

Summary of ISMTII'2005

Jane Jiang

*Centre for Precision Technologies
University of Huddersfield*

IMSTII'2007, 24-27 September, Sendai, Japan



ISMTII'2005 Conference

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ISMTII 2005
Huddersfield, UK

7th International Symposium Series on Measurement Technology and Intelligent Instruments

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ISMTII 2005 Huddersfield, UK

7th International Symposium on Measurement Technology and Intelligent Instruments

6-8 September 2005
Associated Seminar on

History and Future Prospects in the Field of Measurement and Instrumentation

5 September 2005

Centre for Precision Technologies, University of Huddersfield, UK

Organised by

Centre for Precision Technologies, University of Huddersfield, UK

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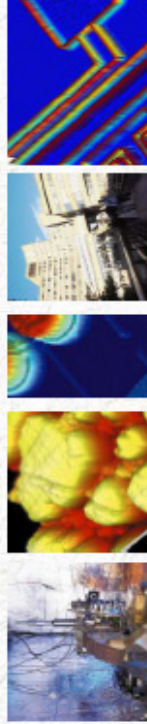
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Conference Programme



7th International Symposium on
Measurement Technology and
Intelligent Instruments
6-8 September 2005

Centre for Precision Technologies,
University of Huddersfield, UK



International Committee

Chair Dr. Seton Bennett (National Physical Laboratory, UK)

Prof. Zhu Li (Huazhong University of Science and Technology, China)

Prof. Maurice Cox (National Physical Laboratory, UK)

Dr. Xianping Liu (The University of Warwick, UK)

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Dr. Sarwat Zahwi (National Institute for Standards, Egypt)

Prof. Yuri Chugui (Technological Design Institute of Scientific Instrument Engineering, Russia)

Mr. Jim Bryan (USA)

Prof. Chunyong Yin (Tsinghua University, China)

International Scientific Committee

Chair Prof. David J. Whitehouse (University of Warwick, UK)

Dr. Richard Leach (National Physical Laboratory, UK)

Prof. Albert Weckenmann (Friedrich-Alexander University-Erlangen – Nuremberg, Germany)

Prof. Derek Chetwynd (University of Warwick, UK)

Dr. Michael Krystek (Physikalisch-Technische Bundesanstalt, Germany)

Dr. Chang Hsu (Centre for Measurement Standards, Taiwan, China)

Dr. Trevor Esward (National Physical Laboratory, UK)

Prof. Jiubin Tan (Harbin Institute of Technology, China)

Prof. Kuangchao Fan (National Taiwan University, Taiwan, China)

Dr. Tomizo Kurosawa (National Metrology Institute, Japan)

Dr. Victor Bykov (Nanotechnology MDT and Nanotechnology Instruments Co., Russia)

Dr. George J. Stein (Slovak Academy of Sciences, Slovak)

Prof. Jay Raja (University of North Carolina at Charlotte, USA)

Prof. Don Lucco (Oklahoma State University, USA)

Prof. Yetai Fei (Hefei University of Technology, China)

Prof. Yongsheng Gao (Hong Kong University of Science and Technology, China)

Dr. Wei Gao (Tohoku University, Japan)

Dr. Han Haitjema (Mitutoyo Research Centre Europe B.V., The Netherlands)

Prof. P. Osanna (Vienna University of Technology, Austria)

Prof. I. Dudas (University of Miskolc, Hungary)

Dr. G. Varga (University of Miskolc, Hungary)

Prof. M. Numan Durakbasa (Vienna University of Technology, Austria)



Attendances

More than **200** delegates attended the conference from **eighteen** countries, USA, Germany, Netherlands, Russia, United Kingdom, Italy, France, Austria, Australian, Sweden, Poland, Denmark, Japan, Brazil, Jordan, India, Egypt, China (including Hong Kong and Taiwan).

Life Lectures



Prof. David Whitehouse



Mr. Jim Bryan



Dr. Erwin Loewen

5th Sept 2005

**History and Future Prospects
in the Field of Measurement and
Instrumentation**
EPSRC Sponsored Life Lectures



5th Sept 2005
University of Huddersfield
Queensgate
Huddersfield
HD1 3DH
UK

EPSRC
Engineering and Physical Sciences Research Council

NPL
National Physical Laboratory

University of
HUDDERSFIELD

Taylor Hobson



Plenary Lectures

Plenary Lecture 1

State-of-the-Art and Trends in the Development of Intelligent Micro Sensor Systems

Prof. Dr. Peter R. Hauptmann

Institute of Micro and Sensor Systems, Otto-von-Guericke-University Magdeburg, Germany

Plenary Lecture 2

Precision Interferometric Metrology

Dr. Chris J. Evans

Zygo Corporation, USA



Six Keynote Papers

- Keynote 1:** Recent advances in traceable nanoscale dimension and force metrology in the UK
- Keynote 2:** Measurement uncertainty and traceability
- Keynote 3:** Probing systems for dimensional micro and nano metrology
- Keynote 4:** Development of a novel micro-cmm for 3D micro/nano measurements
- Keynote 5:** New concepts in specifications, operators and uncertainties and their impact on measurement and instrumentation
- Keynote 6:** Pattern analysis and metrology


Publications

IOP

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Measurement Science and Technology

Volume 17 Number 3 March 2006
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Online: www.iop.org/journals/mst



Institute of **Physics** PUBLISHING

23 MST Papers



ISSN 1742-6598

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7th International Symposium on Measurement Technology and Intelligent Instruments

University of Huddersfield, UK
6-8 September 2005

Editors: Xiangqian Jane Jiang and David J Whitehouse

Volume 13 2005
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Institute of **Physics** PUBLISHING

105 JPCS Papers



A Large Industrial Exhibition

The **fifteen** companies, included instrumentation, metrology and precision Engineering companies from UK (Renishaw plc, Lambda Photometrics Ltd, Taylor Hobson Ltd, Yorkshire Forward, Interferomet Ltd, Salartron metrology Ltd, ZEEKO Ltd), Europe (IBS Precision Engineering, Queesgate Instruments), and USA (Zygo Ltd.) etc..

Anglo-Chinese Bilateral Exchange Programme on Nanometrology





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Anglo-Chinese Bilateral Exchange programme on Nanometrology

Nanotechnology is still a relatively new field of development and research in science yet it is predicted to have as greater impact on the 21st century as the technology of the microchip had on the second half of the 20th century. The term nanotechnology was coined in 1974 when Tansugud defined it as the technology where dimensions and tolerances are in the range of 100nm to 0.1µm. In the recent Royal Society report they defined nanotechnologies as the design, characterisation, production and application of structures, devices and systems by controlling shape and size at the nanometre scale. Now Nanotechnology has a far wider meaning and relates to manipulation, fabrication and measurement at this scale. With the emergence of many novel technologies, methods and instruments, Nanotechnology is growing as a backbone of many key industries such as new materials, environment, energy, chemistry, biology, medicine, microelectronics, defence, etc.

China is now one of the fastest growing economies in the world (currently the sixth largest) and investing heavily in nano-technology. MIT's technology review magazine reported that China is the world's third largest investor into nano-technology research (\$480 million in 2003). Both China and the UK have identified the importance of nano-technology for their future economic development. An exchange of missions between China and the UK on nano-technology would create a synergy beneficial to both, leading to formal research collaborations.

The UK and China have had a long history of co-operation and share much common ground. For example, the CPT in the University of Huddersfield has a sister Nanotechnology Laboratory in Huzhou University of Science and Technology in Wuhan, and has a key co-operative international research projects with Tsinghua University; Warwick University have a very tight relationship with Tianjin University, including exchange-teaching projects, etc. UK scientists are looking for more co-operations in the future, which this proposed exchange would facilitate.

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http://www.livings-uk.org/anglo-chinese-bilateral-exchange-programme-on-nanometrology/

UK host

Centre for Precision Technologies at the University of Huddersfield

The University of Huddersfield has over the past 5 years within the School of Computing and Engineering developed a new multi-million pound research facility the Centre of Precision Technologies (CPT). The Centre has considerable expertise in measurement, precision engineering, nanometrology, and has attracted significant funding from EPSRC, DTI, the European Community and major industrial companies.



Artists impression of the new CPT building



The class 10,000 surface metrology room

The CPT has been building a reputation as a centre of research excellence with national and international standing. The CPT facility is based around a bespoke nano-metrology laboratory having a specialised design for vibration minimisation through pneumatic mounting of the working zones. The lab is temperature controlled to +/-0.5°C or better and is a class 10 000 clean room. The facility is equipped with state of the art instrumentation through Nano to Micro scale surface and form measurement, nanoform polishers and ultra-precision CMC machine tools.

In the last five years, CPT has hosted three international conferences; the 8th International conference on Metrology and Properties of Engineering Surfaces (ICHYPES) in April 2000, 8th International Seminar on Challenges for the Precision and Nanotechnology EUSPEN (ISPCPN) in February 2002, and the 6th International Conference on Laser Metrology, Machine Tool, CHM and Robot Performance (LAIMDAMAP) in 2003. CPT has led the UK Nanometrology Network, sponsored by the EPSRC (GR/R11209/01) . CPT will host the 7th International Symposium Series on Measurement Technology and Intelligent Instruments (ISMTII) in September 2005. ([more...](#))



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Thank You

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