The 9th International Symposium on Measurement Technology and Intelligent Instruments

ISMTII-2009 FINAL PROGRAM

June 29 - July 2, 2009, Saint-Petersburg, Russia

Organized by

International Committee on Measurements and Instrumentation (ICMI)

Technological Design Institute of Scientific Instrument Engineering (TDI SIE), SB RAS

Siberian Branch of the Russian Academy of Sciences (SB RAS)

D.I. Mendeleyev Institute for Metrology (VNIIM)

Saint-Petersburg State University of Information Technologies, Mechanics and Optics (SPbSU ITMO)

Scientific and Industrial Corporation "Vavilov State Optical Institute"

Saint-Petersburg State Polytechnical University (SPbSPTU), Russia

D.S. Rozhdestvensky Optical Society, Russia

In cooperation with

Russian Corporation of Nanotechnologies

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The International Science and Technology Center (ISTC)

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National Natural Science Foundation of China (NSFC)

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FOREWORD

On behalf of the Organizers, Steering Committee, International Program Committee, and Organizing Committee of the 9th International Symposium on Measurement Technology and Intelligent Instruments (ISMTII-2009) I cordially welcome you to this event, being held in Saint-Petersburg, Russia, from June 29 to July 2, 2009.

First of all I would like to thank the Board and Members of ICMI for their decision to hold this Symposium in Russia. We are happy to host the ISMTII-2009 in Russia, Saint-Petersburg and believe that this event will be as successful as the previous ISMTII Symposia with the support from ICMI members, Committees' members, authors and attendees.

ISMTII-2009 will include Keynote speeches, Invited Session speeches, and Technical sessions (oral and poster). The topics will cover a wide range of measurement and instrumentation technologies, including intelligent instruments. The optional technical visits to the Saint-Petersburg Organizations are also arranged.

During ISMTII-2009 Symposium we kindly invite the authors and attendees to be the participants of two Round Tables on emerging fields and Special Session of the International science and Technology Center (ISTC).

The Co organizers of this event besides ICMI are D.I. Mendeleyev Institute of Metrology (VNIIM), Saint-Petersburg State University of Information Technologies, Mechanics and Optics (SPbSU ITMO), Siberian Branch of the Russian Academy of Sciences (SB RAS), D.S. Rozhdestvensky Optical Society, Saint-Petersburg State Polytechnical University (SPbSPTU), and Scientific and Industrial Corporation "Vavilov State Optical Institute".

We greatly appreciate the assistance and cooperation of Organizations that provide an important assurance to the success of ISMTII-2009.

The financial support of Russian Corporation of Nanotechnologies, West-Siberian Railroad of the Russian Federation, International Science and Technology Center, Sartorius and SIOS Germany Companies, Joint Stock Company TVEL and other companies is also highly appreciated.

Building on the previous successful Symposia, we hope that ISMTII-2009 will further make the important contribution to the measurement science and technology. We sincerely wish this Symposium can build up a bridge to closely link up the measuring world participants from different countries and continents.

I give my best regards to the participants of ISMTII-2009. Welcome to Russia! Welcome to Saint-Petersburg!

Professor Yuri Chugui
Chair of ISMTII-2009

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PLENARY SESSION I

Keynote Speech 1

Precision Measuring in Nanoscale Range

Corresponding member of RAS Alexander V. Latyshev, Institute of Semiconductor Physics,
Siberian Branch of the Russian Academy of Sciences, Russia,
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Prof. Alexander Latyshev is vice-director of Institute of Semiconductor Physics Siberian Branch of Russian Academy of Sciences, Corresponding member of RAS, Professor of Novosibirsk State University, and Scientific Director of Diagnostic Center of Collective Using.

A.V. Latyshev is specialist in the field of semiconductor physics, nanotechnology, crystallography, structural diagnostic, electron microscopy, atomic force microscopy of semiconductor, metal and various other materials including nanostructures. Special A.V. Latyshev's research interests include various mode of electron microscopy and their applications to diagnostic and study semiconductor and metal surfaces. He is particularly interested in the field of ultra high vacuum reflection electron microscopy (UHV-REM) for *in situ* studies of the kinetic and structural processes during the sublimation, phase transition, initial stages of epitaxy and surface gas reaction. The problems of structural transformations on stepped surface of semiconductor and metal crystals during sublimation, annealing, phase transitions and heteroepitaxial epitaxial growth are among research interests of A.V. Latyshev. His activity deals with the various modes of complex structural characterization, diagnostic electron and ion beam lithography and nanotechnology.

Abstract

Results of the study of the atomic structure of surface, interfaces, and structural defects in semiconductor materials, the development of electron and scanning probe microscopy methods and the fabrication of precision calibrator for nanoscale measurements are reviewed. By comparing atomic force microscopy data and contrast of reflection electron microscopy image, the number of methodological recommendations has been pronounced to describe correctly three-dimensional surface microstructures at atomic resolution. There are three dimensional surface morphology characterization, growth monitoring at monolayer level and precision calibration of measurement of linear sizes.

PLENARY SESSION I

Keynote Speech 2

The Impact of Micro and Nano Sensors in Biomedical Measurement

Prof. Peter Rolfe, Oxford BioHorizos Ltd, UK,
E-mail: PeterRolfe@aol.com

Professor Peter Rolfe is a Biomedical Engineer with a career spanning more than 35 years. Much of his research over this period has been concerned with biomedical micro and nano sensors, medical and environmental instrumentation, and cell & tissue optics. He has developed invasive sensors based on electrochemical and optical principles for blood gases, ions, drugs, proteins and hormones. His work on nanosensors has been aimed at investigating cellular phenomena, especially for creating tissues and organs. Professor Rolfe has held professorial positions in the UK, Italy, and Japan. Whilst founding Director of the Biomedical Engineering Centre at Oxford University he also set up two spin-out companies. He has been Editor-in-Chief of two international biomedical journals, has for many years acted as a consultant to the World Health Organisation, been the Director of a WHO Collaborating Centre, and currently acts as an assessor for EU research programmes.

Abstract

This paper reviews the ways in which micro and nano sensors have evolved within biology and medicine. The target measurands include an ever-increasing number of simple and complex molecules, physical quantities, and electrical and magnetic phenomena. Micro sensors based on electrochemical, acoustic, piezoelectric and optical principles are contributing to clinical care of patients who may benefit from the continuous monitoring of critical variables in intensive care or from the ability to perform convenient self-monitoring during normal daily life. Sensors constructed on the nano-scale are now emerging, especially for complex bio-molecules such as DNA. These are strengthening basic research, for example in the study of genetic factors in disease and for discovery of new drugs. Scanning probe technology and nano optics, including surface enhanced Raman spectroscopy, play important roles in these developments. Sensor science and technology has gained significant benefits through inspiration arising from biological sensory systems. This includes the sense of olfaction, which has led to the artificial nose, and the sense of vision that has been emulated in several versions of the artificial retina. The impact of micro and nano sensors on fundamental understanding in biomedicine and on clinical diagnosis and care are highlighted.

PLENARY SESSION II

Keynote Speech 3

Nano- and Micrometrology in PTB: State of the Art and Future Challenges

Harald Bosse, L. Koenders, F. Härtig, E. Buhr, G. Wilkening

Prof. Harald Bosse, Physikalisch-Technische Bundesanstalt, Germany,
E-mail: Harald.Bosse@ptb.de

Harald Bosse is the head of the department "Dimensional Nanometrology" at the Physikalisch-Technische Bundesanstalt in Braunschweig, Germany.

Harald Bosse, born in 1961, studied physics at the University of Kassel in Germany.

He received his PhD in 1989 working on spinwave resonance characterizations on exchange coupled magnetic thin films.

In 1990 he joined the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig, the metrology institute of Germany. Until 1995 he worked in the dimensional standards section on precise form and diameter characterization and then moved to the PTB mask metrology section. In 1997 he temporarily was with the presidential staff section of the PTB and since 2000 he is head of the department for length and angle metrology. He coordinated the international line scale comparison Nano 3 (2000-2003) and he is active as head of the WGDM DG9 discussion group on line scales and as a member in international standardization bodies in the field of nanotechnology.

Since 2008 he is the Head of PTB Department "Dimensional Nanometrology".
Since 2009 he is Head of PTB Division "Precision Engineering".

Abstract

In this paper we will provide an overview of methods and instruments developed and applied at the PTB for high precision dimensional micro- and nanometrology and discuss some challenges for future developments in this important area of dimensional metrology.

PLENARY SESSION II

Keynote Speech 4

Topical Tasks of Metrology due to Measuring Instruments Computerization

Valery S. Alexandrov, Roald E. Taymanov, Anna G. Chunovkina

Prof. Valery S. Alexandrov, VNIIM, Russia,
E-mail: V.S.Aleksandrov@vniim.ru

Prof. Valery S. Alexandrov, Deputy Director of D.I. Mendeleyev Institute of Metrology (VNIIM) since 1992.

Under his supervision the State standard of the unit of voltage on the basis of the Josephson effect was designed and approved in 2001, major documents bearing upon the future metrological policy were elaborated, including the 2007-2009 Program "Measurement Standards of Russia" and fundamental regulatory documents assuring measurement traceability across the country.

Valery S. Alexandrov is the author of more than 50 research works. He is the Deputy Chair of the VNIIM Academic Council, Deputy Chair of the National Technical Committee on Measurement Standards and Hierarchy Schemes, a member of the Presiding Board of the Russian Academy of Metrology, and the Honored Metrologist of the Russian Federation awarded the distinction "For Achievements in Standardization".

Abstract

Some new problems of measurement assurance of computerized measuring instruments at the stage of development, production and operation are discussed. Their possible solutions are outlined taking into account the experience of the D.I. Mendeleyev Institute for Metrology.

PLENARY SESSION III

Keynote Speech 5

The Evolution of Surfaces and Their Measurement

Prof. Xiangqian (Jane) Jiang, University of Huddersfield, UK,
E-mail: x.jiang@hud.ac.uk

Professor Xiangqian Jane Jiang started her career as an apprentice in industry. In 1990, Jane started her academic life as an MSc student in measurement science. Jane obtained her PhD in 1995. 1996, Prof. Jiang further her academic career at Metrology Centre of Birmingham University. Later, with the Birmingham research team, she moved to the University of Huddersfield. She was awarded a Professorial Chair on 2003 and a DSc of precision engineering in 2007.

Jane's research mainly involves development of mathematical models and algorithms for surface metrology and development of new optical interferometry techniques for measurement of micro/nano-scale surface topography and form geometry.

Prof. Jiang is a Royal Society Wolfson Research Fellow and a European ERC Advanced Scheme Fellow. Prof. Jiang is an IET Fellow, a RSA Fellow and an Associate Member of CIRP. She is an active member in ISO TC213 and BSI TW/4.

Abstract

Surfaces and their interactions are at the heart of living systems and all moving objects. They have fascinated man from the ancient Egyptians, through Leonardo Da Vinci in the Renaissance period, to nanotechnologists of today. This paper elucidates the science of surfaces and their interactions, covering the importance of surfaces and how they influence us all in terms of energy, environment and quality of life. It attempts to uncover the story of mankind's deepening understanding of surfaces and their measurement, and to provide an overview of surface measurement and shows how current thinking has evolved from a complicated historical background.

PLENARY SESSION III

Keynote Speech 6

Computed Tomography for Application in Manufacturing Metrology

Albert Weckenmann, Philipp Krämer

Prof. Dr.-Ing. Dr.-Ing. E.h. Dr. h.c. mult. Albert Weckenmann,
University Erlangen-Nuremberg, Germany,
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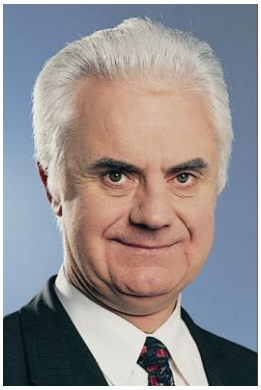

1964 – 1969 Study of electrical engineering at the University (TH) of Karlsruhe.

1971 Award: Dr.-Ing. of the faculty of electrical engineering of the University (TH) of Karlsruhe.

1972 – 1975 Robert Bosch GmbH, Nuremberg. R & D engineer. Head of the team: Conception of new products for motor vehicles

1975 – 1992 Univ.-Professor for metrology and precision engineering in the department mechanical engineering of the University of the Federal armed forces Hamburg.

Since 01.09.1992 Univ.-Professor and head of the chair "Quality Management and Manufacturing Metrology" of the University of Erlangen-Nuremberg

Main activities in Metrology: Tactile Coordinate Measuring Techniques, Measurement Strategies, Evaluation Procedures and Algorithms, Function Oriented Evaluation, Optical Measurement, Fringe Projection Techniques, Laser Scanning, Shadow Projection, Practice Oriented Measurement Uncertainty Evaluation according GUM.

Main activities in Quality Management: Development of Computer Aided Application of QM Techniques, Virtual Quality Management, Process Chain Oriented QM.

Abstract

As a rather new technology, X-Ray Computed Tomography offers new and promising possibilities in manufacturing metrology in comparison to well-established tactile or optical measurements. The main benefit is the volumetric model which results of each measurement and represents the measurement object holistically with high point density.

PLENARY SESSION III

Keynote Speech 7

In Search for New Paradigm for Humanitarian Measurements: Informational Path Between Scylla of Subjectivism and Harybdis of Operationalism

Prof. Vladimir M. Petrov, State Institute for Art Studies, Russia,
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Vladimir Mikhailovich PETROV – Ph.D. (Physics and Mathematics), D.Sc. (Theory of Culture), Principal Researcher of the State Institute for Art Studies, Professor of the State University of Management, Adjunct Professor of the University of California (Santa Cruz), Honorary Professor of Perm State Institute of Arts and Culture, Krasnodar State University of Culture and Arts, Azerbaidzhan State Institute of Arts and Architecture, Vice-President of the International Association of Empirical Aesthetics.

Born in Moscow (1937), graduated from Moscow Power Institute (Department of Electronics – 1961), worked in the field of experimental physics, mathematical sociology, cultural studies. Published more than 600 scientific papers, including 16 monographs; among them: *Information and creation: Integrating the 'two cultures'* – Basel; Boston; Berlin: Birkhauser Verlag, 1995 (together with G.Golitsyn); *Social and cultural dynamics: Fast processes (Information approach)* – Saint Petersburg: Aleteya, 2008.

Main fields of interest: quantitative methods in studies of art and culture, literary studies, sociology, psychology, linguistics.

Abstract

The subjectivity both of researchers (which compile the questionnaires) and experts (which evaluate objects subdued to measurements) penetrates most humanitarian fields. However, trials to introduce objectivity by means of certain 'rulers,' usually result in the 'sin of operationalism' (P. Bridgman), i.e., strong influence of the 'rulers' used. To escape both menaces, it is necessary to change the status both of definition of the phenomenon studied and its empirical indicators: all of them should become the constituents of a certain general model. For most fields, prospective general models can be derived in the framework of the information approach (G. Golitsyn, S. Maslov). One of such approaches permitting to measure assimilation of any system, was proved in sociological and psychological investigations.

PLENARY SESSION IV

Keynote Speech 8

Orthogonally Polarized Dual Frequency Lasers and Applications in Self-Sensing Metrology

Shulian Zhang, Yidong Tan

Prof. Shulian Zhang, Tsinghua University, China, E-mail: zsl-dpi@tsinghua.edu.cn

Zhang Shulian, male, professor works at Tsinghua Universiy. Bachelor degree and master degree of Tsinghua University, The director of The Key Lab of Precision Measurement Technology and Instruments at Tsinghua University from Feb. 1997 to Apr. 2008 and the director of Optic-Electrical Engineering Institute of Tsinghua University from Aug. 1993 to Apr. 2004. Member of SPIE, Vice director of The Geometry Quantity Committee, Vice director of The Optic-electrical Technology, Vice-director-committeeman of Journal "Infrared and Laser Engineering".

Research field: laser technology and metrology.

Publications: Papers: More than 200; Patents: More than 30; Book: "Applied Laser Technologies", Zhejiang University Press, 1994; Monograph: "Fundamental of Orthogonally Polarized Lasers", Tsinghua University Press, 2005.

Awards: (1) National Second Class Science and Technology Award (2007): "Orthogonally Polarized Lasers and Their Instruments"; (2) First Class Science and Technology Award of National Education Ministry (2006): "Cavity Tuning Characteristics of Two-mirror and Three Mirror Lasers";(3) First Class Science and Technology Award of National Education Committee (1994): "Laser Frequency Splitting Phenomena and Application In Metrology"; (4) Second Class Beijing Science and Technology Award (2000): "Two Polarization Frequency Competition Displacement Sensing Laser System".

Abstract

The traditional Zeeman laser (Z-laser) outputs a frequency difference generally smaller than 2MHz, which has limited its applications. An orthogonally polarized laser is capable of outputting two frequencies with a 90°-angle between their polarization directions. The difference between the two frequencies may range from 1MHz to 1GHz, determined by the birefringence within the resonance cavity of the laser. Because it is easy to adjust the frequency difference and to detect the intensities of the two frequencies separately, a number of unknown characteristics are observed in cavity tuning and optical feedback. These properties have turned and will turn into the working principles of self-sensing metrology instruments. That is to say that an orthogonally polarized laser, in addition to serve as a light source of a dual frequency laser, may be changed into a metrological apparatus. It has self-sensing ability, namely laser itself is just the instrument, e.g. nanometer displacement based on laser cavity tuning or feedback effects, retardation of a wave-plate based on frequency splitting or feedback effects, and non-contact high resolution laser feedback interferometer.

PLENARY SESSION IV

Keynote Speech 9

A Scanning Contact Probe for Micro CMM

Kuang-Chao Fan, Fang Cheng, Weili Wang, Yejin Chen, Jia-You Lin

Prof. Kuang-Chao Fan, National Taiwan University, Taiwan,
E-mail: fan@ntu.edu.tw

Kuang-Chao Fan received the B.Sc. degree from National Taiwan University (NTU) in 1972, M.Sc. degree from the State University of New York at Buffalo in USA in 1976, and Ph.D. degree from University of Manchester Institute of Science and Technology in UK in 1984, all in mechanical engineering. He has been a Professor of Mechanical Engineering at National Taiwan University since 1989. He was the Chairman of Institute of Industrial Engineering of NTU, the Chairman of Chinese Institute of Automation Technology, the Chairman of SME Taipei Chapter, the Director of Tjing Ling Industrial Research Institute, and the Associate Dean of Engineering College at the National Taiwan University. He has been the Cheung Kong Scholar at the Hefei University of Technology since 2001. He has been elected as distinguished professor and Chon-Juo Zhang Chair Professor by National Taiwan University since 2007. He was elected as the SME Fellow in 2008. His research interests include manufacturing metrology, precision machining, and machine tool technology. He has published more than 100 journal papers and 200 conference papers.

Abstract

A new high precision contact scanning probe possible to measure miniature components on a micro/nano-CMM is proposed. This contact probe is composed of a fiber stylus with a ball tip, a floating plate and focus sensors. The ball tip is fabricated using optical fiber with melting and solidification processes. The stylus is attached to a floating plate, which is connected to the probe housing via four elastic wires. When the probe tip is touched and then moved by the workpiece the wires will perform elastic deformation and four mirrors mounted onto the plate will be displaced. These displacements can be detected by four corresponding laser focus probes. Experiments were carried out to test the unidirectional touch analog repeatability. The standard deviation is less than 10 nm.

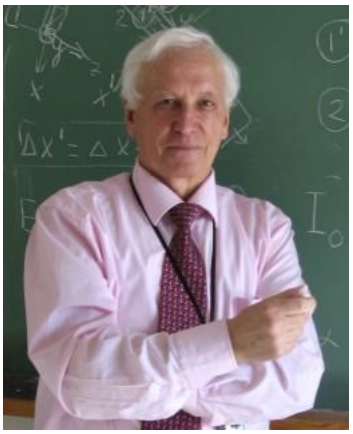
PLENARY SESSION IV

Keynote Speech 10

Novosibirsk High-Power Terahertz Free Electron Laser: Instrumentation Development and Experimental Achievements

Boris A. Knyazev, Gennady N. Kulipanov, N.A. Vinokurov, A.L. Aseev, V.S. Cherkassky, E.N. Chesnokov, Yu.V. Chugui, M.A. Dem'yanenko, D.G. Esaev, V.M. Fomin, N.G. Gavrilov, V.V. Gerasimov, S.V. Golod, T.N. Goryachkovskaya, E.I. Kolobanov, A.S. Kozlov, V.V. Kubarev, S.B. Malyshkin, A.N. Matveenko, L.E. Medvedev, L.A. Merzhievsky, S.V. Miginsky, L.A. Mironenko, E.V. Naumova, V.K. Ovchar, V.N. Ovsyuk, S.E. Peltek, A.K. Petrov, V.M. Popik, V.Ya. Prinz, T.V. Salikova, M.A. Scheglov, V.A. Seleznev, S.S. Serednyakov, O.A. Shevchenko, A.N. Skrinsky, M.F. Stupak, M.G. Vlasenko, V.I. Yakovlev, S.A. Zhigach

Prof. Boris A. Knyazev, Budker Institute of Nuclear Physics, SB RAS, Russia,
E-mail: B.A.Knyazev@inp.nsk.su



Professor Boris A. Knyazev is principle scientist at Budker Institute of Nuclear Physics, Siberian Branch of Russian Academy of Science, and professor of physics at Novosibirsk State University. He is currently the head of the Research Group that studies the fundamental aspects and applications of terahertz radiation at Novosibirsk free electron laser. Throughout his career, Boris Knyazev has made significant contributions to atomic and plasma physics, high-power particle beams, laser physics and technology, optics and spectroscopy. In 1990-2000 he was the chair of General Physics Department at Novosibirsk State University and chairman of Siberian Branch of the Committee for Physics Education of Russian Ministry of Education. During this period he was visiting scholar at Cornell University (1995 and 2000-2001) and short term guest scientist at Forschungszentrum Karlsruhe (1993, 1994, 1996, 1997, 1998, 1999). Professor Knyazev has written and/or edited 4 books, published around 120 papers, and delivered 180 conference papers (42 invited) at international level. He served as an editor for two research journals. He has received Medal of Merit from Russian President and Certificate of Recognition from Congress of the United States.

Abstract

In this paper we describe the Novosibirsk terahertz free electron laser (NovoFEL) and present some of results obtained by many research groups working at the user stations of the NovoFEL.

PLENARY SESSION V

Keynote Speech 11

Fast Measuring Technologies for Ultra-Precision Manufacturing

Wei Gao, Yoshikazu Arai, Yusuke Saito, Akihide Kimura and Takemi Asai

Prof. Wei Gao, Tohoku University, Japan
E-mail: gaowei@nano.mech.tohoku.ac.jp

Professor Wei Gao received his Ph. D in Precision Engineering from Tohoku University, Japan in 1994. He is currently the director of the Center for Precision Nanosystems, Tohoku University. His research interests include optical sensors, precision nanometrology and precision nanosystems. He acted as a visiting professor of the Center for Precision Metrology, University of North Carolina, Charlotte in 1998. He is a member of the ASPE, JSPE, JSME and CIRP. He serves as an Associate Editor for Precision Engineering, Journal of the International Society for Precision Engineering and Nanotechnology.

Abstract

This paper discusses measuring technologies for the purpose of quality control in ultra-precision machining. A number of fast measuring systems of dimensional measurement, including high speed sensors for multi-axis motion measurement, fast scanning probe microscopy for 3D microstructure measurement, dynamic optical systems for complicated shape measurement, error separation techniques for surface profile measurement etc., are presented as examples of new fast measuring technologies.

Guidelines

1. Official language

The official language of ISMTII-2009 is English. All presentations including questions and answers should be made in English. Simultaneous translation facilities (Russian-English and vice versa) will be provided only on June 29 (Opening Ceremony, Plenary Sessions).

2. Venue

Park INN Pulkovskaya Hotel (1, Pobedy Square)
Rossiya Hotel (11, Pl. Chernyshevskogo)

3. Registration

Registration/Information Desk will be open **before** Symposium **(June 27 and June 28, 2009,** according to schedule of Flights arrival**)** at the **Rossiya** and **Park INN Pulkovskaya** Hotels lobbies, as well as during the Symposium:

June 29, 2009	(08.30-13.30)	"Park Inn Pulkovskaya" Hotel, Congress Hall
June 30-July 1, 2009	(08.30-18.30)	"Rossiya" Hotel, Ekaterininskiy Hall

Contacts during Symposium

Yuri Chugui (English)	**+7 905 278 1782**
Tatiana Ivanchenko (English)	**+7 905 278 1685**
Yuri Lysenko (Chinese)	**+7 963 313 2139**

4. Symposium Kit

Symposium Kit, which contains Final Program, Symposium Proceedings, badge, tickets for Social Program and lunches will be provided to participants during check in at the Registration/Information Desk.

5. Internet Room

A set of computers connected to the Internet will be available for the Symposium's attendees in the Internet Room, as well as there is the WI-FI access in the Rossiya Hotel lobby.

6. Guidelines for presenters

Guidelines for oral speakers

Six sessions will take place simultaneously.

- Please check the session rooms and presentation time in the Final Program of the Symposium
- Time allocated for each paper is as follows:

Keynote presentation:	40min (including discussion)
Invited Session presentation	30min (including discussion)
Oral presentation	15min (including discussion)

- The presenters and session chairs are asked to keep to the paper sequence as shown in the Final Program as well as to adhere to the time restrictions
- Symposium rooms will be equipped by computer projection systems and light pointers
- The computer-based presentation must be prepared as .ppt files (i.e. MS Office Power Point files) and can be done using the existing computer, or using your own notebook.

To enable the proper installation of your ppt file, you may bring your presentation file on CD ROM or DVD ROM or USB Flush drive

- Presenters are kindly asked to be at the Session room at least 20 minutes before the start of the session; a few seats in the front row will be reserved for speakers. 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

Guidelines for poster presentations

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.

Each poster presentation must include the following:

- A title, including authors' names and affiliations
- Abstract
- Purpose/Introduction
- Subjects & Methods
- Results
- Discussion/Conclusions
- References

2. **Poster sessions will be on June 30, Tuesday and on July 1, Wednesday (14.15 – 15.15) in the Ekaterininskiy Hall of the Symposium venue.**
   Authors are kindly asked to be at their posters for the duration of the allocated discussion time (refer to the Final Program of ISMTII-2009).
3. **Authors will be provided with a poster boards and support for mounting posters (stationary).**
4. **The presentation board will be available for you to organize your poster on June 30, Tuesday and on July 1, Wednesday between 13.00 and 14.00. 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 1000 mm (W)×1000 mm (H).**

   The paper number will be indicated at the poster board.

ISMTII-2009 Timetable

June 28, 2009	Monday, June 29, 2009		Tuesday, June 30, 2009	
ARRIVAL, ACCOMMODATION, REGISTRATION OPTIONAL PROGRAM	$8^{30} – 10^{30}$	Transfer*	$8^{00} – 9^{00}$	Transfer*
	$8^{30} – 13^{30}$	**Registration** **Congress Hall** **Pulkovskaya Hotel**	$8^{30} – 10^{30}$	**Plenary Session III** Keynote Speech 5, Keynote Speech 6, Keynote Speech 7 **Petrovskiy Hall, Rossiya Hotel**
	$10^{00} – 10^{30}$	**Opening Ceremony** **Congress Hall** **Pulkovskaya Hotel**	$10^{30} – 11^{00}$	**Coffee Break** **Restaurant 2, Rossiya Hotel**
	$10^{30} – 11^{50}$	**Plenary Session I** Keynote Speech 1 Keynote Speech 2 **Congress Hall** **Pulkovskaya Hotel**	$11^{00} – 13^{15}$	**Invited Sessions Ordinary Sessions Rossiya Hotel** **Session 2a. Alexander III Hall** **Session 4a. Petrovskiy Hall** **Session 6a. Alexander II Hall** **Session 7a. Nikolay I Hall** **Session 8a. Alexander I Hall**
	$11^{50} – 12^{10}$	**Coffee Break**		
	$12^{10} – 13^{30}$	**Plenary Session II** Keynote Speech 3 Keynote Speech 4 **Congress Hall** **Pulkovskaya Hotel**	$13^{15} – 14^{15}$	**Lunch Break** **Restaurant 1 + Restaurant 2, Rossiya Hotel**
	$13^{30} – 14^{00}$	**Photography**	$14^{15} – 15^{15}$	**Poster Session I** **Ekaterininskiy Hall, Rossiya Hotel**
	$14^{00} – 16^{00}$	**Welcome Reception** **Atrium Restaurant** **Pulkovskaya Hotel**	$15^{15} – 17^{15}$	**Invited Sessions Ordinary Sessions Rossiya Hotel** **Session 1a. Elizabeth Hall** **Session 2b. Alexander III Hall** **Session 4b. Petrovskiy Hall** **Session 6b. Alexander II Hall** **Session 7b. Nikolay I Hall** **Round Table I Alexander I Hall**
	$16^{00} – 19^{00}$	**Sightseeing Tour** around Saint-Petersburg	$17^{15} – 17^{45}$	**Coffee Break** **Restaurant 1, Rossiya Hotel**
	$19^{00} – 19^{30}$	Transfer* to Hotels	$17^{45} – 18^{45}$	**Invited Sessions Ordinary Sessions Rossiya Hotel** **Session 1b. Elizabeth Hall** **Session 2c. Alexander III Hall** **Session 4c. Petrovskiy Hall** **Session 6c. Alexander II Hall** **Session 7c. Nikolay I Hall** **Session 9a. Alexander I Hall**
	$20^{00} – 20^{30}$	**Coffee Break** for **ICMI Members Meeting** **Rossiya Hotel**		
	$20^{30} – 22^{00}$	**ICMI Members Meeting** **Nikolay I Hall** **Rossiya Hotel**	20^{00}	**Social Program** (Optional)
		Transfer		

- Accommodation and Symposium venue will be held in two nearby Hotels, so the transfer will be provided.

ISMTII-2009 Timetable

Wednesday, July 1, 2009		Thursday, July 2, 2009	July 3, 2009
$8^{\underline{00}} – 9^{\underline{00}}$	Transfer*		
$8^{\underline{30}} – 10^{\underline{30}}$	**Plenary Session IV** Keynote Speech 8, Keynote Speech 9, Keynote Speech 10 **Petrovskiy Hall, Rossiya Hotel**		
$10^{\underline{30}} – 11^{\underline{00}}$	**Coffee Break** **Restaurant 2, Rossiya Hotel**		
$11^{\underline{00}} – 13^{\underline{15}}$	**Invited Sessions Ordinary Sessions Rossiya Hotel** **Session 2d. Alexander III Hall** **Session 3a. Nikolay I Hall** **Session 4d. Petrovskiy Hall** **Session 6d. Alexander II Hall** **Session 10. Nikolay II Hall** **ISTC Special Session Alexander I Hall**	$9^{\underline{00}} – 12^{\underline{30}}$ **Technical Tours**	
$13^{\underline{15}} – 14^{\underline{15}}$	**Lunch Break** **Restaurant 1 + Restaurant 2, Rossiya Hotel**	$12^{\underline{30}} – 13^{\underline{30}}$ **Lunch Break** **Rossiya Hotel**	
$14^{\underline{15}} – 15^{\underline{15}}$	**Poster Session II** **Ekaterininskiy Hall, Rossiya Hotel**		
$15^{\underline{15}} – 17^{\underline{00}}$	**Invited Sessions Ordinary Sessions Rossiya Hotel** **Session 3b. Nikolay I Hall** **Session 4e. Petrovskiy Hall** **Session 5. Alexander III Hall** **Session 9b. Alexander I Hall** **Round Table II Alexander II Hall**	$13^{\underline{30}} – 18^{\underline{30}}$ **Optional Program** Visit to Hermitage Museum	$13^{\underline{30}} – 18^{\underline{30}}$ **Optional Program** Visit to Peterhof (Petrodvorets)
$17^{\underline{00}} – 17^{\underline{30}}$	**Coffee Break** **Restaurant 1, Rossiya Hotel**		
$17^{\underline{30}} – 18^{\underline{30}}$	**Invited Sessions Ordinary Sessions Rossiya Hotel** **Session 3c. Nikolay I Hall** **Session 4f. Petrovskiy Hall** **Session 6e. Alexander II Hall** **Session 8b. Alexander I Hall**		
$18^{\underline{30}} – 19^{\underline{10}}$	**Plenary Session V** Keynote Speech 11 **Petrovskiy Hall, Rossiya Hotel**		
$19^{\underline{10}} – 19^{\underline{30}}$	**Closing Ceremony** **Petrovskiy Hall, Rossiya Hotel**		
$20^{\underline{00}} – 22^{\underline{30}}$	**Transfer** **Farewell Party** **Pulkovskaya Hotel** **Atrium Restaurant**		
	Transfer		

- Accommodation and Symposium venue will be held in two nearby Hotels, so the transfer will be provided.

ISMTII-2009 Final Program

Monday, June 29, 2009

Congress Hall. Pulkovskaya Hotel

$8^{30} – 13^{30}$ **Registration**

$10^{00} – 10^{30}$ **Opening Ceremony**

Prof. Yuri V. Chugui, Symposium Chair
Prof. Yongsheng Gao, ICMI General Secretary, member of Steering Committee
Prof. Vladimir N. Vasiliev, Co-Chair of International Program Committee, SPbSU ITMO
Dr. Andrey S. Maksimov, representative of Saint-Petersburg Government
Prof. Geny I. Kavalerov, President of Instrument Engineers and Metrologists Society
Prof. Valery S. Alexandrov, member of IPC and Steering Committee, VNIIM
Prof. Yuri V. Tarbeev, President of Russian Academy of Metrology

Plenary Session I

Chair: Peter Herbert Osanna

$10^{30} – 11^{10}$ **Keynote Speech 1** KS-01 (ismtii418)
Precision Measuring in Nanoscale Range
Corresp. member of RAS Alexander V. Latyshev,
Institute of Semiconductor Physics, SB RAS, *Russia*

$11^{10} – 11^{50}$ **Keynote Speech 2** KS-02 (ismtii268)
The Impact of Micro and Nano Sensors in Biomedical Measurement
Prof. Peter Rolfe, Oxford BioHorizons Ltd, *UK*

$11^{50} – 12^{10}$ **Coffee Break**

Plenary Session II

Chair: Alexander V. Latyshev

$12^{10} – 12^{50}$ **Keynote Speech 3** KS-03 (ismtii366)
Nano- and Micrometrology in PTB: State of the Art and Future Challenges
Prof. Harald Bosse, L. Koenders, F. Härtig, E. Buhr, G. Wilkening,
Physikalisch-Technische Bundesanstalt, *Germany*

$12^{50} – 13^{30}$ **Keynote Speech 4** KS-04 (ismtii367)
Topical Tasks of Metrology due to Measuring Instruments Computerization
Prof. Valery S. Alexandrov, Prof. Roald E. Taymanov,
Prof. Anna G. Chunovkina, VNIIM, *Russia*

$13^{30} – 14^{00}$ **Photography**

$14^{00} – 16^{00}$ **Welcome Reception**
Atrium Restaurant, Pulkovskaya Hotel

$16^{\underline{00}} – 19^{\underline{00}}$ **Sightseeing Tour around Saint-Petersburg**

$20^{\underline{00}} – 20^{\underline{30}}$ **Coffee Break for ICMI Members Meeting, Rossiya Hotel**

Nikolay I Hall, Rossiya Hotel

$20^{\underline{30}} – 22^{\underline{00}}$ **ICMI Members Meeting**

Tuesday, June 30, 2009

Petrovskiy Hall, Rossiya Hotel

Plenary Session III

Chair: Wolfgang Osten

$8^{\underline{30}} – 9^{\underline{10}}$ **Keynote Speech 5** KS-05 (ismtii333)
The Evolution of Surfaces and Their Measurement
Prof. Xiangqian Jiang, University of Huddersfield, *UK*

$9^{\underline{10}} – 9^{\underline{50}}$ **Keynote Speech 6** KS-06 (ismtii035)
Computed Tomography for Application in Manufacturing Metrology
Prof. Albert Weckenmann, Ph. Krämer,
University Erlangen-Nuremberg, *Germany*

$9^{\underline{50}} – 10^{\underline{30}}$ **Keynote Speech 7** KS-07 (ismtii362)
In Search for New Paradigm for Humanitarian Measurements: Informational Path between Scylla of Subjectivism and Harybdis of Operationalism
Prof. Vladimir M. Petrov, State Institute for Art Studies, *Russia*

$10^{\underline{30}} – 11^{\underline{00}}$ **Coffee Break**

Tuesday, June 30, 2009. $11^{\underline{00}} – 13^{\underline{15}}$

Alexander III Hall, Rossiya Hotel

Session 2a. Micro- Nano- Measurements and Metrology: Novel Approaches

Chairs: Pavel A. Todua, Xiangqian Jiang

$11^{\underline{00}} – 11^{\underline{30}}$ OS02-02 (ismtii372)
New Probing System for the Nano-CMM Using Radiation Pressure Controlled Microsphere (invited paper)
Yasuhiro Takaya, Masaki Michihata, Terutake Hayashi

$11^{\underline{30}} – 11^{\underline{45}}$ OS02-03 (ismtii071)
Measurement of Pretravel Distance of Nano-CMM Probe
Fang Cheng, Yetai Fei, Kuang-Chao Fan, Yuanzhong Lei

$11^{\underline{45}} – 12^{\underline{00}}$ OS02-04 (ismtii350)
Nanorelief Measurements Errors for a White-Light Interferometer with Chromatic Aberrations
Evgeny V. Sysoev

$12^{00} – 12^{15}$ OS02-05 (ismtii291)
Model-Based Correction of Image Distortion in Scanning Electron Microscopy
D. Gnieser, C.G. Frase, H. Bosse and R. Tutsch

$12^{15} – 12^{30}$ OS02-06 (ismtii024)
Development of a Closed-Loop Micro-/Nano-Positioning System Embedded with a Fiber Optic Interferometer System
Fang-Jung Shiou, Chao-Jung Chen, Shu-Chung Liao, Huay-Chung Liou

Tuesday, June 30, 2009. $11^{00} – 13^{15}$

Petrovskiy Hall, Rossiya Hotel

Session 4a. Measurements for Geometrical and Mechanical Quantities: Micro-, Nano Surface Evaluation

Chairs: Yongsheng Gao, Kiyoshi Takamasu

$11^{00} – 11^{30}$ OS04-01 (ismtii022)
Three Steps Towards Metrological Traceability for Ballistics Signature Measurements (invited paper)
Junfeng Song, Theodore Vorburger, Robert Thompson, Thomas Renegar, Alan Zheng, Li Ma, James Yen, and Martin Ols

$11^{30} – 12^{00}$ OS04-02 (ismtii054)
Traceability for Areal Surface Texture Measurement (invited paper)
Richard K. Leach, Claudiu Giusca, Kazuya Naoi

$12^{00} – 12^{15}$ OS04-03 (ismtii028)
Machine Vision for Surface Roughness Assessment of Inclined Components
P. Priya and B. Ramamoorthy

$12^{15} – 12^{30}$ OS04-04 (ismtii080)
Motif Parameters Based Characterization of Line Edge Roughness(LER) of a Nanoscale Grating Structure
Zhuangde Jiang, Fengxia Zhao, Weixuan Jing, Philip D. Prewett, and Kyle Jiang

$12^{30} – 12^{45}$ OS04-05 (ismtii353)
Application of Technical Vision for External View Inspection of Fuel Pellets
Alexey V. Beloborodov, Peter I. Lavrenyuk, Yuri V. Pimenov, Vladimir M. Troyanov, Evgeny V. Vlasov, Peter S. Zav'yalov, Leonid V. Finogenov

$12^{45} – 13^{00}$ OS04-06 (ismtii037)
Surface Roughness Computer Simulation in Machining Process
Ossama B. Abouelatta, Fahad A. Al-Zahrani, Sarwat Z. Zahwi

$13^{00} – 13^{15}$ OS04-07 (ismtii046)
Fractal Geometry Surface Modeling and Measurement for Musical Cymbal Surface Texture Design and Rapid Manufacturing
Jack Zhou, Ananth Vas and Denis Blackmore

Tuesday, June 30, 2009. $11^{00} – 13^{15}$

Alexander II Hall, Rossiya Hotel

Session 6a. Novel Measurements and Diagnostic Methods: Optical Fiber Sensors

Chairs: Hartmut Bartelt, Oleg B. Vitrik

$11^{00} – 11^{30}$ OS06-01 (ismtii030)
Trends in Bragg Grating Technology for Optical Fiber Sensor Applications (invited paper)
Hartmut Bartelt

$11^{30} – 12^{00}$ OS06-02 (ismtii346)
Fiber-Optic Sensor Systems and Their Applications (invited paper)
Sergey A. Babin, Arsen E. Ismagulov, Alexey G. Kuznetsov, Alexander A. Vlasov, Ivan S. Shelemba

$12^{00} – 12^{15}$ OS06-03 (ismtii195)
Differential Interrogation of FBG Sensors Using Conventional Optical Time Domain Reflectometry
Yuri N. Kulchin, Anatoly M. Shalagin, Oleg B. Vitrik, Sergey A. Babin, Anton V. Dyshlyuk, Alexander A. Vlasov

$12^{15} – 12^{30}$ OS06-04 (ismtii400)
Touch-Trigger Measurement of Micro-Cavity by Optical Fiber Coupling
Cui Jiwen, Song Chuanxi, Tan Jiubin

$12^{30} – 12^{45}$ OS06-05 (ismtii014)
Integrated-Optic Components on Glass for Sensor Microsystems
Mikhail M. Vekshin, Elena B. Khotnyanskya, Valery A. Nikitin, Nikolay A. Yakovenko

$12^{45} – 13^{00}$ OS06-06 (ismtii033)
Interferometric Fiber-Optic Electric Current Sensor for Industrial Application
Nikolay I. Starostin, Maksim V. Ryabko, Yurii K. Chamorovskii, Vladimir P. Gubin, Aleksandr I. Sazonov, Sergey K. Morshnev, Nikita M. Korotkov

$13^{00} – 13^{15}$ OS06-07 (ismtii249)
Reference Apparatuses for Metrological Support of Measurements of the Parameters of Optical Fiber Transmission Systems
Alexander I. Glazov, Vyacheslav S. Ivanov, Vladimir Ye. Kravtsov, Alexey B. Pnev, Sergey V. Tikhomirov

Tuesday, June 30, 2009. $11^{00} – 13^{15}$

Nikolay I Hall, Rossiya Hotel

Session 7a. Intelligent Measuring Instruments and Systems for Industry and Transport: Novel Approaches and Techniques

Chairs: Shulian Zhang, Lev B. Zuev

$11^{00} – 11^{30}$ OS07-01 (ismtii239)
Absolute Distance Measurements Based on the Frequency Comb of a Femtosecond Pulse Laser (invited paper)
Seung-Woo Kim, Sangwon Hyun, Young-Jin Kim, Yunseok Kim

$11^{30} – 11^{45}$ OS07-02 (ismtii275)
Development of an in-Process Form Error Measurement System for Surface Grinding
Y. Gao, X. Huang and Y. Zhang

$11^{45} – 12^{00}$ OS07-03 (ismtii034)
Evaluation Procedures of Ultrasonic Signals in Gas Flow Metering
Yaoying Lin, Volker Hans

$12^{00} – 12^{15}$ OS07-04 (ismtii191)
Experience of Development and Operation of Automated Laser Non-Contact Complexes for Running Freight Car Wheels Monitoring
Andrey N. Bajbakov, Konstantin I. Kuchinsky, Dmitry N. Losev, Vladimir I. Paterikin, Sergey V. Plotnikov, Vadim V. Sotnikov

$12^{15} – 12^{30}$ OS07-05 (ismtii049)
Radiofrequency Temperature-Independent Measurement of Density of Liquefied Petroleum Gas in Reservoirs and Pipelines
Alexander S. Sovlukov, Victor I. Tereshin

$12^{30} – 12^{45}$ OS07-06 (ismtii094)
Automated Optoelectronic System for Fast Contact Wire Wear Inspection
Vadim E. Kalikin, Alexander G. Verkhogliad, Stepan V. Kalichkin, Sergey N. Makarov, Vladimir S. Bazin, Vladimir B. Kharhota, Sergey G. Savkov

$12^{45} – 13^{00}$ OS07-07 (ismtii116)
Measurements of Weld Geometry Using Image Processing Technology
Chia-Lung Chang, Yen-Hung Chen

$13^{00} – 13^{15}$ OS07-08 (ismtii106)
Measurement of Vehicle Tire Footprint Pattern and Pressure Distribution Using Piezoresistive Force Sensor Mat and Image Analysis
Rong-Sheng Lu, Ning Liu, Qi Li, Xiaohuai Chen

Tuesday, June 30, 2009. $11^{\underline{00}} – 13^{\underline{15}}$

Alexander I Hall, Rossiya Hotel

Session 8a. Measurements and Metrology for the Humanitarian Fields

Chairs: Vladimir M. Petrov, Roald Taymanov

$11^{\underline{00}} – 11^{\underline{15}}$ OS08-01 (ismtii003)
Near the Origin of Informational Measurements in the Humanities (Dedicated to the 70th Anniversary of Sergey Maslov)
Vladimir M. Petrov

$11^{\underline{15}} – 11^{\underline{45}}$ OS08-02 (ismtii303)
Improvement of Traceability of Widely-Defined Measurements in the Field of Humanities (invited paper)
Ksenia Sapozhnikova, Roald Taymanov

$11^{\underline{45}} – 12^{\underline{00}}$ OS08-03 (ismtii072)
Creativity and School Education: Subjects Vs Professional Identity in a Sample of Teachers in Italy
Orazio Licciardello, Maria Elvira De Caroli, Claudia Castiglione, Elisabetta Sagone

$12^{\underline{00}} – 12^{\underline{15}}$ OS08-04 (ismtii121)
Measures of Emotional and Motivational Processes Activated by Stress or Comfort Conditions
Valeria Biasi, Paolo Bonaiuto, Anna Maria Giannini

$12^{\underline{15}} – 12^{\underline{30}}$ OS08-05 (ismtii215)
Indirect Measures in the Study of the Implicit Affect: Schematic Faces as a Possible Affective Stroop
Stefano Mastandrea

$12^{\underline{30}} – 12^{\underline{45}}$ OS08-06 (ismtii097)
The Right Word in the Left Place: Towards Experimental Poetics
Dmitrii Y. Manin

$12^{\underline{45}} – 13^{\underline{00}}$ OS08-07 (ismtii122)
Clarification and Measure of Vivid Illusions Favoured by Canova's Sculptures
Paolo Bonaiuto, Valeria Biasi

$13^{\underline{00}} – 13^{\underline{15}}$ OS08-08 (ismtii018)
Asymmetry of Creative Activity: Product-Based Iterative Measurement Procedure
Lidia A. Mazhul, Vladimir M. Petrov, Stefania Mancone

$13^{\underline{15}} – 14^{\underline{15}}$ **Lunch Break**

Tuesday, June 30, 2009. $14^{15} – 15^{15}$

Ekaterininskiy Hall, Rossiya Hotel

Poster Session I

Organizer: Peter S. Zav'yalov

Session 1. General Problems of Measurement

PS01-01 (ismtii110)
Counting Method for Calibration and Linearity Checking of Photometry Devices
Eduard V. Kuvaldin

PS01-02 (ismtii113)
Control of the Parameter Values on the Basis of Measurement Results and Associated Uncertainties
Anna G. Chunovkina, Valery A. Slaev

PS01-03 (ismtii124)
Dynamic Calibration of Pressure Sensors at Low Frequencies Using Liquid Step Pressure Generator with Special Spool Valve
Sheng-Hung Wang, L.L. Han, and T.T. Tsung

PS01-04 (ismtii166)
Traceable Large-Scale Metrology Based on Laser Tracker
Zhang Fumin, Qu Xinghua, Wu Hongyan

PS01-05 (ismtii263)
A Universal Method to Optimise Measurement Uncertainty, Time and Cost for CMM Scanning Technology
Robert Schmitt, Susanne Nisch

PS01-06 (ismtii406)
Modern Laser Technologies for Metrological Applications
Bronislav S. Mogilnitsky

PS01-07 (ismtii408)
Multivariant System of Perspective
Aristarkh M. Kovalev

Session 2. Micro- Nano- Measurements and Metrology

PS02-01 (ismtii087)
Design and Analysis of 6-DOF Monolithic Nanopositioning Stage
Lingli Cheng, Jianwei Yu, Xiaofen Yu

PS02-02 (ismtii188)
Ultraviolet Nanosecond Pulse Laser 3D Micro-Fabrication System
Chunyang Liu, Xing Fu, Yong Wu, Fengming Sun, Xiaotang Hu

PS02-03 (ismtii233)
Nanoscale Measurement Technique of In-Plane Motion for MEMS Based on Correlation Fitting Calibration Method
Chen Zhi, Hu Xiaodong, Fu Xing, Hu Xiaotang, Gao Sitian

PS02-04 (ismtii240)
In Situ Mechanical Property Measurement of Titania Nanowires
M. Chang, J.R. Deka, C.H. Lin, C.C. Chung

PS02-05 (ismtii324)
Analysis on Heterodyne Signals in Apertureless Scanning Near-Field Optical Microscopy
Chin-Ho Chuang and Yu-Lung Lo

PS02-06 (ismtii338)
Dynamic Characteristic Measurement for MEMS Microstructures in Environment Beyond Normal
X.D. Wang, D.S. She, X.W. Zhang, T. Wang, L.D. Wang

PS02-07 (ismtii403)
Image Restoration Used for Detection of Confocal Microscope
Huang Xiangdong, Xing Benfeng, Cui Junning

PS02-08 (ismtii404)
Differential Confocal Microscopy with Center Shaded Filter Based on Polychromatic Illumination
Jian Liu, Jiu-Bin Tan, Yu-Hang Wang

Session 3. Optical and X-Ray Tomography and Interferometry

PS03-01 (ismtii144)
Development of Innovative Fringe Locking Strategies for Vibration-Resistant White Light Vertical Scanning Interferometry (VSI)
Liang-Chia Chen, Abraham Mario Tapilouw, Sheng-Lih Yeh, Shih-Tsong Lin, Yi-Shiuan Lin

PS03-02 (ismtii149)
The Compensation of Tilt Angles and Verification of Displacement Measurements with Fabry-Perot Interferometer
Yung-Cheng Wang, Lih-Horng Shyu, Wen-Yuh Jywe, Bean-Yin Lee

PS03-03 (ismtii158)
Ultrasonic Interferometer for High-Accuracy Linear Measurements
Eugene V. Konkov

PS03-04 (ismtii162)
Spatial Phase-Shifting Moiré Tomography
Song Yang, Zhao Zhimin, Chen Yunyun, He Anzhi

PS03-05 (ismtii175)
Improvement on Measuring Optical Nonlinear Phase Shift by Self-Aligned Interferometer
Chongxiu Yu, Bing Liu, Xiangjun Xin, Xinzhu Sang, Jinhui Yuan

PS03-06 (ismtii202)
About the Peculiarities of The Polarization Approach to the Measuring of Optical Field Correlations
Oleg V. Angelsky, Sergij B. Yermolenko, Claudia Yu. Zenkova, Alla O. Angelskaya

PS03-07 (ismtii244)
Multi-Channel Adaptive Interferometry System
Roman Romashko, Yuri Kulchin, Salvatore Di Girolamo, and Alexei Kamshilin

PS03-08 (ismtii293)
Feedback Interferometry with Frequency Modulation
Victor S. Sobolev, Galina A. Kashcheeva

PS03-10 (ismtii352)
Modeling Software for Industrial Computed Tomography Problems
Yuri V. Obidin, Konstantin V. Petukhov, Vladimir Y. Sartakov

Session 4. Measurements for Geometrical and Mechanical Quantities

PS04-01 (ismtii025)
Development of a Print-Through Phenomenon Measurement System Using the Fringe Reflection Method for the Fiber Reinforced Plastics (FRP)
Fang-Jung Shiou, Hsin-Ju Chen, Chia-Hao Hsu

PS04-02 (ismtii038)
A Novel Point Matching Method for Stereovision Measurement Using RANSAC Affine Transformation
Naiguang Lu, Peng Sun, Wenyi Deng, Lianqing Zhu, Xiaoping Lou

PS04-03 (ismtii048)
A Method for Laser Measurement of Disperse Composition and Concentration of Aerosol Particles
Olga B. Kudryashova, Igor R. Akhmadeev, Anatoly A. Pavlenko,
Vladimir A. Arkhipov, Sergey S. Bondarchuk

PS04-04 (ismtii055)
Reducing the Effects of Measurement Noise when Determining Surface Texture Parameters
Alistair Forbes, Richard Leach

PS04-05 (ismtii057)
Uncertainty Analysis of Helical Deviation Measurements
Shi Zhaoyao, Lin Jiachun, Michael Krystek

PS04-06 (ismtii058)
Uncertainty Calculation of Roundness by Automatic Differentiation
Lin Jiachun, Michael Krystek, Shi Zhaoyao

PS04-07 (ismtii082)
Optical Correlation Relief Measurement
Oleg V. Angelsky, Alexander P. Maksimyak, Peter P. Maksimyak

PS04-08 (ismtii084)
Advanced Phase- and Amplitude Control of a Coriolis Mass Flow Meter (CMFM)
H. Röck and F. Koschmieder

PS04-09 (ismtii134)
Investigation of an Optical Sensor for Small Angle Detection
Yusuke Saito, Yoshikazu Arai and Wei Gao

PS04-10 (ismtii151)
The Study and Improvement of a 3D Digitizer Based on Grinding Technique
Wei-Chen Lee, Po-Kai Hsu

PS04-11 (ismtii156)
Error Modeling and Compensation for High-Precision Non-Contact Four Coordinate Measuring System
Fei Zhang, Zhuang-De Jiang, Bing Li, Jian-Jun Ding, Lei Chen

PS04-12 (ismtii163)
Multi-Angle Detecting Method for the Defects of the High-Reflective Products
Zhao Yang, Qu Xinghua, Wang Junlong

PS04-13 (ismtii167)
Round Steel Parameters on-Line Measurement Based on Multi-Line Structured Light Visual Technology
T. Xue, P. Gao, B. Wu, S.H. Ye

PS04-14 (ismtii168)
A Novel Method for Spatial Circle Localizing with Line Structured Light Visual Sensor
B. Wu, X.T. Xiao, G. Mu, T. Xue, S.H. Ye

PS04-15 (ismtii170)
The Relaxation Matching Technology and Algorithm for Moving Photogrammetry
Jigui Zhu, Lei Guo, Shenghua Ye

PS04-16 (ismtii177)
Quick Error Verification of Portable Coordinate Measuring Arm
J.F. Ouyang, W.L. Liu, X.H. Qu

PS04-17 (ismtii178)
Research on a Novel System of Optical Image Processing
Lei Liu, Hongmin Yu, Zhimin Zhao, Lei Ji

PS04-18 (ismtii203)
Inner-Base Optoelectronic System for the Control of Linear Displacements
Konstantin G. Arakantsev, Igor A. Koniakhine, Aleksandr N. Timofeev

PS04-19 (ismtii207)
Method of the on-Field Calibration of Measurement System Based on Industrial Robot
Liu Changjie, Shi Chunlei, He Jia, Ye Shenghua

PS04-20 (ismtii228)
Development and Implementation of a Simplified Tool Measuring System
J.Y. Chen, B.Y. Lee, K.C. Lee, Z.K. Chen

PS04-21 (ismtii235)
Analysis and Design of an Integrated Universal Capacitive Sensor Interface
A. Heidary and G.C.M. Meijer

PS04-22 (ismtii241)
Evaluation of Surface Roughness in High Speed Turning of Superalloy Inconel 718 Using Taguchi Method
D.G. Thakur, B. Ramamoorthy, L. Vijayaraghavan

PS04-23 (ismtii270)
Position Predictive Measurement Method for Time Grating CNC Rotary Table
Liu Xiaokang, Peng Donglin, Yang Wei and Fei Yetai

PS04-24 (ismtii272)
Research on Error Compensation and Measurement Technology in Robot Flexible Measurement
Ren Yong-Jie, Zhu Ji-Gui, Yang Xue-You, Ye Sheng-Hua

PS04-25 (ismtii289)
Principles for Echo Position Determination Using Airborne Ultrasound
Georg Kaniak, Herbert Schweinzer

PS04-26 (ismtii311)
High Precision Angular and Linear Measurements Using Universal Opto-Electronic Measuring Modules in Distributed Measuring Systems
Igor A. Konyakhin, Alexander N. Timofeev, Sergey N. Yaryshev

PS04-27 (ismtii329)
Recognition of Features from Micro Scale Patterned Surfaces
H. Zhu, L. Blunt, X. Jiang, S. Xiao

PS04-28 (ismtii336)
Simple Method for the Straightness Errors Measurement with Interferometer MI1500 of SIOS® and Overall Error Calibration of CMM
Wei Jinwen, Chen Yanling, Guo Junjie

PS04-29 (ismtii337)
The Geometric Dynamic Errors of CMM in Fast Probing
Wei Jinwen, Chen Yanling, Guo Junjie

PS04-30 (ismtii358)
Measurement of Nonroundness of the Objects Freely Rolling on Guide Bearing or on a Smooth Surface
Olga P. Belousova, Pavel P. Belousov, Peter Ya. Belousov

PS04-31 (ismtii359)
Form Measurement for Cylinder Guide by Laser Doppler Anemometer
Olga P. Belousova, Peter Ya. Belousov

PS04-32 (ismtii369)
Accuracy Enhancement for Precision Angle Measuring Structures
Alexey V. Kiryanov

PS04-33 (ismtii373)
Research by the Hilbert Optics Methods of the Vortical Structures Arising at Diffraction of Pressure Front on an Aperture
Vitaly A. Arbuzov, Yury N. Dubnishchev, Nikolay A. Dvornikov, Victor G. Nechaev

PS04-34 (ismtii398)
Measurements of Sophisticated Surface Pairs in Holonic Manufacturing System
Illes Dudas, Gyula Varga

PS04-35 (ismtii402)
Compensation of Hysteresis for Calibrator of Giant Magnetostrictive Actuator Based on Preisach Model
Lei Wang, J.B. Tan, Shan Zhang and Tao Cheng

Session 5. Terahertz Technologies for Science, Industry, Medicine, Biology

PS05-01 (ismtii042)
Compact Terahertz Spectrometers: Principles and Applications
V.D. Antsygin, A.A. Mamrashev, N.A. Nikolaev, O.I. Potaturkin

PS05-02 (ismtii305)
Research on Terahertz Filters Employing the Effect of Frustrated Total Internal Reflection
A.S. Syrneva, V.V. Chesnokov, D.V. Chesnokov

PS05-03 (ismtii328)
Micromechanical Optical Scanner for Terahertz Spectrum Diapason
Vladimir S. Korneyev, Vladimir V. Chesnokov, Dmitriy V. Chesnokov

Session 9. Metrology and Characterization of Materials

PS09-01 (ismtii029)
Iodine Molecules Differential Absorption Cross Section Lidar Studies
Vadim E. Privalov, Valery G. Shemanin and Elina I. Voronina

PS09-02 (ismtii047)
Experiments of Negative-Index Refraction in Optical Frequency Region
Jiabi Chen, Binming Liang, Dawei Zhang , Songlin Zhuang

PS09-04 (ismtii186)
The Measurement of Electromagnetic Shielding Effectiveness of the Composite Carbon Fibers/Nickel Thin Film
Ho Chang, Yun-Min Yeh, Ching-Song Jwo, Sih-Li Chen

PS09-05 (ismtii212)
The Design of Acoustic Horns for Ultrasonic Insertion
Kuen-Ming Shu, Wen- Hsiang Hsieh, Chien Chih Chen

PS09-06 (ismtii216)
Prediction of the Bilinear Stress-Strain Curve of Engineering Material by Nanoindentation Test
T.S. Yang, T.H. Fang, C.T. Kawn, G.L. Ke, S.Y. Chang

PS09-07 (ismtii242)
Determination of Threshold Values and Monitoring of the Surface State of Semiconductors Under Pulsed Laser Irradiation
Volodymyr A. Gnatyuk, Toru Aoki, Olexandr I. Vlasenko, Olena S. Gorodnychenko

PS09-08 (ismtii245)
Characterization of Periodically Poled Structures Using Digital Holography
Roman Romashko, Hyung-Man Lee, Woo-Seok Yang, Woo-Kyung Kim,
Yuri Kulchin, and Han-Young Lee

PS09-09 (ismtii306)
Principle of Absorption Spectrum Measurement of the Layers Adsorbed on Transparent Substrates
D.S. Mikhailova, V.V. Chesnokov, D.V. Chesnokov

PS09-10 (ismtii318)
Requirements on a Differential Refractometer for Its Use in Sizing Colloidal Particles
Augusto García-Valenzuela, Celia Sánchez Pérez

Tuesday, June 30, 2009. 15^{15} – 17^{15}

Elizabeth Hall, Rossiya Hotel

Session 1a. General Problems of Measurement: Uncertainty, Traceability

Chairs: Valery S. Alexandrov, Harald Bosse

15^{15} – 15^{45} OS01-01 (ismtii001)
Principles of Bayesian Methods in Data Analysis (invited paper)
Michael Krystek

15^{45} – 16^{15} OS01-09 (ismtii419)
Preference Aggregation: Measurement Theoretic Aspects, Algorithms and Present Applications (invited paper)
Sergey V. Muravyov

16^{15} – 16^{30} OS01-03 (ismtii192)
Correct Treatment of Systematic Errors in the Evaluation of Measurement Uncertainty
Frank Härtig, Michael Krystek

16^{30} – 16^{45} OS01-04 (ismtii292)
Optical Signal Parameters Maximum Likelihood Estimator and Cramer-Rao Bounds
Victor S. Sobolev, Sergey V. Khabarov

16^{45} – 17^{00} OS01-05 (ismtii315)
A Consistent Approach to Measurement-Uncertainty Evaluation and Multisensor Information Fusion
Klaus-Dieter Sommer, Michael Krystek, Anna-Lisa Hauswaldt, Albert Weckenmann

Tuesday, June 30, 2009. 15^{15} – 17^{15}

Alexander III Hall, Rossiya Hotel

Session 2b. Micro- Nano- Measurements and Metrology: Metrological Assurance

Chairs: Kuang-Chao Fan, Nikolay V. Nikonorov

15^{15} – 15^{45} OS02-07 (ismtii413)
NT-MDT for Innovations Instruments Engineering (invited paper)
Victor Bykov, Vladislav Polyakov, Vladimir Kotov, Andrei Bykov, Andrei Shubin

15^{45} – 16^{15} OS02-08 (ismtii006)
Metrological and Standardization Base of Nanotechnologies (invited paper)
Pavel A. Todua

16^{15} – 16^{30} OS02-09 (ismtii412)
Interrelation of Metrology and Nanotechnology with Intellectual Property Rights
L. Kraeuter, M.N. Durakbasa, P.H. Osanna

16^{30} – 16^{45} OS02-10 (ismtii416)
Measurements and Metrology for RUSNANO Projects Directed to Development of Nanotechnologies and the Nanoindustry
Victor V. Ivanov

16^{45} – 17^{00} OS02-11 (ismtii380)
Calibration Methods for Nanometer Scale Measuring Instruments
Wenhao Huang, Yuhang Chen, Jiawen Li

17^{00} – 17^{15} OS02-12 (ismtii361)
Optical Registration of Nanoscale Membrane Deformation in Optoacoustic Infrared Imager
Victor N. Fedorinin, Andrei G. Paulish

Tuesday, June 30, 2009. 15^{15} – 17^{15}

Petrovskiy Hall, Rossiya Hotel

Session 4b. Measurements for Geometrical and Mechanical Quantities: Advanced Metrology and Techniques

Chairs: Balakrishnan Ramamoorthy, Seung-Woo Kim

15^{15} – 15^{45} OS04-08 (ismtii340)
Application of Diode Lasers in Interferometrical Length Measurements
(invited paper)
Alexander Höink, Karl Meiners-Hagen, Otto Jusko, Ahmed Abou-Zeid

15^{45} – 16^{00} OS04-10 (ismtii256)
Angle Metrology at the PTB: Current Status and Developments
M. Krause, A. Just, R. D. Geckeler, H. Bosse

16^{00} – 16^{15} OS04-11 (ismtii100)
Measurement of Straightness for Two-Dimensional Translatory Stage
M. Watanabe, R. Furutani

16^{15} – 16^{30} OS04-12 (ismtii314)
The Optic-Electronic Systems for Control the Angle and Line Positions of the Elements Unblocked Aperture Radio-Telescope
Igor A. Konyakhin, Aleksandr N. Timofeev

16^{30} – 16^{45} OS04-13 (ismtii257)
The PTB Nanometer Comparator for Metrology on Length Graduations and Incremental Length Encoder Systems
J. Flügge, R. Köning, Ch. Weichert, S. Vertu, A. Wiegmann, M. Stavridis, C. Elster, M. Schulz, H. Bosse

16^{45} – 17^{00} OS04-14 (ismtii330)
A New Way to Evaluate Steel Sheet Surfaces
L. Blunt, X. Jiang, W. Zeng, T. Asim

Tuesday, June 30, 2009. $15^{15} – 17^{15}$

Alexander II Hall, Rossiya Hotel

Session 6b. Novel Measurements and Diagnostic Methods: Biological and Medical Applications

Chairs: Peter Rolfe, Sergey E. Peltek

$15^{15} – 15^{45}$ OS06-08 (ismtii409)
Microfluidic Systems in Biology (invited paper)
Sergey E. Peltek, T.N. Goryachkovskaya, V.M. Popik, V.F. Pindyurin, V.S. Eliseev, B.G. Gol'denberg, M.A. Shcheglov, N.V. Tikunova, T.M. Khlebodarova, N.B. Rubtsov, G.N. Kulipanov, and Nikolay A. Kolchanov

$15^{45} – 16^{00}$ OS06-09 (ismtii223)
Heart Rate Wireless Monitoring System, Novel Approach to ECG Processing and Representation
Vjacheslav E. Antsiperov, Yuri V. Obukhov, Gennady K. Mansurov, Tapobrata Lahiri, Gohel Bakul Chandulal, Hrishikesh Mishra, Abhishek Vaish, Pritish K. Varadwaj, Shirshu Varma

$16^{00} – 16^{15}$ OS06-10 (ismtii002)
Disability Assessment Using Visual Gait Analysis
Sherif El-Sayed Hussein

$16^{15} – 16^{30}$ OS06-11 (ismtii140)
New Methods of Noninvasive Electrocardiography on the Basis of Multiple-Electrode and Economical Measuring Systems
Leonid I. Titomir, Vladimir G. Trunov, Eduard A.-I. Aidu, Tamara A. Sakhnova, Elena V. Blinova

$16^{30} – 16^{45}$ OS06-12 (ismtii236)
A Computational Approach for Risk-Estimation of Coronary Artery Blockade Using Thermogram
Tapobrata Lahiri, Gohel Bakul Chandulal, Hrishikesh Mishra, Abhishek Vaish, Pritish Kumar Varadwaj, Shirshu Varma, Uma Shankar Tiwary, Vjacheslav E. Anticeperov, Yuri V. Obukhov, Alexei A. Morozov, Gennady K. Mansurov

$16^{45} – 17^{00}$ OS06-13 (ismtii227)
Metrological Aspects of Enzyme Production
Tatiana de Mattos Kerber, Gisela Maria Dellamora-Ortiz, Fatima Ventura Pereira-Meirelles

$17^{00} – 17^{15}$ OS06-14 (ismtii107)
Neural Network Based on Intelligent Measuring Instrument
Yu. Grodetski, G. Malykhina

Tuesday, June 30, 2009. $15^{15} – 17^{15}$

Nikolay I Hall, Rossiya Hotel

Session 7b. Intelligent Measuring Instruments and Systems for Industry and Transport: Algorithm and Software

Chairs: Konstantin I. Kuchinsky, Volker Hans

$15^{15} – 15^{30}$ OS07-09 (ismtii051)
Automatic, Task-Sensitive and Simulation-Based Optimization of Fringe Projection Measurements
Johannes Weickmann, Albert Weckenmann, Peter-Frederik Brenner

$15^{30} – 15^{45}$ OS07-10 (ismtii069)
Estimation of the Wrist Torque of Robot Gripper Using Data Fusion and ANN Techniques
Wu Ting, Tang Xue-hua, Li Zhu

$15^{45} – 16^{00}$ OS07-11 (ismtii348)
CMM with Large Working Volume Based on Laser Technological System
Ignat A. Vykhristyuk

$16^{00} – 16^{15}$ OS07-12 (ismtii258)
Research on Tool Condition Monitoring System in Auto-Balancing Machines
Zhao Dingding, Cai Ping

$16^{15} – 16^{30}$ OS07-13 (ismtii342)
A Study of CFD Models for Investigating the Water Beam Assisted Form Error in-Process Optical Measurement
Y.H. Lai, Y. Gao, Y. Zhang and J.X. Wang

$16^{30} – 16^{45}$ OS07-14 (ismtii189)
Image Denoising Algorithm Based on Improved Filter in Contourlet Domain
HongJun Li, ZhiMin Zhao

$15^{15} – 17^{15}$ Round Table I **"Concept of Measurements: Past, Present, and Future"**
Prof. Roald Taymanov

$17^{15} – 17^{45}$ **Coffee Break**

Tuesday, June 30, 2009. $17^{45} – 18^{45}$

Elizabeth Hall, Rossiya Hotel

Session 1b. General Problems of Measurement: Uncertainty, Traceability

Chair: Richard K. Leach

$17^{45} – 18^{15}$ OS01-06 (ismtii229)
Uncertainty Evaluation for Coordinate Metrology by Intelligent Measurement (invited paper)
Kiyoshi Takamasu, Satoru Takahashi, Wang Tao, Ryoshu Furutani and Makoto Abbe

$18^{15} – 18^{30}$ OS01-07 (ismtii205)
Direct Measurement Technique of Plumb-Lines Deflection
Eugene V. Konkov

18^{30} – 18^{45} OS01-08 (ismtii394)
Phase and Group Refractive Index of Optical Waves for Precision Measurements
Alexander P. Karpik, Alexander V. Koshelev

Tuesday, June 30, 2009. 17^{45} – 18^{45}

Alexander III Hall, Rossiya Hotel

Session 2c. Micro- Nano- Measurements and Metrology: Structures Fabrication Techniques

Chairs: Victor Bykov, Wen-Yuh Jywe

17^{45} – 18^{15} OS02-13 (ismtii023)
3D Micro- and Nanofabrication Using Femtosecond Lasers (invited paper)
Boris N. Chichkov, Roman Kiyan

18^{15} – 18^{30} OS02-14 (ismtii044)
Nanotechnology of Creation of Quantum Points from the Ultra-Cold Atoms of Hydrogen
E.K. Izrailov, K.E. Izrailov

18^{30} – 18^{45} OS02-15 (ismtii016)
Fabrication of Large Grating by Monitoring the Latent Fringe Pattern
Lijiang Zeng, Lei Shi, and Lifeng Li

Tuesday, June 30, 2009. 17^{45} – 18^{45}

Petrovskiy Hall, Rossiya Hotel

Session 4c. Measurements for Geometrical and Mechanical Quantities: Measurements of Motion Parameters

Chairs: Yuri N. Dubnishchev, Jürgen Kompenhans

17^{45} – 18^{15} OS04-15 (ismtii063)
Industrial Applications of Image Based Measurement Techniques in Aerodynamics: Problems, Progress and Future Needs (invited paper)
Jürgen Kompenhans

18^{15} – 18^{30} OS04-16 (ismtii187)
Droplet Imaging Velocimeter and Sizer (Divas)
Cecil F. Hess and Drew L'Esperance

18^{30} – 18^{45} OS04-17 (ismtii414)
Laser Doppler Visualization of Velocity Fields with Eliminating the Influence of Multi–Particle Scattering
Yuri N. Dubnishchev, Yuri V. Chugui, Jürgen Kompenhans

Tuesday, June 30, 2009. 17^{45} – 18^{45}

Alexander II Hall, Rossiya Hotel

Session 6c. Novel Measurements and Diagnostic Methods: Ultra Precision WaveFront Techniques

Chairs: Robert Schmitt, Vladimir P. Lukin

17^{45} – 18^{15} OS06-15 (ismtii320)
Wavefront Sensors for Adaptive Optics Application (invited paper)
Vladimir P. Lukin, Nina N. Botygina, Oleg N. Emaleev, Peter A. Konyaev, Lidia N. Lavrinova

18^{15} – 18^{30} OS06-16 (ismtii053)
Wavefront Correction and Measurement by Using a Liquid Crystal Spatial Light Modulator
Zhang Jian, Wu Liying, Zou Limin

18^{30} – 18^{45} OS06-17 (ismtii052)
Beam Pointing Precision Control by Using a Liquid Crystal Optical Phased Array
Wu Liying, Zhang Jian, Fang Yun

Tuesday, June 30, 2009. 17^{45} – 18^{45}

Nikolay I Hall, Rossiya Hotel

Session 7c. Intelligent Measuring Instruments and Systems for Industry and Transport: Self-Diagnostics

Chairs: Roald Taymanov, Ksenia Sapozhnikova, Sánchez V. José

17^{45} – 18^{00} OS07-15 (ismtii117)
Sensor Self-Monitoring and Fault-Tolerance
Roland Werthschützky, Reinhard Werner

18^{00} – 18^{15} OS07-16 (ismtii302)
Problems of Terminology in the Field of Intelligent Sensors and Systems
Roald Taymanov, Ksenia Sapozhnikova

18^{15} – 18^{30} OS07-17 (ismtii221)
Toward the Self-Calibration of Optical Flats by Using Geometrical Polynomials on Relief, and Sine Gray Spectrum on Interpherograms
Sánchez V. José, Ruiz B. Gerardo, Valera O. Benjamín

18^{30} – 18^{45} OS07-18 (ismtii271)
On-Line Test System for Vibration Measurement and Sorting of Ball Bearings
Chen Yuxue, Liu Jian

Tuesday, June 30, 2009. $17^{45} – 18^{45}$

Alexander I Hall, Rossiya Hotel

Session 9a. Metrology and Characterization of Materials: Hardness Measurement

Chair: Charles Wang

$17^{45} – 18^{15}$ OS09-01 (ismtii009)
Development of a Micro-Miniature Nanoindentation Instrument with the Force Resolution of 1 Nn (invited paper)
Sai Gao, Zhi Li, Konrad Herrmann

$18^{15} – 18^{45}$ OS09-02 (ismtii379)
Transients of Deformation at Nanoscale Observed in Displacement Controlled Nanoindentation Testing (invited paper)
Ude D. Hangen

Wednesday, July 1, 2009

Petrovskiy Hall, Rossiya Hotel

Plenary Session IV

Chair: Otto Jusko

$8^{30} – 9^{10}$ **Keynote Speech 8** KS-08 (ismtii007)
Orthogonally Polarized Dual Frequency Lasers and Applications in Self-Sensing Metrology
Prof. Shulian Zhang, Prof. Yidong Tan, Tsinghua University, *China*

$9^{10} – 9^{50}$ **Keynote Speech 9** KS-09 (ismtii036)
A Scanning Contact Probe for Micro CMM
Prof. Kuang-Chao Fan, Dr. Fang Cheng, Weili Wang, Yejin Chen, Jia-You Lin, National Taiwan University, *Taiwan*

$9^{50} – 10^{30}$ **Keynote Speech 10** KS-10 (ismtii325)
Novosibirsk High-Power Terahertz Free Electron Laser: Instrumentation Development and Experimental Achievements
Prof. Boris A. Knyazev, Academician Gennady N. Kulipanov, et al, Budker Institute of Nuclear Physics, SB RAS, *Russia*

$10^{30} – 11^{00}$ **Coffee Break**

Wednesday, July 1, 2009. $11^{00} – 13^{15}$

Alexander III Hall, Rossiya Hotel

Session 2d. Micro- Nano- Measurements and Metrology: Advanced Methods and Systems

Chairs: Yasuhiro Takaya, Junfeng Song

$11^{00} – 11^{30}$ OS02-16 (ismtii417)
Testing Aspheric Lenses: Some New Approaches with Increased Flexibility (invited paper)
Wolfgang Osten, Eugenio Garbusi, Christoph Pruss, Lars Seifert

$11^{30} – 12^{00}$ OS02-17 (ismtii370)
Development of the Equipments for Nano Photonic Crystal (invited paper)
Wen-Yuh Jywe, Jing-Chung Shen, Chien-Hung Liu, Shang-Liang Chen, Tung Hsien Hsieh, Li-Li Duan, Chen-Hua She

$12^{00} – 12^{15}$ OS02-18 (ismtii070)
Features of Coherent Optical Method for Studies of Nanoscale Objects in Liquid Media
Yuriy N. Kulchin, Oleg B. Vitrik, Alexey D. Lantsov, Natalya P. Kraeva

$12^{15} – 12^{30}$ OS02-19 (ismtii349)
Microrelief Measurements for White-Light Interferometer with Adaptive Algorithm Interferogram Processing
Evgeny V. Sysoev, Rodion V. Kulikov

$12^{30} – 12^{45}$ OS02-20 (ismtii238)
Multi-Wavelength Angle-Resolved Reflectometer for Thickness and Refractive Index Measurement of Thin-Film Structures
Woo-Deok Joo, Joonho You, and Seung-Woo Kim

$12^{45} – 13^{00}$ OS02-21 (ismtii231)
Precision Inspection of Glass Ceramics Surface Topology
Valery V. Besogonov, Irina N. Skvortsova

$13^{00} – 13^{15}$ OS02-22 (ismtii045)
Measurement and Visualization of Dynamics of Piezoelectric Microcantilever
Weijie Dong, Mengwei Liu, Cui Yan

Wednesday, July 1, 2009. $11^{00} – 13^{15}$

Nikolay I Hall, Rossiya Hotel

Session 3a. Optical and X-Ray Tomography and Interferometry: Advanced Optical Interferometry 1

Chairs: Albert Weckenmann, Mitsuo Takeda

$11^{00} – 11^{30}$ OS03-01 (ismtii032)
Nanotrace: the Investigation of Non-Linearity in Optical Interferometers Using X-Ray Interferometry (invited paper)
Andrew Yacoot, Marco Pisani, Gian Bartolo Picotto, et al

11^{30} – 11^{45} OS03-02 (ismtii217)
High-Resolution Dimensional Metrology for Industrial Applications
Thilo Schuldt, Martin Gohlke, Dennis Weise, Achim Peters, Ulrich Johann, Claus Braxmaier

11^{45} – 12^{00} OS03-03 (ismtii376)
Diffractive Interferometer for Visualization and Measurement of Optical Inhomogeneities
Irina G. Palchikova, Ivan A. Yurlagin

12^{00} – 12^{15} OS03-04 (ismtii179)
Programmable Holographic Optical Elements as Adaptive Optics in Optical Diagnostics Devices
James D. Trolinger, Amit Lal, Joshua Jo, and Stephen Kupiec

12^{15} – 12^{30} OS03-05 (ismtii079)
Measurement of Period Difference in Grating Pair Based on Analysis of Grating Phase Shift
Chao Guo, Lijiang Zeng

12^{30} – 12^{45} OS03-06 (ismtii141)
Double-Sided Interferometer with Low Drift for Stability Testing
Jonathan D. Ellis, Ki-Nam Joo, Jo W. Spronck, and Robert H. Munnig Schmidt

12^{45} – 13^{00} OS03-07 (ismtii150)
Compact Signal Processing with Position Sensitive Detectors Utilized for Michelson Interferometer
Lih-Horng Shyu, Yung-Cheng Wang, Jui-Cheng Lin

13^{00} – 13^{15} OS03-08 (ismtii211)
Digital 2D Wavefield Reconstruction Based on Novel Two-Matrix Forward/Backward Propagation Modeling
Vladimir Katkovnik, Artem Migukin, Jaakko Astola, and Karen Egiazarian

Wednesday, July 1, 2009. 11^{00} – 13^{15}

Petrovskiy Hall, Rossiya Hotel

Session 4d. Measurements for Geometrical and Mechanical Quantities: High resolution 3D Inspection

Chairs: Shulian Zhang, Ahmed Abou-Zeid

11^{00} – 11^{30} OS04-18 (ismtii246)
Dynamic 3-D Surface Profilometry Using a Novel Color Pattern Encoded with a Multiple Triangular Model (invited paper)
Liang-Chia Chen and Xuan-Loc Nguyen

11^{30} – 11^{45} OS04-19 (ismtii064)
Current Issues in CNC Machine Tools — 3D Volumetric Positioning Accuracy
Charles Wang

11^{45} – 12^{00} OS04-20 (ismtii041)
The Development of a Laser Array Measurement System for Three Dimensional Positioning Testing in Machine Tool
Wenyuh Jywe, Fong-Zhi Chen, Chun-Jen Chen, Hsin Hong Jwo, Jhih-Ming Pan

$12^{\underline{00}} – 12^{\underline{15}}$ OS04-21 (ismtii230)
The Development of Cylindrical Coordinate Measuring Machines
Guoxiong Zhang, Jingbin Guo, Shugui Liu, Zurong Qiu, Xinghua Li

$12^{\underline{15}} – 12^{\underline{30}}$ OS04-22 (ismtii354)
3D Optoelectronic Inspection of Fuel Assembly Components
Alexey V. Beloborodov, Alexander V. Chinov, Yuri V. Chugui, Leonid V. Finogenov, Anna A. Gushchina, Yuri K. Karlov, Peter I. Lavrenyuk, Yuri A. Lemeshko, Yuri V. Pimenov, Vladimir M. Troyanov, Mikhail G. Zarubin, Peter S. Zav'yalov

$12^{\underline{30}} – 12^{\underline{45}}$ OS04-23 (ismtii297)
Micro Coordinate Measuring Machine for Parallel Measurement of Microstructures
Christian Schrader, Christian Herbst, Rainer Tutsch, Stephanus Büttgenbach, Thomas Krah

$12^{\underline{45}} – 13^{\underline{00}}$ OS04-24 (ismtii290)
A 3D Ultrasonic Positioning System with High Accuracy for Indoor Application
Herbert F. Schweinzer, Gerhard F. Spitzer

Wednesday, July 1, 2009. $11^{\underline{00}} – 13^{\underline{15}}$

Alexander II Hall, Rossiya Hotel

Session 6d. Novel Measurements and Diagnostic Methods: Scientific and Industrial Applications 1

Chairs: Alexander S. Sovlukov, P. Venkateswara Rao

$11^{\underline{00}} – 11^{\underline{30}}$ OS06-18 (ismtii129)
Alternative Speckle Photography Techniques for Plastic Deformation Investigation (invited paper)
L.B. Zuev, V.V. Gorbatenko and K.V. Pavlichev

$11^{\underline{30}} – 11^{\underline{45}}$ OS06-19 (ismtii243)
Full-Field Laser Vibrometry – a Novel Approach for Vibration Mode Studies and Non-Destructive Inspection
James M. Kilpatrick and Vladimir B. Markov

$11^{\underline{45}} – 12^{\underline{00}}$ OS06-20 (ismtii356)
New Method for Measurement of Small Opaque Objects Using Fraunhofer Diffraction in Divergent Light
Mikhail D. Yaluplin, Yuri V. Chugui, Nikolay A. Yakovenko

$12^{\underline{00}} – 12^{\underline{15}}$ OS06-22 (ismtii066)
Compensating Method Based on ANN Inverse System for Dynamic Measurement System
Wang Yawei, Wang Zhongyu

$12^{\underline{15}} – 12^{\underline{30}}$ OS06-23 (ismtii174)
A Preliminary Study of Micro Heat Conduction by Hot-Tip TPM
Zhaoyang Yue and Xianping Liu

$12^{30} – 12^{45}$ OS06-24 (ismtii104)
Polarization Selection of Two-Dimensional Phase-Inhomogeneous Birefringence Images
A.G. Ushenko, Yu.A. Ushenko, I.Z. Misevitch, A.I. Dubolazov, V.I. Istratyy

Wednesday, July 1, 2009. $11^{00} – 13^{15}$

Nikolay II Hall, Rossiya Hotel

Session 10. Education in Measurement Science

Chairs: Victor M. Musalimov, Teresa Werner

$11^{00} – 11^{15}$ OS10-01 (ismtii381)
Dynamics of Dualscales
Victor M. Musalimov, L. Musalimova

$11^{15} – 11^{30}$ OS10-02 (ismtii050)
Computer-Assisted Generation of Individual Training Concepts for Advanced Education in Manufacturing Metrology
Teresa Werner, Albert Weckenmann

$11^{30} – 11^{45}$ OS10-03 (ismtii027)
Assessment of the Ukrainian Quality Infrastructure: Challenges Imposed by the WTO and Commitments to EU Accession
M.N. Frota, J.L. Racine, F. Blanc, P. Rodrigues, S. Ibragimov, D. Torkhov & S. Osavolyuk

$11^{45} – 12^{00}$ OS10-04 (ismtii391)
Metrological Maintenance of Geodetic Measuring Apparatuses
Evgeny A. Vorontsov

$12^{00} – 12^{15}$ OS10-05 (ismtii391)
MRI-Systems Designing and Application Specialists Development
Anna O. Kaznacheeva

Wednesday, July 1, 2009. $11^{00} – 13^{15}$

Alexander I Hall, Rossiya Hotel

ISTC Special Session

Chair: Olga N. Safronova

$11^{00} – 11^{15}$ ISTC-01
Investigation and Development of Plasma Display Panel Macrocell
G. Zvereva, E. Golubev, O. Levina

$11^{15} – 11^{30}$ ISTC-02
Innovations in X-ray Induced Electron Emission Spectrometry (XIEES) Performed Under ISTC Project #3157
Konstantin Ju. Pogrebitsky and Mikhail D. Sharkov

$11^{30} – 11^{45}$ ISTC-03

Tests of Model of Absolute Measuring Instrument of Synchrotron Radiations Power

I.A. Khrebtov, V.G. Malyarov, V.Yu. Zerov, A.D. Nikolenko, V.F. Pindyurin, A.A. Legkodymov, V.V. Lyah

$11^{45} – 12^{00}$ ISTC-04

Advantages in the Small-Angle Scattering of X ray for Studying Optoelectronic Devices within the Frames of ISTC Projects

Michael E. Boiko, Andrei M. Boiko

$12^{00} – 12^{15}$ ISTC-05

Space Solar Patrol Data and the Weather-Climate Changes, including the Global Warming

S.V. Avakyan, L.A. Baranova, E.V. Kuvaldin, N.B. Leonov, E.P. Savinov, A.V. Savuyshkin, N.A. Voronin, V.V. Kovalenok, V.P. Savinykh, V.F. Pindurin, A.D. Nikolenko

$12^{15} – 12^{30}$ ISTC-06

Optics of Experimental Nanolithographer with Laser Produced Plasma Source

A.P. Zhevlakov

$12^{30} – 12^{45}$ ISTC-07

Development and Creation of Automatic Highly Sensitive Gas Analyzers Based on Molecular Condensation Nuclei Effect to Detect Dangerous Substances

Ruben A. Kjandzhetsian, Vadim J. Katelevski, Vladimir P. Valjuchov, Sergej V. Demin, Vladimir D. Kuptsov, Leonid M. Vinogradsky

$13^{15} – 14^{15}$ **Lunch Break**

Wednesday, July 1, 2009. $14^{15} – 15^{15}$

Ekaterininskiy Hall, Rossiya Hotel

Poster Session II

Organizer: Peter S. Zav'yalov

Session 6. Novel Measurement and Diagnostic Methods

PS06-01 (ismtii015)

Glass Microlens Arrays for Shack-Hartmann Wavefront Sensors

Mikhail M. Vekshin, Anton S. Levchenko, Alexander V. Nikitin, Valery A. Nikitin, Nikolay A. Yakovenko

PS06-02 (ismtii092)

Photoacoustic Technique Application for Concrete Hydration Diagnostics

Mykhaylo P. Gorsky, Peter P. Maksimyak

PS06-03 (ismtii096)

Measurement of Phase Correlation Function of Liquid Crystal – Polymer Composites

P.P. Maksymyak, A.L. Nehrych, L.O. Dolgov, O.V. Yaroshchuk

PS06-04 (ismtii127)
The Development of Three-Tip Fluxgate Magnetometer Applied on Ship Magnetic Field Measure
Gu Wei, Chu Jianxin, Qiao Shuiyun

PS06-05 (ismtii136)
Auto Focusing Confocal Laser Induced Fluorescence Detection System
Wang Xuefei, Yan Weiping, Bai Haiming, Li Wei

PS06-06 (ismtii153)
Precision Measurement of the Low-Frequency Noise of Highly-Stable Capacitance-to-Digital Converter
Xiaodong Guo, Stoyan Nihtianov

PS06-07 (ismtii171)
Study on Measuring System for Characteristics and Distribution of Skylight Polarization
Yan Cui, Jinkui Chu, Nannan Cao, Kaichun Zhao

PS06-08 (ismtii173)
A Balanced Design of a Universal Sensor Interface Chip
Qi Jia, Xiujun Li and Gerard C.M. Meijer

PS06-09 (ismtii176)
Information Fusion in Human Eye Aberration Measurement
Jiabi Chen, Peiming Zhang, Tingyu Wang, Xinmei Xie, Songlin Zhuang

PS06-10 (ismtii180)
V-T/I-T Characterization of Photoconductive Semiconductor Switch
Qinggang Liu, Zhihong Yan and Xiaotang Hu

PS06-11 (ismtii183)
A Method for Mass Estimation of Loose Parts in NPP Based on SVM
Zheng Huawen, Cao Yanlong, Yang Jiangxin, He Yuanfeng

PS06-12 (ismtii184)
Automatic Shape Grading of Pearl Using Machine Vision Based Measurement System
Cao Yanlong, Zheng Huawen, Yang Jiangxin, He Yuanfeng

PS06-13 (ismtii185)
Dynamic Performance of Flow Control Valve Using Different Models of System Identification
Ho Chang, Po-Kai Tzenog and Yun-Min Yeh

PS06-14 (ismtii198)
Analysis of Grape Wine with Imidacloprid Pesticide Residues on Fluorescence Spectra
Tianhu Wang, Zhimin Zhao, Lei Ji, Benzheng Wei

PS06-15 (ismtii219)
Oil-Filled Isolated High Pressure Sensor for High Temperature Application
Zhuangde Jiang, Libo Zhao, Yulong Zhao, Yuanhao Liu, Philip D. Prewett, Kyle Jiang

PS06-16 (ismtii248)
Methods of Control of the Melt Composition with Growth of Stoichiometric $Linbo_3$ Single Crystals for PPLN
Valery V. Galutskiy, Elena V. Stroganova, Nikolay A. Yakovenko, Olga G. Volodzko

PS06-17 (ismtii317)
Development of Optical Ammonia Sensor with Composite Sensitive Film
Sergey A. Krutovertsev, Alexander G. Borisov, Maxim V. Chuprin,
Olga M. Ivanova, Anatoly V. Shevchenko

PS06-18 (ismtii327)
Tunable Interference Colour Filter in Micromechanical Performance
Dmitry M. Nikulin, Vladimir V. Chesnokov, Dmitry V. Chesnokov

PS06-19 (ismtii395)
Alignment of Cassegrain Telescope with Epps-Shulte Focus
Vladimir S. Obraztsov, Alexander A. Ageichik, Nikolai P. Larionov,
Oleg A. Lebedev, Anatoly V. Lukin, Sergey V. Solk

PS06-20 (ismtii405)
Asymmetric Thermal Structure for Frequency Stabilized Two-Mode Lasers
Hu Pengcheng, Tan Jiubin, Wang Qi, Zhang Pei

PS06-21 (ismtii411)
Silicon Precision Detectors for Near IR, Visible, UV, XUV and Soft X-Ray Spectral Range
V.V. Zabrodsky, P.N. Aruev, V.L. Sukhanov, N.V. Zabrodskaya, B.J. Ber,
D.Yu. Kasantsev, A.G. Alekseyev

PS06-22 (ismtii401)
Conceptual Basis for Creating New-Generation High-Stable High-Temperature Microelectromechanical Sensors Based on a Silicon-on-Isolator Heterostructure with a Monolithic Integral Tensoframe For Intelligent Transducers
Leonid V. Sokolov

PS06-23 (ismtii076)
Detection of Indoor Formaldehyde Concentration Using Lasrfeo_3-Doped Sno_2 Gas Sensor
Jing Wang, Xing Ru Chen, Peng Jun Yao, Min Ji, Jin Qing Qi, Wei Wu

PS06-24 (ismtii093)
The Investigation of Thrombus Formation Process by Lyapunov's Index of Scattered Coherent Radiation
M.S. Gavrylyak, S.G. Guminetsky, P.M. Grygoryshyn, P.P. Maksimyak, M.V. Shaplavskyi

PS06-25 (ismtii101)
Laser Metrology of Organic Crystals Singular Structure
A.G. Ushenko, I.Z. Misevitch, Yu.A. Ushenko and A.G. Pridiy

PS06-26 (ismtii102)
Polarization Metrology of Mueller Matrices Images of Phase-Inhomogeneous Layers
A.G. Ushenko, Yu.A. Ushenko, I.Z. Misevitch, A.I. Dubolazov, V.I. Istratyy

PS06-27 (ismtii103)
Mueller-Matrixes Tomography of Biological Crystals Network
A.G. Ushenko, I.Z. Misevitch, Yu.A. Ushenko And A.G. Pridiy

PS06-28 (ismtii111)
Polymer Based Micro Sensors Arrays for Ph and Glucose Monitoring
O. Korostynska, K. Arshak, A. Arshak, E. Gill, P. Creedon, S. Fitzpatrick

PS06-29 (ismtii114)
Fiber Bragg Grating Demodulation System Based on Equi-Intensity Cantilever Beam
Li Hong, Yan Weiping, Shen Rensheng, Wang Benyu

PS06-30 (ismtii199)
Design of Digital Closed-Loop Interferometric Fiber-Optic Magnetometer
Chunxi Zhang, Xiujuan Feng, Lishuang Feng, Xiaxiao Wang, Sheng Liang

PS06-31 (ismtii250)
Metrological Support of Measurements of the Parameters of Wavelength Dense Multiplexing FOTS
Vasiliy V. Grigoriev, Vladimir Ye. Kravtsov, Natalia A. Neverova,
Alexey B. Pnev, Sergey V. Tikhomirov

PS06-32 (ismtii251)
Reference Apparatuses for Metrological Support of Instruments Measuring Polarization Mode Dispersion in Optic Fiber
Vasiliy V. Grigoriev, Vladimir Ye. Kravtsov, Alexey K. Mityurev, Alexey B. Pnev,
Sergey V. Tikhomirov

PS06-33 (ismtii253)
Strain and Temperature Sensing System Based on Fiber Optic Periodic Structures
Vasiliy V. Grigoriev, Vladimir A. Lazarev, Alexey K. Mityurev, Alexey B. Pnev,
Sergey V. Tikhomirov

PS06-34 (ismtii254)
Calibration System for Fiber Bragg Grating Strain Sensors
Vladimir A. Lazarev, Natalia A. Neverova, Alexey B. Pnev, Sergey V. Tikhomirov

PS06-35 (ismtii279)
Raman-Assisted Distributed Brillouin Sensor in Optical Fiber for Strain and Temperature Monitoring in Civil Engineering Applications
Felix Rodriguez-Barrios, Sonia Martin-Lopez, Ana Carrasco-Sanz, Pedro Corredera, Maria Luisa Hernanz and Miguel Gonzalez-Herraez

PS06-36 (ismtii316)
U-Shaped Waveguide with Nanofilms for Medical Application
Sergey A. Krutovertsev, Alexander G. Borisov, Maxim V. Chuprin,
Maya G. Rubtsova, Olga M. Ivanova

PS06-37 (ismtii319)
Laser Beam Deflection Sensor in a Planar Optical Waveguide Based in the Mirage Effect
C. Sanchez-Perez and A. García-Valenzuela

Session 7. Intelligent Measuring Instruments and Systems for Industry and Transport

PS07-01 (ismtii056)
Intelligent Elements in Control Systems and Monitoring
Vadim M. Malykhin, Galina F. Malykhina

PS07-02 (ismtii067)
Optimal Design of High-Efficiency Retrodiffraction Gratings for Polarizing Filters Based on the Rigorous Coupled-Wave Analysis.
Chabum Lee, Jaeyoung Joo, Dokyun Woo, And Sun-Kyu Lee

PS07-03 (ismtii088)
Localization Accuracy Improved Methods for Range-Free Localization Schemes in Wireless Sensor Network
Jiawen Hu, Xiaofen Yu, Biao Wang, Zhiqiang Li

PS07-04 (ismtii109)
Relative Method of Measurement Photometry Data of Road Markings and Road Sign
Eduard V. Kuvaldin

PS07-05 (ismtii118)
Flow Rate Detection as an Example of Analytic Redundancy
Reinhard Werner, Roland Werthschützky

PS07-06 (ismtii123)
The Dimension Accuracy Analysis of a Micro-Punching Mold for IC Packing Bag
Wei-Shin Lin and Jui-Chang Lin

PS07-07 (ismtii128)
The Parameter Measurement of Marine Power System Based on Multi-Sensors Data Fusion Theory
Chu Jianxin, Gu Wei, Qiao Shuiyun

PS07-08 (ismtii142)
Excited Energy Attenuation Study Through Vibration Measurement and Spectrum Analysis
S.Y. Lin, C.K. Chang, C.T. Chung, F.C. Hsu, C.C. Wang, Y.C. Hsu

PS07-09 (ismtii157)
Measurement's Result and Its Error as Fuzzy Variables: Background and Perspectives
Guennady N. Solopchenko, Konstantin K. Semenov, Vladik Kreinovich, Leon Reznik

PS07-10 (ismtii161)
A Data Reduction Method Based on Bi-Directional Point Cloud Slicing for Reverse Engineering
Lei Chen, Zhuang-De Jiang, Bing Li, Jian-Jun Ding, Fei Zhang

PS07-11 (ismtii225)
Intellectual Measuring Converters Based on Neural Network Technologies
V.N. Loktiukhin, S.V. Chelebaev

PS07-12 (ismtii276)
Factorial and Preliminary Parameter Tests for the Water Beam Assisted form Error in-Process Optical Measurement
Y. Zhang, Y. Gao, Y.H. Lai And J.X. Wang

PS07-13 (ismtii312)
Noncontact Temperature Measurements in Laser Machining
M. Doubenskaia

PS07-14 (ismtii313)
SLS-Process Monitoring and Temperature Control
Yu. Chivel, M. Doubenskaia

PS07-16 (ismtii351)
RGB Image Processing Method for Color Classifying Diamonds
Aleksander V. Ginzhul, Marina A. Zavjalova, Yuri V. Obidin

PS07-17 (ismtii355)
Comparative Analysis of Algorithms of Processing Luminescence Signals from Minerals for Diamond Detection in Ore Flow
Boris V. Vanyushev, Anatoly K. Potashnikov

Session 8. Measurements and Metrology for the Humanitarian Fields

PS08-01 (ismtii013)
Measuring the Flow of Poetic Time (Identification of Latent Structures in Poetry)
Stefania Mancone, Vladimir M. Petrov

PS08-02 (ismtii019)
Intensity of Creative Innovations: Construing Samples for Evolutionary Investigations
Timofey V. Kovalenko, Peter A. Kulichkin, Lidia A. Mazhul, Vladimir M. Petrov

PS08-03 (ismtii021)
Nonmetric Multidimensional Unfolding as a Tool to Identify Latent Perceptual Variables: Measuring Contemporary Bards' Singing
Victor S. Kamensky, Vladimir M. Petrov

PS08-04 (ismtii073)
Methods to Measure the Extent to Which Teachers' Points of View Influence Creativity and Factors of Creative Personality: a Study with Italian Pupils
Maria Elvira De Caroli, Orazio Licciardello, Elisabetta Sagone, Claudia Castiglione

PS08-05 (ismtii165)
Mental Imagery Scale: an Application in the Field of Art Didactics
Paolo Castelli, Martina D'Ercole, Anna Maria Giannini, Antonella Sbrilli

PS08-06 (ismtii277)
Theatrical Life and Socially-Political Climate of Russian Society: Measurement of Evolution Intensity
Timofey V. Kovalenko

PS08-07 (ismtii281)
Intensity Waves: External or Internal Forces?
Peter A. Kulichkin

Session 10. Education in Measurement Science

PS10-01 (ismtii265)
Analysis of Phase Distribution of Focused Light in High NA Systems
Alexander Normatov, Boris Spektor And Joseph Shamir

PS10-02 (ismtii382)
The Analysis of Frictional Interaction of Constructional Materials
Denis V. Ershov, Dmitriy V. Zapatrin, Vitaliy V. Lulin

PS10-03 (ismtii383)
The Torsion Magnetic Variometer with Kevlar-Hanger-Based Sensor
Pavel A. Sergushin, Anna D. Perechesova, Maksim S. Petrishchev

PS10-04 (ismtii384)
Measuring Dynamic Visual Acuity Device
Alexey P. Saenko

PS10-05 (ismtii385)
The Device for Manufacturing Torsion Bars with Helical Anisotropy UISAT-1
Anna D. Perechesova, Pavel A. Sergushin, Maksim S. Petrishchev

PS10-06 (ismtii386)
Automatic Measurement of Lens Sizes
Galina A. Nedotsuka, Alla A. Vinogradova, Pavel P. Kovalenko

PS10-07 (ismtii387)
Peculiarities of Developing Requirements to the Results of Mastering Educational Programs in "Instrument-Making" Field
Maria Y. Marusina

PS10-08 (ismtii388)
Metrological Support of Nanotechnologies
Maria Y. Marusina

PS10-09 (ismtii389)
The Competence Approach to Designing Structure and Contents of Educational Programs in Higher Professional Education
Maria Y. Marusina, Alexander A. Shechonin

PS10-10 (ismtii390)
Designing the Competence Model of Graduate in "Instrument-Making" Field
Maria Y. Marusina

PS10-11 (ismtii393)
Diffusion Parameters Studying Using Magnetic Resonance Tomography
Anna O. Kaznacheeva

Wednesday, July 1, 2009. $15^{15} – 17^{00}$

Nikolay I Hall, Rossiya Hotel

Session 3b. Optical and X-Ray Tomography and Interferometry: Uncertainty, Traceability, Calibration for Tomography

Chairs: Andrew Yacoot, Hidenori Mimura

$15^{15} – 15^{45}$ OS03-09 (ismtii085)
Visual Inspection Using X-Ray Computer Tomography - Non-Destructive 3D-Quality Assurance (invited paper)
Robert Schmitt, Christian Niggemann

$15^{45} – 16^{15}$ OS03-10 (ismtii299)
Novel X-Ray Imaging Using a Cdte Sensor (invited paper)
Hidenori Mimura, Yoichiro Neo and Toru Aoki

$16^{15} – 16^{30}$ OS03-11 (ismtii288)
Measurements of Density Fields in Micro Nozzle Plumes in Vacuum by Using an Enhanced Tomographic Background Oriented Schlieren (BOS) Technique
A. Schröder, B. Over, R. Geisler, A. Bulit, R. Schwane, J. Kompenhans

$16^{30} – 16^{45}$ OS03-12 (ismtii206)
Achieving Traceability of Industrial Computed Tomography
Markus Bartscher, Marko Neukamm, Uwe Hilpert, Ulrich Neuschaefer-Rube, Frank Härtig, Karin Kniel, Karsten Ehrig, Andreas Staude, Jürgen Goebbels

Wednesday, July 1, 2009. $15^{15} – 17^{00}$

Petrovskiy Hall, Rossiya Hotel

Session 4e. Measurements for Geometrical and Mechanical Quantities: Advanced Metrology and Techniques

Chairs: Wei Gao, Guoxiong Zhang

$15^{15} – 15^{45}$ OS04-25 (ismtii065)
Optical Vortex Metrology (invited paper)
Mitsuo Takeda, Wei Wang, Steen G. Hanson, Yoko Miyamoto

$15^{45} – 16^{00}$ OS04-26 (ismtii274)
A Study of Key Optical Profiler Parameters for Form Error Measurement
X. Huang and Y. Gao

$16^{00} – 16^{15}$ OS04-27 (ismtii095)
High Throughput System for Geometry Inspection of Large-Size Distributed Objects
Sergey N. Makarov, Alexander G. Verkhogliad

$16^{15} – 16^{30}$ OS04-28 (ismtii083)
Impact of High-Speed Image Recognition of Transition Phenomenon of Chip Formation and Chip Flow in Gear Hobbing Process
Yoji Umezaki, Syuhei Kurokawa, and Yasutsune Ariura

$16^{30} – 16^{45}$ OS04-29 (ismtii133)
Evaluation of Multi-Degree-of-Freedom Displacement Sensors
Akihide Kimura, Yoshikazu Arai and Wei Gao

Wednesday, July 1, 2009. $15^{15} – 17^{00}$

Alexander III Hall, Rossiya Hotel

Session 5. Terahertz Technologies for Science, Industry, Medicine, Biology

Chairs: Boris A. Knyazev, Tilo Pfeifer

$15^{15} – 15^{45}$ OS05-01 (ismtii193)
Thz-Imaging on Its Way to Industrial Application (invited paper)
Tilo Pfeifer

$15^{45} – 16^{00}$ OS05-02 (ismtii368)
Development and Characterization of Quasi-Optical Mesh Filters and Metastructures for Subterahertz and Terahertz Applications
S.A. Kuznetsov, A.V. Arzhannikov, P.V. Kalinin, M. Sorolla, M. Aznabet, M. Navarro-Cia, M. Beruete, A.V. Gelfand, N.I. Fedorinina, V.V. Kubarev

$16^{00} – 16^{15}$ OS05-03 (ismtii407)
Terahertz Fabry-Perot Interferometer Constructed by Metallic Meshes with Micrometer Period and High Ratio of Linewidth/Period
Lu Zhengang, Tan Jiubin, Fan Zhigang

16^{15} – 16^{30} OS05-04 (ismtii375)
Transmissive Diffractive Elements for the Terahertz Spectral Range
Vladimir M. Vedernikov, Pavel M. Dutov, Boris A. Knyazev, Alexander I. Kokarev, Valery P. Kiryanov, Vladislav G. Nikitin, Irina G. Palchikova, Alexander R. Sametov, Mikhail F. Stupak, Yuri V. Chugui, Vladimir V. Chukanov

Wednesday, July 1, 2009. 15^{15} – 17^{00}

Alexander I Hall, Rossiya Hotel

Session 9b. Metrology and Characterization of Materials: Analytical Measurements

Chairs: Konrad Herrmann, Vadim E. Privalov

15^{15} – 15^{30} OS09-03 (ismtii410)
Laser-Induced Phase Transitions at Confined Metal Surface
Alexander A. Karabutov, Alexander Yu. Ivochkin, Dmitri M. Ksenofontov, Alexander G. Kaptil'niy

15^{30} – 15^{45} OS09-04 (ismtii130)
Use of Acoustic Parameter Measurements for Evaluating the Reliability Criteria of Machine Parts and Metalwork
L.B. Zuev, B.S. Semukhin and A.G. Lunev

15^{45} – 16^{00} OS09-05 (ismtii010)
Development of a Three-Dimensional Metrological Interlayer Deformation Imaging System
Zhi Li, Sai Gao, Konrad Herrmann

16^{00} – 16^{15} OS09-06 (ismtii074)
Dedicated Impedance Sensors with Reduced Influence of Undesired Physical Effects
Gerard C.M. Meijer, Xiujun Li, Zu-yao Chang and Blagoy P. Iliev

16^{15} – 16^{30} OS09-07 (ismtii040)
Nano- and Micropowder Laser Multy Wavelengths Sensing and Aerodynamic Classification
Pavel V. Chartiy, Vadim E. Privalov, Valery G. Shemanin

16^{30} – 16^{45} OS09-08 (ismtii201)
Extended Analysis Versus Frequency of Partial Discharges Phenomena, in Support of Quality Assessment of Insulating Systems
Romeo C. Ciobanu, Cristina Schreiner, Ramona Burlacu, Cristina Bratescu

16^{45} – 17^{00} OS09-09 (ismtii308)
The Thermal Effects of Platinum Bottom Electrodes on PZT Sputtered Thin Films Used in MEMS Devices
A. Koochekzadeh, E. Keshavarz Alamdari, A.G. Barzegar, G. Rezazadeh

15^{15} – 17^{00} Round Table II **"Technologies for Micro/Nano-CMM Development"**
Prof. Kuang-Chao Fan

17^{00} – 17^{30} **Coffee Break**

Wednesday, July 1, 2009. 17^{30} – 18^{30}

Nikolay I Hall, Rossiya Hotel

Session 3c. Optical and X-Ray Tomography and Interferometry: Advanced Optical Interferometry 2

Chairs: Tilo Pfeifer, Irina G. Palchikova

17^{30} – 17^{45} OS03-13 (ismtii365)
Developments in Homodyne Interferometry
Walter Schott

17^{45} – 18^{00} OS03-14 (ismtii197)
A simple heterodyne laser interferometer without periodic errors
Ki-Nam Joo, Jonathan D. Ellis, Jo W. Spronck, Paul J. M. van Kan, and Robert H. Munnig Schmidt

18^{00} – 18^{15} OS03-15 (ismtii208)
Research on the Vibration Resistance Ability of the Random Phase-Shifting Interferometry
Qun Hao, Qiudong Zhu, Lei Tang

18^{15} – 18^{30} OS03-16 (ismtii300)
Angular Displacement Determinations Using Fabry-Perot Etalon and Angular Scanning Technique
Shyh-Tsong Lin and Zhi-Feng Lin

Wednesday, July 1, 2009. 17^{30} – 18^{30}

Petrovskiy Hall, Rossiya Hotel

Session 4f. Measurements for Geometrical and Mechanical Quantities: Advanced Metrology and Techniques

Chairs: Sarwat S. Zahwi, Syuhei Kurokawa

17^{30} – 17^{45} OS04-30 (ismtii059)
Least Squares Association of Geometrical Features by Automatic Differentiation
Michael Krystek, Shi Zhaoyao, Lin Jiachun

17^{45} – 18^{00} OS04-31 (ismtii286)
Estimation of Uncertainty of Coordinate Measurements according to the B Method
Władysław Jakubiec

18^{00} – 18^{15} OS04-32 (ismtii309)
Final Results of the Geometrical Calibration of the Pressure Balances to Be Used for the New Determination of the Boltzmann Constant
Otto Jusko, Dirk Bastam, Michael Neugebauer, Helge Reimann, Wladimir Sabuga, Tasanee Priruenrom

18^{15} – 18^{30} OS04-33 (ismtii399)
Examination of Drilling Manufacturing Operation Made by Environmentally Conscious Way
Gyula Varga, Illes Dudas

Wednesday, July 1, 2009. 17^{30} – 18^{30}

Alexander II Hall, Rossiya Hotel

Session 6e. Novel Measurements and Diagnostic Methods: Scientific and Industrial Applications 2

Chairs: Sergey V. Muravyov, Michael Krystek

17^{30} – 17^{45} OS06-25 (ismtii415)
Digital Color Analysis for Chemical Measurements Based on Transparent Polymeric Optodes
Sergey V. Muravyov, N.A. Gavrilenko, A.S. Spiridonova, S.V. Silushkin

17^{45} – 18^{00} OS06-27 (ismtii043)
Fuzzy Clustering Algorithm of Early Fire Based on Process Characteristic
Zhang Rencheng, Du Jianhua

18^{00} – 18^{15} OS06-28 (ismtii234)
The Use of the Optical Bistability Phenomenon in Metrological Systems
Claudia Yu. Zenkova

Wednesday, July 1, 2009. 17^{30} – 18^{30}

Alexander I Hall, Rossiya Hotel

Session 8b. Measurements and Metrology for the Humanitarian Fields

Chairs: Orazio Licciardello, Ksenia Sapozhnikova

17^{30} – 17^{45} OS08-09 (ismtii060)
Periodical Waves in the Evolution of Art: Methods of Study
Alexander V. Kharuto

17^{45} – 18^{00} OS08-10 (ismtii226)
Real Time Eye Gaze Logging in a 3D Game/Simulation World
Charlotte C. Sennersten, Craig A. Lindley

18^{00} – 18^{15} OS08-11 (ismtii172)
Evaluation of Graphic-Pictorial Characteristics and Contents in the Representation of Legality
Francesca Baralla, Anna Maria Giannini, Roberto Sgalla

18^{15} – 18^{30} OS08-12 (ismtii086)
Russian Vs. English Drama in the Context of Network Theory
Alexander V. Voloshinov, Irina V. Gozhanskaya

Wednesday, July 1, 2009

Petrovskiy Hall, Rossiya Hotel

Plenary Session V

Chair: Liang-Chia Chen

18^{30} – 19^{10} **Keynote Speech 11** KS-11 (ismtii332)
Fast Measuring Technologies for Ultra-Precision Manufacturing
Prof. Wei Gao, Yoshikazu Arai, Yusuke Saito, Akihide Kimura and Takemi Asai, Tohoku University, *Japan*

19^{10} – 19^{30} **Closing Ceremony**

Resume of ISMTII-2009 Symposium and statistics
The results of young participants' competition
Congratulations

Atrium Restaurant, Pulkovskaya Hotel

20^{00} – 22^{30} **Farewell Party**

Presentation of ISMTII 2011 by Prof. Seung-Woo Kim (Korea)
Musical Performance by Kazak ensemble

ISMTII-2009
The Round Tables

During the ISMTII-2009 Symposium we kindly invite the attendees to participate in the work of two Round Tables on emerging fields.

A Round Table **"Technologies for Micro/Nano-CMM Development"** will be chaired by Prof. Kuang-Chao Fan (Taiwan) and **"Conception of measurements: past, present, and future"** with Prof. Roald Taimanov (Russia) as the coordinator.

The Round Table **"Technologies for Micro/Nano-CMM Development"** will be held on July 1 from 15.15 to 17.00 and **"Conception of Measurements: Past, Present, and Future"** will be held on June 30 from 15.15 to 17.00.

Below you will find the more complete information.

Round Table "Technologies for Micro/Nano-CMM Development"

A variety of micro/nano fabrication processes have been developed since the late 20^{th} century. Products with dimensional sizes downscaled from meso to micro and even to nanometer ranges have been widely used in sensors, actuators, grooves, gratings, functional components, etc. Traditional CMMs are no more applicable to cope with these fine structure measurements.

According to K. Takamasu "Development of Nano-CMM and Parallel-CMM: CMM in the 21th Century", Proceedings of the International Dimensional Metrology Workshop, May 10 – 13, 1999, Tennessee, USA, specifications of traditional CMM and Nano-CMM are listed in the following table (just for reference).

	Traditional CMM	**Nano-CMM**
Size of machine	$(2000\ mm)^3$	$(200mm)^3$
Mass of machine	1000kg	10kg
Measuring range	$1m^3$	$(10mm)^3$
Resolution	1μm	10nm
Accuracy	5μm	50nm
Diameter of probe	5mm	50μm
Measuring force	10^{-1} N	10^{-3} N
Accuracy of scale	5μm	50nm

During a round table discussion, it is planned to discuss the problems related to various technologies for "micro/nano-CMM" development and related concepts taking into account spheres of measurement application in technical and humanitarian fields.

Participants will shortly (up to 5 minutes) present their points of view concerning the topic proposed.

Round Table "Concept of Measurements: Past, Present, and Future"

According to International Vocabulary of Metrology. Basic and General Concepts and Associated Terms (VIM), JCGM, 2008,

"Measurement: process of experimentally obtaining one or more quantity values that can reasonably be attributed to a quantity

NOTE 1 Measurement does not apply to nominal properties.

NOTE 2 Measurement implies comparison of quantities and includes counting of entities.

NOTE 3 Measurement presupposes a description of the quantity commensurate with the intended use of a measurement result, a measurement procedure, and a calibrated measuring system operating according to the specified measurement procedure, including the measurement conditions".

According to L. Finkelstein "Problems of widely-defined measurement", Proceedings of the 12th IMEKO TC1 & TC7 Joint Symposium on Man Science & Measurement, September 3 – 5, 2008, Annecy, France, pp. 24-29,

"Measurement is here defined, in the wide sense, as any process of empirical, objective assignment of symbols to attributes of objects and events of the real world, in such a way as to represent them, or to describe them…

Strongly defined measurement is defined as a class of widely defined measurement, which follows the paradigm of the physical sciences. In particular it has precisely defined empirical operations, representation by numbers and well-formed theories for broad domains of knowledge".

Some other definitions can be found in scientific literature.

During a round table discussion, it is planned to discuss the problems related to various definitions of "measurement" and related concepts taking into account spheres of measurement application in technical and humanitarian fields.

Participants will shortly (up to 5 minutes) present their points of view concerning the topic proposed.

Optional Program

For attendees attention some excursions as Optional Program are proposed. Please note, these excursions are not included in the registration fee. Attendees of ISMTII-2009 and accompanying persons could choose any excursions and contact the manager of FAVORIT DMC.

St.Isaac's Cathedral, St. Peter and Paul's Fortress
Date: June 27 (Saturday)
Time: 10.00-13.00

Transfer with guide to the city center and return
Date: June 27 (Saturday)
Time: 20.00-23.00

Pushkin (Tsarskoe Selo): Catherine Palace with Amber room and park
Date: June 28 (Sunday)
Time: 11.00-16.00

Hermitage Museum
Date: June 28 (Sunday)
Time: 10.00-14.00

Peterhof (only park with fountains)
Date: June 28 (Sunday)
Time: 14.30-19.00

Transfer with guide to the city center and return
Date: June 28 (Sunday)
Time: 17.00-21.00
Time: 20.00-23.00

St. Petersburg by night (open drawbridges)
Date: June 28 (Sunday)
Time: 23.30-2.30

Hermitage Museum
Date: June 30 (Tuesday)
Time: 14.30-18.30

Boat trip
Date: June 30 (Tuesday)
Time: 20.00-22-30

St. Petersburg by night (open drawbridges)
Date: June 30 (Tuesday)
Time: 23.30-2.30

Hermitage Museum
Date: July 2 (Thursday)
Time: 13.30-18.00

Peterhof (Petrodvorets) with Grand Palace
Date: July 3 (Friday)
Time: 09.00-15.00

Mariinsky theatre (ballet, opera)
Date: any day
Time: 19.00

Hermitage theatre (ballet)
Date: any day
Time: 20.00

Social Program

1. Welcome Reception

Date: June 29, Monday
Time: 14.00-16.00
Venue: Pulkovskaya Hotel, Atrium Restaurant
Bus Pick-up: 13.30 from Rossiya Hotel to Pulkovskaya Hotel

All attendees of Symposium and Accompanying persons are invited to the Welcome Reception. It is a part of the Social Program included in registration Symposium fee. Every attendee should take the badge and Ticket for Welcome Reception.

2. Sightseeing Tour around St. Petersburg

Date: June 29, Monday
Time: 16.00-19.00
Bus Pick-up: 16.00 from Pulkovskaya Hotel

All attendees of Symposium and Accompanying persons are invited to the Sightseeing Tour around Saint-Petersburg. It is a part of the Social Program included in registration Symposium fee. Every attendee should take the badge and Ticket for Sightseeing tour.

3. Farewell Party

Date: July 1, Wednesday
Time: 20.00-22.30
Venue: Pulkovskaya Hotel, Atrium Restaurant
Bus Pick-up: 19.45 from Rossiya Hotel to Pulkovskaya Hotel
Bus Pick-up: 22.40 from Pulkovskaya Hotel to Rossiya Hotel

All attendees of Symposium and Accompanying persons are invited to the Farewell Party. It is a part of the Social Program included in registration Symposium fee. Every attendee should take the badge and Ticket for Farewell Party.

4. Technical Tours

Date: July 2, Thursday
Time: 09.00-12.30
Bus Pick-up: 09. 00 from Pulkovskaya Hotel
09.15 from Rossiya Hotel
Visits to: D.I. Mendeleyev Institute for Metrology (VNIIM)
Saint-Petersburg State University of Information Technologies, Mechanics and Optics
Scientific Institute "OPTOINFORMATIKA"
Time: 12.30 return to Rossiya Hotel for Lunch Break

Brief description of the Technical Tours

- The Technical Tours are optional and all participants joining the Technical tours need to make pre-registration before the Symposium and pay an additional fee of 20 Euro. Attendees that have paid for the Technical Tour in advance should only choose the Technical Tour and inform at the Registration Desk.
- The Technical Tour fee includes the bus transportation and lunch.

ISMTII-2009

Technical Tours

During the ISMTII-2009 Symposium we kindly invite the attendees to take part in the Technical Tours.

Date:	July 2, Thursday
Time:	09.00-12.30
Bus Pick-up:	09.00 from Pulkovskaya Hotel 09.15 from Rossiya Hotel
Visits to:	D.I. Mendeleyev Institute for Metrology (VNIIM) Saint-Petersburg State University of Information Technologies, Mechanics and Optics Scientific Institute "OPTOINFORMATIKA"
Time:	12.30 return to Rossiya Hotel for Lunch Break

The Technical Tours are optional and all participants joining the Technical tours need to make pre-registration before the Symposium and pay an additional fee of 20 Euro. Attendees that have paid for the Technical Tour in advance should only choose the Technical Tour and inform at the Registration Desk. The Technical Tour fee includes the bus transportation and lunch.

Below you will find the more complete information.

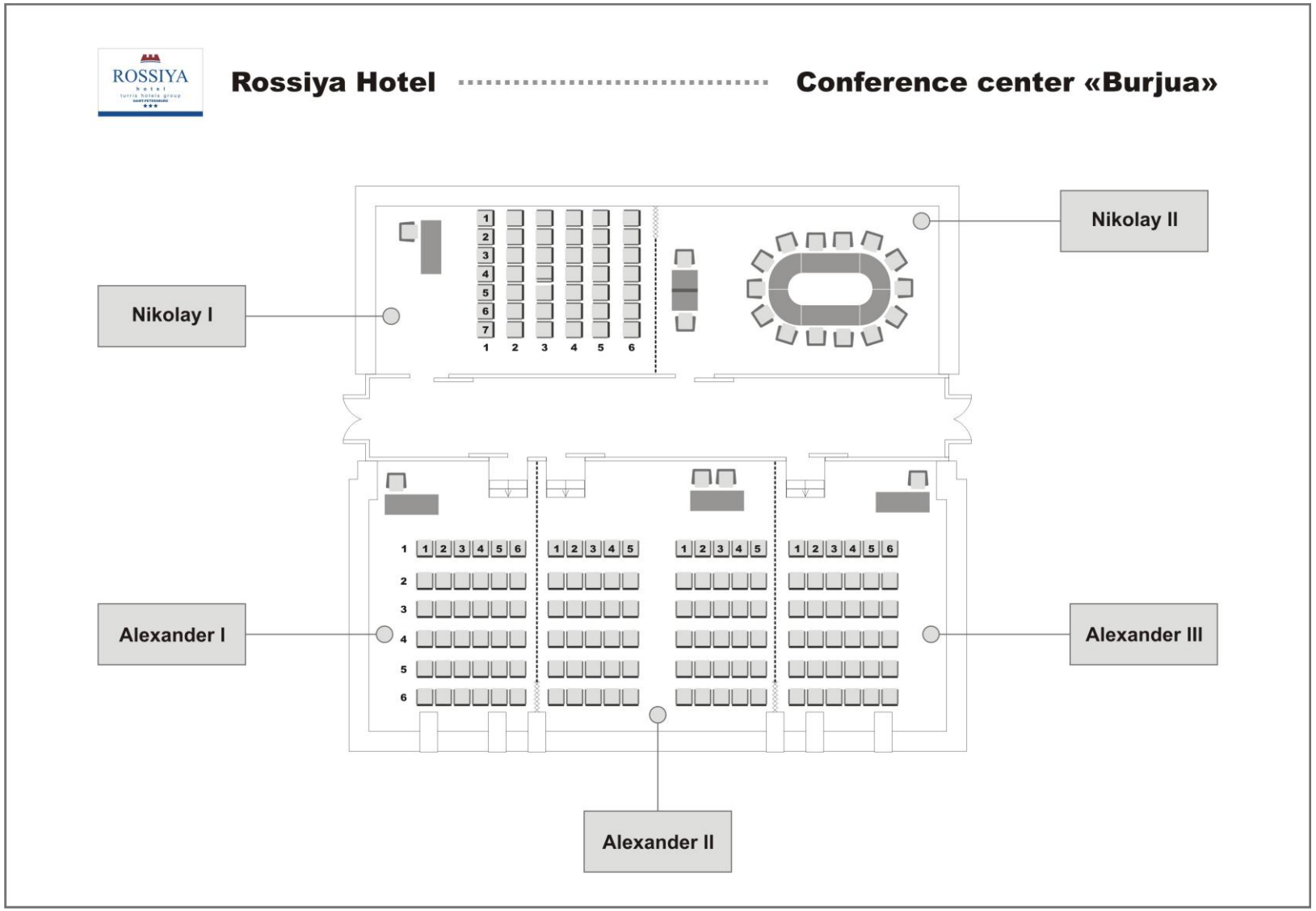
1. D.I. Mendeleyev Institute for Metrology (VNIIM)
The participants visit the laboratories of Institute and get acquaintance with the state primary etalons for force, length, pressure and so on. Also they visit the Metrological museum and Memorial office of D.I. Mendeleev and exposition "Mendeleyev-founder of scientific metrology" (tour coordinator – Prof. Valery Alexandrov).

2. Saint-Petersburg State University of Information Technologies, Mechanics and Optics (SPbSU ITMO)

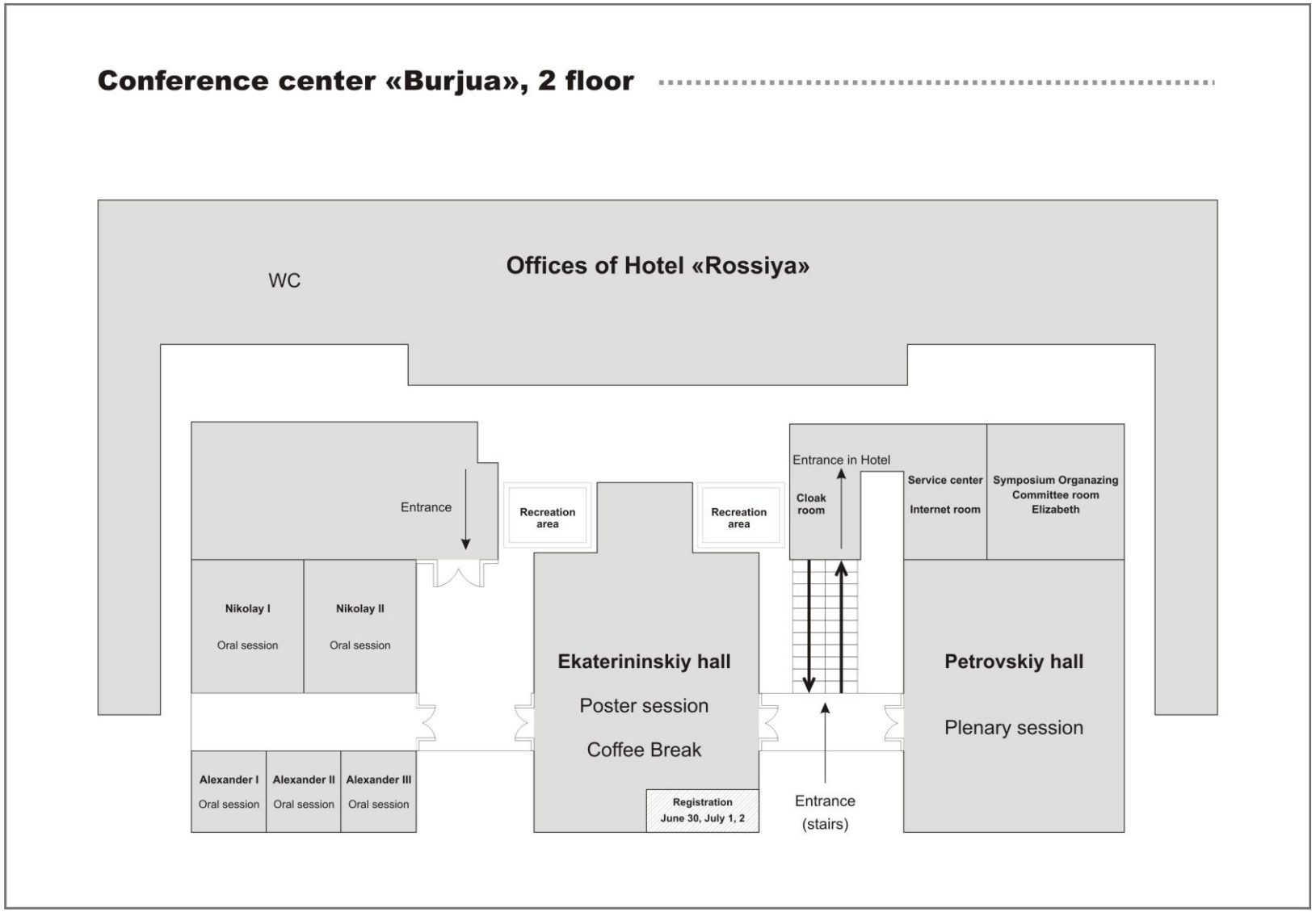
- Scientific Institute "OPTOINFORMATIKA"
  The participants visit the laboratories for optical material synthesis, optical material diagnostics, fiber optics, laser physics, and holography
  (tour coordinator – Prof. Nikolay Nikonorov).

- Optical Museum
  The attendees could see the collection of art and computer holograms, actual holographic systems as well as the collection of bronze mirrors and ancient lights, collection of spectral lamps, demonstration of magic mirrors and "camera Obscura". There will be presented the panorama on the Venetian glass history and interactive catalogue Abbe-unique collection of 144 optical glasses, prototypes of the first laser rods and fiber-optical elements, laser shooting-gallery, and laser chess. Special halls are devoted to astral optics with mini-planetarium, precise measurements; computer games: laser weapon and chess, kaleidoscopes, mirror systems, light music (tour coordinator – Prof. Sergey Stafeev).

Conference Center "Burjua" Map



Conference Center "Burjua" Map



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