WOUND WEBS FOR PROTECTING WRINKLES AND SLIPPAGE**

Hiromu HASHIMOTO<sup>1</sup>, Puttha JEENKOUR<sup>2</sup>, Mongkol MONGKOLWONGROJN<sup>2</sup>

1: Tokai University, Japan

2: King Mongkut's Institute of Technology Ladkrabang, Thailand

**18:10 - 18:30 FMF-15**

**WEB WINDING SIMULATION AND WOUND ROLL STRESSES**

Shigeo YANABE, Kengo TAKAHASHI, Toru YAMASHITA

Nagaoka University of Technology, Japan



**6 / 19**  
**Room 1 (201A)**

6 / 19 Room 1 (201A)

**Drive Mechanisms I (9:00 – 10:40)**

Chair: #####

9:00 - 9:20 DVM-01

VCM DESIGN WITH ROUND COIL AND RECTANGULAR MAGNET FOR HARD DISK DRIVE ACTUATOR

Kenji SUZUKI<sup>1</sup>, Mutsuro OHTA<sup>2</sup>

1: Hitachi Ltd., Japan

2: Hitachi Global Storage Technologies Japan, Ltd., Japan

9:20 - 9:40 DVM-02

OPTIMIZATION OF BASEPLATE HUB DESIGN FOR SWAGING OPERATION

K.C. EE, Peter HAHN, Brett HOLAWAY

Magnecomp Corporation, USA

9:40 - 10:00 DVM-03

A RELIABLE MAGNETIC LATCH DESIGN USING ELECTRO-MAGNETIC FORCE OF VCM ACTUATOR

Kyung-Ho KIM<sup>1</sup>, Dongho OH<sup>2</sup>, Bu-Hyun SHIN<sup>3</sup>

1: Samsung Electronics Company, Republic of Korea

2: Chungnam National University, Republic of Korea

3: Sogang University, Republic of Korea

10:00 - 10:20 DVM-04

SELF-POWERED SEEK-INDUCED KINETIC ENERGY HARVESTER IN COMPUTER HARD DISK DRIVES

Jen-Yuan (James) CHANG

Massey University, New Zealand

10:20 - 10:40 DVM-05

NEWLY DESIGNED SLIDER-BASED MICRO-ACTUATOR FOR MAGNETIC DISK DRIVE

Yusuke NOJIMA, Shinji KOGANEZAWA

Fujitsu Limited, Japan

(10:40 – 11:00 BREAK)

6 / 19 Room 1 (201A)

**Drive Mechanisms II (11:00 – 12:20)**

Chair: #####

11:00 - 11:20 DVM-06

AN OPTIMIZED DESIGN USING THE VCM YOKE TO SUPPORT THE ACTUATOR PIVOT

Takeshi YOSHIDA<sup>1</sup>, Shinobu YOSHIDA<sup>2</sup>

1: Hitachi Information Academy Co., Ltd., Japan

2: Hitachi Ltd., Japan

11:20 - 11:40 DVM-07

SHOCK RESPONSE OF DISK, MOTOR-BASE AND TOP-COVER IN HDD

Xiao Cong YAO, Xue Chao WANG, Jun Yan YANG, Da Peng ZHAO

SAE Magnetics (H.K.) Ltd., China

**11:40 - 12:00 DVM-08**

**SHOCK RESPONSE IN DROP TEST SIMULATION OF A SMALL FORM FACTOR DISK DRIVE**

Bin GU<sup>1</sup>, Dong-Wei SHU<sup>1</sup>, Bao-Jun SHI<sup>2</sup>

1: Nanyang Technological University, Singapore

2: Shandong Jianzhu University, China

**12:00 - 12:20 DVM-09**

**VALIDATION OF SOLID STATE DRIVES - VIRTUAL PORT EMULATION**

Alok PANDEY

Intel, India

(12:20 – 13:50 LUNCH)

**13:50 – 18:00 WORKSHOP AT CONVENTION HALL 300**

(18:00 – 18:30 PHOTOGRAPHY AT ENTRANCE HALL)

(18:30 – 20:30 BANQUET AT MULTI-PURPOSE HALL)

**6 / 19**  
**Room 2 (201B)**

6 / 19 Room 2 (201B)

**Micro/Nanosystem Science and Technology III (9:00 – 10:40)**

Chair: Dr. Masaharu KURODA (National Institute of Advanced Industrial Science and Technology, Japan)

9:00 - 9:20 MNS-09

INSECT-INSPIRED WALL-CLIMBING ROBOTS MICRO UTILIZING SURFACE TENSION FORCES

Kenji SUZUKI, Shusuke NEMOTO, Takahiro FUKUDA, Hideaki TAKANOBU, Hirofumi MIURA  
Kogakuin University, Japan

9:20 - 9:40 MNS-10

ELECTROWETTING-BASED ACTUATION OF LIQUID DROPLETS FOR MICRO  
TRANSPORTATION SYSTEMS

Kenji SUZUKI, Hiroaki HOMMA, Tatsuya MURAYAMA, Hideaki TAKANOBU, Hirofumi MIURA  
Kogakuin University, Japan

9:40 - 10:00 MNS-11

DEVELOPMENT OF ELECTROHYDRODYNAMICS (EHD) MICROPUMP TO GENERATE  
OSCILLATING FLOW AT LOW FREQUENCIES

Yuhei FUJIWARA, Ichiro KANO, Ichiro TAKAHASHI  
Yamagata University, Japan

10:00 - 10:20 MNS-12

DEVELOPMENT OF PNEUMATIC SERVO BEARING ACTUATOR FOR NANO-POSITIONING

Katto SATOSHI<sup>1</sup>, Masato KADOTANI<sup>1</sup>, Takakazu KITAGAWA<sup>1</sup>, Tomoko HIRAYAMA<sup>1</sup>,  
Takashi MATSUOKA<sup>1</sup>, Katsumi SASAKI<sup>2</sup>

1: Doshisha University, Japan

2: Pneumatic Servo Controls Ltd., Japan

10:20 - 10:40 MNS-13

ACTIVE DAMPING OF MICRO-ACTUATOR FOR HDD TRACKING SERVO

Toshiki HIRANO

Hitachi Global Storage Technologies San Jose Research Center, USA

(10:40 - 11:00 BREAK)

6 / 19 Room 2 (201B)

**Micro/Nanosystem Science and Technology IV (11:00 – 12:20)**

Chair: Prof. Tomoko HIRAYAMA (Doshisha University, Japan)

11:00 - 11:40 MNS-K **Keynote Address**

TRIBOLOGICAL PROPERTIES OF SELF-ASSEMBLED MOLECULAR LAYERS

Miki NAKANO

National Institute of Advanced Industrial Science and Technology (AIST), Japan

11:40 - 12:00 MNS-14

NANO-STRUCTURE-BASED PATTERNING OF NANOMETER THICK LUBRICANT FILMS

Kenji FUKUZAWA, Yusuke SHIKATA, Yuichi IMURA, Shintaro ITOH, Hedong ZHANG

Nagoya University, Japan

12:00 - 12:20 MNS-15

NANOSCALE FRICTION BEHAVIORS OF HIERARCHICAL SUPERHYDROPHOBIC STRUCTURE  
OF DIAMOND LIKE CARBON FILMS WITH VARIOUS HUMIDITY CONDITIONS

Young-Jun JANG, Hiroyuki KOUSAKA, Noritsugu UMEHARA  
Nagoya University, Japan

(12:20 – 13:50 LUNCH)

**13:50 – 18:00 WORKSHOP AT CONVENTION HALL 300**

(18:00 – 18:30 PHOTOGRAPHY AT ENTRANCE HALL)

(18:30 – 20:30 BANQUET AT MULTI-PURPOSE HALL)

**6 / 19**  
**Room 3 (202A)**

6 / 19 Room 3 (202A)

**MM/Micro/Nano Precision Equipments I (9:00 – 10:20)**

Chair: Prof. Mikio HORIE (Tokyo Institute of Technology, Japan)

9:00 - 9:40 PRE-K **Keynote Address**

APPLICATION OF MICRO-NANO TECHNOLOGIES FOR OPTICAL AND BIOLOGICAL FIELDS

Fumikazu OOHIRA, Takaaki SUZUKI  
Kagawa University, Japan

9:40 - 10:00 PRE-01

PRACTICAL COMMON DESIGN PROCEDURE OF PRECISION POSITIONING CONTROLLER FOR NON-CONTACT AND CONTACT MECHANISMS

Shin Horng CHONG, Kaiji SATO  
Tokyo Institute of Technology, Japan

10:00 - 10:20 PRE-02

ACTIVE VIBRATION SUPPRESSION USING EFFICIENT AND ROBUST PZT-ACTUATED SUSPENSION

Landong MARTUA, Yopie ADRIANTO, Yin Quan YU, Wu Zhong LIN, Eng Hong ONG  
Data Storage Institute, Singapore

(10:20 – 11:00 BREAK)

6 / 19 Room 3 (202A)

**MM/Micro/Nano Precision Equipments II (11:00 – 12:20)**

Chair: Prof. Seiichi HATA (Tokyo Institute of Technology, Japan)

11:00 - 11:20 PRE-03

MAGNETIC ACTUATION TYPE LOW COST POLYMER MEMS MIRROR FABRICATED BY PHOTOLITHOGRAPHY TECHNOLOGY

Tetsuro NAKANO<sup>1</sup>, Takaaki SUZUKI<sup>1</sup>, Fumikazu OOHIRA<sup>1</sup>, Gen HASHIGUTI<sup>2</sup>  
1: Kagawa University, Japan  
2: Shizuoka University, Japan

11:20 - 11:40 PRE-04

DRIVING CHARACTERISTIC OF AN OPTICAL MEMS SWITCH USING A BELT-SHAPED THIN FILM MIRROR AND A HIGH DIELECTRIC CONSTANT LAYER

Kazutoshi OKUTSU, Masahiko NISHIMURA, Kaiji SATO  
Tokyo Institute of Technology, Japan

11:40 - 12:00 PRE-05

IMPULSE-DRIVEN SMALL CAPSULE FOR MEDICAL TREATMENT

Takahiro ITO<sup>1</sup>, Shuhei ISHIMORI<sup>1</sup>, Teru HAYASHI<sup>2</sup>  
1: Kyushu Institute of Technology, Japan  
2: Ogasawara Precision Laboratory, Japan

12:00 - 12:20 PRE-06

NEW SURFACE MOUNT SYSTEM COMPOSED OF PLASTIC MINIATURE PANTOGRAPH  
MECHANISMS AND A POSITIONING TABLE

Yohei KAI<sup>1</sup>, Daiki KAMIYA<sup>2</sup>, Mikio HORIE<sup>2</sup>, Yuichi NAKAZATO<sup>3</sup>

- 1: Tokyo Institute of Technology, Interdisciplinary Graduate School, Japan
- 2: Tokyo Institute of Technology, Precision and Intelligence Laboratory, Japan
- 3: Nippon Institute of Technology, Japan

(12:20 – 13:50 LUNCH)

**13:50 – 18:00 WORKSHOP AT CONVENTION HALL 300**

(18:00 – 18:30 PHOTOGRAPHY AT ENTRANCE HALL)

(18:30 – 20:30 BANQUET AT MULTI-PURPOSE HALL)

**6 / 19**  
**Room 4 (202B)**

6 / 19 Room 4 (202B)

**Bio-medical Equipments I (9:00 – 10:40)**

Chair: Prof. Mami TANAKA (Tohoku University, Japan)

9:00 - 9:40 BIO-K **Keynote Address**

MR-SAFE SURGICAL DEVICES FOR ACCURATE IMAGE GUIDED SURGERY

Ken MASAMUNE, Ikuma SATO, Hiromasa YAMASHITA, Takeyoshi DOHI  
The University of Tokyo, Japan

9:40 - 10:00 BIO-01

RADIAL HYDRAULIC FORCE ESTIMATION IN A MAGNETICALLY LEVITATED CENTRIFUGAL BLOOD PUMP

Chi Nan PAI<sup>1</sup>, Tadahiko SHINSHI<sup>2</sup>, Xiaoyou ZHANG<sup>2</sup>, Akira SHIMOKOHBE<sup>2</sup>

- 1: Tokyo Institute of Technology, Interdisciplinary Graduate School of Science and Engineering, Japan
- 2: Tokyo Institute of Technology, Precision and Intelligence Laboratory, Japan

10:00 - 10:20 BIO-02

ROTARY DNA-CHIP SCANNER BASED ON A DVD OPTICAL PICK-UP

Sookyung KIM<sup>1</sup>, Wonhyung CHO<sup>1</sup>, Ki Seong SEO<sup>1</sup>, Sangbin LEE<sup>1</sup>, Kyung-Ho KIM<sup>2</sup>, Seung-Yop LEE<sup>2</sup>

- 1: Nanostorage Inc., Republic of Korea
- 2: Sogang University, Republic of Korea

10:20 - 10:40 BIO-03

DESIGN AND CONTROL OF A MAGNETICALLY DRIVEN CAPSULE-ROBOT FOR ENDOSCOPY

Saman HOSSEINI, Mir Behrad KHAMESEE,  
University of Waterloo, Canada

(10:40 – 11:00 BREAK)

6 / 19 Room 4 (202B)

**Bio-medical Equipments II (11:00 – 12:20)**

Chair: Assis. Prof. Takeshi OKUYAMA (Tohoku University, Japan)

11:00 - 11:20 BIO-04

WEARABLE EATING HABIT SENSING USING SOUND INFORMATION

Masaki SHUZO<sup>1,4</sup>, Shintaro KOMORI<sup>1</sup>, Tomoko TAKASHIMA<sup>1,4</sup>, Guillaume LOPEZ<sup>1,4</sup>, Seiji TATSUTA<sup>2,4</sup>,  
Shintaro YANAGIMOTO<sup>3,4</sup>, Shinichi WARISAWA<sup>1,4</sup>, Jean-Jacques DELAUNAY<sup>1,4</sup>, Ichiro YAMADA<sup>1,4</sup>

- 1: The University of Tokyo, Japan
- 2: Olympus Corporation, Japan
- 3: The University of Tokyo Hospital, Japan
- 4: Japan Science and Technology Agency, CREST, Japan

11:20 - 11:40 BIO-05

CONTINUOUS BLOOD PRESSURE MONITORING IN DAILY LIFE

Guillaume LOPEZ<sup>1,4</sup>, Masaki SHUZO<sup>1,4</sup>, Hiroyuki USHIDA<sup>1</sup>, Keita HIDAKA<sup>1</sup>, Shintaro YANAGIMOTO<sup>2,4</sup>,  
Yasushi IMAI<sup>2,4</sup>, Akio KOSAKA<sup>3,4</sup>, Jean-Jacques DELAUNAY<sup>1,4</sup>, Ichiro YAMADA<sup>1,4</sup>

- 1: The University of Tokyo, Japan
- 2: The University of Tokyo Hospital, Japan
- 3: Olympus Corporation, Japan
- 4: Japan Science and Technology Agency, CREST, Japan

**11:40 - 12:00     BIO-06**

**A HANDY INSTRUMENT FOR QUANTITATIVE EVALUATION OF KINEMATICAL PATELLAR TENDON REFLEX RESPONSES**

Yasuaki OHTAKI<sup>1</sup>, Naotaka MAMIZUKA<sup>2</sup>, Mohammad A. FARD<sup>3</sup>, Yoshinori HARADA<sup>4</sup>, Naoyuki OCHIAI<sup>4</sup>

- 1: University of Yamanashi, Japan
- 2: Mito General Hospital, Japan
- 3: Royal Melbourne Institute of Technology, Australia
- 4: University of Tsukuba, Japan

**12:00 - 12:20     BIO-07**

**3D MEASUREMENT OF FOREARM AND UPPER ARM DURING THROWING MOTION USING BODY MOUNTED SENSOR**

Hideharu KODA<sup>1</sup>, Koichi SAGAWA<sup>1</sup>, Kouta KUROSHIMA<sup>1</sup>, Toshiaki TSUKAMOTO<sup>2</sup>, Kazutaka URITA<sup>2</sup>, Yasuyuki ISHIBASHI<sup>3</sup>

- 1: Hirosaki University, Graduate School of Science and Technology, Japan
- 2: Hirosaki University, School of Medicine & Hospital, Japan
- 3: Hirosaki University, School of Medicine, Japan

(12:20 – 13:50 LUNCH)

**13:50 – 18:00 WORKSHOP AT CONVENTION HALL 300**

(18:00 – 18:30 PHOTOGRAPHY AT ENTRANCE HALL)

(18:30 – 20:30 BANQUET AT MULTI-PURPOSE HALL)



**6 / 20**  
**Room 1 (201A)**

6 / 20 Room 1 (201A)

**Drive Mechanisms III (9:40 – 10:40)**

Chairs: #####

9:40 - 10:00 DVM-10

HDD FLEX CABLE VIBRATIONS CONSIDERING BOUNDARY GEOMETRICAL TOLERANCES

Jen-Yuan (James) CHANG

Massey University, New Zealand

10:00 - 10:20 DVM-11

NUMERICAL SIMULATION OF PARTICLE BEHAVIOR IN HARD DISK DRIVES

Taisuke SUGII, Yukinobu ABE, Hiroshi MUKAI, Masato Ikegawa, Masatoshi WATANABE

Hitachi Ltd., Japan

10:20 - 10:40 DVM-12

CRITICAL ISSUES IN VIBRATION TESTING OF HARD DISK DRIVE SPINDLE MOTORS AT ELEVATED TEMPERATURES

Tsung-Liang WU<sup>1</sup>, I-Yeu SHEN<sup>2</sup>, Fusatoshi OKAMOTO<sup>3</sup>, Takafumi ASADA<sup>3</sup>

1: Industrial Technology Research Institute, Taiwan

2: University of Washington, USA

3: Panasonic Shikoku Electronics Co., Ltd., Japan

(10:40 – 11:00 BREAK)

6 / 20 Room 1 (201A)

**Drive Mechanisms IV (11:00 – 12:20)**

Chairs: #####

11:00 - 11:20 DVM-13

EMPIRICAL ANALYSIS ON FREQUENCY DEPENDENCY OF AIRFLOW EXCITATION FOR DISK FLUTTER OF HARD DISK DRIVE

Takehiko EGUCHI

Hitachi Ltd., Japan

11:20 - 11:40 DVM-14

AIRFLOW INDUCED VIBRO-ACOUSTICS ANALYSIS OF HDD

Wu Zhong LIN, Feng GAO, Eng Hong ONG

Data Storage Institute, Singapore

11:40 - 12:00 DVM-15

FLOW-INDUCED VIBRATION REDUCTION OF HARD DISK DRIVE WITH A WINDOW SPOILER

Masato Ikegawa, Hiroshi MUKAI

Hitachi Ltd., Japan

12:00 - 12:20 DVM-16

THERMAL ANALYSIS OF HELIUM-FILLED ENTERPRISE DISK DRIVE

Jiaping YANG, Cheng Peng Henry TAN, Jianqiang MOU, Eng Hong ONG

Data Storage Institute, Singapore

(12:20 – 13:50 LUNCH)

6/20 Room 1 (201A)

## Imaging and Printing Technologies I (13:50 – 14:30)

Chair: Prof. George T.-C. Chiu (School of Mechanical Engineering, Purdue University, USA)

13:50 - 14:10 IMG-01

DEVELOPMENT OF NEW NOZZLE FOR CONTINUOUS INKJET PRINTERS

Mamoru OKANO<sup>1</sup>, Tomohiro INOUE<sup>1</sup>, Yoshiharu TAKIZAWA<sup>2</sup>, Tadayuki MATSUDA<sup>2</sup>

1: Hitachi Ltd., Japan

2: Hitachi Industrial Equipment Systems Co., Ltd., Japan

14:10 - 14:30 IMG-02

FUNDAMENTAL CHARACTERISTICS OF GELATIN PATTERNING UTILIZING ELECTROSTATIC INJECTION

Shinjiro UMEZU<sup>1</sup>, Hitoshi OHMORI<sup>2</sup>

1: Tokai University, Japan

2: Riken, Japan

(14:30 – 14:50 BREAK)

6/20 Room 1 (201A)

## Imaging and Printing Technologies II (14:50 – 16:10)

Chair: Dr. Shinjiro UmezU (Tokai University, Japan)

14:50 - 15:10 IMG-03

ELECTROSTATIC INKJET FOR MICRO-FILM FORMATION BY SPRAYING VISCOUS LIQUID

Kazuyuki TADA, Masato NISHIURA, Noritaka HARA, Kiyohito MARUO, Nozomi YOSHIDA,

Hiroyuki KAWAMOTO

Waseda University, Japan

15:10 - 15:30 IMG-04

HIGH SCALABLE PARALLEL ALGORITHM FOR DISCRETE ELEMENT METHOD

Tomohiro SEKO, Toshiroh SHIMADA, Nobuyuki NAKAYAMA

Fuji Xerox Co., Ltd., Japan

15:30 - 15:50 IMG-05

VELOCITY COMMAND SYNTHESIS BASED ON COMMAND SHAPING AND ITERATIVE LEARNING CONTROL FOR REDUCING VIBRATIONS AND COLOR MISREGISTRATION IN DOCUMENT SCANNERS

Moeed MUKHTAR, George T.-C. CHIU

Purdue University, USA

15:50 - 16:10 IMG-06

DEVELOPMENT OF AN ELECTROPHOTOGRAPHIC LASER INTENSITY MODULATION MODEL FOR EXTRINSIC SIGNATURE EMBEDDING

Pei-Ju CHIANG<sup>1</sup>, George T.-C. CHIU<sup>1</sup>, Edward J. DELP<sup>2</sup>, Jan P. ALLEBACH<sup>2</sup>

1: Purdue University, School of Mechanical Engineering, USA

2: Purdue University, School of Electrical and Computer Engineering, USA

**6 / 20**  
**Room 2 (201B)**

6 / 20 Room 2 (201B)

**Simulations of Micro/Nano Scale Phenomena I (9:00 – 10:40)**

Chair: Prof. Kenji FUKUZAWA (Nagoya University, Japan)

9:00 - 9:40 SIM-K **Keynote Address**

EXPECTATIONS FOR SIMULATION TECHNOLOGIES TO INTELLECTUAL DESIGN OF PRODUCTS

Naoya SASAKI  
Hitachi Ltd., Japan

9:40 - 10:00 SIM-01

MD SIMULATION ON THE RESPONSE SPEED OF HYDRAULIC FLUID

Toshiyuki TSUBOUCHI<sup>1</sup>, Hiroshi SETOGAWA<sup>2</sup>, Ugur MART<sup>2</sup>, Ai SUZUKI<sup>3</sup>, Hideyuki TSUBOI<sup>2</sup>,  
Nozomu HATAKEYAMA<sup>2</sup>, Akira ENDOU<sup>2</sup>, Hiromitsu TAKABA<sup>4</sup>, Carlos A. del CARPIO<sup>2</sup>,  
Akira MIYAMOTO<sup>3,4,2</sup>

- 1: Idemitsu Kosan Co. Ltd., Japan
- 2: Tohoku University, Graduate School of Engineering, Department of Applied Chemistry, Japan
- 3: Tohoku University, New Industry Creation Hatchery Center, Japan
- 4: Tohoku University, Graduate School of Engineering, Department of Chemical Engineering, Japan

10:00 - 10:20 SIM-02

FRICTION ANALYSIS OF COATINGS BY PARTICLE METHOD

Yasuhiro HIKITA<sup>1</sup>, Takahisa KATO<sup>2</sup>

- 1: Taiho Kogyo Co., Ltd., Japan
- 2: The University of Tokyo, Japan

10:20 - 10:40 SIM-03

MULTI-SCALE SPATIAL MODEL FOR MULTI-SCALE PRODUCT DESIGN AND SIMULATION SYSTEM IMPLEMENTED WITH MESSAGE PASSING INTERFACE

Kazuhiro SAKITA  
Japan

(10:40 - 11:00 BREAK)

6 / 20 Room 2 (201B)

**Simulations of Micro/Nano Scale Phenomena II (11:00 – 12:20)**

Chair: Prof. Kentaro TANAKA (Tokyo University of Marine Science and Technology, Japan)

11:00 - 11:20 SIM-04

MOLECULAR DYNAMICS STUDY OF EXTRAORDINARY ELASTIC DEFORMATION FOUND IN GOLD ATOMIC CLUSTER

Ken-ichi SAITOH, Yoshiaki YONEKAWA  
Kansai University, Japan

11:20 - 11:40 SIM-05

MECHANISM OF SUPERLUBRICITY OF FULLERENE BEARINGS

Naruo SASAKI<sup>1</sup>, Noriaki ITAMURA<sup>1</sup>, Kouji MIURA<sup>2</sup>

- 1: Seikei University, Japan
- 2: Aichi University of Education, Japan

11:40 - 12:00 SIM-06

ON THE STABILITY OF THE STATE OF SUPERLUBRICITY

Motohisa HIRANO, Takahiro NITTA, Hirotaka KATO  
Gifu University, Japan

12:00 - 12:20 SIM-07

MICROSCOPIC MECHANISM FOR KINETIC FRICTION: ENERGY DISSIPATION DUE TO LATTICE VIBRATION IN SLIDING SURFACES

Seiji KAJITA, Hitoshi WASHIZU, Toshihide OHMORI  
Toyota Central R&D Labs., Inc., Japan

(12:20 – 13:50 LUNCH)

6 / 20 Room 2 (201B)

### Simulations of Micro/Nano Scale Phenomena III (13:50 – 15:10)

Chair: Dr. Toshiyuki TSUBOUCHI (Idemitsu Kosan Co. Ltd., Japan)

13:50 - 14:10 SIM-08

DYNAMIC STRUCTURE OF BOUNDARY LUBRICATING WATER FILM ON HYDROPHILIC SURFACES USING MOLECULAR DYNAMICS SIMULATION

Hitoshi WASHIZU<sup>1</sup>, Seiji KAJITA<sup>1</sup>, Shi-aki HYODO<sup>1</sup>, Toshihide OHMORI<sup>1</sup>, Hiroshi TERANISHI<sup>2</sup>,  
Atsushi SUZUKI<sup>2</sup>

- 1: Toyota Central R&D Labs., Inc., Japan
- 2: Toyota Motor Corp., Japan

14:10 - 14:30 SIM-09

MOLECULAR DYNAMICS SIMULATIONS OF UV PATTERNING OF MONOLAYER LIQUID LUBRICANT FILMS

Hedong ZHANG<sup>1</sup>, Shinji KOMATSU<sup>1</sup>, Kenji FUKUZAWA<sup>2</sup>, Shintaro ITOH<sup>2</sup>

- 1: Nagoya University, Graduate School of Information Science, Japan
- 2: Nagoya University, Graduate School of Engineering, Japan

14:30 - 14:50 SIM-10

DYNAMIC CONTACT ANGLE AND GROWTH OF A MENISCUS BRIDGE USING PARTICLE BASED NUMERICAL SIMULATION

Kentaro TANAKA, Fumihiko ASAMI, Katsumi IWAMOTO  
Tokyo University of Marine Science and Technology, Japan

14:50 - 15:10 SIM-11

A NEW APPROACH ON CALCULATION OF VISCOSITIES OF COMPLEX LIQUIDS USING ULTRA-ACCELERATED QUANTUM CHEMICAL MOLECULAR DYNAMICS

Ugur MART<sup>1,4</sup>, Hideyuki TSUBOI<sup>1</sup>, Nozomu HATAKEYAMA<sup>1</sup>, Akira ENDOU<sup>1</sup>,  
Hiromitsu TAKABA<sup>1</sup>, Carlos A. del CARPIO<sup>1</sup>, Toshiyuki TSUBOUCHI<sup>3</sup>, Akira MIYAMOTO<sup>1,2</sup>

- 1: Tohoku University, Department of Applied Chemistry, Japan
- 2: Tohoku University, New Industry Creation Hatchery Center, Japan
- 3: Idemitsu Kosan Co. Ltd., Japan
- 4: University of Southampton, UK

(15:10 – 15:30 BREAK)

6 / 20 Room 2 (201B)

## Simulations of Micro/Nano Scale Phenomena IV (15:30 – 16:30)

Chair: Dr. Hitoshi WASHIZU (Toyota Central R&D Labs. Inc., Japan)

15:30 - 15:50 SIM-12

MOLECULAR DYNAMICS SIMULATIONS OF ADHESION PROPERTIES OF MONOLAYER LIQUID LUBRICANT FILMS

Hedong ZHANG<sup>1</sup>, Shinji KOMATSU<sup>1</sup>, Kenji FUKUZAWA<sup>2</sup>, Shintaro ITOH<sup>2</sup>

1: Nagoya University, Graduate School of Information Science, Japan

2: Nagoya University, Graduate School of Engineering, Japan

15:50 - 16:10 SIM-13

SIMULATION OF PICO-FORCE DETECTION IN LATERAL-MODE DYNAMIC AFM

Naruo SASAKI<sup>1</sup>, Shigeki KAWAI<sup>2,3</sup>, Hideki KAWAKATSU<sup>2</sup>

1: Seikei University, Japan

2: University of Tokyo and JST-CREST, Japan

3: University of Basel, Switzerland

16:10 - 16:30 SIM-14

MOLECULAR DYNAMICS STUDY ON NANOINDENTATION OF SINGLE-CRYSTALLINE ALUMINA THIN FILM

Kenji NISHIMURA<sup>1</sup>, Aiichiro NAKANO<sup>2</sup>

1: National Institute of Advanced Industrial Science and Technology (AIST), Japan

2: University of Southern California, USA

**6 / 20**  
**Room 3 (202A)**

6 / 20 Room 3 (202A)

**MM/Micro/Nano Precision Equipments III (9:40 – 10:40)**

Chair: Prof. Kaiji SATO (Tokyo Institute of Technology, Japan)

9:40 - 10:00 PRE-07

MECHANICAL DESIGN OF LARGE-APERTURE DISK AMPLIFIERS FOR A HIGH-POWER SOLID-STATE LASER

Hai ZHOU<sup>1</sup>, Shaobo HE<sup>1</sup>, Yuanbin CHEN<sup>1</sup>, Donghui LIN<sup>1</sup>, Taiqin CHA<sup>2</sup>, Na XIE<sup>1</sup>, Liangming CHEN<sup>1</sup>

1: Chinese Academy of Engineering Physics, Research Center of Laser Fusion, China

2: Chengdu Aircraft Industrial (Group) Co., Ltd., China

10:00 - 10:20 PRE-08

DEVELOPMENT OF THE PRECISION ADJUSTMENT SYSTEM FOR LARGE-APERTURE MOSAIC GRATINGS

Donghui LIN<sup>1</sup>, Xiao WANG<sup>1</sup>, Rui REN<sup>1</sup>, Na XIE<sup>1</sup>, Hai ZHOU<sup>1</sup>, Qihua ZHU<sup>1</sup>, Shengqiang FAN<sup>2</sup>

1: Chinese Academy of Engineering Physics, Research Center of Laser Fusion, China

2: Chengdu Ke Xin Da Corporation, Ltd., China

10:20 - 10:40 PRE-09

ACCURATE RUNOUT MEASUREMENT FOR HDDS

Quan JIANG, Chao BI, Song LIN

Data Storage Institute, Singapore

(10:40 – 11:00 BREAK)

6 / 20 Room 3 (202A)

**MM/Micro/Nano Precision Equipments IV (11:00 – 12:20)**

Chair: Prof. Tadahiko SHINSHI (Tokyo Institute of Technology, Japan)

11:00 - 11:20 PRE-10

DESIGN AND FABRICATION ON A NOVEL TRAVELING WAVE TYPE CYLINDRICAL ULTRASONIC LINEAR MICROACTUATOR

Dongming SUN<sup>1</sup>, Sheng WANG<sup>1</sup>, Seiichi HATA<sup>1</sup>, Junpei SAKURAI<sup>1</sup>, Akira SHIMOKOHBE<sup>2</sup>

1: Tokyo Institute of Technology, Precision and Intelligence Laboratory, Japan

2: Tokyo Institute of Technology, Emeritus professor, Japan

11:20 - 11:40 PRE-11

STUDY ON GYROSCOPIC POWER GENERATOR -2nd REPORT  
IMPEDANCE CONTROL FOR STABLE OPERATION

Jun IWASAKI, Satoru YOSHIKAWA, Hiroshi HOSAKA, Ken SASAKI

The University of Tokyo, Japan

11:40 - 12:00 PRE-12

2D NANO-MOTION ACTUATOR FOR PRECISE TRACK FOLLOW

Shigeki MORI<sup>1</sup>, Yuudai SATO<sup>2</sup>, Akira SAKURADA<sup>1</sup>, Akihiro NAGANAWA<sup>2</sup>, Yotsugi SHIBUYA<sup>2</sup>, Goro OBINATA<sup>3</sup>

1: Akita Research Institute of Advance Technology, Japan

2: Akita University, Japan

3: Nagoya University, Japan

12:00 - 12:20 PRE-13

STUDY ON GYROSCOPIC POWER GENERATOR -1st REPORT  
PROTOTYPE AND ITS FUNDAMENTAL CHARACTERISTICS

Manabu KASAHARA, Hiroshi YOSHIDA, Hiroshi HOSAKA, Ken SASAKI  
The University of Tokyo, Japan

(12:20 – 13:50 LUNCH)

6 / 20 Room 3 (202A)

### Optical Storage / Optical Devices for Storage I (13:50 – 15:10)

Chair: Prof. Toshifumi OHKUBO (Toyo University, Japan)

13:50 - 14:30 OPT-K **Keynote Address**

INTEGRATED OPTICAL SYSTEM FOR THERMALLY ASSISTED MAGNETIC RECORDING  
-TOWARD TERABIT-CLASS HDD

Takuya MATSUMOTO<sup>1</sup>, Junichiro SHIMIZU<sup>1</sup>, Irizo NANIWA<sup>1</sup>, Yasuhiko IWANABE<sup>1</sup>, Satoshi ARAI<sup>2</sup>,  
Toshio TAKAHASHI<sup>2</sup>, Shigeyuki SASAKI<sup>3</sup>, Shigeo NAKAMURA<sup>3</sup>, Fumiko AKAGI<sup>1</sup>, Harukazu MIYAMOTO<sup>1</sup>

1: Hitachi Ltd., Central Research Laboratory, Japan

2: Hitachi Ltd., Production Engineering Research Laboratory, Japan

3: Hitachi Ltd., Mechanical Engineering Research Laboratory, Japan

14:30 - 14:50 OPT-01

IN-PLANE ERROR SIGNAL DETECTION BY DIFFERENTIAL PUSH-PULL METHOD FOR OPTICAL  
RECORDING MEDIUM HAVING 2-DIMENSIONAL PERIODIC STRUCTURE

Mizuho TOMIYAMA, Ryuichi KATAYAMA  
NEC Corporation, Japan

14:50 - 15:10 OPT-02

CONTROLLING DEPTH OF FIELD OF IMAGING SYSTEM USING CODED APERTURE

Sang-Hyuck LEE<sup>1</sup>, No-Cheol PARK<sup>2</sup>, Young-Pil PARK<sup>2</sup>, Kyoung-Su PARK<sup>1</sup>

1: Yonsei University, Center for Information Storage Device, Republic of Korea

2: Yonsei University, Department of Mechanical Engineering, Republic of Korea

(15:10 – 15:30 BREAK)

6 / 20 Room 3 (202A)

### Optical Storage / Optical Devices for Storage II (15:30 – 16:50)

Chairs: Dr. Shigeo NAKAMURA (Hitachi Ltd., Japan)

15:30 - 15:50 OPT-03

TILT AND SERVO CONTROL BY INTELLIGENCE ALGORITHM IN HOLOGRAPHIC DATA  
STORAGE SYSTEM

Jang Hyun KIM, Hyun-Seok YANG, Jin Bae PARK, Yong-pil PARK  
Yonsei University, Republic of Korea

15:50 - 16:10 OPT-04

IMPROVED ANTI-SHOCK AIR GAP CONTROL USING QUADRANT Q FILTER AND DEAD-ZONE  
NONLINEAR CONTROLLER FOR SIL-BASED NEAR-FIELD STORAGE SYSTEM

Jung-Gon KIM<sup>1</sup>, Won-Ho SHIN<sup>2</sup>, Hyun-Woo Hwang<sup>2</sup>, Kyoung-Su PARK<sup>2</sup>, No-Cheol PARK<sup>2</sup>,  
Hyun-Seok YANG<sup>2</sup>, Young-Pil PARK<sup>2</sup>

1: Yonsei University, Center for Information Storage Device, Republic of Korea

2: Yonsei University, Department of Mechanical Engineering, Republic of Korea

16:10 - 16:30 OPT-05

HIGH RESOLUTION SOLID IMMERSION LENS-BASED NEAR-FIELD OPTICS WITH AN ANNULAR APERTURE

Yong-Joong YOON<sup>1</sup>, Wan-Chin KIM<sup>1</sup>, Hyungbae MOON<sup>1</sup>, No-Cheol PARK<sup>2</sup>, Young-Pil PARK<sup>2</sup>,  
Kyoung-Su PARK<sup>2</sup>

1: Yonsei University, Center for Information Storage Device, Republic of Korea

2: Yonsei University, Department of Mechanical Engineering, Republic of Korea

16:30 - 16:50 OPT-06

FEASIBILITY ANALYSIS IN THE APPLICATION OF RADIALY POLARIZATION TO NEAR-FIELD OPTICAL MICROSCOPY

Yong-Joong YOON<sup>1</sup>, Wan-Chin KIM<sup>1</sup>, Tae Seob KIM<sup>2</sup>, No-Cheol PARK<sup>2</sup>, Young-Pil PARK<sup>2</sup>, Kyoung-Su PARK<sup>2</sup>

1: Yonsei University, Center for Information Storage Device, Republic of Korea

2: Yonsei University, Department of Mechanical Engineering, Republic of Korea



**6 / 20**

**Room 4 (202B)**

6 / 20 Room 4 (202B)

**Bio-medical Equipments III (9:00 – 10:40)**

Chair: Prof. Koichi SAGAWA (Hirosaki University, Japan)

9:00 - 9:20      BIO-08

DEVELOPMENT OF A HAPTIC SENSOR FOR MONITORING HUMAN SKIN  
CONDITIONS: MEASUREMENT OF SOFTNESS, SMOOTHNESS, AND TACKINESS

Daisuke TSUCHIMI<sup>1</sup>, Takeshi OKUYAMA<sup>2</sup>, Mami TANAKA<sup>1</sup>

- 1: Tohoku University, Graduate School of Biomedical Engineering, Japan
- 2: Tohoku University, Graduate School of Engineering, Japan

9:20 - 9:40      BIO-09

EXPANSION OF BALLOON ON SOFT OBJECT AND ITS APPLICATION TO TACTILE SENSOR

Yoshihiro TANAKA, Kazuki DOUMOTO, Akihito SANO, Hideo FUJIMOTO

Nagoya Institute of Technology, Japan

9:40 - 10:00     BIO-10

DEVELOPMENT OF A CURVATURE SENSOR USING A SOLID POLYMER ELECTROLYTE

Takeshi OKUYAMA<sup>1</sup>, Manabu OTSUKI<sup>2</sup>, Ryota KOMIYA<sup>3</sup>, Nozomu SUGOH<sup>3</sup>, Mami TANAKA<sup>2</sup>

- 1: Tohoku University, Graduate School of Engineering, Japan
- 2: Tohoku University, Graduate School of Biomedical Engineering, Japan
- 3: Kuraray Co., Ltd., Japan

10:00 - 10:20    BIO-11

A BODY MOTION INSTRUCTION SYSTEM USING SHAPE MEMORY ALLOY ACTUATOR

Ryota SAKAMOTO<sup>1</sup>, Kohei TAKAGI<sup>1</sup>, Tokuhiro SUGIURA<sup>2</sup>, Yoshihiko NOMURA<sup>3</sup>

- 1: Mie University, Graduate school of Engineering, Japan
- 2: Mie University, Center for Information Technologies and Networks, Japan
- 3: Mie University, Japan

10:20 - 10:40    BIO-12

SENSORY FEEDBACK OF AN INTELLIGENT ARTIFICIAL ARM

Kazuo KIGUCHI, Hiroshi SATO, Junichi KARIYA

Saga University, Japan

(10:40 – 11:00 BREAK)

6 / 20 Room 4 (202B)

**Micro/Nanomechatronics I (11:00 – 12:20)**

Chair: Prof. Hirofumi SHINTAKU (Osaka University, Japan)

11:00 - 11:40 MCH-K      **Keynote Address**

BIONANOTECHNOLOGY FOR THE MEASUREMENT, MODIFICATION AND UTILIZATION OF  
CELLULAR FUNCTIONS

Masao WASHIZU

The University of Tokyo, Japan

11:40 - 12:00     MCH-01

DEVELOPMENT OF A NOVEL METHOD FOR STRETCHING DNA FIBERS ON MICROBRIDGES  
FABRICATED BY SINGLE-MASK INCLINED UV LITHOGRAPHY

Daisuke HIRAMARU<sup>1</sup>, Takaaki SUZUKI<sup>2</sup>, Ariko FUKU<sup>1</sup>, Hiroyuki SUZUKI<sup>2</sup>, Isaku KANNO<sup>1</sup>,  
Hidetoshi KOTERA<sup>1</sup>

- 1: Kyoto University, Japan
- 2: Kagawa University, Japan

12:00 - 12:20 MCH-02

DEVELOPMENT OF A TISSUE-LIKE CHIP TO EXCLUSIVELY STIMULATE SINGLE CELL AND DETECT ITS PHYSIOLOGICAL REACTION

Atsuhito OKONOGI<sup>1,2</sup>, Kyohei TERAOKA<sup>4</sup>, Teru OKITSU<sup>3</sup>, Takaaki SUZUKI<sup>4</sup>, Hidetoshi KOTERA<sup>2</sup>

- 1: JST CREST, Japan
- 2: Kyoto University, Japan
- 3: Kyoto University Hospital, Japan
- 4: Kagawa University, Japan

(12:20 – 13:20 LUNCH)

6 / 20 Room 4 (202B)

**Micro/Nanomechatronics II (13:20 – 14:20)**

Chair: Prof. Hidetoshi KOTERA (Kyoto University, Japan)

13:20 - 13:40 MCH-03

SHAPE MEMORY PIEZOELECTRIC ACTUATOR WITH ASYMMETRIC VOLTAGE OPERATION

Yoichi KADOTA, Hiroshi HOSAKA, Takeshi MORITA  
The University of Tokyo, Japan

13:40 - 14:00 MCH-04

EFFECT OF AC DRIVE IN CONTROL OF MEMS MIRROR TILT ANGLE

Naru NEMOTO, Joji YAMAGUCHI, Fusao SHIMOKAWA  
Nippon Telegraph and Telephone Corp., Japan

14:00 - 14:20 MCH-05

CHARACTERISTICS OF RESONANT MICRO MIRROR IN VACUUM

Chu Hoang MANH, Kazuhiro HANE  
Tohoku University, Japan

(14:20 – 14:30 BREAK)

6 / 20 Room 4 (202B)

**Micro/Nanomechatronics III (14:30 – 15:50)**

Chair: Prof. Takaaki SUZUKI (Kagawa University, Japan)

14:30 - 14:50 MCH-06

POSITIONING CONTROL OF A CANTILEVER TYPE MICROACTUATOR USING HIGH-PERFORMANCE NdFeB/Ta THIN FILM MAGNET AND BUILT-IN DISPLACEMENT SENSOR

Sen YAO<sup>1</sup>, Shunji GOTO<sup>1</sup>, Ryo TANABE<sup>1</sup>, Tadahiko SHINSHI<sup>1</sup>, Minoru UEHARA<sup>2</sup>, Hitoshi YAMAMOTO<sup>2</sup>  
1: Tokyo Institute of Technology, Japan  
2: Hitachi Metals Ltd., Japan

14:50 - 15:10 MCH-07

IMPROVEMENT OF SELF-SENSING PIEZOELECTRIC ACTUATOR CONTROL USING PERMITTIVITY CHANGE DETECTION

Yusuke ISHIKIRIYAMA, Takeshi MORITA  
The University of Tokyo, Japan

15:10 - 15:30 MCH-08

AN ADAPTIVE MECHANICAL RESONATOR FOR WIDEBAND VIBRATION ENERGY HARVESTING

Hiroshi OKAMOTO, Yuichiro HAMATE, Hiroki KUWANO  
Tohoku University, Japan

15:30 - 15:50 MCH-09

MICROFABRICATED ACOUSTIC SENSOR WITH FREQUENCY SELECTIVITY AND ELECTRIC SIGNAL CONVERSION FOR NOVEL ARTIFICIAL COCHLEAR SYSTEM

Hirofumi SHINTAKU<sup>1</sup>, Takayuki NAKAGAWA<sup>2</sup>, Toshiya KANBE<sup>1</sup>, Harto TANUJAYA<sup>1</sup>, Satoyuki KAWANO<sup>1</sup>, Juichi ITO<sup>2</sup>

1: Osaka University, Japan

2: Kyoto University, Japan

(15:50 – 16:00 BREAK)

6 / 20 Room 4 (202B)

### Micro/Nanomechatronics IV (16:00 – 17:00)

Chair: Prof. Kyohei TERAO (Kagawa University, Japan)

16:00 - 16:20 MCH-10

HANDLING CHARACTERISTICS OF MEMS-TWEEZERS WITH CONTACT SURFACE FABRICATED BY ICP DRY-ETCHING

Satomitsu IMAI, Tadashi ISHIKAWA, Masakazu SATO, Hiroki SATO, Keisuke TAMURA  
Nihon University, Japan

16:20 - 16:40 MCH-11

A MINIATURE RAILWAY VEHICLE FOR SENSOR-CARRYING

Max T.-K. HOU<sup>1</sup>, Hui-Mei SHEN<sup>1</sup>, Chiang-Ni LU<sup>1</sup>, I-Jen HSU<sup>2</sup>, Jerliang A. YEH<sup>3</sup>

1: National United University, Taiwan

2: Chung Yuan Christian University, Taiwan

3: National Tsing Hua University, Taiwan

16:40 - 17:00 MCH-12

MONOLITHICALLY INTEGRATION OF GaN LIGHT-EMITTING DIODE AND Si SUBSTRATE WITH AlN/GaN SUPERLATTICE AS INTERLAYER

Fang Ren HU, M. WAKUI, H. SAMESHIMA, R. ITO, Kazuhiro HANE  
Tohoku University, Japan

## ***Technical Program of Poster Session***

**6 / 18 (13:50 - 15:10)**

**Room 5 (406)**

### **Head / Disk Interface and Tribology**

**P-HDI-01**

SUSPENSION STIFFNESS MATRIX ESTIMATION AND UNLOADING ANALYSIS WITH THE FINITE ELEMENT METHOD

Yan LIU, Hejun DU, Shao WANG

Nanyang Technological University, Singapore

**P-HDI-02**

ESTIMATION OF SUSPENSION STIFFNESS MATRICES WITH EXPERIMENTS

Yan LIU, Hejun DU, Shao WANG

Nanyang Technological University, Singapore

**P-HDI-03**

SLIDER FLYING OVER BIT PATTERNED MEDIA USING THE DIRECT SIMULATION MONTE CARLO METHOD

Hui LI<sup>1</sup>, Kensuke AMEMIYA<sup>1</sup>, Frank E. TALKE<sup>2</sup>

1: Hitachi Asia Ltd., Singapore

2: University of California, San Diego, USA

**P-HDI-04**

FINITE ELEMENT SIMULATION OF CONTACT OF SLIDER WITH PATTERNED MEDIA

Hui LI<sup>1</sup>, Kensuke AMEMIYA<sup>1</sup>, Frank E. TALKE<sup>2</sup>

1: Hitachi Asia Ltd., Singapore

2: University of California, San Diego, USA

**P-HDI-05**

MOLECULAR GAS-FILM LUBRICATION ANALYSES OF A SLIDER OVER A DISK WITH GROOVES (STATIC AND DYNAMIC FLYING CHARACTERISTICS OF A 3-DOF SLIDER)

Atsushi SATO, Hiroshige MATSUOKA, Shigehisa FUKUI

Tottori University, Japan

**P-HDI-06**

DYNAMIC BEHAVIOR OF A THIN LIQUID SURFACE BY REPETITIVELY APPLIED STRESS (NUMERICAL ANALYSES BY LONG-WAVE EQUATION)

Kota HOZUMI, Hiroyuki ISHIBASHI, Shigehisa FUKUI, Hiroshige MATSUOKA

Tottori University, Japan

**P-HDI-07**

DEFORMATION CHARACTERISTICS OF ULTRA-THIN LIQUID FILM CONSIDERING TEMPERATURE AND FILM THICKNESS DEPENDENCE OF SURFACE TENSION (NUMERICAL ANALYSES BY THE LONG WAVE EQUATION)

Kouji OKA, Yuusuke YAMASHITA, Hiroyuki ISHIBASHI, Fumihiko SAEKI, Hiroshige MATSUOKA, Shigehisa FUKUI

Tottori University, Japan

**P-HDI-08**

**INVESTIGATION OF MECHANICAL CLEARANCE CHANGE WITH THERMAL FLY-HEIGHT CONTROL SLIDER AT HIGH ALTITUDE**

Satoru OOKUBO, Toshiya SHIRAMATSU, Masayuki KURITA, Hidekazu KOHIRA, Yoshinori TAKEUCHI  
Hitachi Global Storage Technologies, Japan

**P-HDI-09**

**A NUMERICAL STUDY OF HEAD-ULTRATHIN LUBRICANT INTERACTION BY MOLECULAR DYNAMICS SIMULATION**

Xiangjun LIU<sup>1</sup>, Kensuke AMEMIYA<sup>1</sup>, Chee How WONG<sup>2</sup>, Shengkai YU<sup>2</sup>, Bo LIU<sup>2</sup>

1: Hitachi Asia Ltd., Singapore

2: Data Storage Institute, Singapore

**P-HDI-10**

**NANO SCALE GAS COUETTE FLOW CONSIDERING WALL POTENTIAL USING MODIFIED DSMC METHOD**

Kiyomi YAMANE<sup>1</sup>, Taishi YOSHIOKA<sup>1</sup>, Shigehisa FUKUI<sup>2</sup>

1: Matsue College of Technology, Japan

2: Tottori University, Japan

**P-HDI-11**

**FEASIBILITY STUDY OF ULTRA-LOW PARTICLE CONTENT MEDIA OVERCOAT DEPOSITED BY FCA METHOD FOR 2 Tbps HDDs**

Norikazu NAKAMURA, Hiroshi Chiba, Shoichi MIYAHARA

Fujitsu Laboratories Ltd., Japan

## Drive Mechanisms

**P-DVM-01**

**STUDY ON A NOVEL MAGNETIC HEAD POSITIONING MECHANISM USING CONTACT FORCE**

Yuta KAMOSHITA, Hiroshi YAMAURA

Tokyo Institute of Technology, Japan

**P-DVM-02**

**CONTROLLING VIBRATION FEATURE OF HDD ACTUATOR USING DUMMY HEADS**

Noritaka OTAKE<sup>1</sup>, Keiko WATANABE<sup>1</sup>, Toshihiko SHIMIZU<sup>1</sup>, Kenji TOMIDA<sup>2</sup>, Toshihiro ARISAKA<sup>2</sup>

1: Hitachi Ltd., Japan

2: Hitachi Global Storage Technologies Japan, Ltd., Japan

**P-DVM-03**

**DYNAMIC STRAIN MEASUREMENT OF THE SUSPENSION OF A SMALL FORM FACTOR HDD**

Bin GU<sup>1</sup>, Dong-Wei SHU<sup>1</sup>, Bao-Jun SHI<sup>2</sup>

1: Nanyang Technological University, Singapore

2: Shandong Jianzhu University, China

## Servo Control

**P-SVC-01**

**AN EFFICIENT ACTIVE VIBRATION SUPPRESSION MODEL FOR HDD TRACK SERVO**

Yan LIU, Hejun DU

Nanyang Technological University, Singapore

**P-SVC-02**

**MICROMECHATRONICS CONTROL METHODOLOGY BASED ON THE MODIFIED DELTA OPERATOR AND FORM USING BANG-BANG CONTROL**

Tatsu AOKI

Tokyo Metropolitan College of Industrial Technology, Japan

## Micro/Nanomechatronics

### P-MCH-01

#### LOW-INSERTION-LOSS 8 x 8 OPTICAL MATRIX SWITCH USING MEMS ANALOG-CONTROL MIRROR

Atsushi KAZAMA<sup>1</sup>, Yasuhiro ITOH<sup>2</sup>, Masaya HORINO<sup>1</sup>, Kazuyuki FUKUDA<sup>1</sup>,  
Masatoshi KANAMARU<sup>1</sup>, Takeshi HARADA<sup>1</sup>, Akiko IIZUKA<sup>1</sup>, Ryoji OKADA<sup>1</sup>

- 1: Hitachi Ltd., Japan
- 2: Hitachi Metals Ltd., Japan

### P-MCH-02

#### FABRICATION OF HIGH ASPECT RATIO MICRO-STRUCTURES USING SUPERCRITICAL DRYING TECHNOLOGY

Norifumi OOTANI<sup>1</sup>, Fumikazu OOHIRA<sup>1</sup>, Takaaki SUZUKI<sup>1</sup>, Satoru KADORIKU<sup>2</sup>

- 1: Kagawa University, Japan
- 2: RyuSyo Industrial Co., Ltd., Japan

### P-MCH-03

#### LOCALIZED SUBSTANCE DELIVERY TO SINGLE CELL BY THREE DIMENSIONAL MICROFLUIDIC DEVICE

Kyohei TERAOKA<sup>1,2</sup>, Murat GEL<sup>2,3</sup>, Atsuhito OKONOGI<sup>2,4</sup>, Teru OKITSU<sup>2,5</sup>, Takaaki SUZUKI<sup>1,2</sup>,  
Masao WASHIZU<sup>2,3</sup>, Hidetoshi KOTERA<sup>2,5</sup>

- 1: Kagawa University, Japan
- 2: JST-CREST, Japan
- 3: The University of Tokyo, Japan
- 4: Kyoto University, Japan
- 5: Kyoto University Hospital, Japan

### P-MCH-04

#### PIEZOELECTRIC MICROPUMPING SYSTEM USING PZT THIN FILMS

Isaku KANNO, Junya OGAWA, Hidetoshi KOTERA  
Kyoto University, Japan

## Bio-medical Equipments

### P-BIO-01

#### DEVELOPMENT OF LCD SLICE IMAGE OVERLAY DEVICE WITH ELECTROMAGNETIC WAVE MEASUREMENT

Ikuma SATO<sup>1</sup>, Akio FUNAKUBO<sup>2</sup>, Hiroki KAMIUCHI<sup>1</sup>, Hongen LIAO<sup>3</sup>, Hiromasa YAMASHITA<sup>1</sup>,  
Takeyoshi DOHI<sup>1</sup>, Ken MASAMUNE<sup>1</sup>

- 1: The University of Tokyo, Graduate School of Information Science and Technology, Japan
- 2: Tokyo Denki University, Japan
- 3: The University of Tokyo, Graduate School of Engineering, Japan

### P-BIO-02

#### EVALUATION OF CONTROLLING ALGORITHM FOR AUTOMATIC INSTRUMENT INSERTING FUNCTION OF SCRUB NURSE ROBOT (SNR)

Kitaro YOSHIMITSU<sup>1</sup>, Fujio MIYAWAKI<sup>2</sup>, Yasuhiro FUKUI<sup>2</sup>, Daijo HASHIMOTO<sup>3</sup>, Ken MASAMUNE<sup>4</sup>

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- 2: Tokyo Denki University, Japan
- 3: Saitama Medical Center & Medical University, Japan
- 4: The University of Tokyo, Japan

### P-BIO-03

#### REMARKS ON HUMAN BODY POSTURE ESTIMATION FROM SILHOUETTE IMAGE USING 3D ARTICULATED HUMAN CG MODEL

Takashi OIDA, Kazuhiko TAKAHASHI, Masafumi HASHIMOTO  
Doshisha University, Japan

P-BIO-04

REMARKS ON IMPROVEMENT OF MARKERLESS HUMAN MOTION CAPTURE FROM VOLUME RECONSTRUCTION

Ken UEDA, Kazuhiko TAKAHASHI, Masafumi HASHIMOTO  
Doshisha University, Japan

P-BIO-05

OPTIMIZATION OF SUSPENDED MICROCHANNEL RESONATOR WITH INTEGRATED PIEZORESISTIVE READOUT AS A HIGH Q-FACTOR BIOMOLECULAR RECOGNITION SYSTEM IN AQUEOUS ENVIRONMENT

Mehrdad MOTTAGHI<sup>1</sup>, Habib Badri GHAVIFEKR<sup>2</sup>

- 1: Sahand University of Technology, Department of Mechanical Engineering, Biomechanics Division, Iran
- 2: Sahand University of Technology, Department of Electrical Engineering, Microelectronics Division, Iran

## Imaging and Printing Technologies

P-IMG-01

MULTI-OPTICAL BEAM ALIGNMENT SYSTEM FOR MICRO-PROJECTION

Jiro HASHIZUME, Tomoki KOBORI, Yoshiho SEO, Yasuhiko AMANO, Etsuko NOMOTO  
Hitachi Ltd., Japan

P-IMG-02

ANALYSIS OF NON-MAGNETIC SINGLE COMPONENT DEVELOPMENT SYSTEM IN ELECTROPHOTOGRAPHY

Takatoshi MIWA, Tomohiko SUGIYAMA, Wataru FURUICHI, Hiroyuki KAWAMOTO  
Waseda University, Japan

P-IMG-03

ELECTROSTATIC INKJET FOR MICRO-FILM FORMATION

Nozomi YOSHIDA, Masato NISHIURA, Kazuyuki TADA, Hiroyuki KAWAMOTO  
Waseda University, Japan

P-IMG-04

BEAD CARRY-OUT IN TWO-COMPONENT BRUSH SYSTEM OF ELECTROPHOTOGRAPHY

Tatsushi MURAKAMI, Satoshi IESAKA, Takashi ADACHI, Hiroyuki KAWAMOTO  
Waseda University, Japan

## MM/Micro/Nano Precision Equipments

P-PRE-01

SMALL HOLE MACHINING USING A COMBINATION OF A 5-DOF CONTROLLED MAGLEV ACTUATOR AND A CONVENTIONAL ELECTRICAL DISCHARGE MACHINE

Yoshitaka UEYAMA<sup>1</sup>, Tadahiko SHINSHI<sup>1</sup>, Xiaoyou ZHANG<sup>1</sup>, Akira SHIMOKOHBE<sup>1</sup>, Tatsushi SATO<sup>2</sup>, Hidetaka MIYAKE<sup>2</sup>, Takayuki NAKAGAWA<sup>2</sup>

- 1: Tokyo Institute of Technology, Japan
- 2: Mitsubishi Electric Corporation, Japan

P-PRE-02

DEVELOPMENT OF A MICRO-MOTION STAGE FOR MECHATRONICS DEVICES

Yasuhiro MATSUDA, Shigeo NAKAMURA  
Hitachi Ltd., Japan

P-PRE-03

PRINCIPLE AND BASIC CHARACTERISTICS OF A NEW OPTICAL MEMS SWITCH USING A BELT-SHAPED THIN FILM MIRROR

Kazutoshi OKUTSU, Yuuki MATSUMOTO, Kaiji SATO  
Tokyo Institute of Technology, Japan

P-PRE-04

OPTICAL MEASUREMENT OF SURFACE PROFILES OF MICROSTRUCTURES USING FOCUS ERROR SIGNAL

Jaehyun KIM, Jungyul PARK, Bu Hyun SHIN, Seung-Yop LEE  
Sogang University, Republic of Korea

P-PRE-05

STUDY ON THE MICROSURGERY SUPPORT SYSTEM USING THE SMA MICROMANIPULATOR

Yuichi NAKAZATO<sup>1</sup>, Shotaro KAGEYAMA<sup>1</sup>, Kazutoyo YUASA<sup>1</sup>, Mikio HORIE<sup>2</sup>  
1: Nippon Institute of Technology, Japan  
2: Tokyo Institute of Technology, Japan

## Micro/Nanosystem Science and Technology

P-MNS-01

EVALUATION OF NANOMETER SCALE MECHANICAL PROPERTIES OF EXTREMELY THIN DIAMOND-LIKE CARBON (DLC) FILMS

Wataru KUROSAKA, Kouich OSHIMOTO, Shojiro MIYAKE  
Nippon Institute of Technology, Japan

P-MNS-02

VIBRATION PROCESSING AND PROCESSED SURFACE EVALUATION OF NANOPERIOD MULTILAYER FILMS BY ATOMIC FORCE MICROSCOPY

Shojiro MIYAKE, Shintaro KAWASAKI, Tang LEMING, Wataru KUROSAKA  
Nippon Institute of Technology, Japan

P-MNS-03

FRICITION AND WEAR SURFACE MONITORING DURING TRIBOLOGICAL TEST FOR SEVERAL METALS

Seisuke KANO, Takeshi SUZUKI  
National Institute of Advanced Industrial Science and Technology (AIST), Japan

P-MNS-04

STUDY ON SURFACE ENERGY OF ULTRATHIN FILM (VERIFICATION OF EFFECTIVE DISPERSION COMPONENT THEORY)

Katsunori ONO, Masaya KANNEN, Hiroshige MATSUOKA, Shigehisa FUKUI  
Tottori University, Japan

P-MNS-05

FRICITION ANISOTROPY BETWEEN DIFFERENT MATERIALS MEASURED UNDER HIGH VACUUM CONDITION

Yu TAMURA<sup>1</sup>, Yasuhisa ANDO<sup>2</sup>, Ken'ichi HIRATSUKA<sup>1</sup>  
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2: National Institute of Advanced Industrial Science and Technology (AIST), Japan

P-MNS-06

HIGHLY-EFFICIENT METHOD FOR FABRICATING NANO GROOVES USING MULTILAYER FILMS

Akira MIZUNO, Yasuhisa ANDO, Akihiro TANAKA, Koji MIYAKE, Atsushi KORENAGA  
National Institute of Advanced Industrial Science and Technology (AIST), Japan

P-MNS-07

NANOTRANSFER METHOD OF THE FERROELECTRIC FILMS ONTO THE POLYMER SUBSTRATE

Masaaki ICHIKI<sup>1,2</sup>, Sho MAKINO<sup>1</sup>, Tadatomo SUGA<sup>1</sup>, Ryutaro MAEDA<sup>3</sup>  
1: The University of Tokyo, Japan  
2: JST-CREST, Japan  
3: National Institute of Advanced Industrial Science and Technology (AIST), Japan



## Optical Storage / Optical Devices for Storage

### P-OPT-01

#### TRACKING CHARACTERISTICS OF A TRIANGULAR APERTURE MOUNTED OPTICAL HEAD SLIDER APPLIED A POLARIZED VIOLET LASER SOURCE

Toshifumi OHKUBO<sup>1</sup>, Majung PARK<sup>2</sup>, Masakazu HIRATA<sup>2</sup>, Manabu OUMI<sup>2</sup>, Kunio NAKAJIMA<sup>2</sup>

1: Toyo University, Japan

2: Seiko Instruments Inc., Japan

### P-OPT-02

#### INCREASE OF TEMPERATURE OF A LIGHT SOURCE (LASER DIODE) IN A HARD DISK DRIVES

Shigeo NAKAMURA, Shigeyuki SASAKI, Shigeo OHASHI

Hitachi Ltd., Japan

### P-OPT-03

#### AN ANTI-SHOCK CONTROL METHOD USING AN ACCELEROMETER AND INVERSE IMPULSE FOR SIL-BASED NEAR FIELD RECORDING SYSTEM

Hyunwoo HWANG<sup>1</sup>, Jung-Gon KIM<sup>2</sup>, Won-Ho SHIN<sup>1</sup>, Hyunseok YANG<sup>1</sup>, No-Cheol PARK<sup>1</sup>, Young-Pil PARK<sup>1</sup>, Kyoung-Su PARK<sup>2</sup>

1: Yonsei University, Department of Mechanical Engineering, Republic of Korea

2: Yonsei University, Center of Information Storage Device, Republic of Korea

### P-OPT-04

#### OPTIMAL DESIGN OF DYNAMIC VIBRATION ABSORBER USING L-SHAPED BEAM FOR REDUCING OPTICAL DISK DRIVE VIBRATION

Ungrae CHO<sup>1</sup>, Seungho LIM<sup>1</sup>, No-Cheol PARK<sup>1</sup>, Young-Pil PARK<sup>1</sup>, Kyoung-Su PARK<sup>1</sup>, Wook-Young SOH<sup>2</sup>

1: Yonsei University, Republic of Korea

2: Hitachi-LG Data Storage, Japan

### P-OPT-05

#### EVALUATION OF SERVO METHOD DESIGNED FOR THE HOLOGRAPHIC DATA STORAGE SYSTEM

Sang-Hoon KIM<sup>1</sup>, Hee-Chan SONG<sup>1</sup>, Sung Yong LIM<sup>1</sup>, Hyunseok YANG<sup>1</sup>, Joo-Youn PARK<sup>2</sup>, Young-Pil PARK<sup>1</sup>

1: Yonsei University, Center for Information Storage Device, Republic of Korea

2: Daewoo Electronics Corp., Republic of Korea

### P-OPT-06

#### DESIGN OF MOVING MAGNET TYPE ACTUATOR CONSIDERING EFFECT OF COIL ELECTROMAGNET

Young-Jun HUR<sup>1</sup>, Myeong-Gyu SONG<sup>2</sup>, No-Cheol PARK<sup>1</sup>, Jeonghoon YOO<sup>1</sup>, Young-Pil PARK<sup>1</sup>, Kyoung-Su PARK<sup>1</sup>

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