

**Conference Program**

# **ISMTII 2007**

**8th International Symposium on  
Measurement Technology and Intelligent Instruments**

**September 24-27, 2007**

**Tohoku University, Sendai, Japan**



**TOHOKU  
UNIVERSITY**

<http://www.ismtii2007.mech.tohoku.ac.jp>

# **8th International Symposium on Measurement Technology and Intelligent Instruments**

## **ISMTII 2007**

**September 24-27, 2007, Tohoku University, Sendai, Japan**

### **Organized by**

The International Committee on Measurements and Instrumentation  
JSPE Technical Committee for Intelligent Nano-Measure  
Korean Society for Precision Engineering  
Chinese Society for Measurement  
Tohoku University, Research Center for Precision Nanosystems

### **In-cooperation with**

The University of North Carolina at Charlotte, Center for Precision Metrology  
SIMTech, Singapore Institute of Manufacturing Technology

### **Financial support by**

The Precise Measurements Technique Promoting Foundation  
Sendai Tourism & Convention Bureau  
JSPS Grant-in-Aid for Scientific Research C 18636002, Planning and Research for Nanoscale  
Measurement

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## FOREWORD

The Conference Committee of the 8th International Symposium on Measurement Technology and Intelligent Instruments (ISMTII 2007) warmly welcome you to this conference being held at Tohoku University, Sendai, Japan, from 24th to 27th of September 2007.

The ISMTII conference has been successfully held 7 times world-widely by ICMI (The International Committee on Measurements and Instrumentation). Japan has organized the third ISMTII conference in 1996. We are happy to host the ISMTII conference again in Japan and believe that ISMTII 2007 will be as successful as the previous ISMTII conferences with the support from ICMI members, ISMTII committee members, authors and attendees.

ISMTII 2007 will include plenary speeches, technical sessions (oral sessions and poster sessions) and industrial exhibitions. The topics will cover a wide range of measurement and instrumentation technologies. An optional technical visit to local industries is also arranged. In addition to ICMI, Japan Society for Precision Engineering (JSPE, Technical Committee of Intelligent Measurement with Nanoscale), Korean Society for Precision Engineering (KSPE), Chinese Society for Measurement (CSM) and Tohoku University are jointly organizing ISMTII2007. The conference is also supported by Center for Precision Metrology of UNC Charlotte and Singapore Institute of Manufacturing Technology. The strong backup from these organizations provides an important assurance for the success of ISMTII 2007.

The financial supports from The Precise Measurements Technique Promoting Foundation and Sendai Tourism & Convention Bureau are highly appreciated.

Tohoku University is celebrating her 100th anniversary. It is our great pleasure to host all of you in this special year of Tohoku University.

Welcome to ISMTII 2007! Welcome to Tohoku University!

Best regards,



**Professor Wei Gao**  
**Chairman of the Conference Committee**  
**ISMTII 2007**

# CONFERENCE COMMITTEE

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K. Watanabe, Hitachi High-Technologies Corporation, Japan

### **Conference Office and Local Organizing Committee**

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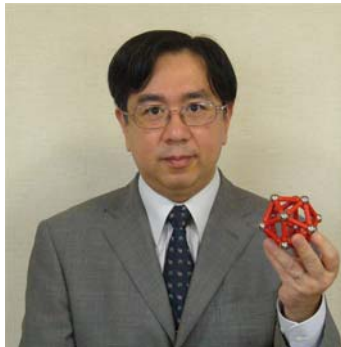
# PLENARY SESSION I

## Plenary Speech 1

**Title:** *"Uncertainty estimation for coordinate metrology: calibration, form deviation and strategy of measurement"*

Coordinate metrology utilizes complex measuring systems such as coordinate measuring machines, laser trackers, and triangulation systems. Therefore, the method of calibrating the coordinate measuring system using artifacts, e.g., the artifact calibration method, is a key technology. In this article, methods of estimating uncertainties using the coordinate measuring system after calibration are formulated. First, a calculation method which extracts the values of kinematic parameters using the least squares method is formulated. Secondly, the uncertainty of the specified measuring task is calculated using the error propagation method. A coordinate measuring system utilizing two line-cameras is analyzed as an example. Moreover, the influences of the form deviations of measured workpiece are calculated in the measurement of the features of a circle.

### **Professor Kiyoshi Takamasu**



Department of Precision Engineering at the University of Tokyo

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Kiyoshi Takamasu was born and brought up in Tokyo, Japan. He graduated from the University of Tokyo in 1977 and obtained Dr. Engineering in 1982. Then he entered Tokyo Denki University as lecturer and associate professor. He went over to United Kingdom in 1990 as research fellow at Warwick University. In 1992 he came back to the University of Tokyo as associate professor. He is currently in charge of the professor in the Department of Precision Engineering at the University of Tokyo. His research interest includes precision metrology, coordinate metrology and nanoscale metrology. During last two decades of research work, he has published about eighty technical papers in domestic and international journals and presented about ninety papers in international conferences. He has been working as the head of working groups for ISO (International Organization for Standardization) and JIS (Japan Industrial Standard) committee in precision measurement. He is the chairman of the technical committee of intelligent measurement with nanoscale in JSPE (Japanese Society of Precision Engineering).

# PLENARY SESSION I

## Plenary Speech 2

**Title:** *"Femtosecond pulse lasers for advanced precision optical metrology"*

Technological potentials and merits of mode-locked femtosecond lasers as a new light source for advanced optical metrology are addressed. Emphasis is on explaining that a train of ultrashort pulses is a phase-locked combination of a large number of monochromatic laser modes evenly spaced over a wide spectral range. In that context, adopting a single femtosecond laser offers many new opportunities of conducting various forms of enhanced interferometric measurements simultaneously to improve the measurement resolution and range at the same time. In addition, the nature of high intensity of a single ultrashort pulse leads to the coherent generation of high harmonics in the extremely ultra-violet and even x-ray regions, and even in the terahertz regions, which will enable one to bring the capability of optical interferometry into the non-optical regime with a wide variety of new possibilities in precision metrology with unprecedented precisions.

### **Professor Seung-Woo Kim**



Korea Advanced Institute of Science and Technology.

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Seung-Woo Kim obtained bachelor degree in mechanical design from Seoul National University in 1978. and received MSc degree from KAIST and Ph.D. from Cranfield University in 1980 and in 1984, respectively. Since 1985 he has been working in the Department of Mechanical Engineering at KAIST. His research interest includes ultra-precision machine design, optical dimensional metrology, and mechatronics systems synthesis. During last two decades of research work, he has published about one hundred technical papers in domestic and international journals and presented about sixty papers in international conferences. He has been working as principal investigator for numerous national and industrial research projects and currently involved in an important national creative research initiative project for the development of next generation precision engineering key technologies. He has also actively been involved in international academic societies for organizing on-time conferences for leading-edge precision engineering technologies. He is a member of SPIE, OSA, eupsen and ASPE.

## PLENARY SESSION II

### Plenary Speech 3

**Title: *"Engineering Nanotechnology: The top down approach"***

Nanotechnology can be defined as “the study, development and processing of materials, devices, and systems in which structure on a dimension of less than 100 nm is essential to obtain the required functional performance.” There are currently two very different approaches to nanotechnology, the first and more classical approach is commonly called engineering nanotechnology. This approach involves using classical deterministic mechanical and electrical engineering principles to build structures with tolerances at levels approaching a nanometer. The other approach, sometimes called molecular nanotechnology, is concerned with self-assembled machines and the like and is far more speculative. At UNC Charlotte’s Center for Precision Metrology we have been working in engineering nanotechnology for more than a decade. We started with molecular manipulation with scanning probe microscopes in the late 1980s and have continued to develop new measurement systems, nano-machining systems, and nano-positioning devices. One of the largest challenges is precision motion control of macroscopic stages. Currently we have three stages under development or modification. The first is the Sub Atomic Measuring Machine (SAMM) which is being modified to provide picometer resolution; the second is the Multi-Scale Alignment and Positioning System (MAPS) initially to be used for nanoimprinting; the third is an Ultra-Precision Vacuum Stage, which is the subject of another paper in this conference. This paper will discuss the first two systems.

#### **Professor Robert J. Hocken**



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Robert J. Hocken received his Ph.D in Physics in 1973. He worked more than ten years in National Institute of Standards and Technology (NIST). In NIST, He served as Chief of Automated Production Technology Division, Center for manufacturing Engineering in 1980-1985, and Chief of Precision Engineering Division in 1985-1988. He then moved to University of North Carolina at Charlotte to establish the Center for Precision Metrology in 1988 as the Norvin Kennedy Dickerson, Jr., Distinguished Professor in Precision Engineering and has been the director of the center since then. He has been awarded various prizes from US government and international academic communities, including Presidential Executive Award, F. W. Taylor Medal. His present research efforts include the areas of nanotechnology, electro-optical instrumentation, atomic force microscopy and optical stethoscopy, and dimensional metrology for Computer Aided Manufacturing.

## PLENARY SESSION II

### Plenary Speech 4

**Title:** *"Achieving traceability and sub-nanometer uncertainty using interferometric techniques"*

Primary length standards are usually Iodine stabilised lasers that produce a stable optical frequency that can be used for interferometry. This laser itself obtains its stable frequency actually from a Fabry-Perot cavity. This illustrates that interferometry appears anywhere where the accurate and traceable measurement of displacements and dimensions is concerned. In interferometric techniques there are sources of systematic deviation that can give unexpected deviations in measurements when uncertainties at the nanometer-level are concerned. In this paper the most often used interferometric measurement techniques - displacement interferometry and surface interferometry - will be treated and their major sources of errors will be discussed.

#### **Dr. Han Haitjema**



Mitutoyo Research Center Europe B.V.  
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Han Haitjema was born and brought up in The Netherlands. He obtained his MSc in Physics at the Utrecht University in 1985. He obtained his PhD at the Delft University of Technology in 1989, then he joined the NMI Van Swinden Laboratory, the National Measurement Institute of The Netherlands. In 1997 he moved to the Eindhoven University of Technology in Delft as assistant professor, and joined the Precision Engineering group of Prof. Schellekens. In 2004 he joined Mitutoyo as the director of Mitutoyo Research Center Europe in Best, The Netherlands. His research interests cover all aspects of dimensional metrology. During almost two decades of research work, he has published many technical papers in domestic and international journals and regularly presented his work in international conferences. During his stay at the Eindhoven University he guided six students towards their PhD in precision dimensional metrology. He is chairman of the Dutch standardisation committee for product geometry, corresponding member of CIRP (The International Academy for Production Engineering) and member of Euspen (European Society of Precision Engineering and Nanotechnology).

# GUIDELINES

## **1. Official Language**

The official language of ISMTII 2007 is English. All presentations including Q&A should be delivered in English.

## **2. Guideline for Participants**

### **2.1 Conference Venue**

Lecture Rooms Building B, Kawauchi Kita Campus, Tohoku University  
Multimedia Education and Research Complex, Kawauchi Kita Campus, Tohoku University

[http://www.ismtii2007.mech.tohoku.ac.jp/conference\\_venue.htm](http://www.ismtii2007.mech.tohoku.ac.jp/conference_venue.htm)

### **2.2 Registration**

Location of Registration:

Secretary and Computer Room at Lecture Rooms Building B.

Time of Registration:

Sept. 24, 2007 17:00 to 18:30PM

Sept. 25, 2007 08:30 to 09:40AM

Sept. 26, 2007 08:30 to 09:10AM

Telephone: +81-22-261-5070

Fax: +81-22-261-5070

### **2.3 Internet Service and International Telephone**

Internet Service will be provided during the conference at the Secretary and Computer Room.

### **2.4 Conference Kit**

Conference kit, which contains final program, conference proceedings, name badge, tickets for social program and lunches, official receipt, will be provided to participants during check in at the Registration/Information Desk.

## **3. Guideline for Presenters**

### **3.1 Guideline for Presenters in Oral Sessions**

- 1) The presenters and session chairs are asked to keep to the paper sequence as shown in the Final Program. By following this predefined schedule, participants can switch between sessions without missing the particular papers of interest.
- 2) The presentation time for each presenter is twenty minutes. The session chair(s) should allow the presenter for a fifteen (15)-minute presentation and leave five (5) minutes for discussions. All presenters are requested to report their attendance to the session chair ten (10) minutes before the session begins.
- 3) Notebook PCs and LCD projectors will be available in every session room.

Presenters are urged to prepare their files in MS PowerPoint format (Windows XP) on a USB and copy into the PC at session room before the session begins. Our session aids will assist the presenters to copy the file. If you wish to use your own notebook PC, please open the file before your presentation time.

- 4) For unexpected events that cannot be handled on the spot, you may request through session chairs, session aids or make a direct notification to the Conference Secretary Desk.

### **3.2 Guideline for Presenters in Poster Sessions**

- 1) Poster presentations are expected to adhere to the same high standards as oral presentations. That is, they should contain significant technical results and data together with their interpretation without commercialism. A good format to follow is:
  - \* a brief introduction
  - \* experimental detail
  - \* results
  - \* conclusion
- 2) The poster sessions will be held on Tuesday, September 25 and Wednesday, September 26, from 14:20 to 15:20. Authors should be present during the session to meet with conference participants regarding the content of their poster.
- 3) A poster board, together with thumbtacks, tape, etc. will be provided in the poster presentation area.
- 4) The presentation board will be available for you to organize your poster on Tuesday, September 25 and Wednesday, September 26 between 12:00 and 14:00 pm. Please attach your poster 10 minutes before the poster session starts and remove your poster soon after the session.
- 5) The size of the poster board for each poster presentation is 900mm (W) x1200mm (H). Please make your poster smaller than the size of the poster board.
- 6) The presentation number and paper number will be indicated at the poster board.

Please direct any further questions to conference secretary of ISMTII2007.

## ISMTII 2007 Timetable

Sept. 24, 2007	Sept. 25, 2007					
	08:30-09:40	Registration				
	09:40-10:10	Opening Ceremony				
	10:10-11:30	Plenary Session I: Plenary Speech 1 Plenary Session I: Plenary Speech 2				
	11:30-13:00	Lunch Break				
Registration (17:00-18:30)	13:00-14:00	OS1-1 (Invited Session 6)	OS2-1 (Invited Session 2)	OS3-1 (Invited Session 12)	OS4-1 (Invited Session 8)	OS5-1 (Invited Session 10)
	14:00-14:20	Coffee Break				
Welcome Party at Tohoku Univ. (18:30-20:00)	14:20-15:20	Poster Session 1				
	15:20-16:40	OS1-2 (Invited Session 6)	OS2-2 (Invited Session 2)	OS3-2 (Invited Session 12)	OS4-2 (Invited Session 8)	OS5-2 (Invited Session 10)
	16:40-17:00	Coffee Break				
ICMI Member Meeting at Tohoku Univ. (20:00-21:00)	17:00-18:20	OS1-3 (Invited Session 6)	OS2-3 (Ordinary Session)	OS3-3 (Ordinary Session)	OS4-3 (Invited Session 8)	OS5-3 (Ordinary Session)
	Barbecue Party at Akiu Woody Park (19:00-20:30)					

Industrial Exhibition

## ISMTII 2007 Timetable

Sept. 26, 2007						Sept. 27, 2007		
08:30-09:10	Registration					Industrial Exhibition	Technical Tour (Optional) (08:00-18:00)	
09:10-10:10	OS1-4 (Invited Session 4)	OS2-4 (Ordinary Session)	OS3-4 (Invited Session 11)	OS4-4 (Invited Session 1)	OS5-4 (Invited Session 9)			
10:10-10:30	Coffee Break							
10:30-11:30	OS1-5 (Ordinary Session)	OS2-5 (Ordinary Session)	OS3-5 (Invited Session 11)	OS4-5 (Invited Session 1)	OS5-5 (Invited Session 9)			
11:30-13:00	Lunch Break							
13:00-14:00	OS1-6 (Invited Session 5)	OS2-6 (Ordinary Session)	OS3-6 (Ordinary Session)	OS4-6 (Invited Session 7)	OS5-6 (Ordinary Session)			
14:00-14:20	Coffee Break							
14:20-15:20	Poster Session 2							
15:20-16:20	OS1-7 (Invited Session 5)	OS2-7 (Ordinary Session)	OS3-7 (Ordinary Session)	OS4-7 (Invited Session 7)	OS5-7 (Ordinary Session)			
16:20-16:40	Coffee Break							
16:40-18:00	Plenary Session II: Plenary Speech 3 Plenary Session II: Plenary Speech 4							
Conference Banquet at Sendai Excel Hotel Tokyu (19:00- 21:00)								



## ISMTII 2007 Technical Program - September 25, 2007

08:30-09:40	<b>Registration @ Secretary Room/Computer Room in Lecture Rooms Bldg. 1F</b>		
09:40-10:10	<b>Opening Ceremony @ Room M206 in Multimedia Research and Education Complex</b>		
10:10-10:50	<b>Plenary Session I @ Room M206 in Multimedia Research and Education Complex</b>		
10:50-11:30	<b>Chair: Prof. Liangchi Zhang, The University of Sydney, Australia</b>		
11:30-13:00	<b>Lunch Break @ Cafeteria of Tohoku Univ.</b>		
	<b>Room 1-B102</b>	<b>Room 2-B103</b>	<b>Room 3-B202</b>
	<b>OS1-1 Chair: Prof. Y. Gao</b> <b>Online and in-process measurement I</b> <b>(Invited Session 6)</b>	<b>OS2-1 Chair: Prof. S. L. Zhang</b> <b>Interferometers and laser self-mixing</b> <b>interferometers I (Invited Session 2)</b>	<b>OS3-1 Chair: Prof. Peter Rolfe</b> <b>Sensors and instruments for medical and</b> <b>biological measurement I (Invited Session 12)</b>
13:00-13:20	OS1-1-1 (I-06-02) Online Measurement of Micro-aspheric Surface Profile with Compensation of Scanning Error  A. Shibuya, Y. Yoshikawa, Y. Arai and W. Gao	OS2-1-1 (I-02-01) Heterodyne Interferometric Method for Reducing Stray Light Induced Uncertainty in Grating Diffraction Efficiency Measurement Lei Shi and Lijiang Zeng	OS3-1-1 (I-12-01) Development of Electrochemical Sensor Based Healthcare Chip as Home Medical Care Devices  Madoka Takai, Kazuhiko Ishihara, and Yasuhiro Horiike
13:20-13:40	OS1-1-2 (I-06-03) In-situ Monitoring of Manufacturing Processes via Impedance  Shih Fu Ling	OS2-1-2 (I-02-02) Development of a Simple Laser System for Simultaneously Measuring Four Degree-of-Freedom Geometric Errors of a Linear Stage Q. B. Feng, B. Zhang and C. F. Kuang	OS3-1-2 (I-12-02) Analysis of Lateral Resolution Improvement for Fluorescence Microscopy using Standing Evanescent Light S. Takahashi, S. Okada, H. Nishioka, S. Usuki and K. Takamasu
13:40-14:00		OS2-1-3 (I-02-03) Laser Diode Self-mixing Interference based on Phase Measurement Method Ming Wang and Dongmei Guo	OS3-1-3 (I-12-09) Direct Measurement of NO in Biological Samples  S. Mochizuki, M. Goto, Y. Ogasawara and F. Kajiya
14:00-14:20	<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		
14:20-15:20	<b>Poster Session 1 &amp; Industrial Exhibition @ Lecture Rooms Bldg. 2F</b>		
	<b>OS1-2 Chair: Prof. Shih-Fu Ling</b> <b>Online and in-process measurement II</b> <b>(Invited Session 6)</b>	<b>OS2-2 Chair: Prof. Q. B. Feng</b> <b>Interferometers and laser self-mixing</b> <b>interferometers II (Invited Session 2)</b>	<b>OS3-2 Chair: Prof. F. J. Shiou</b> <b>Sensors and instruments for medical and</b> <b>biological measurement II (Invited Session 12)</b>
15:20-15:40	OS1-2-1 (I-06-04) Dynamic Characteristics and Identifications of Hydraulic Piping Devices L. L. Han, T. T. Tsung, S. H. Wang, T. Y. Lin	OS2-2-1 (I-02-05) A Novel Laser Feedback Interferometer for Metrology of Large Range Displacement Wei Mao and Shulian Zhang	OS3-2-1 (I-12-03) Sensors & Instruments for Continuous In Vivo Monitoring of the Ventilated Newborn Peter Rolfe, Fabio Scopesi and Giovanni Serra
15:40-16:00	OS1-2-2 (I-06-06) An Optical and Confocal Microscopic System for Nano-stereolithography Using Evanescent Light Y. Kajihara, T. Takeuchi, S. Takahashi and K. Takamasu	OS2-2-2 (I-02-06) Eliminate of the Nonlinearity in Heterodyne Interferometer Wenmei Hou, Liyan Shen, Xiao Ren	OS3-2-2 (I-12-04) On the Measurement of the Effective Refractive Index of Biological Colloids A. Garcia-Valenzuela, C. Sánchez-Pérez, A. Reyes-Coronado and R. G. Barrere
16:00-16:20	OS1-2-3 (I-06-07) Optical Measuring Systems and Technologies for Some Urgent Tasks in Industry and Science  Yuri V. Chugui	OS2-2-3 (I-02-07) Characterizing the Thermal Properties of Solid Materials with Weakly Absorption by the Transient Thermal Grating Method X. D. Xu and X. J. Liu	OS3-2-3 (I-12-05) Surface Plasmon Resonance Bio-Sensor With Full Field Phase Detection  Ju-Yi Lee, Teng-Ko Chou, Hsueh-Ching Shih and Cheng-Chih Hsu
16:20-16:40	OS1-2-4 (I-06-13) Development of Ultra Precision Gear Measuring Instrument/UPGM H. Ogasawara, N. Maeda, T. Hayashi	OS2-2-4 (I-02-08) Aspheric Surface Testing using a Partial Compensation Lens Qun Hao and Qidong Zhu	OS3-2-4 (I-12-08) Study on the Intravenous Lung Assist Device (ILAD) Using PZT Actuators and PVDF Sensors G. B. Kim, S. J. Kim, Y. C. Lee, C. U. Hong, H. S. Kang, J. S. Kim, S. Z. Kim, S. J. Yoon and M. H. Kir
16:40-17:00	<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		
	<b>OS1-3 Chair: Prof. Yuri V. Chugui</b> <b>Online and in-process measurement III</b> <b>(Invited Session 6)</b>	<b>OS2-3 Chair: Prof. P. Cai</b> <b>Optical metrology &amp; image processing I</b> <b>(Ordinary Session)</b>	<b>OS3-3 Chair: Prof. O. B. Abouelatta</b> <b>Advanced micro/nano-positioning</b> <b>(Ordinary Session)</b>
17:00-17:20	OS1-3-1 (I-06-08) Use of Air Beam for In-Process Optical Measurement in Precision Machining  Y. Gao, K. Xiao and Y.S. Chan	OS2-3-1 (ismtii179) High Speed Micro Three-dimensional Surface Profilometry using DMD-based Two-frequency Moire Fourier Transform Projection (FTP) Liang Chia Chen, Chia Hung Cho	OS3-3-1 (ismtii217) A Study on Dynamic Performance of Precise XY Stages Using Real-Time Input Shaping  S. W. Park, S. W. Hong, H. S. Choi and W. E. Singhose
17:20-17:40	OS1-3-2 (I-06-10) A Lateral Shearing Interferometer Based on Use of Birefringence Plate for Ultra Precision Surface Measurement X. Liu and Y. Gao	OS2-3-2 (ismtii077) New Approach to Fringe Pattern Analysis Obtained by Scanning Polished Metal Cylinders with Gaussian Beam  Ryszard Jabłoński, Jerzy Małowski	OS3-3-2 (ismtii218) Adaptive Identification of Hysteresis and Creep in Piezoelectric Stack Actuators  J. Minase, T-F. Lu and B. Cazzolato
17:40-18:00	OS1-3-3 (I-06-11) Development and Evaluation of a Non-contact on-Machine Profile Measurement System using a Compact Laser Probe Ryo Kobayashi, Shin-ya Morita, Yutaka Watanabe, Yoshihiro Uehara, Weimin Lin, Taketoshi Mishima, Hitoshi Ohmori	OS2-3-3 (ismtii231) Theoretical Study on Self-calibration for the Wide-range Laser Auto-collimation Method  Hiroki Shimizu and Osamu Hayashi	OS3-3-3 (ismtii196) Performance Evaluation of Ultra-Precision Motion Controlled Positioning Stage  Eric S. Buice, Stuart T. Smith, Robert J. Hocken, David L. Trumper and David Otten
18:00-18:20	OS1-3-4 (I-06-14) Measurement Method for Micro-cavity Based on Improved MAP Algorithm Jiwen Cui, Jiubin Tan, Qian Shi	OS2-3-4 (ismtii057) Direct Measurement of Spindle Error Motion using Regular Crystalline Lattice and Scanning Tunneling M. Aketagawa, P. Chaikool and E. Okuyama	OS3-3-4 (ismtii066) Development of a Closed Loop Micro-/Nano-positioning Stage with Small Tilting Angles Fang Jung Shiou, Chao Jung Chen, Huay Chung Liou and Po Huai Chang
19:00-20:30	<b>Barbecue Party @ Akiu Woody Park</b>		

# ISMTII 2007 Technical Program - September 25, 2007

<b>Registration @ Secretary Room/Computer Room in Lecture Rooms Bldg. 1F</b>		<b>08:30-09:40</b>
<b>Opening Ceremony @ Room M206 in Multimedia Research and Education Complex</b>		<b>09:40-10:10</b>
<b>Plenary Speech 1: "Uncertainty Estimation for Coordinate Metrology: Calibration, Form Deviation and Strategy of Measurement", Prof. Kiyoshi Takamasu, The University of Tokyo, Japan</b>		<b>10:10-10:50</b>
<b>Plenary Speech 2: "Femtosecond Pulse Lasers for Advanced Precision Optical Metrology", Prof. Seung Woo Kim, Korea Advanced Institute of Science and Technology, Korea</b>		<b>10:50-11:30</b>
<b>Lunch Break @ Cafeteria of Tohoku Univ.</b>		<b>11:30-13:00</b>
<b>Room 4-B203</b>	<b>Room 5-B204</b>	
<b>OS4-1 Chair: Dr. M. Krystek</b> <b>Precision measurements for micro- and nanotechnology I (Invited Session 8)</b>	<b>OS5-1 Chair: Prof. K.C. Fan</b> <b>Sensors for intelligent robot I (Invited Session 10)</b>	
OS4-1-1 (I-08-04) Air refractive Index Compensation in Length Measurements by Optical Interferometry  K. Meiners Hagen and A. Abou Zeid	OS5-1-1 (I-10-05) A Robotic Facial Expression Recognition System Using Real-Time Vision System  Kai Tai Song, Meng Ju Han, Fuh Yu Chang and Shuo Hung Chang	<b>13:00-13:20</b>
OS4-1-2 (I-08-02) Dimensional Measurements for Micro-and Nanotechnology  G. Dai, F. Pohlenz, H U. Danzebrink and L. Koenders	OS5-1-2 (I-10-06) Freeform Surface Measurement from a Single Encoded Image Captured by a Camera with Varying Parameters  Rong Sheng Lu, Zhi Jian Liu, Xue Ming Dang, Peng Hao Hu	<b>13:20-13:40</b>
OS4-1-3 (I-08-03) Recent Advances in our Research on Ultrahigh Resolution Laser Confocal Microscopy Jiubin Tan and Jian Liu	OS5-1-3 (I-10-03) Development of A Flexible Temperature Sensor Array System  Bonnie T. Chia, Duo Ru Chang, Hsin Hung Liao, Yao Joe Yang, Wen Pin Shih, Fu Yu Chang and Kuang Chao Fai	<b>13:40-14:00</b>
<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		<b>14:00-14:20</b>
<b>Poster Session 1 &amp; Industrial Exhibition @ Lecture Rooms Bldg. 2F</b>		<b>14:20-15:20</b>
<b>OS4-2 Chair: Dr. G. Dai</b> <b>Precision measurements for micro- and nanotechnology II (Invited Session 8)</b>	<b>OS5-2 Chair: Prof. Ryszard Jabłoński</b> <b>Sensors for intelligent robot II (Invited Session 10)</b>	
OS4-2-1 (I-08-01) Reliable Detection of Periodic Micro Structures on Open Surfaces F. Härtig, M. Krystek and S. Klein	OS5-2-1 (I-10-04) Signal Detection and Control of an Intelligent Robot  F.C. Wang, H.M. Lin, P.K. Chen, F.Y. Chang and K.C. Fan	<b>15:20-15:40</b>
OS4-2-2 (I-08-05) The Assessment of Functional Properties of Surfaces with Morphological Operations Michael Dietzsch, Sophie Gröger, Marco Gerlach, Michael Krystek	OS5-2-2 (I-10-01) A Large Area Temperature and Tactile Sensing Array  M. Y. Cheng, W. Y. Chang, L. C. Tsao, S.A. Yang, Y. J. Yang, W. P. Shih, F. Y. Chang, S. H. Chang and K. C. Fan	<b>15:40-16:00</b>
OS4-2-3 (I-08-06) The Influence of Form Deviations and Surface Topography of Micro-components on the Uncertainty of their Geometrical Parameters Michael Neugebauer, Michael Krystek	OS5-2-3 (I-10-02) Fabrication and Characterization of Electro-Active Polymer for Flexible Tactile Sensing Array  L. C. Tsao, D. R. Chang, W. P. Shih and K. C. Fan	<b>16:00-16:20</b>
OS4-2-4 (I-08-07) Ultra High Accuracy Thermal Expansion Measurements with PTB's Precision Interferometer René Schödel	OS5-2-4 (I-10-07) Development of an Optical Accelerometer for Low Frequency Vibration Using DVD Pickup Head Y. C. Liu, K. C. Fan, C. L. Chu, C. A. Werner and G. Jäger	<b>16:20-16:40</b>
<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		<b>16:40-17:00</b>
<b>OS4-3 Chair: Prof. Jiubin Tan</b> <b>Precision measurements for micro- and nanotechnology III (Invited Session 8)</b>	<b>OS5-3 Chair: Prof. G. Varga</b> <b>Applied sensor technology (Ordinary Session)</b>	
OS4-3-1 (I-08-08) Tactile and Optical Microsensors - Test Procedures and Standards  Ulrich Neuschaefer Rube, Michael Neugebauer, Wiebke Ehrig, Markus Bartscher and Uwe Hilpert	OS5-3-1 (ismtii098) Advanced Measurement Methods of Geometric Object Properties Using Airborne Ultrasound  H. Schweinzer, G. Kaniak, J. Kellner	<b>17:00-17:20</b>
OS4-3-2 (I-08-10) Simulation of Light Scattering from Nanostructured Surfaces  A. Tausendfreund, S. Patzelt, S. Simon, G. Goch	OS5-3-2 (ismtii139) Measurement of Acoustic Emission Wave by Using Optical Fiber Sensor during Microsecond Discharge  Y. Akematsu, A. Hirao, H. Takezawa, K. Kageyama, N. Mohri and H. Murayama	<b>17:20-17:40</b>
OS4-3-3 (I-08-11) Novel Nano Fabrication using an Atomic Force Microscope Controlled by Haptic Device Human Interface F. Iwata, Y. Ishizu, K. Ohara, K. T. Miura, H. Aoyama and T. Ushiki	OS5-3-3 (ismtii136) Predictive Measurement Method for Time Grating Displacement Sensor  Liu Xiaokang, Fei Yetai, Peng Donglin and Wang Xianquan	<b>17:40-18:00</b>
OS4-3-4 (I-08-12) Characterization and Manipulation of Boron Nanowire inside SEM M. Chang, C.H. Lin and J.R. Deka	OS5-3-4 (ismtii205) Intelligent Profile Measurement for Wide-Area Resist Surface Using Multi-Sensor AFM System Shujie Liu, Kentaro Watanabe, Satoru Takahashi, Kiyoshi Takamasu	<b>18:00-18:20</b>
<b>Barbecue Party @ Akiu Woody Park</b>		<b>19:00-20:30</b>

# ISMTII 2007 Technical Program - September 26, 2007

Registration @ Secretary Room/Computer Room in Lecture Rooms Bldg. 1F			
08:30-09:10	Room 1-B102	Room 2-B103	Room 3-B202
	<b>OS1-4 Chair: Dr. C. H. Park</b> <b>Measurement method of motion and machining errors (Invited Session 4)</b>	<b>OS2-4 Chair: Prof. Liang-Chia Chen</b> <b>Optical metrology &amp; image processing II (Ordinary Session)</b>	<b>OS3-4 Chair: Dr. T. Takatsuji</b> <b>Traceable dimensional metrology I (Invited Session 11)</b>
<b>09:10-09:30</b>	OS1-4-1 (I-04-01) Compensation of 3-DOF Motion Errors of a 1-Axis Linear Air Bearing Stage with Active Magnetic Preload S. K. Ro, S. Kim, Y. Kwak and C. H. Park	OS2-4-1 (ismtii037) Study on the Phase Unwrapping Method with Colored Encoded Grating Pattern in 3-Dimension Profile Measurement B. Li, Z. D. Jiang and X. Q. Wang	OS3-4-1 (I-11-02) ESAD Shearing Deflectometry: A Primary Flatness Standard with Sub-nanometer Uncertainty Ralf D. Geckeler
<b>09:30-09:50</b>	OS1-4-2 (I-04-02) Dynamic Compensation to Modeling Uncertainties and Disturbance of Non-contact Planar Actuator Based on Sliding Mode Observer Song Yi Dian, Wei Gao, Yoshikazu Arai	OS2-4-2 (ismtii243) A Study of the Surface Profile Measurement using a Reference Error Free Interferometer Eiki Okuyama and Tomoaki Yamasuge	OS3-4-2 (I-11-03) Achieving Nanorad Level Stability of Beam Deflection with Scanning Pentaprisms Ralf D. Geckeler
<b>09:50-10:10</b>	OS1-4-3 (I-04-03) Estimation Method for Errors of an Aerostatic Planar XY Stage Based on Measured Profiles Errors J. Hwang, C. Park and S. Kim	OS2-4-3 (ismtii013) 3D Displacement Measurement with Pico-meter Resolution using Single Heterodyne Grating Interferometry Cheng Chih Hsu, Ju Yi Lee, Chyan Chyi Wu and Hsueh Ching Shih	OS3-4-3 (I-11-04) Development of a Grating Disk of a Micro Rotary Encoder for Measurement of Meshing Accuracy of Micro Gears S. Kurokawa and Y. Ariura
<b>10:10-10:30</b>	<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		
	<b>OS1-5 Chair: Prof. M. Numan Durakbasa</b> <b>On-machine &amp; machine tool metrology (Ordinary Session)</b>	<b>OS2-5 Chair: Prof. H. K. Kweon</b> <b>Optical metrology &amp; image processing III (Ordinary Session)</b>	<b>OS3-5 Chair: Prof. M. Komori</b> <b>Traceable dimensional metrology II (Invited Session 11)</b>
<b>10:30-10:50</b>	OS1-5-1 (ismtii083) Machining Accuracy Improvement by Automatic Tool Setting and On machine Verifier Eung Suk Lee, Chan Ho Lee and Sung Chung Kim	OS2-5-1 (ismtii244) Merging Phase Shifting Interferometry with Confocal Chromatic Microscopy Joseph Cohen Sabban	OS3-5-1 (I-11-05) Traceable Dimension Metrology by AFM for Nanoscale Process Control T. Bao
<b>10:50-11:10</b>	OS1-5-2 (ismtii257) Advanced Consistent On-machine Detecting, Sensing, Imaging, Monitoring, Control, Feedback on Tooling and Machining for Milli to Micro-scaled Phenomenon T. Naruse, H. Ohmori, Y. Uehara, Y. Watanabe, K. Katahira, M. Mizutani, K. Andou and C. Sasak	OS2-5-2 (ismtii003) Positional Detection in Grating Mosaic Based on Image Processing of Far-field Diffraction Intensity Patterns in Two Wavelengths Yao Hu, Lijiang Zeng	OS3-5-2 (I-11-06) Test Artefacts for the Verification of Optical Digitizers O. Sato, S. Osawa, T. Takatsuji, M. Murakami and R. Harada
<b>11:10-11:30</b>	OS1-5-3 (ismtii215) CCD Camera Measurements for Examination of Wear of Cutting Tools I. Dudas and G. Varga	OS2-5-3 (ismtii015) A Comparison of Image Registration Methods Used for Printed Circuit Board Inspection Shih Chieh Lin, Chih Ting Chen and Chih Hsien Chou	OS3-5-3 (I-11-07) Application of Si/SiO <sub>2</sub> Superlattice in Nanometric Lateral Scale - Revision of Uncertainty Evaluation Method in Pitch Measurement I. Misumi, S. Gonda, K. Yoshizaki, H. Tanaka, O. Sato, K. Sugawara and T. Kurosawa
<b>11:30-13:00</b>	<b>Lunch Break @ Cafeteria of Tohoku Univ.</b>		
	<b>OS1-6 Chair: Dr. H. Huang</b> <b>Nanomechanical testing I (Invited Session 5)</b>	<b>OS2-6 Chair: Dr. J. Song</b> <b>Advanced surface evaluation I (Ordinary Session)</b>	<b>OS3-6 Chair: Prof. S. Zahwi</b> <b>Uncertainty, traceability &amp; calibration I (Ordinary Session)</b>
<b>13:00-13:20</b>	OS1-6-1 (I-05-08) Temperature Characterization for Nano-polishing of PCD Composites Y. Chen, L. Zhang and J. Arsecularatne	OS2-6-1 (ismtii032) Quantifying Touch-feel Perception: Tribological Aspects X. Liu, Z. Cai, Z. Yue, M.K. Lau and D. G. Chetwynd	OS3-6-1 (ismtii031) Kalman Filter for Estimation of a Linear Regression Model with Account of the Regression Vector Error and its Application to Calibration of Mesuring Instrument Ch. Hajiyev
<b>13:20-13:40</b>	OS1-6-2 (I-05-03) Thermal Detection using Dual Resonance Mode of Probe Sang Jin Kim, Takahito Ono, Masayoshi Esashi and Akio Ishijima	OS2-6-2 (ismtii211) Analysis of Digitizing and Traditional Measuring System at Surface Measurement of Lids B. Barisic, M. Rucki and Z. Car	OS3-6-2 (ismtii088) Numerical Evaluation of Measurement Uncertainty by a Monte Carlo Method G. Wübbeler, M. Krystek and C. Elster
<b>13:40-14:00</b>	OS1-6-3 (I-05-11) Measurement and Characterization of Surface Quality in Fast Tool Servo Machining of Optical Microstructures C.F. Cheung, L.B. Kong, W.B. Lee, b and S. To	OS2-6-3 (ismtii236) High Precision Measurement and Evaluation of the Fine Mould Surface Structures M. Numan Durakbasa, P. Herbert Osanna, M. Emin Yurci, Anil Nomak Akdogan	OS3-6-3 (ismtii197) Research on Specification Uncertainty in the Next Generation GPS Wenlong Lu, Xiaojun Liu, Xiangqian Jiang and Zhengqao Xu
<b>14:00-14:20</b>	<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		
<b>14:20-15:20</b>	<b>Poster Session 2 &amp; Industrial Exhibition @ Lecture Rooms Bldg. 2F</b>		
	<b>OS1-7 Chair: Prof. C. F. Cheung</b> <b>Nanomechanical testing II (Invited Session 5)</b>	<b>OS2-7 Chair: Prof. X. Liu</b> <b>Advanced surface evaluation II (Ordinary Session)</b>	<b>OS3-7 Chair: Prof. I. Dudas</b> <b>Uncertainty, traceability &amp; calibration II (Ordinary Session)</b>
<b>15:20-15:40</b>	OS1-7-1 (I-05-07) Abrasive Dispersing in Ultra-fine Diamond Tools J. Liu, H. Huang and X.P. Xu	OS2-7-1 (ismtii245) Corrosion Resistance of Coated Steel Sheets Polished at Different Surface Roughness Grades G. F. El Gendey, O. B. Abouelatta, M. Zaki and S. M. A. Rassou	OS3-7-1 (ismtii223) Traceable Nanometrology Realized by Means of Nanopositioning and Nanomeasuring Machine G. Jäger, E. Manske, T. Hausotte, R. Mastlylo, N. Dorozhovets, N. Hofmann
<b>15:40-16:00</b>	OS1-7-2 (I-05-05) Nanomechanical Properties and Nanostructure of CMG and CMP Machined Si Substrates B. L. Wang, H. Huang, J. Zou and L. Zhou	OS2-7-2 (ismtii191) Topography Measurements for Determining the Decay Factors in Surface Replication J. Song, P. Rubert, A. Zheng and T. Vorburger	OS3-7-2 (ismtii207) Study on Scanning Squareness Measurement Method and Uncertainty Estimation X. Chen and K. Takamasu
<b>16:00-16:20</b>	OS1-7-3 (I-05-10) Development of Piezoresistive Nanocantilevers for Ultra-sensitive Force Detection Y. G. Jiang, T. Ono and M. Esashi	OS2-7-3 (ismtii213) 3D Topography for Drilled Surfaces G. Varga and I. Dudas	OS3-7-3 (ismtii261) Improved Abbe Vertical Metroscope for the Calibration of Gauge Blocks S. Zahwi, M Bahrawy, M Amer and N. Farid
<b>16:20-16:40</b>	<b>Coffee Break @ Multimedia Research and Education Complex</b>		
<b>16:40-17:20</b>	<b>Plenary Session II @ Room M206 in Multimedia Research and Education Complex</b> <b>Chair: Prof. Gerd Jäger, Technical University Ilmenau, Germany</b>		
<b>17:20-18:00</b>			
<b>19:00-21:00</b>	<b>Conference Banquet @ SENDAI EXCEL HOTEL TOKYU</b>		

# ISMTII 2007 Technical Program - September 26, 2007

<b>Registration @ Secretary Room/Computer Room in Lecture Rooms Bldg. 1F</b>		<b>08:30-09:10</b>
<b>Room 4-B203</b>	<b>Room 5-B204</b>	
<b>OS4-4 Chair: Prof. Y. Fujii</b> <b>High precision optical measurement of mass and force I (Invited Session 1)</b>	<b>OS5-4 Chairs: Dr. R. Taymanov, Dr. K. Sapozhnikova</b> <b>Sensors distinguished by enhanced measuring data validity and long lifetime I (Invited Session 9)</b>	
OS4-4-1 (I-01-06) Material Tester Using a Controlled Oscillator and an Inertial Mass  Seiji Hashimoto and Yusaku Fujii	OS5-4-1 (I-09-03) Increasing of the Metrological Reliability of Sensors. New Problems and Ways of Their Solution  K. Sapozhnikova, R. Taymanov	<b>09:10-09:30</b>
OS4-4-2 (I-01-02) Dynamic Metrology – A New Paradigm for Dynamic Evaluation of Measurement Systems  J. P. Hessling	OS5-4-2 (I-09-05) Self-monitoring and Self-calibrating Gas Flow Meter  V. Hans and O. Ricken	<b>09:30-09:50</b>
OS4-4-3 (I-01-04) Dynamic Response Measurement of Head Arm Assembly of a Hard Disk Drive by Numerical Analysis and Experiments Madhusudhana R Parlapalli, Bin Gu, Dong Wei Shu and Yusaku Fujii	OS5-4-3 (I-09-02) Consistency Checking and Combining Measurement Results For A Wireless Sensor Network  M. D. Duta and M. P. Henry	<b>09:50-10:10</b>
<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		<b>10:10-10:30</b>
<b>OS4-5 Chair: Prof. D. W. Shu</b> <b>High precision optical measurement of mass and force II (Invited Session 1)</b>	<b>OS5-5 Chair: Prof. X. Jiang</b> <b>Sensors distinguished by enhanced measuring data validity and long lifetime II (Invited Session 9)</b>	
OS4-5-1 (I-01-05) Dynamic Analysis by FEM for a Measurement System to Observe Viscoelasticity Using Levitation Mass Method T. Yamaguchi and Y. Fujii	OS5-5-1 (I-09-06) Validated Uncertainty Evaluation for Self-validating Sensor  Zhigang Feng, Qi Wang and Katsunori Shida	<b>10:30-10:50</b>
OS4-5-2 (I-01-01) Levitation Mass Method: A Precision Mass and Force Measuring Method  Yusaku Fujii	OS5-5-2 (I-09-01) Approach to Evaluate and Monitor the Piping Degradation  Kyung Ha Ryu, Il Soon Hwang, Na Young Lee, Chang Ho Son and Jin Ho Park	<b>10:50-11:10</b>
OS4-5-3 (I-01-07) Reconsideration of Body Mass Measurement on the International Space Station and beyond  Kazuhito Shimada, Yusaku Fujii	OS5-5-3 (I-09-04) Ultrareliable Measuring Complex for Nuclear Reactor of New Generation  R. Taymanov, I. Druzhinin, K. Sapozhnikova	<b>11:10-11:30</b>
<b>Lunch Break @ Cafeteria of Tohoku Univ.</b>		<b>11:30-13:00</b>
<b>OS4-6 Chair: Dr. Y. Zhang</b> <b>Optical measurements for semiconductor manufacturing I (Invited Session 7)</b>	<b>OS5-6 Chair: Prof. V. Hans</b> <b>Singal processing &amp; Algorithm I (Ordinary Session)</b>	
OS4-6-1 (I-07-05) Experimental Verification for Super-resolution Optical Inspection for Semiconductor Defect by using Standing Wave Illumination Shift S. Usuki, H. Nishioka, S. Takahashi and K. Takamasu	OS5-6-1 (ismtii237) Universal Designed Structures for Strict Pitch Measurements Using Scanning Probe Microscopes  K. Sugawara, O. Sato, K. Yoshizaki, I. Misumi and S. Gonda	<b>13:00-13:20</b>
OS4-6-2 (I-07-02) Optical Detection using Multi-Wavelength Modulation  Boon Ping Ng , Seck Hon Luen, Ying Zhang, Yeng Chai Soh	OS5-6-2 (ismtii263) An Intelligent Design for Foot Orthoses  Sherif E. Hussein	<b>13:20-13:40</b>
OS4-6-3 (I-07-03) An Improved Active Homodyne Detector  H. L. Seck, Y. Zhang and Y. C. Soh	OS5-6-3 (ismtii152) Study on In-process Detection and Diagnosis of Faults Arc Based on Early Sounds Signature and Intermittent Chaos Zhang Ren Cheng, Yang Jian Hong and Du Jian Hua	<b>13:40-14:00</b>
<b>Coffee Break @ Lecture Rooms Bldg. 2F</b>		<b>14:00-14:20</b>
<b>Poster Session 2 &amp; Industrial Exhibition @ Lecture Rooms Bldg. 2F</b>		<b>14:20-15:20</b>
<b>OS4-7 Chair: Prof. M. Dietzsch</b> <b>Optical measurements for semiconductor manufacturing II (Invited Session 7)</b>	<b>OS5-7 Chair: Prof. Sherif E. Hussein</b> <b>Singal processing &amp; Algorithm II (Ordinary Session)</b>	
OS4-7-1 (I-07-04) Improved Accuracy of 2-D Non-contact Range Sensors Using 2-D Lateral Effect Position Sensitive Detecto S. Cui, Y. Zhang, S. Y. Lim, Y. C. Soh	OS5-7-1 (ismtii052) Processing of Complex Modulated Ultrasonic Signals in Gas Flow Metering  O. Ricken, V. Hans	<b>15:20-15:40</b>
OS4-7-2 (I-07-01) Dynamic Behavior of Tuning Fork  Zhao Gang Dong, Ying Zhang and Yeng Chai Soh	OS5-7-2 (ismtii185) Investigation on the Noise Separation in Watt Balance Experiments  W. Zeng, X. Jiang, Paul Scott, L. Blunt	<b>15:40-16:00</b>
OS4-7-3 (I-07-07) Measurement of Oscillating Condition for 3D Probing Accuracy of Microparts using the Laser Trapping Probe for the Nano-CMM M. Michihata, Y. Takaya, T. Hayashi and T. Miyoshi	OS5-7-3 (ismtii095) Advanced Analog-to-Digital Conversion Using Voltage-to-Frequency Converters for Remote Sensors  S. Y. Yurish	<b>16:00-16:20</b>
<b>Coffee Break @ Multimedia Research and Education Complex</b>		<b>16:20-16:40</b>
<b>Plenary Speech 3: "Engineering Nanotechnology: The Top Down Approach", Prof. Robert J. Hocken, The University of North Carolina at Charlotte, USA</b>		<b>16:40-17:20</b>
<b>Plenary Speech 4: "Achieving Traceability and Sub-nanometer Uncertainty Using Interferometric Techniques", Dr. Han Haitjema, Mitutoyo Research Center Europe B.V., The Netherlands</b>		<b>17:20-18:00</b>
<b>Conference Banquet @ SENDAI EXCEL HOTEL TOKYU</b>		<b>19:00-21:00</b>

**ISMII 2007 Poster Session 1 - 14:20-15:20, September 25, 2007**

<b>PS1-1: Precision measurements for micro- and nanotechnology</b>		
PS1-1-1 (I-08-09)	AFM with the Slope Compensation Technique for High-speed Precision Measurement of Micro-structured Surfaces	Y .G. Cui, B. F.Ju, J. Aoki, Y. Arai and W. Gao
PS1-1-2 (I-02-04)	Compact Displacement Measurement System Based on Microchip Nd:YAG Laser with Birefringence External Cavity	Y. Tan and S. Zhang
PS1-1-3 (ismtii206)	New Synthetic Heterodyne Laser Doppler Vibrometer for Measurement of Mechanical Vibrations with Submicron Amplitude	Seonggu Kang, Jongpil La , Heesun Yoon, Dongyoub Choi and Kyihwan Park
PS1-1-4 (ismtii222)	Development of the Precision Stage with Nanometer Accuracy and a Millimeter Dynamic Range	Dong Ho Jeong, Hyun Kyu Kweon and Young Sik Kim
<b>PS1-2: Applied sensor technology</b>		
PS1-2-1 (ismtii007)	Key Technique of Tip Clearance Measurement for Rotational Blades	Y. Z.Ma, F. J. Duan, Y.Z. Zheng, C.S. Ai and S. H. Ye
PS1-2-2 (ismtii150)	Optimal Design of Microaccelerometer	Yen Chu Liang and Yun Ping Sun
PS1-2-3 (ismtii017)	Optical Feedback Effect in Fiber Ring Laser	J. Zhou, M. Wang and D. Han
PS1-2-4 (ismtii033)	Measurement of Strain Induced by Impact with Fiber Bragg Grating	P. Zhu, D. Liu and Y. Lin
PS1-2-5 (ismtii046)	Sensor Dynamic Modeling Based on LS-SVM and NGA	Qi Wang, Zhigang Feng and Katsunori Shida
PS1-2-6 (ismtii053)	Application of Particle Swarm Optimization-Based Digital Beamforming Technique to the Identification of Multiple SAW Tags	Hua Zhu, Qingliang Li, Wenkang Shi
PS1-2-7 (ismtii114)	Study on Oil and Gas Pipeline Leakage Real-time Inspection System Based on Distributed Optical Fiber	Zhou Yan, Jin Shi Jiu, Feng Hao, Zeng Zhou Mo and Qu Zhi Gang
PS1-2-8 (ismtii175)	Effect of Arc Discharge Pressure on Discharge Current in EDM	A. Hirao, S. Tai, H. Takezawa, N. MohriK. Kageyama, H. Murayama, Y. Akematsu
<b>PS1-3: Biomeasurement</b>		
PS1-3-1 (I-12-06)	Study on the Immobilization of Ni-NTA and NTA on PMMA Substrate Base	W. S. Chong, G. B. Kim and C. U. Hong
PS1-3-2 (ismtii260)	A Basic Study of the CNT-Biomolecule Conjugation by Molecular Dynamics Analysis	Se Min Kim and Hyun kyu Kweon
PS1-3-3 (ismtii230)	Lie Detection Experiment Methodology: Infrared Image and Spectrum Analysis	Wenshi Li, Hongge Li, Shengli Lu and Qingquan Hu
PS1-3-4 (ismtii255)	Study of Equilibrium Sense Improvement Displaying Visual Information	G. B. Kim, S. H. Jeong, W. S. Chong, H. S. Kang, S. J. Kim, M. H. Kim, J. W. Hwang and C. U. Hong
<b>PS1-4: Dimensional measurement</b>		
PS1-4-1 (ismtii025)	Development of Measurement System for Accuracy Control in Subsection Manufacture	Fumin Zhang, Xinghua Qu, JianFang Dai and Shenghua Ye
PS1-4-2 (ismtii040)	Study on the Composite Measuring Method for Small Module Gears	J. J. Ding, Z. D. Jiang, B. Li, and J. J. Guo
PS1-4-3 (ismtii048)	Collinear Constraint based Mobile Vision Coordinate Measurement System	Zhijing Yu, Xinxin Li, Xiayan Si, Jigui Zhu, Dongrui He and Qingji Gao
PS1-4-4 (ismtii059)	Measurement of Straightness for Two-dimensional Translatory Stage	N. Sakuta and R. Furutani
PS1-4-5 (ismtii102)	Designing a System of Interferometry Based on DSP	X. Ding, Z. Zhao, Y. Chen and Y. Hou
PS1-4-6 (ismtii106)	Multiple Measurement Techniques for Coordinate Metrology	S. Osawa, O. Sato and T. Takatsuji
PS1-4-7 (ismtii232)	Novel High-Precision Pitch Artifact Using Balls	Masaharu Komori, Sonko Osawa and Osamu Sato
PS1-4-8 (ismtii267)	Refractive Index and Yhickness Determinations Using a Dual-path Mach-Zehnder Interferometer	Shyh Tsong Lin, Tzu Lung Lin
PS1-4-9 (I-11-03)	Achieving Nanorad Level Stability of Beam Deflection with Scanning Pentaprisms	Ralf D. Geckeler
<b>PS1-5: In-process and on-line metrology</b>		
PS1-5-1 (ismtii042)	Study on the Multifunctional Bearing Test-bed for Testing the Limit PV Performance	Yu Jianwei, You Tao and Yu Xiaofen
PS1-5-2 (ismtii049)	Online Stereo Vision Coordinate Measurement System Using on Aircraft Assembly	Zhijing Yu, Xinxin Li, Dongrui He, Jigui Zhu, Xiayan Si, Lei Zhang
PS1-5-3 (ismtii248)	Laser Remote Inspection of Live Contact Wire for Railways	Yu. Chugui, A. Verkhogliad, V. Bazin, V. Kalikin, S. Kalichkin, S. Makarov and I. Vykhristyuk

**ISMTII 2007 Poster Session 1 - 14:20-15:20, September 25, 2007**

<b>PS1-6: Intelligent measurement and instrumentation</b>		
PS1-6-1 (ismtii021)	Flatness-based Control of a Coriolis Mass Flowmeter	H. Röck, Th. Schröder, K. Kolahi and F. Koschmieder
PS1-6-2 (ismtii256)	Fabrication of Micro Tetrahedron Patterns Using Ultra-Precision Shaping System	J. W. Park, S. C. Choi, H. S. Oh, Y. W. Kim, S. W. Kim, C. M. Lee and D. W. Lee
PS1-6-3 (ismtii064)	The Rapid Scanning Measurement with SNOM	M. Shiga and R. Furutani
PS1-6-4 (ismtii079)	Load and Damage Monitoring of Intelligent Structures Based on Optical Fibers	Z. Zhao, L. Guo, W. Li, X. Hong and C. Ma
PS1-6-5 (ismtii127)	Development of a High-Precision Temperature Measurement Instrument Based on Quartz Tuning-Fork Temperature Sensor	J. Xu, B. You and X. Li
PS1-6-6 (ismtii135)	A New Method and Characterization for Pollution Preventing of Camera Window	D. H. Kim, J. Y. Song and M. R. Lee
PS1-6-7 (ismtii171)	Measurement Method for Four Degrees of Freedom using Reflective Diffraction Grating	T. H. Ha, C. W. Lee and J. W. Song
PS1-6-8 (ismtii195)	Development of Durability Test Bench and Experimental Evaluation for Refrigerant Compressor of Automotive Air Conditioning System	J. N. Lee, C. B. Huang, K. J. Jang and C. W. Tsai
<b>PS1-7: Measurement and machining</b>		
PS1-7-1(ismtii065)	Measuring and Machining of Ripples on Silicon Surface with Femtosecond Pulse Laser	Xing Fu, Lingmei Li, Yong Wu, Na Geng
PS1-7-2 (ismtii145)	Straightness Error Compensation for Ultra-Precision Machining Based on a Straightness Gauge	G. Cao and Y. Namba
PS1-7-3 (ismtii199)	R&D of Ray Tracing Simulation Software and Fabrication Technologies Based on VCAD (Volume-CAD) Concept for GRIN Lens	Norihiko Itani, Yutaka Watanabe, Weimin Lin, Yoshihiro Uehara, Shin ya Morita, Taketoshi Mishima, Hitoshi Ohmori and Akitake Makinouchi
PS1-7-4 (ismtii224)	Surface Topography of Chromium Coatings After Pneumatic Ball Peening	A. Dzierwa, P. Pawlus and R Reizer
PS1-7-5 (ismtii262)	A Calculate to Design Circular Flat Aerostatic Bearing with Central Feedhole and Pocket - Using in Coordinate Measuring Machine	Vu Toan Thang, Le Cong Du
<b>PS1-8: Mechanical measurement</b>		
PS1-8-1 (ismtii138)	Research on a Novel Vibration System for Dynamic Balancing Measurement Based on Flexure Hinges Mechanism	Zhao Dingding, Qin Peng, Cai Ping
PS1-8-2 (ismtii043)	Hydraulic Pressure Wave Generator for Performing the Calibration of Hydraulic Components	S. H. Wang, L. L. Han and T. T. Tsung
PS1-8-3 (ismtii081)	The Research of Data Acquisition and Control Method about On-line Measurement System on High Precision of Large Diameter	Biao Wang, Xiaofen Yu and Hanping Zeng
PS1-8-4 (ismtii107)	Online Measurement for Dimensions of Thermal Train Wheel	Yang Yongyue, Deng Shanxi, Hong Zhanyong
PS1-8-5 (ismtii192)	Stability Derivatives Estimation of Unmanned Aerial Vehicle	Yun Ping Sun, Lian Tang Wu and Yen Chu Liang
PS1-8-6 (ismtii204)	Design of a Compliant Micromechanism for Optical-Fiber Alignment	Ya Hui Hu, Kao Hui Lin, Shang Chun Chang and Ming Chang

**ISMTII 2007 Poster Session 2 - 14:20-15:20, September 26, 2007**

<b>PS2-1: Metrology and characterization for materials science</b>		
PS2-1-1 (ismtii266)	Development of Nanometrology for Nanoelectronics: Growth and Characterization of Transition Metal Monolayer Films on Silicon	N.I. Plusnin, V.M. Il'yashenko, S.A.Kitan' and C.V.Krylov
PS2-1-2 (ismtii157)	On the Measurement of Dielectric Constant of Coatings with Capacitance Sensors	A. Guadarrama Santana and A. Garcia Valenzuela
PS2-1-3 (ismtii172)	Broadband Dielectric Properties of the Ba3MnTa2O9 Complex Perovskites	J. W. Chen, B. K. Wang, Jimmy C. Hsu and G. N. Rao
<b>PS2-2: Micro/nano-metrology</b>		
PS2-2-1 (ismtii012)	Quasi-common-path Laser Feedback Interferometers for Precision Measurement of Non-cooperative Targets	Xinjun Wan, Shulian Zhang
PS2-2-2 (ismtii016)	Self-mixing Interferometer Based on Four-Bucket Integration Technique for Micro-Displacement Measurement	Dongmei Guo and Ming Wang
PS2-2-3 (ismtii056)	Phase Modulation Homodyne Interferometer with Picometer Resolution Using Tunable Laser Diode	M. Ishige, F. Matsuura, M. Kawasugi, Y. Hoshino and M. Aketagawa
PS2-2-4 (ismtii082)	Micro-Nanometer Positioning Control of Bimodal Ultrasonic Motor Based on Wavelet Differential Actuation Pattern	Xu Congyu, Yu Xiaofen
PS2-2-5 (ismtii147)	Adaptive Fiber-Optical Sensor System for Pico-Strain and Nano-Displacement Metrology	Roman Romashko, Yuri Kulchin, Salvatore Di Girolamo, Alexei Kamshilin and Jean Claude Launay
PS2-2-6 (ismtii149)	The Development of a Separated Mini-environment	Hui Zhang, Zhen Cai, Kuang Chao Fan
PS2-2-7 (ismtii188)	Signal Denoising of MEMS Microstructure Profile	Kai Hu, Xiangqian Jiang, Xiaojun Liu
PS2-2-8 (ismtii120)	Measurement and Analysis of Radial Error Motion of a Miniature Ultra-high-speed Spindle	K. Fujimaki and K. Mitsui
<b>PS2-3: Optical metrology and image processing</b>		
PS2-3-1 (ismtii036)	Analyzing the Grating Profile Parameters Based on Scanning-electron Microscope Images	Ying Li and Lijiang Zeng
PS2-3-2 (ismtii047)	Machine Vision Based Tracking Control of a Ball-Beam System	Chao Ching Ho and Ching Long Shih
PS2-3-3 (ismtii070)	A Point Matching Method for Stereovision Measurement	Lu Naiguang, Dong Mingli, Sun Peng, Guo Junwei
PS2-3-4 (ismtii113)	Photogrammetric Measurement of Deformation of Large Deployable Mesh Microwave Antenna	Dong Mingli, Deng Wenyi, Sun Yunan, Wang Yongqiang
PS2-3-5(ismtii125)	Photogrammetric Method with Distance Constraint for Profile of Inflatable Space Antenna	Deng Wenyi, Dong Mingli, Lu Naiguang and Wang Yongqiang
PS2-3-6 (ismtii130)	A Research on the Colorimetric Characterization of Digital Camera	Jia Guoxin, Qu Xinghua, Gong Hui, Ye Shenghua
PS2-3-7 (ismtii153)	Autofocusing System for Optical Microscope Based on DVD Pick-up Head	C.L. Chu, C.Y. Chung, C.M. Tseng, Y.C. Lin, C.F. Li and K.M. Yeh
PS2-3-8 (ismtii165)	Automatic Inspection System for Grain Size Distribution Using a Commercial Grind Gauge	M. Yoshida, K. Yanagi, M. H. Hafiz and M. Hara
<b>PS2-4: Precision metrology</b>		
PS2-4-1 (ismtii203)	Measurement Method for Measuring Circular Motion Error of CNC Machine Tools	Kao Hui Lin, Ya Hui Hu, Chuan An Chan and Ming Chang
PS2-4-2 (ismtii250)	Optical-Electronic System for Remote Measurements of Shifts and Deformations in Huge Mechanical and Engineering Constructions	Yu. Chugui, A. Verkhogliad, V. Bazin, V. Kalikin, S. Kalichkin, S. Makarov and S. Savkov
PS2-4-3 (ismtii027)	Incompressible and Analytical Study on a Basic Model of Out-Pump Type Complex Journal Gas Bearings	S. Yao, S. M. Barrans and L. Blunt
PS2-4-4 (ismtii084)	Research of the Capacitance Automatic Measurement Method of the Thickness of Liquid Film on Plat Form	Xu Shuxing, Wang Baoguang and Zheng Yizhong
PS2-4-5 (ismtii142)	Calibration Technology of the Articulated Arm Flexible CMM	X. Y. Wang, S. G. Liu, G. X. Zhang, B. Wang and L. F. Guo
PS2-4-6 (ismtii178)	DLC Coating Effect of WC Molding Core for Glass Molding Lens	Hyun Uk Kim, Sang Hwa Jeong, Sang Suk Kim, Hye Jeong Kim and Jeong Ho Kim
PS2-4-7 (ismtii242)	Theory and Application Research of Dynamic Measuring Accuracy	Yetai Fei and Minlan Jiang
PS2-4-8 (ismtii002)	Research on the Application Technology of Linear CCD in Dynamic Measuring Molten Tin Glass Surface	Yu Yongxin and Xu Shuxing

**ISMTII 2007 Poster Session 2 - 14:20-15:20, September 26, 2007**

<b>PS2-5: Sensors and actuators</b>		
PS2-5-1 (ismtii090)	The Giant Magnetostrictive Micro-displacement Actuator Based on Principle of Permanent Magnet	Wang Lei, Tan Jiu Bin and Zhang Shan
PS2-5-2 (ismtii137)	Theory Study of Nanometer Metrological Grating Based Two Times Moire Fringe	Ma Xiushui, Fei Yetai, Li Guihua, Ying Zhongyang and Li Suyun
PS2-5-3 (ismtii202)	Lag Time and Working Frequency of FBG Strain Sensor	Li Sun, Hong nan Li, De zhi Liang and Ji Fang
PS2-5-4 (ismtii208)	Vibration Reduction Control of a Voice Coil Motor (VCM) Nano Stage	J. Jung, W. Youm and K. Park
PS2-5-5 (ismtii239)	A Planar Capacitive Sensor for Large Scale Measurement	Wen Wang, Xinxin Li and Zichen Chen
<b>PS2-6: Signal processing</b>		
PS2-6-1 (ismtii108)	Correlation Processing of the Signals of the Single-Fiber Intermode Interferometer with a Small Number of Excited Modes	Yu. N. Kulchin, O. B. Vitrik and A. D. Lantsov
PS2-6-2 (ismtii128)	Research on Automatic Flaw Classification and Feature Extraction of Ultrasonic Testing	Jian Li, Xianglin Zhan, Jingchang Zhuge, Zhoumo Zeng and Shijiu Jin
PS2-6-3 (ismtii210)	Simulation of Profiles of Normal Ordinate Distribution	Pawel Pawlus, Rafal Reizer and Andrzej Dzierwa
<b>PS2-7: Software for instruments</b>		
PS2-7-1 (ismtii170)	Improvement of the Retrieving Algorithm for an Intelligent Communication Instrument	H. Kikuchi, H. Shen and S. Iwasaki
PS2-7-2 (ismtii198)	The Design and Use of F1 Softgauges for Validating Surface Metrology Software	Tukun Li, Xiangqian Jiang, Liam Blunt, Paul Scott and Shaojun Xiao
PS2-7-3 (ismtii221)	Hazard Elimination of a Pipelined Processor for Mechanical Measurements	Hong Shen and Nobuyoshi Numata
<b>PS2-8: Surface metrology</b>		
PS2-8-1 (ismtii051)	Study on the Key Technology of Airport Runway Frictional Coefficient Measurement	Liwen Wang, Zhijing Yu, Lei Zhang, Jianshu Gao and Jiye Song
PS2-8-2 (ismtii067)	Simultaneous Flatness and Surface Roughness Measurement of a Plastic Sheet Using a Fan-Shaped Laser Beam Scanning System	Fang Jung Shiou and Ya Wen Deng
PS2-8-3 (ismtii159)	A Surface Texture Information System Integrated with AutoCAD for Next Generation GPS	Qunfen Qi, Xiaojun Liu and Xiangqian Jiang
PS2-8-4 (ismtii162)	A Study on Surface Material Measures for Areal Surface Texture Measuring Instruments - Measuring Conditions for the Areal Profiling -	K. Nemoto, K. Yanagi, M. Aketagawa, D. Kanda, I. Yoshida and M. Uchidate
<b>PS2-9: Uncertainty, traceability and calibration</b>		
PS2-9-1 (ismtii060)	Analysis of Gear Measurement Using Virtual Gear Checker (VGC)	F. Takeoka, M. Komori, M. Takahashi, A. Kubo, T. Takatsuji, S. Osawa and O. Sato
PS2-9-2 (ismtii123)	Industrial Robot Error Compensation Using Laser Tracker System	J. F. Ouyang, Liu Wanli, Qu Xinghua and Yan Yonggang
PS2-9-3 (ismtii129)	Research on Measurement Uncertainty Evaluation Methods Based on Bayesian Principle	X. H. Chen, Z. Y. Cheng and Y. T. Fei
PS2-9-4 (ismtii176)	Uncertainty Estimation Using Monte-Carlo Method Constrained by Correlations of the Data	M. Nara, M. Abbe and K. Takamasu
PS2-9-5 (ismtii181)	Analysis of Deformation and Stress Distribution of the Poly-Axial Pedicle Screw	Sung Min Kim, In Chul Yang and Do Kyung Kim
PS2-9-6 (ismtii233)	Tooth Form Evaluation Using Ball Artifact -Development of a Measuring Instrument of a Ball Center Distance Traceable to National Standard of Length-	Y. Kondo, K. Sasajima, S. Noguchi, K. Kondo, S. Osawa, K. Naoi and T. Takatsuji
PS2-9-7 (ismtii020)	Using of Validated Software for Uncertainty Analyses Tools in Accredited Laboratories	O. Velychko



## **SOCIAL PROGRAM**

### **1. Welcome Party**

Date: September 24, 2007, 18:30-20:00

Place: Cafeteria, Kawauchi Kita Campus, Tohoku University

Bus Pick-up: 17:30 from the conference hotels

All attendees of ISMTII2007 and accompanying person are invited to Welcome Party, a part of the social program included in the conference registration fee. Every attendee should bring your name plate and the ticket for Welcome Party.

### **2. Barbecue Party**

Date: September 25, 2007, 19:00-20:30

Place: Akiu Woody Sports Park, Sendai

Bus Pick-up: 18:30 from Kawauchi Campus, Tohoku University

All attendees of ISMTII2007 and accompanying person are invited to Barbecue Party, a relaxing and informal social program included in the conference registration fee. Every attendee should bring your name plate and the ticket for Barbecue Party.

### **3. Conference Banquet**

Date: September 26, 2007, 19:00-21:00

Place: Sendai Excel Hotel Tokyu

Bus Pick-up: 18:10 from Kawauchi Campus, Tohoku University

All attendees of ISMTII2007 and accompanying person are invited to Conference Banquet, a formal social program included in the conference registration fee. Every attendee should bring your name plate and the ticket for Conference Banquet.

### **4. Technical Tour of Local Industrials (Optional)**

Date: September 27, 2007, 08:00-18:00

Bus Pick-up: 08:00 at Sendai Excel Hotel Tokyu

Courses:

Course 1 Sony Corporation Sendai Technology Center

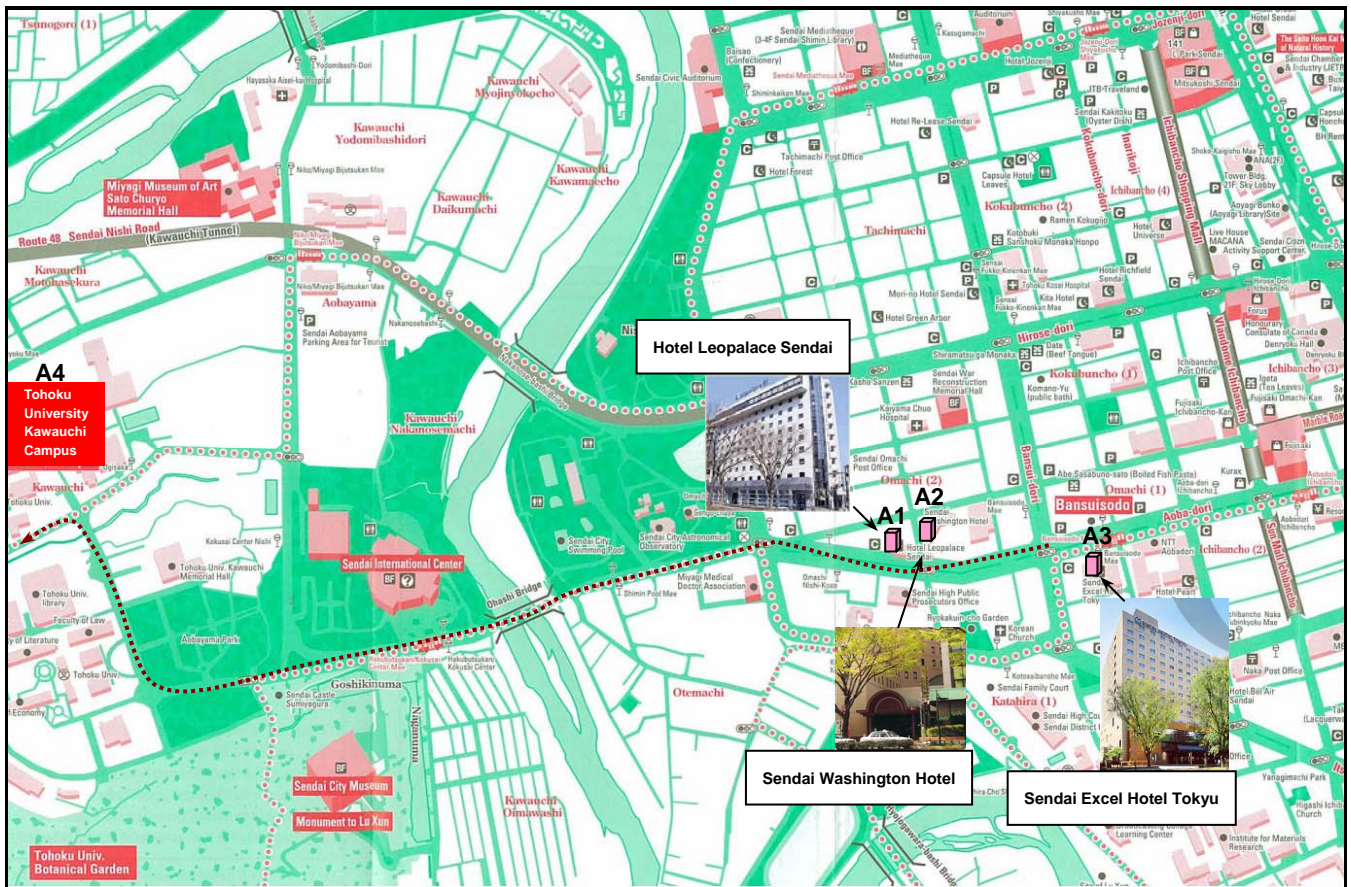
Course 2 Sendai Nikon Corporation

Course 3 East Japan Railway Company

Brief description of the technical tour

- 1) The technical tours are optional and all the participants joining the technical tour need to make pre-registration before the conference and pay an additional fee of JPY 4,000.
- 2) The technical tour fee includes bus transportation and lunch.
- 3) The bus will leave Sendai in the morning and return back to Sendai in the afternoon.
- 4) The industry visit will be in the morning. The lunch will be taken at Matsushima, a famous sea-side resort of Sendai, followed by a personal excursion tour at Matsushima. Please note the Technical Tour Fee does not cover the expense for the excursion tour except lunch.

# Map of Conference Venue and Hotels



	Name of Place	Address	Telephone
A1	Hotel Leoplace Sendai	2-3-1, Omachi, Aobaku	022-262-9171
A2	Sendai Washington Hotel	2-2-10, Omachi, Aobaku	022-222-2111
A3	Sendai Excel Hotel Tokyu	2-9-25, Ichibanncho, Aobaku	022-262-2411
A4	Tohoku University Kawauchi Campus (Conference Venue)	Kawauchi, Aoba-ku	022-261-5070

Miyagi museum of art

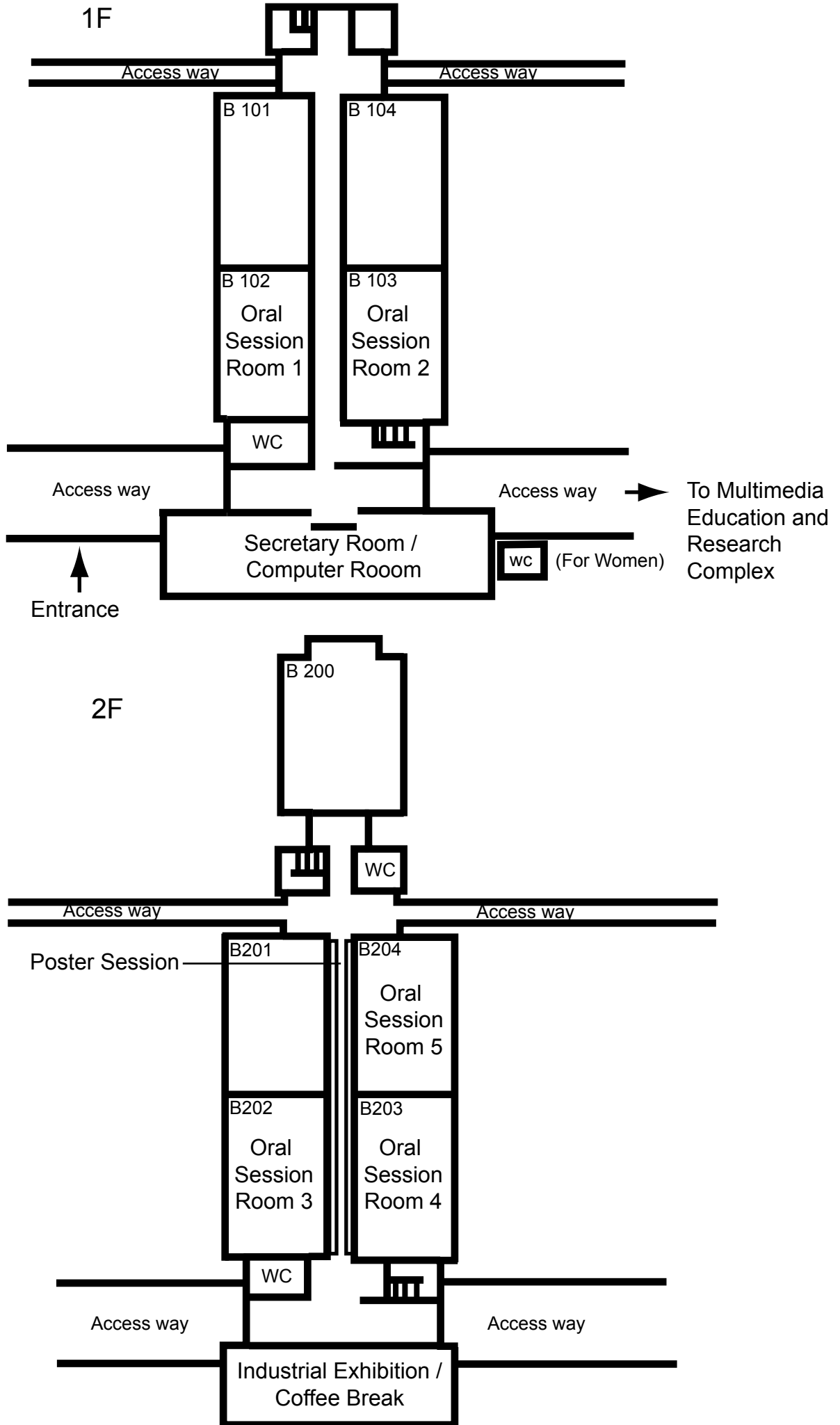
Tohoku University Kawauchi Campus  
(Conference Venue)  
Tel: 022-261-5070



- ① Multimedia Education and Research Complex  
For Opening Ceremony and Plenary Sessions
- ② Lecture Rooms Bldg. B  
For registrations, Oral presentations and  
Poster presentations
- ③ Cafeteria

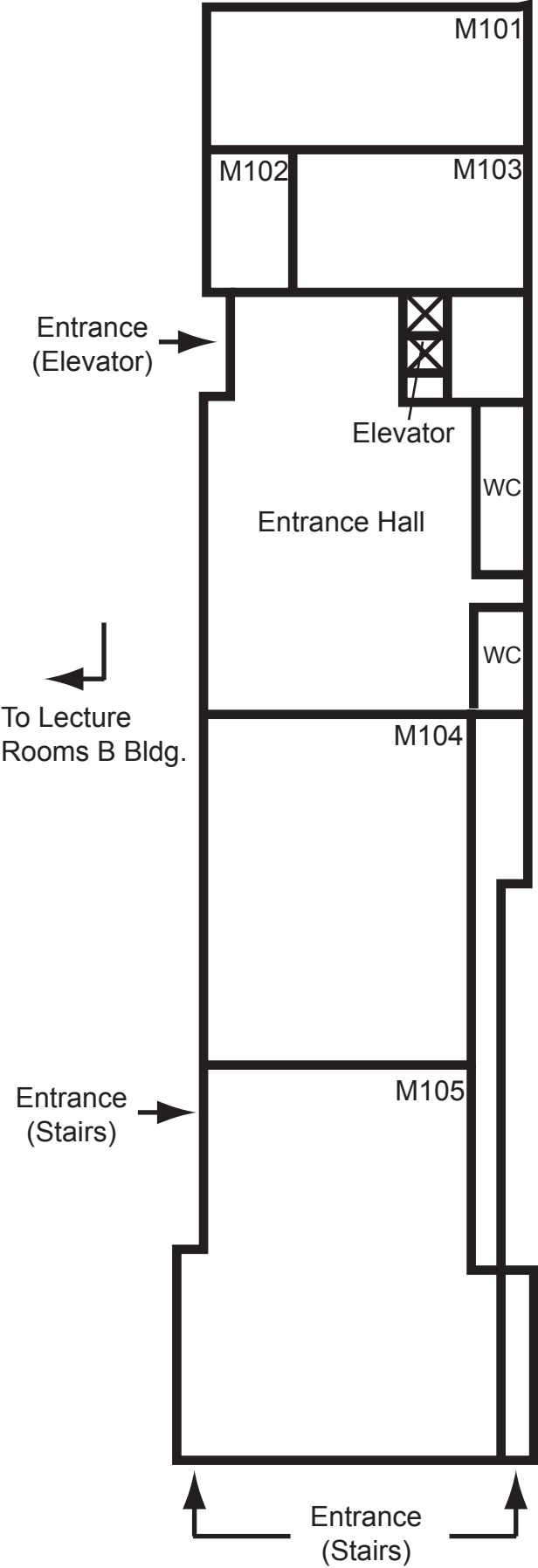
➔ To Sendai Station,  
Sendai Excel Hotel Tokyu,  
Sendai Washington Hotel,  
Hotel Leoplace Sendai

# Lecture Rooms B Bldg.



# Multimedia Education and Research Complex

1F



2F

