IIP/ISPS Joint MIPE’03 Technical Program

June 16 (Mon.)

Room I (301)

Magnetic Recording Storage (Mechanism and Control) Keynote Address 1
Chair: Takashi Yamaguchi, Hitachi Ltd., Japan
MCK-1 8:50 – 9:30
Control Strategies for Writing Servo Tracks Narrower Than 5 Micro Inches
Prof. Guoxiao Guo and Prof. Jingliang Zhang (Data Storage Institute, Singapore)

Magnetic Recording Storage (Mechanism and Control) I
Chair: Takashi Yamaguchi, Hitachi Ltd., Japan
MC-01 9:30 – 9:50
A Piezoelectric Micro-actuator with Extended Base-Plate for High-density Disk Drives
Gih-Keong Lau and Hejun Du (Nanyang Technological University, Singapore)
MC-02 9:50 – 10:10
FEM Analysis and Control of Micro Actuator with Piezoelectric Element for Spinstand
Akihiro Naganawa (Akita University, Japan), Shigeki Mori (Akita Research Institute of Advanced Technology, Japan), Hirohiko Tada (Kyodo Denshi System Co., Ltd., Japan), Yotsugi Shibuya (Akita University, Japan), Goro Obinata (Nagoya University, Japan), and Kazuhiro Ouchi (Akita Research Institute of Advanced Technology, Japan)
Break 10:10 – 10:30

Magnetic Recording Storage (Mechanism and Control) II
Co-Chairs: Susumu Hara, Toyota Technological Institute, Japan
Roberto Oboe, University of Padova, Italy
MC-03 10:30 – 10:50
Symmetrical Piezoelectric Microactuators for Magnetic Disk Drives
Kazuaki Kurihara, Tuyoshi Mita, Masaharu Hida (Fujitsu Laboratiries Ltd., Japan), and Shinji Koganezawa (Fujitsu Ltd., Japan)
MC-04 10:50 – 11:10
Micromachined Electrostatic Actuator for R/W Head Positioning
Jian Chen, Jiaping Yang, and Yi Lu (Data Storage Institute, Singapore)
MC-05 11:10 – 11:30
Hard Disk Drive Generated High Speed Real Random Numbers
Erhard Schreck (Maxtor Corporation, USA) and Wolfgang Ertel (University of Weingarten, Germany)
MC-06 11:30 – 11:50
Streaming Performance Sensitivity Analysis of HDDs Submitted to Shock & Vibrations
Alexander Geerlings, Rob Severt, and Frank Cremers (Philips Electronics, Netherland)
MC-07 11:50 – 12:10
Disk Erase of HDD Servo Pattern by Highly Efficient Permanent Magnet Matrix
Mitsuru Kitamura, Akira Morita, and Hitoshi Tamura (Hitachi Global Storage Technologies, Japan)
Lunch 12:10 – 13:30
Poster Session 13:30 – 15:20 at Foyer (see Poster Session program)
Break 15:20 – 15:30
Magnetic Recording Storage (Mechanism and Control) III
Co-Chairs: Ho Lee, Maxtor Corporation, USA
Masahito Kobayashi, Hitachi Ltd., Japan

MC-08 15:30 – 15:50
An Iterative Learning Approach to Compensation for the Servo Track Writing Error in High Track Density Disk Drives
Chang-Ik Kang (Cheju National University, Korea) and Chang-Hwan Kim (Daejeon University, Korea)

MC-09 15:50 – 16:10
An Adaptive Notch Filter for Suppressing Mechanical Resonance in High Track Density Disk Drives
Chang-Ik Kang (Cheju National University, Korea) and Chang-Hwan Kim (Daejeon University, Korea)

MC-10 16:10 – 16:30
High Frequency Vibration Rejection in Hard Disk Drives
Seung-Hi Lee (Samsung Advanced Institute of Technology, Korea), Chung Choo Chung, and Choong Woo Lee (Hanyang University, Korea)

MC-11 16:30 – 16:50
Suppressing Sensitivity Hump in HDD Dual-Stage Servo Systems
Chee Khiang Pang (Data Storage Institute, Singapore), Daowei Wu (Nanyang Technological University, Singapore), Guoxiao Guo, Chong Tow Chong (Data Storage Institute, Singapore), and Youyi Wang (Nanyang Technological University, Singapore)

MC-12 16:50 – 17:10
Acceleration Feedforward Control based on Adaptive Identification of Transfer Characteristics for Hard Disk Drives
Nobutaka Bando, Sehoon Oh, and Yoichi Hori (The University of Tokyo, Japan)

Room II (302)
Magnetic Recording Storage (Head Disk Interface) I: Head Flying Simulation (1)
Co-Chairs: Mike Suk, Hitachi Global Storage Technologies, USA
Norio Tagawa, Kansai University, Japan

HDI-01 8:50 – 9:10
A Mesh-free Method for Numerical Simulation of HDD Slider Air Bearings
Li Xuhong, Du Hejun (Nanyang Technological University, Singapore), Liu Bo (Data Storage Institute, Singapore), and Gih Keong Lau (Nanyang Technological University, Singapore)

HDI-02 9:10 – 9:30
Flying Characteristics in the Free Molecular Region (Influence of Accommodation Coefficients)
Shigehisa Fukui, Hidekazu Shimada, Kiyomi Yamane, and Hiroshige Matsuoka (Tottori University, Japan)

HDI-03 9:30 – 9:50
Dynamic Characteristics of Flying Head Slider with Ultra-thin Spacing (CIP Method and Linearized Method)
Shigehisa Fukui, Hidetoshi Matsui, Kiyomi Yamane, and Hiroshige Matsuoka (Tottori University, Japan)

HDI-04 9:50 – 10:10
Simulation of a Pad Slider Flying on a Wavy Surface
Zhisheng Deng, Yoshihiro Ueno, Tatsuhiko Inagaki (Matsushita Electric Industrial Co., Ltd., Japan)

Break 10:10 – 10:30
Magnetic Recording Storage (Head Disk Interface) Keynote Address 1
Co-Chairs:  Du Hejun, Nanyang Technological University, Singapore
            Shigehisa Fukui, Tottori University, Japan

HDIK-1  10:30 – 11:10
Recent Research of Mechanical and Tribological Problems of the Head/Disk Interface at CMRR
          Prof. Lin Zhou, Prof. Jiadong Zhang, Prof. Eric Jayson, Prof. Saurabh Deoras, and Prof. Frank E. Talke
          (University of California, San Diego, USA)

Magnetic Recording Storage (Head Disk Interface) II: Head Flying Simulation (2)
Co-Chairs:  Du Hejun, Nanyang Technological University, Singapore
            Shigehisa Fukui, Tottori University, Japan

HDI-05  11:10 – 11:30
Local Deformation Crown Change and Their Influence on Slider Flying Performance
          Yufei Han, Bo Liu (Data Storage Institute, Singapore), and
          Chih Ping Tso (Nanyang Technological University, Singapore)

HDI-06  11:30 – 11:50
Flying Characteristics of a Slider with Ultrasmall Spacing Considering Surface Force
          Hiroshige Matsuoka, Satoru Ohkubo, and Shigehisa Fukui (Tottori University, Japan)

HDI-07  11:50 – 12:10
A Parametric Study of Head-Disk Interface Instability due to Intermolecular Forces
          Brian H. Thornton and David B. Bogy (University of California, Berkeley, USA)

Lunch  12:10 – 13:30
Poster Session 13:30 – 15:20 at Foyer (see Poster Session program)
Break  15:20 – 15:30

Magnetic Recording Storage (Head Disk Interface) III: Flying Height Measurement
Co-Chairs:  Kris Schouterden, Hitachi Global Storage Technologies, USA
            Kenji Suzuki, The University of Tokyo, Japan

HDI-08  15:30 – 15:50
Elimination of Fly Height Measurement Error by Correction with N, K value
          Taichi Nakamura, Tsuyoshi Matsumoto, and Takao Chikazawa
          (Hitachi Global Storage Technologies, Japan)

HDI-09  15:50 – 16:10
A Polarisation Interferometer for Flying Height
          David Jenkins, Xinqun Liu (University of Plymouth, UK), and
          Warwick Clegg (Victoria University of Wellington, New Zealand)

HDI-10  16:10 – 16:30
Component Design Features for Near-Contact Recording
          Vedantham Raman and Donald Gillis (Hitachi Global Storage Technologies, USA)

HDI-11  16:30 – 16:50
Influence of Slider Air-bearing Design on Disk Effective Take-off Height
          Kris Schouterden, Mike Suk, and Vedantham Raman (Hitachi Global Storage Technologies, USA)

HDI-12  16:50 – 17:10
Friction Control by Micro-vibration under Micro-load for Magnetic Recording Storage
          Lizhi Su (Tohoku University, Japan), Junguo Xu, Masayuki Kurita (Hitachi Ltd., Japan),
          Koji Kato, and Koshi Adachi (Tohoku University, Japan)
Room III (311+312)

Micro- and Nanosystem Science and Technology I
Co-Chairs:  Junho Choi and M. Sajjad Mayeed
National Institute of Advanced Industrial Science and Technology (AIST), Japan

MN-01  9:10 – 9:30  Withdrawn

MN-02  9:30 – 9:50  Simulation on Chemical Mechanical Polishing using Atomic Force Microscope
Atsushi Miyoshi, Hiroyuki Nakagawa, and Koei Matsukawa (Mitsubishi Electric, Japan)

MN-03  9:50 – 10:10  Flow Resistance of a Liquid Droplet Confined between Hydrophobic Surfaces
Kenji Suzuki (The University of Tokyo, Japan)

Break  10:10 – 10:30

Micro- and Nanosystem Science and Technology II
Co-Chairs:  M. Sajjad Mayeed and Masahiro Kawaguchi
National Institute of Advanced Industrial Science and Technology (AIST), Japan

MN-04  10:30 – 10:50  Withdrawn

MN-05  10:50 – 11:10  On the Modeling of Stress Singularity at the Interface Edge between Piezoelectric Thin Film and Elastic Substrate
Fulin Shang and Takayuki Kitamura (Kyoto University, Japan)

MN-06  11:10 – 11:30  Membrane Microcantilever Arrays Fabrication with PZT Thin Films for Nanorange Movement
Hong Zhu, Jianmin Miao, Bangtao Chen, Zhihong Wang, and Weiguang Zhu
(Nanyang Technological University, Singapore)

MN-07  11:30 – 11:50  Development of 3-D Electrostatic Microactuator for Hard Disk Drives
Chen Bangtao, Miao Jianmin, and Zhu Hong (Nanyang Technological University, Singapore)

Lunch  11:50 – 13:30
Poster Session  13:30 – 15:20 at Foyer (see Poster Session program)
Break  15:20 – 15:30

Micro- and Nanosystem Science and Technology III
Co-Chairs:  Masahiro Kawaguchi and Junho Choi
National Institute of Advanced Industrial Science and Technology (AIST), Japan

MN-08  15:30 – 15:50  Micro-Rheometry of Pressurized Lubricants and Micro-Nanorheology
Yuichi Nakamura and Yasushi Kurosaki (Mie University, Japan)

MN-09  15:50 – 16:10  Dynamic Meniscus Models for MEMS Elements
Shunji Matsumoto, Yoshinobu Nishine, Akitoshi Yamaguchi, Hiroshi Morishita, Hiroshi Matsuoka, and Shigehisa Fukui (Tottori University, Japan)

Mei Wang, Shojiro Miyake and Shuichi Watanabe (Nippon Institute of Technology, Japan)
Room IV (313+314)

Intelligent Machines I
Chair: Toyofumi Tani, Mitsubishi Electric Corporation, Japan

IM-01  9:10 – 9:30
**Management of Factory Automation Controllers with Peer-to-Peer Technology**
Satoshi Iwatsu and Akio Noda (Mitsubishi Electric Corporation, Japan)

IM-02  9:30 – 9:50
**Development of Cellular Manufacturing System Based on Movable Cells**
Satoru Yajima, Yoshiki Shimomura, Fabio Noriyuki Takada (The University of Tokyo, Japan), and Tetsuo Tomiyama (Delft University of Technology, Netherland)

IM-03  9:50 – 10:10
**Dynamic Behavior of Thin Blade Fan Driven by Electric Motor**
Hiroki Ota, Taichi Sato (Tokyo Denki University, Japan), Cedrick Baup (ENSMM, France), Jouji Okamoto, Makoto Nagai, Katsuaki Nagahashi (Hitachi Air Conditioning Systems Co., Ltd.)

Break  10:10 – 10:30

Intelligent Machines Keynote Address
Chair: Hiroshi Takahashi, Nissan Motor Co., Ltd., Japan

IMK  10:30 – 11:10
**Image Sensors for Intelligent Automotive Applications**
Dr. Kraisorn Throngnumchai and Dr. Hiroshi Takahashi (Nissan Motor Co., Ltd., Japan)

Intelligent Machines II
Chair: Hiroshi Takahashi, Nissan Motor Co., Ltd., Japan

IM-04  11:10 – 11:30
**Basic Study of Signal Extraction Methods Using Frequency Domain Characteristics of Reflected Waves from Ground Penetrating Radar**
Yoshikazu Sudo (AIREC Engineering Corporation, Japan), Yoshihiko Nomura (Mie University, Japan), and Yuji Nagashima (AIREC Engineering Corporation, Japan)

IM-05  11:30 – 11:50
**A Quick Intelligent Control System For a Mobile Robot to Avoid Collision with Moving Obstacles**
Weihong Yang, Keiichi Watanuki (Saitama University, Japan), and Shen Zhao (Minebea Co. Ltd.)

IM-06  11:50 – 12:10
**Figure and Texture Presentation Capabilities of Tactile Displays Featuring an Array of Stimulus Pins Driven by Piezoelectric Bimorph Actuators**
Masahiro Ohka (Nagoya University, Japan), Hiroshi Koga (MACNICA Inc., Japan), Yukihiro Mouri (Toyota Motor Company, Japan), Tokuhiro Sugiura (Mie University, Japan), and Yasunaga Mitsuya (Nagoya University, Japan)

Lunch  12:10 – 13:30

Poster Session  13:30 – 15:20 at Foyer (see Poster Session program)

Break  15:20 – 15:30

Intelligent Machines III
Chair: Yoshihiko Nomura, Mie University, Japan

IM-07  15:30 – 15:50
**Development of System for Detecting Passengers Trapped in Elevator Using a Video Surveillance Camera**
Nami Hirata, Manabu Hashimoto, Kazuhiko Sumi, and Shigeru Abe (Mitsubishi Electric Corporation, Japan)
A Basic Study on Face-to-face Image Presentation System
Masatoshi Onishi (NTT Access Service Systems Laboratories, Japan),
Yoshihiro Nomura, Norihiko Kato (Mie University, Japan), and
Satoshi Takahama (THK Co., Ltd., Japan)

Boundary Pixel Assigning Method for Image Segmentation Using Multi Dimensional Co-occurrence Matrix
Terumoto Komori, Tomotaka Sugishita, and Yoshihiro Nomura (Mie University, Japan)
June 17 (Tue.)

Room I (301)

Magnetic Recording Storage (Head Disk Interface) IV: Head and Suspension Design
Co-Chairs:  David Jenkins, University of Plymouth, UK  
Junguo Xu, Hitachi Ltd., Japan

HDI-13  8:30 – 8:50
Active Head Sliders Using Piezoelectric Thin Films for Flying-Height Control
Kenji Suzuki, Takayuki Akimatsu, Kenji Sasaki (The University of Tokyo, Japan), and Masayuki Kurita (Hitachi Ltd., Japan)

HDI-14  8:50 – 9:10
Mechanical Stability of the Interface Between a Padded Slider and Magnetic Recording Disk
Richard Martin and Brian Strom (Maxtor Corporation, USA)

HDI-15  9:10 – 9:30
Effect of Mechanical Design of the Suspension on Dynamic Loading Process
Mike Suk and Donald Gillis (Hitachi Global Storage Technology, USA)

HDI-16  9:30 – 9:50
Topology and Shape Optimization of the Suspension Assembly for High Density HDDs
Shengkai Yu and Bo Liu (Data Storage Institute, Singapore)

Break  9:50 – 10:10

Magnetic Recording Storage (Mechanism and Control) IV
Co-Chairs:  Chung Choo Chung, Hanyang University, Korea  
Hiroshi Yamaura, Tokyo Institute of Technology, Japan

MC-13  10:10 – 10:30
Realization of an Adaptive Voltage Driver for Voice Coil Motor
Roberto Oboe (University of Padova, Italy), Paolo Capretta (STMicroelectronics, Italy), and Riccardo Antonello (University of Padova, Italy)

MC-14  10:30 – 10:50
Unified Design of Time-Varying Gain Type Access Control and Integral Type Servo Control by Means of Nonstationary Optimal Control Method
Susumu Hara (Toyota Technological Institute, Japan)

MC-15  10:50 – 11:10
Optimization of Position Mode Seek Control for Hard Disk Drives
Ho Seong Lee, Jim Wiseman, and David Hyunchul Shim (Maxtor Corporation, USA)

MC-16  11:10 – 11:30
Residual Vibrationless Seeking Design based on Final-State Control in Hard Disk Drives
Atsushi Okuyama, Masato Kobayashi, Takao Horiguchi, and Kazuhsa Shishida (Hitachi, Ltd., Japan)

MC-17  11:30 – 11:50
Servo Design for High-TPI Hard Disk Drives Using a Delay-accommodating State Estimator
Young-Hoon Kim (Samsung Advanced Institute of Technology, USA), Sang-Hoon Chu (Samsung Information Systems America, USA), Seong-Woo Kang, Dong-Ho Oh, Yun-Sik Han, Tae-Yeon Hwang (Samsung Advanced Institute of Technology, USA)

MC-18  11:50 – 12:10
A Multi-rate Variable Structure Seeking Control for HDDs
Keitaro Ohno (Fujitsu Laboratories Ltd., Japan) and Roberto Horowitz (University of California, Berkeley, USA)
Lunch 12:10 – 13:30
Workshop 14:00 – 17:30 at Room V (303) (see Workshop program)
Photograph 18:00 – 18:15 at the entrance of Pacifico Yokohama, or 1st floor lobby if it rains.
Banquet 18:30 – 21:30 at Pacific

Room II (302)

Micromechatronics I: Mechano-Micro Systems
Co-Chairs: Sri M. Sri-Jayantha, IBM, USA
          Mikio Horie, Tokyo Institute of Technology, Japan

MMT-01 8:30 – 8:50
Dynamic Characteristic of Miniature Molding Pantograph Mechanisms for Surface Mount Systems
  Yuki Ishii and Mikio Horie (Tokyo Institute of Technology, Japan)

MMT-02 8:50 – 9:10
A Simple and Small Magnetic Bearing
  Jiro Kuroki, Tadahiko Shinshi (Tokyo Institute of Technology, Japan), Lichuan Li (Shanghai Jiaotong University, China), and Akira Shimokohbe (Tokyo Institute of Technology, Japan)

MMT-03 9:10 – 9:30
Development of a Micromanipulator Made of Diamond Having Reversal Mechanism
  Yuichi Nakazato, Akiyoshi Sekine, Hajime Miyazawa, Sadao Takeuchi, Yukinori Ariga, and Masao Murakawa (Nippon Institute of Technology, Japan)

MMT-04 9:30 – 9:50
Research on Piezoelectric Pump of a New Type High Frequency Valve
  JianHui Zhang, Qixiao Xia (Beijing Polytechnic University, China), Zheng Hong, Tatuo Yoshizawa, Akiyoshi Onuki (Yamagata University, Japan), and Dakang Wang (Beijing Polytechnic University, China)

Break 9:50 – 10:10

Micromechatronics II: MEMS/Micro Motion Systems
Co-Chairs: Tadahiko Shinshi, Tokyo Institute of Technology, Japan
          Mikio Horie, Tokyo Institute of Technology, Japan

MMT-05 10:10 – 10:30
Silicon-Based Flapping Wings Using Self-Actuated Stress Distribution
  Patrice Le Moal, Gilles Bourbon, Eric Joseph, Cyrille Hibert, and Patrice Minotti (Universite de Franche Comte, France)

MMT-06 10:30 – 10:50
Design of Servo Control Systems for MEMS-based Storage Device
  Hongjun Jeon, Dirk Grunwald, and Renjeng Su (University of Colorado, USA)

MMT-07 10:50 – 11:10
Nano-servomechanics of a MEMS Device for AFM-based Storage Technology
  Sri Sri-Jayantha, Hien Dang, Arun Sharma (IBM Research, T. J. Watson Research Laboratory, USA), Evangelos Eleftheriou, Mark Lantz, and Haralampos Pozidis (IBM Research, Zurich Research Laboratory, Switzerland)
Micromechatronics Keynote Address
Co-Chairs: Mikio Horie, Tokyo Institute of Technology, Japan
Yuichi Nakazato, Nippon Institute of Technology, Japan
MMTK 11:10 – 12:10
LIGA and AMANDA Technologies for the Fabrication of Advanced Micro-devices
Prof. Walter Bacher and Prof. Volker Saile
(Forschungszentrum Karlsruhe, Institute for Microstructure Technology, Germany)
Lunch  12:10 – 13:30
Workshop 14:00 – 17:30 at Room V (303) (see Workshop program)
Photograph 18:00 – 18:15 at the entrance of Pacifico Yokohama, or 1st floor lobby if it rains.
Banquet 18:30 – 21:30 at Pacific

Room III (311+312)
Healthcare and Wearable Equipment
Co-Chairs: Minoru Sasaki, Gifu University, Japan
Terunao Hirota, The University of Tokyo, Japan
HW-01 8:30 – 8:50
Intra-body Digital Data Transmission for the Personal Area Network
Keisuke Hachisuka, Teruhito Takeda, Yusuke Terauchi, Ken Sasaki, Hiroshi Hosaka, and Kiyoshi Itao
(The University of Tokyo, Japan)
HW-02 8:50 – 9:10
Development of a Wrist-worn Healthcare System Using Bluetooth
Chika Sugimoto, Hartaman Ariesanto, Hiroshi Hosaka, Ken Sasaki, Noriyoshi Yamauchi, and
Kiyoshi Itao (The University of Tokyo, Japan)
HW-03 9:10 – 9:30
Control System of Comfortable Environment for Drivers
Yoshinobu Hashimoto, Satori Arimitsu, Tadashi Suga, Kiyoshi Itao, Hiroshi Hosaka,
Ken Sasaki (The University of Tokyo, Japan),
Tsuyoshi Nakagawa, and Taiji Kawachi (DENSO Corporation, Japan)
HW-04 9:30 – 9:50
Automatic Classification of Ambulatory Movements and Evaluation of Energy Consumptions Utilizing
Accelerometers and Barometer
Yasuaki Ohtaki, Mitsutoshi Susumago (Tohoku University, Japan),
Akihiro Suzuki (Instruments Technology Research Co., Ltd.),
Koichi Sagawa (Hirosaki University, Japan), and Hikaru Inooka (Tohoku University, Japan)
Break 9:50 – 10:10

Medical and Bio Treatment Equipment Keynote Address
Chair: Mami Tanaka, Tohoku University, Japan
MBK 10:10 – 10:50
Sensor Network And Its Application To Wearable Healthcare Systems
Prof. Ken Sasaki (The University of Tokyo, Japan)

Medical and Bio Treatment Equipment
Chair: Mami Tanaka, Tohoku University, Japan
MB-01 10:50 – 11:10
Mental Tasks Discrimination by Neural Networks with Wavelet Transform
Minoru Sasaki and Choi Kyoung-Ho (Gifu University, Japan)
Focal Cooling System for Termination of Neocortical Seizure
Takashi Saito, Kimihiko Nakano, Jouji Uchiyama, Masami Fujii, Michiyasu Suzuki, and Hirochika Imoto (Yamaguchi University, Japan)

Mechanical Behavior of a Thermoelectric SMA Manipulator
Yun Luo, Toshiyuki Takagi, and Kumiko Yakuwa (Tohoku University, Japan)

Piezo Micro Probe Sensor System to Detect Environmental Stresses Induced in Living Cells
Tadashi Kosawada, Ken-ichi Konno, Shingo Yamamura (Yamagata University, Japan), and Toshikatsu Kanazawa (Miharashi-ishikai Hospital),

Flexible Media Feeding and Handling Machines I
Chair: Hiromu Hashimoto, Tokai University, Japan

A Method to Estimate the Amount of Swelling in Rollers under Working Conditions
Yuko Kobayashi, Naofumi Hiraoka, Hideki Ogawa, and Takanobu Nishimura (Toshiba Corporation, Japan)

High Frequency Dynamic-viscoelasticity of Tribology for Rubber Roller on Paper
Nobuaki Omata, Yusuke Honma, Qing-Qing Ni (Kyoto Institute of Technology, Japan)

Traction at the Nip Region of Wound Roll
Masashi Sasaki, Kazukiyo Kohno, Koshi Tanimoto, Sadamu Takahashi, Setsuo Suzuki (Mitsubishi Heavy Industries, Ltd., Japan), and Hiromu Hashimoto (Tokai University, Japan)

A Sheet-Handling Mechanism Using a Tape and Drum
Tadashi Satou, Akira Nomiyama, and Yasunari Niioka (Hitachi, Ltd., Japan)

LTO Cartridge Reel Deflection under Tape Packing Stresses
Paul Poorman (Hewlett-Packard Co., USA)

Flexible Media Feeding and Handling Machines Keynote Address
Chair: Masashi Sasaki, Mitsubishi Heavy Industries, Ltd., Japan

Prediction and Measurement of Friction Coefficient between Paper-web and Steel Roller
Prof. Hiromu Hashimoto (Tokai University, Japan)
Flexible Media Feeding and Handling Machines II
Chair: Masashi Sasaki, Mitsubishi Heavy Industries, Ltd., Japan

FM-06 11:10 – 11:30
Tape Mechanics over a Flat Recording Head
Sinan Muftu (Northeastern University, USA)

FM-07 11:30 – 11:50
Traction between a Web and a Smooth Roller
Sinan Muftu (Northeastern University, USA)

FM-08 11:50 – 12:10
Tape Edge Wear and Its Relationship to Lateral Tape Motion
Jason H. Wang and Frank E. Talke, University of California, San Diego, USA

FM-09 12:10 – 12:30
High Frequency Lateral Tape Motion and the Dynamics of Tape Edge Contact
Ryan J. Taylor and Frank E. Talke (University of California, San Diego, USA)

Lunch 12:30 – 13:30
Workshop 14:00 – 17:30 at Room V (303) (see Workshop program)
Photograph 18:00 – 18:15 at the entrance of Pacifico Yokohama, or 1st floor lobby if it rains.
Banquet 18:30 – 21:30 at Pacific
Room I (301)

Magnetic Recording Storage (Mechanism and Control) V
Co-Chairs: Shinobu Yoshida, Hitachi Ltd., Japan
          Arvind Raman, Purdue University, USA

MC-19  8:30 – 8:50
Optimal Design of Smart Carriage Arms in Magnetic Disk Drive for Vibration Suppression
  Fumitake Ohashi, Itsuro Kajiwara, Motoko Iwadare (Tokyo Institute of Technology, Japan), and
  Toshihiro Arisaka (Hitachi Ltd., Japan)

MC-20  8:50 – 9:10
Optimization of Smart Structure for Realizing High Controllability
  Takahiro Omori and Itsuro Kajiwara (Tokyo Institute of Technology, Japan)

MC-21  9:10 – 9:30
Linear Actuator for Precise Track Following
  Shigeki Mori (Akita Research Institute of Advanced Technology, Japan),
  Takayuki Hoshino (Minolta Co., Ltd., Japan), Hirohiko Tada (Kyodo Dendhi System Co., Ltd., Japan),
  Goro Obinata (Nagoya University, Japan), and
  Kazuhiro Ouchi (Akita Research Institute of Advanced Technology, Japan)

MC-22  9:30 – 9:50
Development of a Head Actuator Based on the New Design Concept for the Wide Servo Bandwidth in a
Hard Disk Drives
  Toshihiro Arisaka, Toshihiko Simizu, Hiromitsu Masuda, Takenori Atsumi (Hitachi Ltd., Japan), and
  Gentaro Nakamura (Hitachi Global Storage Technologies, Japan)

MC-23  9:50 – 10:10
Position Error Reduction in Magnetic Disk Drives Using a Head Gimbal Assembly with Radial Motion
Capability
  Dong-Ho Oh, Seong-Woo Kang, Young-Hoon Kim, Yun-Sik Han, and Tae-Yeon Hwang
  (Samsung Advanced Institute of Technology, USA)

Break  10:10 – 10:30

Magnetic Recording Storage (Mechanism and Control) Keynote Address 2
Co-Chairs: Shigeki Yanagihara, Toshiba Co. Digital Media Network Company, Japan
          Hannes Bleuler, Lausanne EPFL, Switzerland

MCK-2  10:30 – 11:10
Vibration of HDD Spindle Motors
  Prof. I. Y. Shen (University of Washington, USA)

Magnetic Recording Storage (Mechanism and Control) VI
Co-Chairs: Shigeki Yanagihara, Toshiba Co. Digital Media Network Company, Japan
          Hannes Bleuler, Lausanne EPFL, Switzerland

MC-24  11:10 – 11:30
Aerodynamically and Structurally Coupled Vibration of Multiple Co-Rotating Disks in Hard Disk Drives
  I. Y. Shen and Jung Seo Park (University of Washington, USA)

MC-25  11:30 – 11:50
Stability Analysis of Disk Spindle Supported by a Full Cylindrical Journal Bearing and Pivot Bearing
  Seiji Murashita, Kyosuke Ono, and Hiroshi Yamaura (Tokyo Institute of Technology, Japan)
MC-26 11:50 – 12:10
A Study on the Disk Vibration Control by Disk Damper for 80GB/Platter Hard Disk Drive Design
Yun-Sik Han, Seong-Woo Kang, Dong-Ho Oh, Tae-Yeon Hwang, Greg Tran
(Samsung Advanced Institute of Technology, USA)

MC-27 12:10 – 12:30
Aerodynamically Induced Power Loss in Hard Disk Drives
Sung-Oug Cho (Yonsei University, Korea), Seung-Yop Lee (Sogang University, Korea), and
Yoon-Chul Rhim (Yonsei University, Korea)

MC-28 12:30 – 12:50
Flow Induced Vibration of Shrouded Corotating Disk Systems at Subcritical Speed Range
Shinji Kisaki, Waichi Yamamoto, Shinnosuke Obi, and Shigeaki Masuda (Keio University, Japan)

Lunch 12:50 – 13:30

Magnetic Recording Storage (Mechanism and Control) VII
Chair: G. H. Jang, Hanyang University, Korea
MC-29 13:30 – 13:50
Investigation of Flow Velocity in Actual Hard Disk Drives by Particle-image-velocimetry and Fluid Simulation
Takashi Kubo, Noriyo Nishijima, Hayato Shimizu, Yoshiyuki Hirono, Mikio Tokuyama, and Shigeo Nakamura (Hitachi, Ltd., Japan)

MC-30 13:50 – 14:10
The Effects of E-Block Arm Thickness on Airflow and Head Off-track Vibration in a Modeled Head Disk Drive
Hany Michael Gross (University of California, Berkeley, USA), Toru Watanabe (Fujitsu Ltd., Japan),
David B. Bogy, and Omer Savas (University of California, Berkeley, USA)

MC-31 14:10 – 14:30
Pawl Latch Mechanism Design and Control for Ramp Loading Design
Joseph HS Chang, Ramin Monajemy (Samsung Information Systems America, USA),
Tae-Soo Kim (Samsung Electronics, Korea), and
Yong-Kyu Byun (Samsung Advanced Institute of Technology, Korea)

MC-32 14:30 – 14:50
Development of Microdrive Assembly Process
Hitoshi Tamura, Kazuya Takeda, Hisashi Kakuta, and Toshiya Furihara
(Hitachi Global Storage Technologies Japan, Ltd., Japan)

MC-33 14:50 – 15:10
Design of a High Natural Frequency Positioning Mechanism
Masaki Saitoh, Hiroshi Yamaura, and Kyosuke Ono (Tokyo Institute of Technology, Japan)

Break 15:10 – 15:30

Magnetic Recording Storage (Mechanism and Control) VIII
Chair: Kaoru Matsuoka, Matsushita Electric Industrial Co., Ltd., Japan
MC-34 15:30 – 15:50
Performances of Journal Bearing with MoS2-Shot Coating for Spindle of Magnetic Recording Storage System
Tomoko Hirayama (Ryukoku University, Japan), Noriaki Hishida (Spindle Device Laboratory, Japan),
Hisashi Ishida (Ryukoku University, Japan), and
Hiroshi Yabe (Osaka Electro-Communication University, Japan)

MC-35 15:50 – 16:10
Improvement of Dynamic Characteristics of a HDD Spindle System Supported by Ball Bearing Due to Temperature Variation
G. H. Jang, D. K. Kim (Hanyang University, Korea),
C. S. Kim, and H. S. Lee (Samsung Advanced Institute of Technology, Korea)
MC-36  16:10 – 16:30  
Finite Element Modal Analysis of a Spinning Flexible Disk-Spindle System in a HDD Considering the Flexibility of Supporting Structure  
G. H. Jang and J. H. Han (Hanyang University, Korea)

MC-37  16:30 – 16:50  
Diamagnetic Levitation and Electrostatic Motor: Components for Future HDDs?  
Hannes Bleuler and Roland Moser (EPFL (Swiss Federal Institute of Technology), Switzerland)

MC-38  16:50 – 17:10  
Development of a Low-profile Small-diameter HDD Motor for Mobile Applications  
Shigeo Obata, Kaoru Matsuoka, Hiromi Kita, Makoto Miyamoto, Kenichi Miyamori, and Hiromitsu Noda (Matsushita Electric Industrial, Japan)

Room II (302)

Magnetic Recording Storage (Head Disk Interface) Keynote Address 2
Co-Chairs: Liu Bo, Data Storage Institute, Singapore  
Takayuki Yamamoto, Toshiba Co., Ltd., Japan

HDIK-2  8:30 – 9:10  
Nano-Tribology Issues for 1 Tbit/in²  
Dr. Singh Bhatia, Hitachi Global Storage Technologies, USA

Magnetic Recording Storage (Head Disk Interface) V: Disk Overcoat
Co-Chairs: Liu Bo, Data Storage Institute, Singapore  
Takayuki Yamamoto, Toshiba Co., Ltd., Japan

HDI-17  9:10 – 9:30  
Improvement of DLC Overcoat by Controlling Hydrogen Content and Its Application to Lower Flying Height Hard Disk Medium  
Toshinori Ono, Hiroyuki Matsumoto, Mitsuhiro Shoda, Tomonori Kozaki, Hiroshi Tani, and Yuuichi Kokaku (Hitachi Global Storage Technologies, Japan)

HDI-18  9:30 – 9:50  
Development of a Head COC Thickness Measuring Method by Means of AES without Ion Sputtering  
Sumihiro Matsumura and Yoshiyuki Tagashira (Hitachi Global Storage Technologies, Japan)

HDI-19  9:50 – 10:10  
Withdrawn

Break  10:10 – 10:30

Magnetic Recording Storage (Head Disk Interface) VI: Slider Disk Interactions
Co-Chairs: Yao Tee Hsia, Seagate Technology, USA  
Takao Chikazawa, Hitachi Global Storage Technologies, Japan

HDI-20  10:30 – 10:50  
Slider Vibration Reduction Using Slider Surface Texture  
Lin Zhou (University of California, San Diego, USA), Michael Beck, Hans H. Gatzen (Hannover University, USA), Kenneth J. Altshuler (Seagate Storage Products, USA), and F. E. Talke (University of California, San Diego, USA)

HDI-21  10:50 – 11:10  
Withdrawn

HDI-22  11:10 – 11:30  
The Glide Noise Caused by Organic Hydrocarbon on DLC Overcoat of Magnetic Recording Disk  
Mitsuhiro Shoda, Tomonori Kozaki, Toshinori Ono, Hiroyuki Matsumoto, and Hiroshi Tani (Hitachi Global Storage Technologies, Japan)
HDI-23  11:30 – 11:50  
**Lubricant-Slider Interaction and Lubricant Depletion in Near Contact Recording**  
Junguo Xu (Hitachi Ltd., Japan), Hideaki Tanaka, Yoshihiko Miyake, and Yuuichi Ootani  
(Hitachi Global Storage Technologies, Japan)

HDI-24  11:50 – 12:10  
**Interactions between Nano-spacing Flying Head Sliders and Ultra-thin Liquid Lubricant Films with Non-uniform Distribution in Hard Disk Drives**  
Norio Tagawa (Kansai University, Japan), Noritaka Yoshioka (Matsusita Electronic Components Co., Ltd., Japan), and Atsunobu Mori (Kansai University, Japan)

Lunch  12:10 – 13:30

**Magnetic Recording Storage (Head Disk Interface) VII: Disk Lubricant**  
Co-Chairs: Brian Strom, Maxtor Corporation, USA  
Hiroyuki Osaki, Sony Co., Ltd., Japan

HDI-25  13:30 – 13:50  
**Characteristics of Alkanolamine-terminated Perfluoropolyether Lubricants for Hard Disk Media**  
Nagayoshi Kobayashi, Masako Ikegami, Yoshinobu Fujii, and Tamio Akada  
(Matsumura Oil Research Corporation, Japan)

HDI-26  13:50 – 14:10  
**The Evaporation and Readsorption of Lubricant Film Molecules in Hard Disks**  
Bo Zhang and Akira Nakajima (Saga University, Japan)

HDI-27  14:10 – 14:30  
**The Dynamic Behavior of Ultrathin Lubricant Films**  
Yiao-Tee Hsia (Seagate Research, USA), Qian Guo, Satoru Izumisawa, and Myung S. Jhon  
(Carnegie Mellon University, USA)

HDI-28  14:30 – 14:50  
**Direct Visualization of Thin Film Spreading over Magnetic Disk Surface by Low-coherence Phase-shifting Interferometry**  
Hedong Zhang, Yasunaga Mitsuya, Sakiko Ishida, and Kenji Fukuzawa (Nagoya University, Japan)

Break  15:10 – 15:30

**Magnetic Recording Storage (Head Disk Interface) VIII: Head Media Interface**  
Co-Chairs: Vedantham Raman, Hitachi Global Storage Technologies, USA  
Youichi Kawakubo, Shinshu University, Japan

HDI-30  15:30 – 15:50  
**Sub-nano-Newton Dynamic Shear Force Measurement for Fiber Wobbling Method**  
Shintaro Itoh, Kenji Fukuzawa, Kazuhiro Takahashi, Zhang Hedong, and Yasunaga Mitsuya (Nagoya University, Japan)

HDI-31  15:50 – 16:10  
**Quantitative Measurements of Tape Abrasivity Using Accelerated Wear Testing**  
Patrick Chou, Michael Lamers, and Dennis Kubeldis (Measurement Analysis Corporation, USA)

HDI-32  16:10 – 16:30  
**Wear Modeling of the Head/Disk Interface at Low Fly Height**  
Wei Peng and Yiao-Tee Hsia (Seagate Technology, USA)

HDI-33  16:30 – 16:50  
Withdrawn
Room III (311+312)

**Optical Devices**
Chair: Yoshiaki Kanamori, Tohoku University, Japan

**OD-01 8:50 – 9:10**
*Stiction Free Capacitive Actuators Using Double Sacrificial Layers Process*
Jun Fujita, Takahiko Itoh, Koichi Yamada, and Tatsuya Fukami (Mitsubishi Electric Corp., Japan)

**OD-02 9:10 – 9:30**
*Development of Grating-image Type Micro-encoder by Si Micromachining: Improvement of Integration and Zero-point Detection*
Yoshiaki Kanamori, Ryuji Kamata (Tohoku University, Japan), Muneo Mitamura, Yoshinori Ito (Harmonic Drive Systems Inc., Japan), and Kazuhiro Hane (Tohoku University, Japan)

**OD-03 9:30 – 9:50**
*Fabrication of a Rotary Vertical Micromirror for Optical Switching*
Min Hu, Hejun Du, Shih-Fu Ling (Nanyang Technological University, Singapore), and Bo Liu (Data Storage Institute, Singapore)

**OD-04 9:50 – 10:10**
*Characteristics and Control of MEMS Mirrors for Optical Cross-connect Switch*
Joji Yamaguchi, Nobuyuki Takeuchi, Akira Shimizu, Tsuyoshi Yamamoto, Eiji Higurashi, Renshi Sawada, and Yuji Uenishi (NTT Microsystem Integration Laboratories, Japan)

**Break 10:10 – 10:30**

**Optical Recording Storage Keynote Address**
Co-Chairs: Ho-Cheol Lee, Samsung Electro-Mechanics Co., Ltd., Korea
Masahiro Yanagisawa, NEC Corporation, Japan

ORSK 10:30 – 11:10
*Nanometer-controlled Optical Disk Systems*
Dr. Seiya Ogawa and Mr. Fumio Tabata (Fujitsu Laboratories Ltd., Japan)

**Optical Recording Storage I**
Co-Chairs: Ho-Cheol Lee, Samsung Electro-Mechanics Co., Ltd., Korea
Masahiro Yanagisawa, NEC Corporation, Japan

**ORS-01 11:10 – 11:30**
*Design of the Optical Path for Small Form Factor Optical Disk Drive*
Kyung-Sung Jung, Hongmin Kim, No-Cheol Park, Shin-II Kang, and Young-Pil Park (Yonsei University, Korea)

**ORS-02 11:30 – 11:50**
*Design of Wafer-based NA 0.85 Micro Objective Lens and Integrated Pick Up Module for Small Form Factor Optical Drive*
Seung-jae Lee, Young-Sik Kim, No-Cheol Park, and Young-Pil Park (Yonsei University, Korea)

**ORS-03 11:50 – 12:10**
*A Scanning Laser Microscope Incorporating SIL for High-density Magneto-optical Recording*
David Jenkins and Sarah Edmund (University of Plymouth, UK)

**Lunch 12:10 – 13:30**
Optical Recording Storage II
Co-Chairs: David Jenkins, University of Plymouth, UK
          Koichi Tezuka, Fujitsu Laboratories Ltd., Japan

ORS-04 13:30 – 13:50
Vibration Analysis of the Omnidirectional Stylish DVD Deck
  Tae-Wook Park (LG Electronics Inc., Korea)

ORS-05 13:50 – 14:10
Design and Optimization of Actuator for Micro Optical Disk Drive
  Hocheol Lee, Hoseop Jeong (Samsung Electro-mechanics, Ltd., Korea),
  Dong-Ju Lee, No-Cheol Park, and Young-Pil Park (Yonsei University, Korea)

ORS-06 14:10 – 14:30
3D Measurement of Micro Thermal Deformation in an Optical Pick-up Base Using Holographic Interferometry
  Sunghoon Cho, Youngmin Seo, and Shinill Kang (Yonsei University, Korea)

ORS-07 14:30 – 14:50
A New Direct Seek Control Design of Optical Disk Drives
  Fengdan Dong, Youyi Wang, and Jianying Zhou (Nanyang Technological University, Singapore)

ORS-08 14:50 – 15:10
Robust H_inf Loop-Shaping Design for an Optical Disk Drive System
  Jin-Young Choi (Yonsei University, Korea), Hong-Gul Jun (LG Electronics, Korea),
  Hyub Seok Yang, No-Cheol Park, and Young-Pil Park (Yonsei University, Korea)

Break 15:10 – 15:30

Optical Recording Storage III
Co-Chairs: No-Cheol Park, Yonsei University, Korea
          Toshifumi Ohkubo, Toyo University, Japan

ORS-09 15:30 – 15:50
Design and Fabrication of Plasmon-enhanced Optical Heads
  Masahiro Yanagisawa, Junichi Fujikata, Tsutomu Ishi, Hitoshi Yokota, Kunio Kato, Masafumi Nakada,
  Kunihiko Ishihara, and Keishi Ohashi (NEC Corporation, Japan)

ORS-10 15:50 – 16:10
Development of the Optical Flying Head for the Next-generation Magneto-optical Recording System
  Goroh Kawasaki, Tsuyoshi Matsumoto, Nobuyuki Kanto, and Koichi Tezuka
  (Fujitsu Laboratories Ltd., Japan)

ORS-11 16:10 – 16:30
Design of Swing Arm Type Actuator and Suspension for Micro Optical Disk Drive
  Eo-Jin Hong, Dong-Wook Kim, No-Cheol Park, and Young-Pil Park (Yonsei University, Korea)

ORS-12 16:30 – 16:50
Development of the Optical Flying Head Positioning Mechanism for the Near-field Optical Recording System
  Satoru Seko, Katsuhiko Yamada, Naoto Kojima, Koji Ishioka, Kazuo Takahashi, and Kenjiro Watanabe
  (Sony Corporation, Japan)
Room IV (313+314)

**Precision and Wearable Equipment I**

Co-Chairs: Hisashi Oosumi, Chuo University, Japan
Nobuhiko Henmi, Shinshu University, Japan

PW-01 8:30 – 8:50
**Wearable System for Outdoor Environmental Information and Air Floating Particle Matter Monitoring**
Yasuhiro Kawahara, Guillaume Lopez, Shingo Sugimoto, Shinya Nagasaki,
Ken Sasaki, Hiroshi Hosaka, and Kiyoshi Itao (The University of Tokyo, Japan)

PW-02 8:50 – 9:10
**Development of Miniature Failure Diagnosis Module with Vibration Sensor, Digital Signal Processor and Wireless Transmitter**
Kohta Kambara, Daisuke Yamamoto, Noriyoshi Yamauchi, Hiroshi Hosaka,
Ken Sasaki, and Kiyoshi Itao (The University of Tokyo, Japan)

PW-03 9:10 – 9:30
**Real Time Thickness Measurement of Thin Film for End-point Detector (EPD) of 12-inch Spin Etcher Using the White Light Interferometry**
Nohyu Kim (Korea University of Technology and Education, Korea)

PW-04 9:30 – 9:50
**Investigation of Vacuum Compatible Hydrostatic Air Bearings**
Changzhi Cui, Keiji Emoto, Kotaro Akutsu, Shigeo Sakino, and Mitsuru Inoue (Canon Inc., Japan)

PW-05 9:50 – 10:10
**Study on Exhaust System in Aerostatic Thrust Bearings for High Vacuum Chamber**
Shigeki Yoshimoto, Yuichi Yoshida, and Kazuyuki Yagi (Tokyo University of Science, Japan)

Break 10:10 – 10:30

**Precision and Wearable Equipment Keynote Address**

Co-Chairs: Shigeki Yoshimoto, Tokyo University of Science, Japan
Hiroshi Hosaka, The University of Tokyo, Japan

PWK 10:30 – 11:10
**Recent Trends in the Design of IC-processed Actuators and Distributed Systems**
Prof. Patrice Minotti, Universite de Franche Comte, France

**Precision and Wearable Equipment II**

Co-Chairs: Shigeki Yoshimoto, Tokyo University of Science, Japan
Hiroshi Hosaka, The University of Tokyo, Japan

PW-06 11:10 – 11:30
**Vibration Isolation System for Semi-conductor Lithograph Machine**
Masato Takahashi and Susumu Makinouchi (Nikon Corporation, Japan)

PW-07 11:30 – 11:50
**Vibration-based Automatic Power-generation System**
Jun Okazaki, Yuji Osaki, Hiroshi Hosaka, Kiyoshi Itao, and Ken Sasaki
(The University of Tokyo, Japan)

PW-08 11:50 – 12:10
**Development of Dive Computer Watch Cyber Aqualand**
Yukimi Takahashi, Yoshihiro Ikeuchi, Yasuo Kitajima, Tohru Tanaka,
Kazuya Mitaki, and Hiroyuki Kihara (Citizen Watch Co., Ltd., Japan)

Lunch 12:10 – 13:30
Copy Machines, Printers, Scanners and Printing Systems I
Co-Chairs: Hiroyuki Kawamoto, Waseda University, Japan
Ralph Kober, Aachen University of Technology, Germany

CM-01 13:30 – 13:50
FEM Simulation of Paper Feed Mechanism with Reverse Roller
Shigeo Yanabe, Yuhei Hosokawa, and Takayuki Maeda (Nagaoka University of Technology, Japan)

CM-02 13:50 – 14:10
Banding Reduction in Electrophotographic Processes through Spatial-sampled Linear Parameter Varying Repetitive Control
Cheng-Lun Chen and George T.-C. Chiu (Purdue University, USA)

CM-03 14:10 – 14:30
Traveling Wave Transport of Particles and Particle Size Classification
Hiroyuki Kawamoto, Naoto Hasagawa, and Kyogo Seki (Waseda University, Japan)

CM-04 14:30 – 14:50
Aspects of Backwards Transport on a Traveling Wave Device
Ralph Kober (Aachen University of Technology, Germany)

Break 14:50 – 15:10

Copy Machines, Printers, Scanners and Printing Systems II
Co-Chairs: Hiroyuki Kawamoto, Waseda University, Japan
Ralph Kober, Aachen University of Technology, Germany

CM-05 15:10 – 15:30
Computational Fluid Dynamic Analysis of Ionic Wind in Corona Devices
Hideki Okamoto and Kazuhiro Mori (Fuji Xerox Co., Ltd., Japan)

CM-06 15:30 – 15:50
Numerical Model of Separating Discharge
Masami Kadonaga (Ricoh Co., Ltd., Japan)

CM-07 15:50 – 16:10
Electrostatic Pull-off of Magnetic Bead Chains in Two-component Magnetic Development System of Electrophotography
Nobuyuki Nakayama, Hiroyuki Kawamoto, and Masaya Nakatsuhara (Waseda University, Japan)

CM-08 16:10 – 16:30
Airflow and Scattering Toner Motion Analysis in a Development Unit
Keisuke Uchida (Ricoh Co., Ltd., Japan)
**Poster Session**

**June 16 (Mon.) 13:30 – 15:20 at Foyer**

**Copy Machines, Printers, Scanners and Printing Systems**

P-CM-01  
*Electrostatic Inkjet Phenomena Utilizing Pin-to-Plate System*  
Hiroyuki Kawamoto, Kenji Arai, Ryuta Koizumi, and Shinjiro Umezu (Waseda University, Japan)

P-CM-02  
*Paper Separation and Feed Utilizing Electrostatic Force*  
Hiroyuki Kawamoto, Shinjiro Umezu, and Jumpei Shiraishi (Waseda University, Japan)

P-CM-03  
*Investigation of Non-magnetic and Non-contact AC Development Process in Electrophotography*  
Hiroyuki Kawamoto and Masao Nakano (Waseda University, Japan)

P-CM-04  
*FEM Analysis of Multilayered MEMS Device under Thermal and Residual Stress*  
Jun-Hyub Park and Hyeon-Chang Choi (Tongmyoung University of Information Technology, Korea)

**Intelligent Machines**

P-IM-01  
*Remarks on Multi-aimed Classification System of Human Face Based on Eigenface Approach*  
Yong Wang and Kazuhiko Takahashi (Yamaguchi University, Japan)

P-IM-02  
*Development of a Novel Optical Stylus Sensor for Surface Profiling Instrument*  
Hiroya Fukatsu (Tokyo Metropolitan College of Technology, Japan), Kazuhisa Yanagi (Nagaoka University of Technology, Japan), Atsushi Shimamoto (Photonics Co., Ltd., Japan)

P-IM-03  
*Antenna Stabilizing Control System with Strapdown 2 Axis Azimuth/Elevation Method*  
Takao Murakoshi (TOKIMEC Inc., Japan)

**Magnetic Recording Storage (Head Disk Interface)**

P-HDI-01  
*Study of the Stiction Free Magnetic Recording Head with DLC Pad*  
Susumu Takagi (Matsushita Kotobuki Electronics Industries, Ltd., Japan)

P-HDI-02  
*Examination of Flying Height of Magnetic Head Slider in Simulations and Measurements at Nanometer-order Spacing*  
Yoshinori Takeuchi (Hitachi, Ltd., Japan), Katsuyuki Tanaka (The University of Shiga Prefecture, Japan), Toshiko Odaka, and Fumitaka Muranushi (EX-Hitachi, Ltd., Japan)

P-HDI-03  
*Effect of Lubricant on Glide Avalanche Height and Slider Vibration*  
Hidekazu Kohira and Hideaki Tanaka (Hitachi, Ltd., Japan)

P-HDI-04  
*Investigation of Head-Disk Contact using Magnetic Read Signal*  
Takanori Yamazaki, Hidekazu Kohira, and Hideaki Tanaka (Hitachi Global Storage Technologies, Japan)
**P-HDI-05**  
**Investigation on Corrosion Behaviour on Hard Disks**  
Daqing Xu, Erjia Liu (Nanyang Technological University, Singapore), and  
Bo Liu (Data Storage Institute, Singapore)

**P-HDI-06**  
**Pin-on-Disk Wear Study on Thin-film Disks for Contact Recording Systems**  
Youichi Kawakubo, Shinichi Kobatake, Shunichi Miyazawa, and Kenjiro Nagata  
(Shinshu University, Japan)

**P-HDI-07**  
**2-DOF Analysis of Friction-induced Slider Vibrations in Near-contact Regime**  
Masami Yamane, Kyosuke Ono, and Hiroshi Yamaura (Tokyo Institute of Technology, Japan)

**P-HDI-08**  
**Identification of Stiffness and Damping in Collision of a Spherical Slier with a Magnetic Disk**  
Satoshi Ohara, Kyosuke Ono, and Hiroshi Yamaura (Tokyo Institute of Technology, Japan)

**P-HDI-09**  
**Contact Burnishing for Head Wear Reduction**  
Shunichi Miyazawa, Youichi Kawakubo, Kenjiro Nagata, Shinichi Kobatake, and Shinichi Nakazawa  
(Shinshu University, Japan)

**Magnetic Recording Storage (Mechanism and Control)**

**P-MC-01**  
**Experimental Studies and Simulation for Air Flow on Rotating Drum in Helical Scan System**  
Kenji Hasegawa (Matsushita Electric Industrial Co., Ltd., Japan) and  
Yoshiaki Mizoh (Matsushita-Kotobuki Electronics Industries Ltd., Japan)

**P-MC-02**  
**Optimizing Servo-signal Design in a Hard-disk Drive**  
Kyo Akagi, Kei Yasuna (Hitachi, Ltd., Japan), and  
Kazuhisa Shishida (Hitachi Global Storage Technologies, Japan)

**P-MC-03**  
**Robust Design of Microactuator for HDD Head Positioning**  
Wenhui Jia (National University of Singapore, Singapore), Jiaping Yang (Data Storage Institute,  
Singapore), and M. A. Jabbar (National University of Singapore, Singapore)

**P-MC-04**  
**New Method for Evaluation of the Ultra-thin Air Film Spacing between Head Slider and Disk Surface on Magnetic Disk Files (General Description of Problem and Solving Method)**  
Toshiko Odaka (Hitachi, Ltd., Japan), Katsuyuki Tanaka (University of Shiga Prefecture, Japan), and  
Yoshinori Takeuchi (Hitachi, Ltd., Japan)

**P-MC-05**  
**The Effects of Arm Edge Shape on Airflow and Slider Off-track Vibration in a Modeled Hard Disk Drive**  
Toru Watanabe (Fujitsu Ltd., Japan), Hany Gross, David B. Bogy and  
Oumlmer Savas (University of California, Berkeley, USA)

**P-MC-06**  
Withdrawn

**Medical and Bio Treatment Equipment**

**P-MB-01**  
**Remarks on Bio-Potential Interface with Application to Controlling Mobile Robot**  
Takahiro Kashiyama and Kazuhiko Takahashi (Yamaguchi University, Japan)

**P-MB-02**  
**Analysis of Chest Surface Vibration for Perioperative Myocardial Ischemia Monitor in the OpenMRI-guided Operating Theater**  
Kiyoshi Naemura (Tokyo University of Technology, Japan),  
Makoto Ozaki, and Hiroshi Iseki (Tokyo Women's Medical University, Japan)
Measurement and Valuation of Touch Sensation
Mami Tanaka, Yoshihiro Tanaka, and Seiji Chonan (Tohoku University, Japan)

Development of a Tactile Sensor for Reading Braille
Mami Tanaka, Kaoru Miyata (Tohoku University, Japan), Tatuo Nishizawa (Shinanokenshi Co., Japan), and Seiji Chonan (Tohoku University, Japan)

A PM-EM Type Magnetic Bearing System for Centrifugal Blood Pump
Tadahiko Shinshi, Daisaku Nishinaka, Junichi Asama (Tokyo Institute of Technology, Japan), Hiroyuki Kataoka, Setsuo Takatanii (Tokyo Medical and Dental University, Japan), and Akira Shimokohbe (Tokyo Institute of Technology, Japan)

Fundamental Study on a Novel Method for Dissolution of Cerebral Thrombus by Micro Piezo-stirrer
Zhongwei Jiang, Zihe Liu, Shoichi Kato, and Michiyasu Suzuki (Yamaguchi University, Japan)

Study on Pressure Distribution Measurement at Tibia-femoral Joint Surface
Tadaatsu Satomi (Tokyo Denki University, Japan), Joung H. Mun (Sung Kyun Kwan University, Korea), and Keita Sato (Tokyo Denki University, Japan)

Micro- and Nanosystem Science and Technology

Nanofabrication of Silicon by Mechano-chemical Processing and Its Application to Etching Mask for Potassium Hydroxide Solution
Shojiro Miyake, Jongduk Kim, and Hirokazu Yamamoto (Nippon Institute of Technology, Japan)

Micro-tribological Properties of Heat Treated Hard Disk Evaluated by Force Modulation Method
Tadashi Saitoh, Shojiro Miyake (Nippon Institute of Technology, Japan), and Satoshi Matsumuma (Hitachi Maxell, Japan)

Wear Durability of PFPE Lubricant on Magnetic Disk Surface
Masahiro Kawaguchi (Nagaoka University of Technology, Japan) and Takahisa Kato (National Institute of Advanced Industrial Science and Technology, Japan)

Effect of Relative Humidity on Frictional Behavior of Ultra-thin Lubricant Films on Carbon Overcoats
Junho Choi (National Institute of Advanced Industrial Science and Technology, Japan), Hiroshi Morishita (Tottori University, Japan), Takahisa Kato (National Institute of Advanced Industrial Science and Technology, Japan), Hiroshige Matsuoka, and Shigehisa Fukui (Tottori University, Japan)

A Molecular Dynamics Simulation of Ultra-thin Liquid Bridging between Surfaces Having Two-dimensional Roughness
Susumu Ogata, Yasunaga Mitsuya, Kenji Fukuzawa (Nagoya University, Japan), and Yasuji Ohshima (Aichi Konan College, Japan)

Micromechatronics

High-speed & High-accuracy Micromechatronics Control Methodology Based on the Modified Delta Operator and Form
Tatsu Aoki (Tokyo Metropolitan College of Technology, Japan)
**Design and Manufacturing of Micro Mechanism Elements of 2-DOF Micromanipulator**  
Daiki Kamiya, Taketo Gozu, and Mikio Horie (Tokyo Institute of Technology, Japan)

**Optical Recording Storage**

**Readout Characteristics of Flexible Monolithic Optical Head Slider obtained using Avalanche-Photo-Diode (APD)-Based Detector**  
Terunao Hirota, Gakushi Tanaka (The University of Tokyo, Japan), Toshifumi Ohkubo (Toyo University, Japan), and Kiyosho Itao (The University of Tokyo, Japan)

**Contact Force Detection on a Minute Aperture Mounted Optical Contact Slider Using Acoustic Emission Sensor**  
Toshifumi Ohkubo (Toyo University, Japan), Kenji Tanaka, Terunao Hirota, Hiroshi Hosaka, Kiyosho Itao (The University of Tokyo, Japan), Yoko Shinozaki, Hideo Maeda, Kenji Kato, Yasuji Mitsuoka, and Kunio Nakajima (Seiko Instruments Inc., Japan)

**Precision and Wearable Equipment**

**Motion Error Correction for Non-contact Ultrasonic Motor driven by Multi-layered Piezoelectric Actuators**  
Hiromi Isobe and Akira Kyusjoji (Nagoya University of Technology, Japan)

**A Novel Motor Manufacturing Technology Using Spiral Type Core for Information Devices**  
Akira Hashimoto, Akio Matsui, Masaya Motohashi, Nobuaki Miyake, Hitoshi Ota, Yasuyuki Nakanishi, and Hiroyo Nishimura (Mitsubishi Electric Corp., Japan)

**Pneumatic Half-floating Leadscrew with Higher Efficiency and Stiffness**  
Shigeho Fukada, Masaki Shinmura, and Yuji Motizuki (Shinshu University, Japan)

**Trial of Nano-meter Order Positioning by Open-loop Drive of Piezoelectric Actuator**  
Nobuhiko Henmi, Michihiko Tanaka, Takeru Yamashita, and Youich Kubo (Shinshu University, Japan)

**Development of the Non-resonance Type Ultra-sonic Motor and Its Application for XY-stage**  
Kouji Kosaka, Yoshiba Egashira, Tetsuya Iwabuchi (Kumamoto Technology Inc., Japan), Satoru Okudera (Tokyo Technology Inc., Japan), Keichi Nagamoto, Takashi Harada, Taishi Endo, Hiroyuki Hashiguchi, Yasuhiro Morizono, Akira Nakada, Hiroshi Kubota, and Tadahiro Ohmi (Kumamoto University, Japan)

**Microdynamics and Practical Control of Precision Positioning Mechanism with Friction Characteristic**  
Kaiji Sato, Kosuke Nakamoto, and Akira Shimokobe (Tokyo Institute of Technology, Japan)

**Design of Aerodynamic Bearings for Ultra-Micro Gas Turbine**  
Satoshi Hirasa, Shigeki Yoshimoto, and Kazuyuki Yagi (Tokyo University of Science, Japan)

**Selective and In-situ Determination of Carbonate and Oxide Particles in Aqueous Solution using Laser-induced Breakdown Spectroscopy (LIBS) for Wearable Information Equipment**  
Hiroyasu Hotekezaka, Noboru Aoyagi, Yasuhiro Kawahara, Noriko U. Yamaguchi, Shinya Nagasaki, Ken Sasaki, and Satoru Tanaka (The University of Tokyo, Japan)

**Development of Human Arm Motion Capture System**  
Chisato Karasawa and Hisashi Osumi (Chuo University, Japan)