Final Program of the 2004 International Symposium on Micro-NanoMechatronics and Human Science - From Micro & Nano Scale Systems to Robotics & Mechatronics Systems -

The Fourth Symposium “Micro-NanoMechatronics for an Information-Based Society”
The 21st Century COE Program, Nagoya University

Nagoya Municipal Industrial Research Institute
October 31-November 3, 2004

Cosponsored by
City of Nagoya, Nagoya Urban Industries Promotion Corporation, Chubu Industrial Advancement Center, Nagoya University, Chubu Science and Technology Center, Nagoya City Science Museum, Kagawa University, The 21st Century Center of Excellence program (Nagoya University) “Micro-NanoMechatronics for an Information-Based Society”, NPO (Human wear network organization), IEEE Robotics and Automation Society, International Symposium on Micro-NanoMechatronics and Human Science Committee

In Cooperation with
Japan Science and Technology Agency, Chubu Bureau of Economy, Trade and Industry, Aichi Prefecture, Gifu Prefecture, Mie Prefecture, Shizuoka Prefecture, Nagano Prefecture, Nagoya Chamber of Commerce & Industry, Chubu Economic Federation, Nagoya Junior Chamber

Technically Cosponsored by
November 1 (Mon)
Location: Nagoya Municipal Industrial Research Institute

Invited Lectures
Chairpersons: K. Sato, Nagoya University
              N. Kawahara, DENSO Corporation

9:00-9:30
Micro/Nano Materials Testing for Reliable Design of MEMS/NEMS
Prof. Yoshitada Isono, Ritsumeikan University, Japan

9:30-10:00
Nano/Micromechanical Tools for Nanoscience and Nanoengineering
Prof. Takahito Ono, Tohoku University, Japan

10:00-10:20 Coffee Break

Technical Sessions
Session MA-1: Measurement and Evaluation of Micro-Nano Systems
Chairpersons: T. Matsuda, Mie University
              Y. Akiniwa, Nagoya University

10:20-10:40
Tensile Fracture Behavior of Single Crystal Silicon Film Having a Notch of
Sub-Micron-Length
X. Li, T. Kasai, T. Ando, M. Shikida and K. Sato, Nagoya University, Japan

10:40-11:00
Tensile Test of Single Crystal Silicon Film at Elevated Temperatures
S. Nakao, T. Ando, M. Shikida and K. Sato, Nagoya University, Japan

11:00-11:20
In-situ Measurements of Internal Stresses in Copper Thin Films during Thermal Cycling
Using Synchrotron X-rays
K. Tanaka and Y. Akiniwa, Nagoya University, Japan

11:20-11:40
Analysis of Elastic Properties of Textured Thin Films
Y. Akiniwa and S. Machiya, Nagoya University, Japan, K. Serizawa and K. Tanaka

11:40-12:00
Three-Dimensional Microscopic Analysis of Inter-Laminar Area in Cross-Ply Laminate Using
a Homogenization Theory
T. Matsuda, Mie university, Japan, D. Okumura, N. Ohno, M. Tokuda

Session MA-2: Micro Actuators and Micro Components
Chairpersons: O. Tabata, Kyoto University
              T. Toriyama, Ritsumeikan University

10:20-10:40
Vertical Direction Drive Micro Actuator Using Shape Memory Alloy Thin Film with Flexible
Joints
W. Yoshikawa, Kyoto University Japan, A. Sasabe, O. Tabata and A. Ishida

10:40-11:00
3D Tactile Rendering Based on Bi (Multi) stable SMA Monolithic Systems
M. Hafez and M. B.-Khoudja, Commissariat à l’Energie Atomique (CEA List), France

11:00-11:20
Magnetic Actuation of a Micro-diaphragm Structure for an Active Tactile Sensor
Y. Hasegawa, H. Sasaki, M. Shikida and K. Sato, Nagoya University, Japan, K. Itoigawa
11:20-11:40  Characteristics of Ni Electroformed Micro Connector Used for High Density Packaging  
T. Unno, T. Toriyama, Y. Isono and S. Sugiyama, Ritsumeikan University, Japan

11:40-12:00  100µm-Diametrical Thin Coaxial Cable for Electronics and Mechatronics in  
Upcoming Information Society  
S. Kobayashi and K. Hira, Yoshinogawa Electric Wire & Cable Inc., K. Yukawa, Y. Suzuki,  
H. Ishihara, Y. Mihara, H. Miyagawa, T. Morita, Y. Horibe and T. Shikama

12:00-13:00  Lunch

Invited Lecture  
Chairperson: Y. Mitsuya, Nagoya University
13:00-13:30  Study of Nanodynamics in Hard Disk Drive Technology  
Prof. Kyosuke Ono, Tokyo Institute of Technology, Japan

13:30-13:40  Coffee Break

Technical Sessions  
Session MP1-1: Micro-Nano Fabrication  
Chairpersons: S. Sugiyama, Ritsumeikan University  
E. Shamoto, Nagoya University
13:40-14:00  X-ray Lithography Fabrication of Large Diffractive Optical Elements on a Curve Surface  
Y. Li and S. Sugiyama, Ritsumeikan University, Japan

14:00-14:20  Effect of Magnesium in KOH Solution on Anisotropic Wet Etching of Silicon  
H. Tanaka and D. Cheng, Nagoya University, Japan, K. Inoue, M. Shikida and K. Sato

14:20-14:40  Exploring the Activation Energy During Nanoscale Structural Evolution in Wet Etching  
M. A. Gosalvez and K. Sato, Nagoya University, Japan

14:40-15:00  Ultraprecision Micromachining of Brittle Materials  
by Applying Ultrasonic Elliptical Vibration Cutting  
N. Suzuki, S. Masuda, M. Haritani and E. Shamoto, Nagoya University, Japan

15:00-15:20  Three-dimensional Microfabrication System for Biodegradable Polymers  
-Complicated and Non-toxic Microstructures with High-resolution for Implantable Devices-  
K. Ikuta, A. Yamada and F. Niikura, Nagoya University, Japan

15:20-15:40  Three Dimensional Photoelastic Stress Analysis on Patient-Tailored Anatomical  
Model of Cerebral Artery  
S. Ikeda, F. Arai and T. Fukuda, Nagoya University, Japan, K. Irie and M. Negoro
Session MP1-2: Robotics and Human Machine Systems  
Conference Room 2

Chairpersons: H. Itoh, Nagoya Institute of Technology  
M. Jung, Samsung Advanced Institute of Technology

13:40-14:00  
Passive Dynamic Autonomous Control of Bipedal Walking  
M. Doi, *Nagoya University, Japan*, Y. Hasegawa and T. Fukuda

14:00-14:20  
Motion Control for Humanoid Robots Based on  
the Motion Phase Decision Tree Learning  
K. Kuwayama and S. Kato, *Nagoya Institute of Technology, Japan*,  
T. Kunitachi and H. Itoh

14:20-14:40  
A Balance Control Method Using Entire Body for Humanoids  

14:40-15:00  
Artificial Odor Discrimination System Using Multiple Quartz-Resonator Sensor and  
Neural Network for Recognizing Fragrance Mixtures  
W. Jatmiko, T. Fukuda and F. Arai, *Nagoya University, Japan*, B. Kusumoputro

15:00-15:20  
Development of Active Icosahedron and its Application to Virtual Clay Modeling  
J. Ochi, T. Hashimoto, J. Tanaka, K. Suzumori and T. Kanda, *Okayama University, Japan*

15:20-15:40  
Estimation of Sleep Cycle and Quality Based on Nonlinear Analysis of  
Heart Rate Variability  
Y. Wakuda, *Nagoya University, Japan*, Y. Hasegawa, T. Fukuda, A. Noda,  
F. Arai and M. Kawaguchi

Session MP1-3 (Organized Session): Nanodynamics & Nanotribology I  
Conference Room 3

Chairpersons: D. B. Bogy, University of California Berkeley  
K. Fukuzawa, Nagoya University

13:40-14:00  
Development of Innovative Machine Elements Using Electron, Atom, Ion and Molecule  
(Synthesis of Thin Film with Super-high Wear Resistance)  
A. Matsumuro, M. Kohzaki, T. Hayashi and H. Ohta, *Nagoya University, Japan*, Y.  
Takahashi

14:00-14:20  
Pin-on-Disk Study of Head Wear in Contact Recording Systems  
S. Kobatake, S. Nakazawa and Y. Kawakubo, *Shinshu University, Japan*

14:20-14:40  
Analytical Study of Nanodynamics of a Flying Head Slider  
Considering the van der Waals Forces for Ultrathin Multilayers  
H. Matsuoka, H. Kokumai, S. Ohkubo and S. Fukui, *Tottori University, Japan*

14:40-15:00  
Mathematical Modeling and Stability Criteria for  
Ultra-Thin Layered Gas-Liquid Interface  
S. Fukui, K. Yamane and H. Matsuoka, *Tottori University, Japan*

15:00-15:20  
MEMS-Based Active-Head Sliders for Flying Height Control in Hard Disk Drives  
K. Suzuki, *Kogakuin University, Japan*
Behavior of Molecularly Thin Lubricant Films for Contact Sliders in Hard Disk Drives
N. Tagawa and A. Mori, Kansai University, Japan

Coffee Break

Technical Sessions
Session MP2-1: Material for Micro-Nano Systems
Chairpersons: K. Yagi, Tokyo Metropolitan University of Health Sciences
T. Niimi, Nagoya University

16:00-16:20
Evaluation of the Tensile Strength Properties by the Difference in the Degree of Polymerization of PVA Gels
K. Yagi, Tokyo Metropolitan University of Health Sciences, Japan, M. Tokuda and T. Ueda

16:20-16:40
Effects on Particle Diameter and Magnetic Force of Magnetic Ultra-Fine Particle that Depend on Surface-Active Agents and pH Condition in Its Synthesis
S. Sugimoto, Mie University, Japan, K. Yagi and M. Tokuda

16:40-17:00
A New Application of Synchrotron Radiation to Carbon Nanotubes - Shape Control and Purification –
Y. Imaizumi, F. Arai and T. Fukuda, Nagoya University, Japan

17:00-17:20
Pressure Sensitive Luminophores for Micro-and Nano-systems
H. Mori, T. Niimi, M. Hirako, H. Uenishi, Nagoya University, Japan

Session MP2-2: Bio-MEMS and μ-TAS
Chairpersons: C. Liu, Dalian University of Technology
D. Byun, Sungkyunkwan University

16:00-16:20
Microfabrication of Functional Microtool Using Photo-Crosslinkable Resin
H. Maruyama, F. Arai and T. Fukuda, Nagoya University, Japan

16:20-16:40
Fabrication of Microfluidic Chip And Its Application
L. Du, C. Liu, Y. Luo, Z. Lou, D. Chu and M. Wen, Dalian University of Technology, China, R. Chen

16:40-17:00
Study on Distribution of Electrokinetic Microfluid in Rectangular Microchannel
Y.-Q. Li, Z. Xu, C. Liu and L.-D. Wang, Dalian University of Technology, China

17:00-17:20
Electrostatic Droplet Formation and Ejection of Colloid
S. Lee, Sungkyunkwan University, Korea, D. Byun, S. J. Han, S. U. Son, Y. Kim and H. S. Ko
**Session MP2-3 (Organized Session): Nanodynamics & Nanotribology II**  
Conference Room 3  
Chairpersons:  
K. Ono, Tokyo Institute of Technology  
N. Tagawa, Kansai University

16:00-16:20  
Fiber Wobbling Method: Novel Method for Measuring Rheological Properties of Molecularily Thin Liquid Films  
K. Fukuzawa, S. Itoh, T. Ando, H. Zhang and Y. Mitsuya, *Nagoya University, Japan*

16:20-16:40  
Thickness and Surface Force Distributions in Spreading Region of Molecularily Thin Lubricant Film on Magnetic Disks  
H. Zhang and Y. Mitsuya, *Nagoya University, Japan*, E. Nakai,  
K. Goto and K. Fukuzawa

16:40-17:00  
Synthesis of Tri-Functional PFPE Lubricant and Its Spreading Characteristics on a Hard Disk Surface  
H. Chiba, Y. Oshikubo and K. Watanabe, *FUJITSU LABORATORIES LTD, Japan*, T. Tokairin and E. Yamakawa

17:00-17:20  
Nanoscale Lubricants for Magnetic Disk Drives  
J. Choi, M. Kawaguchi and T. Kato, *National Institute of Advanced Industrial Science and Technology, Japan*

17:30-19:00  
**Welcome Party**  
**Exhibition room (1st floor)**
November 2 (Tue)
Location: Nagoya Municipal Industrial Research Institute

Technical Sessions

Session TA1-1: Micro Sensors and Precise Measurement
Conference Room 1

Chairpersons: A. Torii, Aichi Institute of Technology
M. Shikida, Nagoya University

9:00-9:20
Development of a 3-DOF Silicon Piezoresistive Micro Accelerometer
D. V. Dao, Ritsumeikan University, Japan, S. Okada, V. T. Dau,
T. Toriyama and S. Sugiyama

9:20-9:40
A Dual Axis Thermal Convective Silicon Gyroscope
T. Shiozawa, Tamagawa Seiki Co., Ltd, Japan, V. T. Dau, D. V. Dao,
H. Kumagai and S. Sugiyama

9:40-10:00
Sensitivity Adjustment Based on Resonant Frequency Change for Tactile Sensing
K. Motoo, F. Arai, Y. Yamada, T. Matsuno, T. Fukuda and H. Matsuura,
Nagoya University, Japan

10:00-10:20
Current Measurement with the Application of a Non-Contact Thermometer
T. Y. Kyaw, A. Torii, K. Doki and A. Ueda, Aichi Institute of Technology, Japan

Session TA1-2: Micro Robotics and Micro System Control
Conference Room 2

Chairpersons: P. Ronkanen, Tampere University of Technology
N. Muramatsu, Nagoya University

9:00-9:20
Numerical Analysis for the Effect of Reynolds Number on Propulsive
Performance of a Submerged Wiggling Micromachine
T. Uchiyama and K. Kikuyama, Nagoya University, Japan

9:20-9:40
Automated Micro Manipulation System with Protein Crystal
K. Ohara, University of Tsukuba, Japan, K. Ohba, T. Tanikawa, M. Hiraki,
S. Wakatsuki, M. Mizukawa and K. Tanie

9:40-10:00
Control Waveforms Applied to Piezo Elements Used in a Miniature Robot
T. Kusakawa, A. Torii, K. Doki and A. Ueda, Aichi Institute of Technology, Japan

10:00-10:20
Self Heating of Piezoelectric Actuators: Measurement and Compensation
P. Ronkanen, P. Kallio and M. Vilkko, Tampere University of Technology, Finland,
H. N. Koivo

10:20-10:40 Coffee Break
**Exhibition & Poster Presentations**

**10:40-12:30**

The poster presentations are divided into two halves. For those with **odd** (uneven) poster numbers, presentation will be between **10:40-11:35** (core time). For those with **even** poster numbers, presentation will be between **11:35-12:30** (core time).

**Session Ex-1: MHS/COE Symposium Posters**

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<th>P-01</th>
<th>Spiral Type Magnetic Micro Actuators for Medical Applications</th>
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<td>M. Sendoh, A. Yamazaki, A. Chiba, M. Soma, K. Ishiyama and K.-I. Arai, Tohoku University, Japan</td>
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<th>P-02</th>
<th>Development of Magnetic Flux Leakage Pipe Inspection Robot Using Hall Sensors</th>
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<td>T. Jin, P. Que and Z. Tao, Shanghai Jiaotong University, China</td>
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<th>P-03</th>
<th>Automatic Fabrication System for Plastic Microfluidic Chips</th>
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<td></td>
<td>X. Wang, L. Wang, C. Liu, L. Ma and Y. Luo, Dalian University of Technology, China</td>
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<th>P-04</th>
<th>Characterization of Microfabricated Microneedles for Sampling</th>
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<td>R. Liu, X. Wang, Z. Zhou and F. Tang, Tsinghua University, China</td>
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<th>P-05</th>
<th>Image-based Visual Servo for Micromanipulation: A Multiple-View and Multiple-Scale Approach</th>
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<td>W. T. Sun and T. C. Chin, Nanyang Technological University, Singapore</td>
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<th>P-06</th>
<th>Controller Design for DC Motor Drives Using Multi-Objective Optimization Evolutionary Algorithms</th>
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<td>L. F. Wang, Texas A&amp;M University, U.S.A.</td>
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<th>P-07</th>
<th>Humanoid Robot Control Based on Reinforcement Learning</th>
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<td></td>
<td>S. Iida and K. Kuwayama, Nagoya Institute of Technology, Japan, M. Kanoh, S. Kato, T. Kunitachi and H. Itoh</td>
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<th>P-08</th>
<th>Humanoid Robot Navigation by Probabilistic Multiple Stereo Matching</th>
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<td>T. Yamaguchi and S. Kato, Nagoya Institute of Technology, Japan, K. Watabe, T. Kunitachi and H. Itoh</td>
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<th>P-09</th>
<th>CPG-Based Motion Generation for Bipedal Robot Using Stochastic Optimization</th>
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<tr>
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<td>K. Taki, Y. Itoh and S. Kato, Nagoya Institute of Technology, Japan, T. Kunitachi and H. Itoh</td>
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<th>P-10</th>
<th>Structured Light 2D Range Finder for Simultaneous Localization and Map-Building (SLAM) in Home Environments</th>
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Session Ex-2: COE Project Posters  
Micro/Nano Processing

P-11  Development of Fabricating Method of Nanoscale Pit with High Aspect Ratio Using Carbon Nanotube Probe  
N. Arima and A. Matsumuro, Nagoya University, Japan

P-12  Mechanical Properties of Thin Films Synthesized by Controlled Substrate Vibration  
T. Suzuki and A. Matsumuro, Nagoya University, Japan

P-13  Characterization of Orientation-dependent Etching Properties of Quartz: Application to 3-D Micromachining Simulation System  
D. Cheng, K. Sato, M. Shikida, Nagoya University, Japan, A. Ono, K. Sato, K. Asaumi and Y. Iriye

P-14  On-Chip Microfabrication of Functional Microtools  
H. Maruyama, F. Arai and T. Fukuda, Nagoya University, Japan

Robotics and Control

P-15  Graph-Dependent Sufficient Conditions for Partial Synchronization of Network Coupled System with Time-delay  
M. Amano, S. Hosoe, Nagoya University, Japan, Zhi-wei Luo

P-16  Vehicle Control of Cooperative Behavior in Non-signalized Intersection  
Y. Ikemoto, T. Fukuda, Nagoya University, Japan, Y. Hasegawa and K. Matsuba

P-17  Study on Brachiation Controller – Realization of Smooth, Continuous Brachiation  
H. Kajima, T. Fukuda, Nagoya University, Japan, and Y. Hasegawa

P-18  Passive Dynamic Autonomous Control of Biped Robot  
M. Doi, T. Fukuda, Nagoya University, Japan, and Y. Hasegawa

P-19  Control of Grasp/Manipulation and Contact Points of an Object with Rolling Contact by Two-fingered Robot Hand with Four Joints  
A. Nakashima, K. Nagase and Y. Hayakawa, Nagoya University, Japan

P-20  Hybrid Nanorobotic Manipulation System inside Scanning and Transmission Electron Microscope  
M. Nakajima, F. Arai, L. Dong and T. Fukuda, Nagoya University, Japan

P-21  Grasping Thin Plate by Robot Hand Using Sensor Embedded Soft Finger  
T. Matsuno, K. Kanada, F. Arai, T. Fukuda and H. Matsuura, Nagoya University, Japan

Mechatronics, Sensing and Actuation

P-22  Integrated Design of Structure/Controller for Head Gimbal Assembly of Spin Stand  
H. Ando, G. Obinata and T. Sakai, Nagoya University, Japan

P-23  Nanotribology of Confined PFPE Lubricant Measured by Fiber Wobbling Method  
S. Itoh, K. Fukuzawa, T. Ando, H. Zhang and Y. Mitsuya, Nagoya University, Japan
P-24  Molecular Dynamics Simulation of Nano Scale Meniscus Formation  
S. Ogata, H. Zhang, K. Fukuzawa and Y. Mitsuya, *Nagoya University, Japan*

P-25  The Estimation Algorithm for Estimate the Motion of a Moving Object with the Wide Angle High Distortion Lens  
Q. Gao, G. Huang, Y. Suematsu, *Nagoya University, Japan*, and J. Yang

P-26  Magnetic Repulsive Force Levitation System  
H. Sasaki, M. Shikida and K. Sato, *Nagoya University, Japan*

P-27  Sensitivity Adjustment Based on Resonant Frequency Change for Tactile Sensing  
K. Motoo, F. Arai, Y. Yamada, T. Matsuno, T. Fukuda and H. Matsuura, *Nagoya University, Japan*

P-28  Ultrasmall Approaching Sensor Using Field Emission of Carbon Nanotube Probe  
P. Liu, F. Arai and T. Fukuda, *Nagoya University, Japan*

Bio/Medical  
P-29  In Vitro Reproduction of Human Cerebral Arteries for Simulating Neurovascular Intervention  
S. Ikeda, F. Arai, T. Fukuda, *Nagoya University, Japan*, M. Negoro and K. Irie

P-30  On-Chip Bio System - Single Cell Analysis by Formation of Air-Liquid Boundary  
A. Ichikawa, F. Arai, T. Fukuda, *Nagoya University, Japan*, and T. Katsuragi

P-31  Alarm Clock System Based on Human Biological Rhythm  
Y. Wakuda, T. Fukuda, A. Noda, F. Arai, *Nagoya University, Japan*, Y. Hasegawa and M. Kawaguchi,

Fluid Flow, Gas Physics  
P-32  Educational Demonstration of Scale Effect in the Micro World  
K. Ikuta and M. Ikeuchi, *Nagoya University, Japan*

P-33  Experimental Study on the Flow Characteristics in Cerebral Aneurysm Model  
Y. Sakai, N. Tanaka, R. Nozue, *Nagoya University, Japan*, H. Isoda and T. Kosugi

P-34  Experimental Analyses of Jet Structures around Clustered Linear-Type Aerospike Nozzle by NO-LIF and PSP  
M. Taniguchi, H. Mori, R. Nishihira and T. Niimi, *Nagoya University, Japan*

P-35  Numerical Simulation of Dust Cloud Formed by Shock-Induced Flow  
K. Doi, I. Men’shov and Y. Nakamura, *Nagoya University, Japan*

P-36  Fundamental Study for Evaporative Cooling System of the Centrifugal Compressor of Micro Gas-turbine  
Y. Hasegawa, K. Kikuyama, S. Maekawa and M. Nishikawa, *Nagoya University, Japan*

P-37  Experiment and Numerical Analysis on Flame Structure in Turbulent Premixed Flame  
N. Hayashi, Y. Nakamura and H. Yamashita, *Nagoya University, Japan*
P-38  Game Theoretic Approach for Aircraft Control Strategies in Wind Shear  
M. Yamaguchi and A. Umemura, Nagoya University, Japan

Materials properties, Deformation, and Fracture
P-39  Material Model for Micro Bonding of Electronic Packaging  
M. Akamatsu and N. Ohno, Nagoya University, Japan

P-40  Microscopic Study of Plastic Deformation in Polycrystalline Metal by Electron Back Scattering Pattern and X-Ray Diffraction Method  
W. Yun, H. Kimura, K. Tanaka and Y. Akiniwa, Nagoya University, Japan

P-41  Micromechanical Modeling for Stress Concentrations around a Broken Fiber in Unidirectional Long Fiber Reinforced Composites  
S. Okabe and N. Ohno, Nagoya University, Japan, and T. Okabe

P-42  Numerical Simulation of Fracture Process of Brittle Materials Based on Micro-Fracture Model  
T. Fujii, Y. Akiniwa, and K. Tanaka, Nagoya University, Japan

P-43  Finite Element Analysis of Deformation Behavior of Textured Thin Films  
S. Machiya, Y. Akiniwa, K. Tanaka, Nagoya University, Japan, and K. Serizawa

12:30-13:30  Lunch

13:30-13:50  Opening Remarks  
Hall

Keynote Lectures  
Chairpersons: K. Sato, Nagoya University  
Y. Mitsuya, Nagoya University

13:50-14:50  “Microfluidics : An Enabling Technology for the Life Sciences”  
Prof. Roland Zengerle, University of Freiburg, Germany

14:50-15:50  “Nanoscale Stability and Active Control in Hard Disk Drives”  
Prof. David B. Bogi, University of California Berkeley, U.S.A.

15:50-16:10  Coffee Break

Plenary Lectures  
Chairpersons: T. Fukuda, Nagoya University  
K. Tanaka, Nagoya University

16:10-16:50  “New Actuators and their Applications --From Nano Actuators to Mega Actuators--”  
Prof. Koichi Suzumori, Okayama University, Japan

16:50-17:30  “Development of a Small Biped Entertainment Robot QRIO”  
Mr. Tatsuzo Ishida, Sony Corporation, Japan

17:30-18:00  “Significance of Micro-NanoMechatronics for an Information-Based Society”  
Prof. Yasunaga Mitsuya, Nagoya University, Japan

18:00-19:00  Reception Party  
Exhibition room (1st floor)
November 3 (Wed) AM  
Location: Nagoya University

10:00-12:00 Laboratory Tour  
Nagoya University  
Furo-cho, Chikusa-ku, Nagoya, Japan  
http://www.nagoya-u.ac.jp/

10:00  Meet at the front gate of Nagoya University  
(Map will be available at the registration desk until Nov. 1.)

10:00 - 10:30 Fukuda Laboratory  
Aeronautics & Mechanical Experiment Building, 2nd floor  
http://www.mein.nagoya-u.ac.jp

10:30 - 11:00 Ikuta Laboratory  
Aeronautics & Mechanical Experiment Building, 1st floor  
http://www.bmse.mech.nagoya-u.ac.jp/

11:00 - 11:30 Sato Laboratory  
Engineering Building 2, South part, 4th floor  
http://www.kaz.mech.nagoya-u.ac.jp/

11:30 - 12:00 Mitsuya Laboratory  
Engineering Building 2, North part, 2nd floor  
http://www.mitsuya.nuem.nagoya-u.ac.jp/

12:00  Breakup

If you want to attend the laboratory tour, please contact the secretariat of MHS by Nov. 1.

October 31 (Sun)  
International Micro Robot Maze Contest  
Location: Nagoya City Science Museum

Program:

12:30  Opening Ceremony  
12:45  Category 0  Teleoperated Micro Racer  
13:30  Category 2  Wireless Autonomous Mobile Robots  
14:15  Exhibition  
14:45  Category 1  Teleoperated Mountain Climbing Micro Robots  
15:30  Panel Discussion  
16:15  Award Ceremony & Closing