

IFMI & ISPEMI 2022

8-10 August 2022
Guilin, China

2nd International High-level Forum on High-end Measurement Instruments &
12th International Symposium on Precision Engineering Measurements and Instrumentation

Last call for papers



Sponsors

Chinese Academy of Engineering (CAE)

International Committee on Measurements and Instrumentation (ICMI)

Organizers

Division of Information and Electronic Engineering of CAE (DIEE-CAE)

Chinese Society for Measurement (CSM)

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Instrumentation Committee of CSM (IC-CSM)

Harbin Institute of Technology (HIT)

Cooperating Organizations

Guilin University of Electronic Technology (GUET)

Beijing Information Science and Technology University (BISTU)

Conference homepage

<http://www.ispemi-icmi.org/>



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About the IFMI & ISPEMI 2022

The International High-level Forum on High-end Measurement Instruments (IFMI) is sponsored by Chinese Academy of Engineering (CAE), and jointly organized by the Division of Information and Electronic Engineering of CAE, Chinese Society for Measurement (CSM), China Instrument and Control Society (CIS), and Harbin Institute of Technology (HIT). It is a platform for international first-rate scientists, technical specialists, and entrepreneurs working in the fields of metrology, industrial measurement, and instrument R&D to jointly discuss the development strategies of international high-end measurement technology. IFMI is to be held in 2022 for the second time. The International Symposium on Precision Engineering Measurements and Instrumentation (ISPEMI) is sponsored by the International Committee on Measurements and Instrumentation (ICMI), and jointly organized by the Instrumentation Committee of CSM (IC-CSM) and Harbin Institute of Technology (HIT). Since its establishment in 1999, ISPEMI has been successfully held in different cities in China for 11 times and now is an international influential symposium concentrating on academic exchange in the field of measurements and instrumentation. In 2022, IFMI and ISPEMI will be held together for the purpose of inviting leading scientists, technical specialists and entrepreneurs to discuss and judge the opportunities and challenges brought about by the new round of S&T revolution and industrial transformation for future measurement system, instrument technology, instrument industry, and jointly predict the development trends toward future international and national measurement systems and instrument industry, thereby planning the building of international and national measurement systems, and the development paths of new instrument technology and enterprises.

Opportunities and challenges mainly come from two aspects. First, the full implementation of the international unit system based on fundamental physical constants in 2019 will lead to a new-round transformation in international and national measurement systems, instrument technology and instrument industry. Second, the new round of S&T revolution will bring breakthroughs in the fields of information technology, biotechnology, new energy technology, new material technology, intelligence manufacturing technology, and so on. In particular, the high-end manufacturing industry will enter a new era of digitalization, networking, and intelligence, generating enormous shocks and challenges for existing international and national measurement systems, and technological formation and industrial system of measurement instruments, while great opportunities and new missions are there to be faced.

How future international and national measurement systems will look like? What technological formation and industrial system of measurement instruments will be in the future? How we should cope with those changes? For all the considerations mentioned above, CAE and ICMI sponsor IFMI and ISPEMI 2022 to provide first-rate scientists, technical specialists, and entrepreneurs with a platform for high-level discussion and academic exchange.

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Topics of Interest for IFMI & ISPEMI 2022

1. Quantized definition, and new-generation international and national measurement systems
2. Demand for new-generation international and national measurement systems brought from digitalization, networking, and intelligence of high-end precision manufacturing
3. New-generation of instrument technology, and new-generation international and national measurement systems
4. New-generation instrument technology, and digitalization, networking, and intelligence in manufacturing
5. New-generation instrumentation theories and design methodologies
6. Measurement for precision and ultra-precision machining
7. New-generation instrument technology and measurement system
8. Modern optical technology and instruments for precision and ultra-precision measurement
9. Sensors, actuators, and industrial Internet of Things
10. Micro- and nano- measurement technology, macro- and micro-scale measurement technology
11. Laser measurement technology and instruments
12. Metrology and online digital calibration
13. Online digital measurement technology for high-end chip manufacturing
14. Online digital measurement technology for flat-panel display
15. Accuracy theory and data processing methods for new-generation measurement system
16. Computational measurement
17. Digital measurement and digital twin technology
18. IntelliSense and networking
19. Embedded measurement and high-end precise equipment
20. Other related topics

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Honorary Chairs

Prof. Guofan Jin, Tsinghua University (China)

Fellow of Chinese Academy of Engineering (China)

Prof. Frank Härtig, Physikalisch-Technische Bundesanstalt (Germany)

President of International Measurement Confederation (IMEKO)

Prof. Kenneth Grattan, City University of London (U.K.)

Fellow of Royal Academy of Engineering (U.K.)

Prof. Tony Wilson, University of Oxford (U.K.)

Fellow of Royal Academy of Engineering (U.K.)

Prof. Songlin Zhuang, University of Shanghai for Science and Technology (China)

Fellow of Chinese Academy of Engineering (China)

Prof. Zhonghua Zhang, National Institute of Metrology (China)

Fellow of Chinese Academy of Engineering (China)

Prof. Jie Gao, Sichuan University (China)

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Prof. Shenghua Ye, Tianjin University (China)

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Prof. Tianchu Li, National Institute of Metrology (China)

Fellow of Chinese Academy of Engineering (China)

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

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General requirements for papers

Please submit a structured extended abstract (up to 1 page) before the extended Abstract Due Date.

The structured extended abstract should have figures, and sufficient data. Full manuscript is not required. Only poster presentation is available for submission since the presenters for plenary, keynote, and invited talks are invited.

Excellent submission will be recommended for publication in one of the following journals:

- 1. Photonics (SCI, IF:2.536)**, we will organize a special issue related to the conference, more than 10 papers in the fields will be published after peer-review. For detailed information, please visit the website: https://www.mdpi.com/journal/photonics/special_issues/mnoptics.
- 2. Frontiers of Information Technology & Electronic Engineering** (abbreviated as FITEE, launched by Chinese Academy of Engineering) **(SCI, IF:2.526)**
- 3. Optics and Precision Engineering (EI)**

Note: Due to the COVID-19 epidemic prevention and control, the conference IFMI & ISPEMI 2022 will be held **online and offline simultaneously**:

- 1) participants in China (mainland) will mainly join us offline;
- 2) other participants are strongly recommended to attend the conference online (via Zoom video conferencing software).

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Critical dates

Abstract Due Date (extended): July 14, 2022

Registration Deadline: July 15, 2022

Speech Video Submission Deadline (For online presenters only): July 25, 2022

Important notes: No full papers will be accepted for this conference, and no proceedings will be published.

Time and Venue

Time for Check-in: August 8, 2022

Duration: August 9-10, 2022

Venue: *Grand Bravo Guilin Hotel* (Guilin, China) (In Chinese: 桂林大公馆)

Address: No.2 Zhongyin Road, Xiufeng District, Guilin, Guangxi Province China

Tel: +86-773-2828888

Registration Fee

For Plenary, Keynote, and Invited presenters: FREE

Other attendees: 2300 CNY per person. (2000 CNY per person before July 14)

Discount for students: 1800 CNY per person. (1500 CNY per person before July 14)

Hotel Room Reservation

The conference provides the accommodation reservation at *Grand Bravo Guilin Hotel* for all the attendees with a special discount.

The hotel offers:

Standard Room (Two single beds): 400 RMB per room per night

King-size Room (One double bed): 400 RMB per room per night

All the attendees can make room reservations before July 15, 2022 with an advance payment depending on the room charge per night.

(Through the email ispemi-icmi@outlook.com with subject 'Room Reservation')

Payment

Bank transfer (Mainland China)

Account Holder Name: HC Convention and Exhibition Company

Account Number: 1689 8819 5070

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Important notes: Please attach your name, paper ID, and ISPEMI2022 with the transfer.

Contact Information

Post Address: P.O.Box 3018, Science Park, Harbin Institute of Technology, No.2 Yikuang Street, Nangang District, Harbin 150080, China

Tel/Fax: +86-451-86402258

Website: <http://www.ispemi-icmi.org/>

E-mail: ispemi-icmi@outlook.com

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Plenary speakers

Prof. Frank Härtig



President of the International Measurement Confederation (IMEKO)
Vice-President of Physikalisch-Technische Bundesanstalt (PTB)
Head of Conformity Assessment Center of PTB (KBS)
Deputy Chairman Administrative Council of Helmholtz-Fonds
Chairman of Rule Determination Committee (Regelermittlungsausschuss REA)
Chairman of Vollversammlung für das Mess- und Eichwesen
Alternate Delegate for the PTB at EURAMET
Professorship honoris causa; Harbin Institute of Technology
Guest professorship of Beijing University of Technology

Professor Frank Härtig has very rich experience in the field of coordinate metrology and has studied this field for about thirty years. He received his degree of graduate engineer at Karlsruhe University in 1980. After that, he spent several years in Carl Zeiss company and got his degree of PhD Engineering from Karlsruhe University in 1992. In 1995, he started his working as scientific employee in the department “Coordinate Measuring Machines” at PTB where he has excellent level in the field of coordinate metrology. He has received a lot of awards such as, Certificate for Excellent Presentation in 2004, Technology Transfer Award of the IHK in 2005, Seifriz Award in 2020, Recipient of Finkelstein Medal in 2021. He has also received guest professorships from Beijing University of Technology and Harbin Institute of Technology. He was appointed as the Chairman of the TraCIM association “Validation of software algorithms” since 2014, Member of the Consultative Committee for Mass and Related Quantities (CCM) des BIPM since 2015, Vice-President of Physikalisch-Technische Bundesanstalt (PTB) since 2020, and President of the International Measurement Confederation (IMEKO) since September 2021.

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Prof. Lihong Wang



Fellow of the US National Academy of Engineering

Bren Professor of Medical Engineering and Electrical Engineering at
California Institute of Technology

Fellow of the AAAS, AIMBE, Electromagnetics Academy, IAMBE, IEEE,
OSA, and SPIE as well as a Foreign Fellow of COS.

Professor Lihong Wang has published 530 peer-reviewed articles in journals, including Nature (Cover story), Science, PNAS, and PRL, and has delivered 535 keynote, plenary, or invited talks. His book entitled “Biomedical Optics: Principles and Imaging,” one of the first textbooks in the field, won the 2010 Joseph W. Goodman Book Writing Award. He also edited the first book on photoacoustic tomography. His laboratory was the first to report in vivo photoacoustic tomography, functional photoacoustic tomography, 3D photoacoustic microscopy, photoacoustic endoscopy, photoacoustic reporter gene imaging, the photoacoustic Doppler effect, the universal photoacoustic reconstruction algorithm, microwave-induced thermoacoustic tomography, ultrasound-modulated optical tomography, time-reversed ultrasonically encoded optical focusing, nonlinear photoacoustic wavefront shaping, compressed ultrafast photography (10 trillion frames/s, world’s fastest real-time camera), Mueller-matrix optical coherence tomography, and optical coherence computed tomography. Photoacoustic imaging broke through the long-standing diffusion limit on the penetration of optical imaging, providing the only technology for noninvasive multiscale biochemical, functional, and molecular imaging from organelles to humans at high resolution. The technology has been commercialized by dozens of companies for both preclinical and clinical imaging.

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Prof. Tong Sun



Fellow of the Royal Academy of Engineering, UK

Director of Research Centre of Sensors and Instrumentation

Fellow of the Institution of Engineering and Technology

City University of London, United Kingdom

Professor Tong Sun is leading a research team focused on developing a range of optical fibre sensors for a variety of industrial applications, including structural condition monitoring, early fire detection, homeland security, process monitoring, food quality and environmental monitoring. She has been working closely with partners across disciplines from academia and industry, both in the UK and overseas. She is a member of the Institute of Physics and a Fellow of the Institution of Engineering and Technology and a Chartered Physicist and a Chartered Engineer in the United Kingdom. She has authored or co-authored some 230 scientific and technical papers. Her current research activities have been focused on the development of a range of novel optical fibre sensors, meeting increasing industrial needs for:

- very high temperatures and under extreme conditions;
- condition monitoring for various structures, ranging from concrete, composite, limestone, carbon/aluminum to steels;
- early fire, VOC and gas detection using novel tunable fibre laser-based techniques
- drug/explosive detection using molecular recognition techniques;
- agri-food and environmental monitoring using chemical and surface-plasmon-resonance based sensing mechanisms

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Prof. Detian Li



Fellow of Chinese Academy of Engineering

Fellow of the International Academy of Astronautics

Vice-director of Lanzhou Institute of Physics, CAST

Professor Detian Li is the Vice-director of Lanzhou Institute of Physics, CAST. He is an expert and a pioneer in field of aerospace test, metrology, and instrumentations in China and has made many innovative researches. In particular, he has made outstanding achievements in vacuum metrology, especially in micro-flow gas measurement, partial pressure measurement, etc. His team maintains the leading position of vacuum metrology in China. He presided the development of China's first ultra-high/extreme-high vacuum calibration device, the first partial pressure mass spectrometer calibration device, the first positive pressure leak calibration device and the first fixed conductance method micro-flow gas calibration device, etc. The vacuum metrology system filled the gaps in the calibration of extremely high vacuum, partial pressure, positive pressure leakage and small gas flow. Seven of his work has been selected as the highest vacuum measurement standards of National Defense of China, and have been practically applied in many major projects such as Chinese manned spaceflight.

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Prof. Dayong Jin



Fellow of Australian Academy of Technology and Engineering
Director, Distinguished Professor, and ARC Laureate Fellow
of Institute for Biomedical Materials & Devices (IBMD),
University of Technology Sydney

Science Director of ARC Research Hub for Integrated Device
for End-user Analysis at Low-levels (IDEAL), University of
Technology Sydney

Director, Chair Professor of UTS-SUSTech Joint Research
Centre for Biomedical Materials & Devices, Southern
University of Science and Technology (SUSTech)

Professor Dayong Jin is a Clarivate Highly Cited Researcher, one of the world's top 0.1% influential researchers across multiple fields. He has spent the past decade driving the transformation of photonics and materials into analytical, diagnostic, and imaging devices for disease detection, including cancer. These devices use photonics technologies to analyze saliva, urine, or blood to identify early signs of disease and toxins.

His research has been in the physical, engineering, and interdisciplinary sciences, with expertise in optics engineering, automation devices, luminescent materials, microscopy imaging, and analytical chemistry, to enable rapid detection of cells and molecules.

More recently, Prof. Jin has worked to develop rapid COVID-19 spike-protein tests that allow virus detection from asymptomatic patients. These tests deliver quick results at a reduced cost.

This technology builds upon his "Super Dots", a new family of nanophotonic probes that can up-convert infrared photons into intense visible light at the nanoscale. Several fascinating properties have been discovered since to allow high-throughput bio-discoveries, data storage and high-security-level anti-counterfeiting applications, setting records for the tracking of single-molecule transport, super-resolution microscopy, nanoscale thermometry, and recently optical tweezers.

He has won the Australian Museum Eureka Prize (2015), the Australian Academy of Science engineering science medal (2017), the Australian Prime Minister Prize for Science – Physical Scientist of the Year (2017), and the Australian Research Council Laureate Fellowship (2021). He is a fellow of Australian Academy of Technology and Engineering.

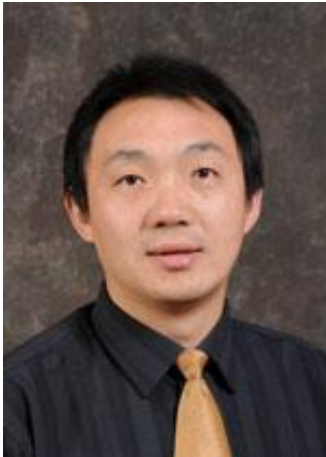
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Prof. Yang Shi



Academician of the Canadian Academy of Engineering

Tenured professor of the Department of Mechanical Engineering,
University of Victoria

Vice Chairman of the IEEE Industrial Internet of Things Professional
Technical Committee, American Society of Mechanical Engineers (ASME
Fellow), Canadian Society of Mechanical Engineers (CSME Fellow)

Professor Yang Shi received the B.Sc. degree and Ph.D. degree both in the School of Marine Engineering at Northwestern Polytechnical University, Xi'an, in 1994 and 1998, respectively. He then received the Ph.D. degree in electrical and computer engineering from the University of Alberta, Edmonton, AB, Canada, in 2005. From 2005 to 2009, he was an Assistant Professor and Associate Professor in the Department of Mechanical Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada. In 2009, he joined the University of Victoria, and now he is a Professor in the Department of Mechanical Engineering, University of Victoria, Victoria, British Columbia, Canada. His current research interests include networked and distributed systems, model predictive control (MPC), cyber-physical systems (CPS), robotics and mechatronics, navigation, and control of autonomous systems (AUV and UAV), and energy system applications.

Prof. Shi received the University of Saskatchewan Student Union Teaching Excellence Award in 2007. At the University of Victoria, he received the Faculty of Engineering Teaching Excellence in 2012, and the Craigdarroch Silver Medal for Excellence in Research in 2015. He received the JSPS Invitation Fellowship (short-term) in 2013 and the Humboldt Research Fellowship for Experienced Researchers in 2017. His co-authored paper was awarded the 2017 IEEE Transactions on Fuzzy Systems Outstanding Paper Award. He is the founding Vice Chair of IEEE IES Technical Committee on Industrial Cyber-Physical Systems. Currently, he serves as Co-Editor-in-Chief of IEEE Trans. Industrial Electronics; he is Associate Editor for Automatica, IEEE Trans. Control Systems Technology, IEEE/ASME Trans. Mechatronics, IEEE Trans. Cybernetics. He is a Fellow of IEEE, ASME and CSME, and a registered Professional Engineer in British Columbia, Canada.

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Prof. Han Haitjema



Professor of KU Leuven University of Leuven, Belgium

Chairman of committee 'Product Geometry' of the NEN, Netherland Normalization institute and the Technical Committee Dimensional Metrology of the RvA 'Raad voor Accreditatie'

Member of expert-group 'dimensional metrology' of the European Accreditation organization (EA); Euspen; and working-group 16 "surface texture" of ISO committee 213

Associate editor of "Precision Engineering" and "CIRP Journal of manufacturing science and Technology"

Editor-in-chief of Journal "Metrology"

Professor Han Haitjema has been engaged in the research of ultra-precision laser interferometry and calibration technology for a long time. He has obtained PhD at TU Delft in 1989. In 1990, he was Scientific group leader in the Physical Standards Laboratory of the Van Swinden Laboratorium te Delft. In 1997, he became an Assistant Professor 'Precision Metrology' at the Faculty of Mechanical Engineering of the Eindhoven University of Technology, 'Precision Engineering' section. From 2004 to 2018, he used to be the director of the European Research Center of Mitutoyo Company in Japan, and has worked closely with the top international semiconductor equipment suppliers. Now, he is the chairman of the RvA Dimensional Metrology Committee of the Netherlands Accreditation Council and the European Certification Organized important positions such as chief expert, responsible for the certification of metrology laboratories in Europe, Japan, and South Korea, and published more than 90 academic papers in top international journals.

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Mr. Zhanjiang Sui



President of Hexagon Intelligent Manufacturing Solution Group and executive dean of Academy of Technology

Advisory member of the National Professional Metrology Technical Committee

Vice-chairman of the Shandong Geometrical Measurement Technical Committee

Mr. Zhanjiang Sui has served as director of Product R&D Center, and general manager of Manufacturing Division; Ocean University of China MBA, PhD candidate in advanced manufacturing at Tianjin University; serving as an advisory member of the National Professional Metrology Technical Committee, and vice chairman of the Shandong Geometrical Measurement Technical Committee.

He has more than 20 years of experience in R&D and manufacturing of precision metrology systems. He is responsible for leading the introduction and development of a variety of international high-end CMM product lines. And based on the Chinese market demand, he is also leading the Academy of Technology Team to research and develop the special CMM solutions, automated inspection and processing production lines for new industries and new application scenarios. He is responsible for leading the construction of interconnected Hexmart Smart Factory Management System Platform, and he has been in charge of planning and construction implementation of the Hexagon Qingdao Smart Factory architecture.

He owns about 20 valid precision metrology technology patents, and has participated in the compilation of a number of national standards and group standards, covering the fields of GPS CMM, smart factory, digital supply chain and industrial chain and so on.