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Wafangdian Bearing Group Corp.
Aviation Industry Corporation of China
KEYNOTE SPEAKERS:

Professor K.P. Rajurkar

Professor, Mechanical and Materials Engineering
University of Nebraska-Lincoln, USA

Biograph:

K.P. Rajurkar, Distinguished Professor of Engineering at the College of Engineering University of Nebraska-Lincoln, received his M.S. and Ph.D. degrees from Michigan Technological University in 1978 and 1982, respectively. Dr. Rajurkar is the founder and Director of the Center for Nontraditional Manufacturing Research and Professor of Mechanical and Materials Engineering. He served as the interim Chair of the Industrial and Management Systems Engineering department (January 2007 – December 2008). He has also served as the Interim Associate Dean for Research of the College of Engineering (January 2005- December 2006). He served as Program Director of Manufacturing Machines and Equipment at the U.S. National Science Foundation (September 1999- November 2002). He was Chairman of the Manufacturing Systems Engineering Graduate Program of the College of Engineering (1988-1999).

Dr. Rajurkar is a Fellow of ASME, SME and International Academy for Production Engineering (CIRP). He was President of the North American Manufacturing Research Institute of SME in 1998-1999. He also served as the ASME Manufacturing Technical Group Leader (previously called Vice President-Manufacturing) for three years (2005-2008).

Dr. Rajurkar has more than 135 refereed publications and nearly 130 technically edited papers which were published in conference proceedings. His research in macro, micro and nano scale manufacturing has been supported by NSF, NIST/ATP, DoD, GEAE, Extrude Hone, Brush Wellman, Cummins Engines, NCMS, Mitsubishi Electric Corporation (Japan), Trans Tec Inc. (England), State of Nebraska, and other sponsors. He has advised more than 80 MS and Ph.D. students and 11 post-doctoral fellows/scholars.

He has received College of Engineering Awards for research, teaching and service. He also has received the ASME Blackall Machine Tool and Gage Award for a paper on Pulse Electrochemical Machining. He has received the 2005 Charles F. Carter Jr. Advancing Manufacturing Award from the Association of Manufacturing Technology. He has received 2009 International Honor, Gold Medal from the Society of Manufacturing Engineers. He has received 2010 Distinguished Investigator in Flexible Automation Award (Japan). He has received 2011 Distinguished Service Award from the North American Research Institution.

Speech title:

Review of Micro Electrical Discharge Machining and Micro Ultra Sonic Machining Processes and their Applications

Abstract

The demand for macro- and micro- products and components of difficult-to-machine materials such as tool steel, carbides, super alloys and titanium alloys has been rapidly increasing in automotive,
aerospace, electronics, optics, medical devices and communications industries. In spite of their exceptional properties many of these difficult-to-machine materials seem to have limited applications. These materials pose many challenges to conventional machining processes (such as turning and milling). For example, titanium alloys are susceptible to work hardening and its low thermal conductivity and higher chemical reactivity result in high cutting temperature and strong adhesion between the tool and work material leading to high tool wear. Electrical Discharge Machining (EDM), Ultra Sonic Machining (USM) and Electrochemical Machining (ECM) offer a better alternative or sometimes the only alternative in generating accurate 3-D complex shaped features and components of these difficult-to-machine, hard and brittle materials. This key-note presents a brief review of the state-of-the art research and developments in modeling, surface integrity, monitoring and control, tool material and tool wear and hybrid processes. Recent reports on emerging micro and nano-scale electro machining and ultra-sonic machining processes and their applications are also reviewed.
Professor Tadahiko SHINSHI
Professor, Institute of Innovative Research
Tokyo Institute of Technology, Japan

Biograph:
Tadahiko SHINSHI received B. E., M. E., and Dr. Eng. from Tokyo Institute Technology (Tokyo Tech), Japan, in 1990, 1992, and 2000, respectively. From 1992 to 1995, he worked for Mechanical Engineering Research Laboratory, Hitachi, Ltd. In 1995, he joined Precision and Intelligence Laboratory, Tokyo Tech, as Research Associate. He became Associate Professor and Professor in 2000 and 2010, respectively. From 2004 to 2006, he concurrently worked for Ministry of Education Culture, Sports, Science and Technology, Japan as Senior Scientific Research Specialist. His current research interests are in micro mechatronics and precision motion control.

Speech title:
Mechatronics Technology for Artificial Hearts

Abstract
For bridges to implant of donor heart or destination therapy, implantable and extracorporeal blood pumps (artificial hearts) with high durability, low hemolysis and little thrombus formation are strongly required. We have developed compact and simple magnetic bearings for centrifugal blood pumps to levitate and rotate the impeller-rotor without contact and contamination. Magnetic bearing, which is one of typical mechatronic devices consisting of mechanical, electrical and control elements, is a key device for continuous type blood pumps to reduce the blood damage and improve the durability of the pumps.

Prototype blood pumps utilizing the magnetic bearings had been fabricated by our research group and implanted to experimental calves to evaluate the durability and biocompatibility of the pump in collaboration with Tokyo Medical and Dental University. Furthermore, the magnetic bearing technology has been transferred to a medical venture (MedTech Heart, Japan) to develop magnetically-levitated extracorporeal blood pumps.

In this speech, first, the required specifications of magnetic bearings for continuous blood pumps are discussed and the working principle and performance of our magnetic bearings are introduced. Secondary, the evaluation methods and experimental results of the magnetically-levitated blood pumps including in vitro and in vivo tests are explained. Finally, the estimation methods of blood viscosity and blood flow using the magnetic bearings are introduced.
Dr. Charles Wang

President of Optodyne, Inc, USA

Biograph:

He received the PhD degree from California Institute of Technology. He spent years working on advanced and high power lasers, pointing and tracking and on President Reagan’s Star War Program before founding Optodyne, Inc. in 1986. Dr. Wang invented the Laser Doppler Displacement Meter (LDDM), making it easier to use and dramatically reducing the physical size of laser optic measurement systems. LDDM has become a powerful and popular instrument for the accuracy calibration of machine tools and precision machines. He is the fellow of SPIE and OSA.

Speech title:

A new technique for angular and linear measurement in 5-axis machines

Abstract

In a five-axis machining center there are three orthogonal linear axes and two rotary axes. For the manufacture of precision and complex parts, it is important to calibrate both the 3 linear axes, X, Y and Z and the two rotational axes, A, B or C. Using a laser interferometer to measure the 3 linear axes and the 2 rotational axes separately and independent of each other is not enough. There are non-intersection of the 2 rotational axes, and the non-parallel of the center lines of the spindle and the z-axis, and also the non-synchronization of all axes. The ISO 10791-6 specify the measurement of a rotary axis and 2 linear axes together. Reported here are the measurement on two 5-axis machines, the setup, data collection, analysis and results.
Professor Yuri Chugui

Professor, Technological Design Institute of Scientific Instrument Engineering
Siberian Branch of the Russian Academy of Sciences (TDI SIE SB RAS), Russia

Biograph:

Prof. Yuri Chugui Graduated from the Physical Department of Novosibirsk State University in 1968. He is a specialist in optical information processing, fourier optics, machine vision, laser metrology, 3D optical nanometry, 3D optical inspection, and optical instrument engineering. He is the creator of new scientific trend “Fourier optics for 3D objects”. He has received the fundamental results under investigation the peculiarities of volumetric Fraunhofer diffraction on 3D bodies, forming and filtration of their images.

Prof. Yuri Chugui is a senior member of OSA, ISA, and SPIE, member of IEEE, EOS, TC 14, TC 2 IMEKO, representative in the General Council IMEKO (international Confederation of Measurements) from Russia. Author and co-author of 359 scientific papers, including 5 monographs and 30 patents and inventions. He is a lecturer at the Novosibirsk Universities. In 2015 Yuri Chugui was awarded the prize of the Government of the Russian Federation in the field of science and technology.

Speech title:

Optoelectronic Precision Measuring Systems and Laser Technologies for Science and Industry

Abstract

For solving the actual industrial and scientific problems the TDI SIE SB RAS has developed and produced a family of 3D optical measuring systems with micro-/nanometer resolution, as well as laser image generator.

For 3D micro-/nanomeasurements with very high resolution we have developed and produced the low-coherent profilometer MNP-1. Using a perfectly atomic-smooth mirror in interferometer reference arm, the subatomic resolution of 20 picometers in-depth has been achieved. This profilometer can be effectively used in nanoindustry and scientific applications (biology, chemistry and others).

Safety of nuclear reactors and ensuring their high exploitation reliability are urgent problem for atomic industry. It takes 100 % noncontact inspection of fuel assemblies, fuel elements, spacer grids and also fuel element surface inspection with micron resolution. To solve this problem TDI SIE has developed and produced the commercial version of laser-optical systems for integral inspection of fuel articles and spacer grids using diffractive optical elements.

High accuracy dimensional measurement of small objects with nano- or subnanometre resolution is a very urgent problem especially applied to micromechanics and nanotechnology. A new high precision method for measurement the small opaque objects using Fraunhofer diffraction in divergent light is presented. The algorithm, based on contrast analysis of the diffraction Fraunhofer pattern at its centre, allows determination of the sought parameter with high precision within a range from a few to dozens of microns.
For microelectronic industry we have developed and produced the optoelectronic devices for high-productive 3D measurements with micrometer resolution of geometrical parameters of ceramic parts, including internal and external rings diameters and coaxiality of these diameters, rings height, flatness and parallelism of ring face surfaces as well as detection of defects on their face surfaces.

TDI SIE and IAE SB RAS have developed and produced commercial model of the updated circular image generator using semiconductor laser for synthesis of high-precision microstructures on flat and curvilinear surfaces for different applications including MOEMS’ components. Effective application of this generator is fabrication of diffractive optical elements for 3D measurement systems. A wavefront error (rms) reconstructed by these elements is about λ/100.

The measuring systems and the laser image generator have been tested by the customers and are used in different branches of industry and science.
Professor Tianhong Cui
Professor, Department of Mechanical Engineering
University of Minnesota, USA

Biograph:
Tianhong Cui is currently a Professor of Mechanical Engineering and an Affiliate Senior Member of the graduate faculty in Department of Electrical and Computer Engineering and Department of Biomedical Engineering at the University of Minnesota. He joined the faculty of the University of Minnesota in 2003. From 1995 to 2003, he held research or faculty positions at Tsinghua University, University of Minnesota, National Laboratory of Metrology in Japan, and Louisiana Tech University, respectively. He was a visiting professor at IMTEK, University of Freiburg in Germany in 2006, and he is holding a visiting professorship at Tsinghua University.

His current research interests include MEMS/ NEMS and nanotechnology for medical applications. He published more than 280 technical papers, and holds 5 US patents in the above areas. He is the founding Executive Editor-in-Chief for two Nature journals, Light: Science & Applications and Microsystems & Nanoengineering. He is also serving as an associate editor for Journal of Nanoscience and Nanotechnology and Journal of Nano Research, and he was an associate editor for IEEE Sensors Journal.

Speech title:
Graphene Biosensors for Medical Diagnostics

Abstract
This talk presents the combination of “bottom-up” nano self-assembly and “top-down” micro-manufacturing techniques to fabricate graphene MEMS and electronics for biomedical applications. With self-assembly and surface micromachining, highly flexible graphene-based beam platform for micro sensing and actuation was fabricated and investigated successfully with a potential for biomedical diagnostics. For flexible electronics devices, graphene-based field-effect transistors with embedded self-assembled films as dielectric and active layers were fabricated and characterized successfully. These self-assembled field-effect transistors were primarily investigated for high-performance bio-sensing applications.
Professor Robert Dorey

Professor, Department of Mechanical Engineering Sciences
University of Surrey, UK

Biograph:

Professor Robert Dorey holds the chair in Nanomaterials at the University of Surrey and is Fellow of the Institute Materials, Mining and Minerals (FIMMM) and Higher Education Academy (FHEA) as well as a Chartered Scientist and Engineer. Professor Dorey joined the University of Surrey from Cranfield University in 2014. Between 2003 and 2008 he held a prestigious Royal Academy of Engineering/EPSRC Research Fellowship.

Speech title:

Additive manufacture printing of active micro devices

Abstract

Functional devices may possess the ability to both sense and act upon their environment as well as generate power to enable remote sensing applications. This ability to monitor the health of the environment around us has many advantages including allowing corrective action to be taken only when required thus minimising downtime, maintaining safe structures and environments enabling less materials to be used while maintain acceptable safety, and facilitating higher efficiency through real-time monitoring. While imparting many environmental advantages such function devices often contain environmentally deleterious and unsustainable elements – a fact that is accentuated by wasteful manufacturing techniques.

Increased sustainability and lower environmental impact can be accomplished through the use of additive manufacturing techniques. At the same time replacement functional materials, including ferroelectrics, piezoelectrics and thermoelectrics, often contain a significant proportion of volatile low atomic weight elements making them susceptible to fluctuations in composition and hence functionality. This is further compounded when the materials are in the form of films or small sections due to the high surface area to volume ratio. This work presents an investigation into the changes that occur during the synthesis and manufacture of a micro-scale functional devices made of materials containing volatile elements such as sodium cobalt oxide thermoelectrics and potassium sodium niobate ferroelectrics.
Professor Zhongde Shan
Professor,
China Academy of Machinery Science & technology, China

Biograph:
Professor & Dr. Shan Zhongde, Ph.D. Candidate Supervisor. He is Vice President of China Academy of Machinery Science & Technology, and Director of state key lab of advanced forming technology & equipment of China. He also is a vice general president of China Association of Machinery Manufacturing Technology, Fellow of Chinese Mechanical Engineering Society, Fellow of the Institution of Engineering and Technology of UK. Guest Professor, POSTECH of South Korea, et al. Graduated from Department of Mechanical Engineering, Tsinghua University in 2002, then he studied in CARDIFF University of UK as a visiting scholar.

He has long been engaged in the research of Advanced Forming Technology and Green Equipment for the Mechanical Industry. More than 40 state-level key projects have been finished. He has issued 5 books and more than 100 papers on core journals or at the international conferences. More than 70 invention patents were authorized. More than 40 times as keynote speech or plenary speech was invited presentations. Many awards and honorary titles of the scientific research national and provincial-level incentives were won, such as The First Prize of National prize for progress in science and technology, The First Prize of Science and Technology Award in Green manufacturing, and so on. More than 10 pieces developed technology and equipment have been applied in mechanical industry.

Speech title:
Hybrid Forming Manufacturing Technology of Metal Complex Parts

Abstract
Complex castings such as engine cylinder block and head, sand casting process needs at least 10 to 12 sets of wood or metal patterns with 2-3 months and 90-120 million RMB yuan cost. Large complex castings in other areas, sometimes they will need dozens of sets of tools with long time and high costs. The manufacturing process & equipment were gradually improved with high performance and low cost & short time. To deal with the limitation of a single manufacturing process and to improve manufacturing efficiency & product quality, hybrid forming technology has become one of the most active development trend of mechanical manufacturing technology. Based on the research of patternless casting technology, a hybrid forming method of the integration of digital extrusion and machining/printing for sand mould was put forward. The mathematical model of sand mold cavity surface discretization is established innovatively in order to meet the precision requirements of near-net forming sand mold. Series of digital precision forming Pattern-less Casting machines such as sand mould digital flexible extrusion equipment, digital sand machining forming machine, sand cutting & printing machine, have been developed. Case Studies of Hybrid Forming Technology were listed. The process can be suitable for a few kinds sand processing in silicate-bonded sand, resin sand, and so on. Many kinds casting parts can be fabricated such as cast steel, cast iron, aluminum and other materials. Future possible research technology & equipment was proposed. Hybrid manufacturing is a green and intelligent manufacturing method to produce complex metal components with high quality, flexibility, and efficiency, as while as low cost, consumption, and emission.
### TECHNICAL PROGRAM

**[October 28 (Fri), 2016]**

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**Registration**

Whole day, Lobby, 1F, DUT International Conference Center (大连理工大学国际会议中心 1 楼大堂)

**Welcome Reception**

18:00-20:30, Multi-function Hall, 1F, DUT International Conference Center (大连理工大学国际会议中心 1 楼多功能厅)

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**[October 29 (Sat), 2016]**

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**Opening Session**

9:00-9:30, Lecture Hall, 2F, Bochuan Library (伯川图书馆 2 楼报告厅)

**Coffee Break**

9:45-10:00, Hall, 2F, Bochuan Library (伯川图书馆 2 楼)

**Memorial Photo**

9:30-9:45, Bochuan Library (伯川图书馆)

**Keynote Session 1**

10:00-12:00, Lecture Hall, 2F, Bochuan Library (伯川图书馆 2 楼报告厅)

Chair: Tianhong Cui, University of Minnesota, USA

10:00-10:40, Keynote Speech 1

Professor K.P. Rajurkar (University of Nebraska-Lincoln, USA)

10:40-11:20, Keynote Speech 2

Professor Tadahiko SHINSHI (Tokyo Institute of Technology, Japan)

11:20-12:00, Keynote Speech 3

Dr. Charles Wang (President of Optodyne, USA)

**Luncheon**

12:00-14:00, Multi-function Hall, 1F, DUT International Conference Center (大连理工大学国际会议中心 1 楼多功能厅)

**Technical Session 1**

14:00-15:45, 2F, Bochuan Library (伯川图书馆 2 楼)

ProMinent-1, 2F, Bochuan Library (普罗名特厅-1，伯川图书馆 2 楼)-Advanced Mechatronics Devices (1)

Chair: Naoki ASAKAWA, Kanazawa University, Japan

14:00-14:15

| [10101] Jinghui Peng, Songjing Li*, Yutaka Tanaka*, Vibration suppression of armature assembly in a hydraulic servo-valve torque motor using magnetic fluid, (Research Center for Micro-nano Technology, Hosei University, Tokyo, JAPAN / Harbin Institute of Technology) |

14:15-14:30

| [10102] You Xiaomei, Shi Xiaotian, Ma Xingguo, Chai Guoying, Yang Guichun, Analysis and Optimum Structure of Deformation Coordination of Crankshaft-bearing System, (Shenyang Ligong University) |

14:30-14:45
[10103] Xiaohui Du, Yuanhui Liu, Qingyuan Zhu, Xiongfeng Wu, Chaoping Yang, Portable on-line multi parameter environment detecting system, (Xiamen University)
14:45-15:00

[10104] Liu Yajun1*, Ye Jiakun, Zhan Shuyan, Xie Wenhua, Study on The Slip of Induction Motor in Low Viscosity Pumping System, (South China University of Technology)
15:00-15:15

[10105] Zheng De-xing, Chen Weifang*, Li Miaomiao, Liang Ruijun, An improved model on forecasting temperature field of high-speed angular contact ball bearings with structural constraints and under oil-air lubrication, (Nanjing University of Aeronautics and Astronautics)
15:15-15:30

[10106] Yingli Zhu*, Juan Wang, Jun Zhang, Effect of Nozzle Size Parameters on High Pressure Abrasive Water Jet, (Tianjin University of Science and Technology)
15:30-15:45

[10107] N. Iwatsuki*, I. Ikeda, J. Igarashi, Centipede Robot Composed of Biped Leg Mechanism Units with 1 DOF, (Tokyo Institute Technology)
ProMinent-2, 2F, Bochuan Library (普罗名特厅-2, 伯川图书馆2楼)- Mechatronics Control (1)
Chair: Kyoung Kwan AHN, University of Ulsan, Korea
14:00-14:15

[10205] SHI Huaitao, ZHOU Qian, WANG Yutong, SONG Wenli, LI Shouhua*, FAN Liting, Process Monitoring Method Based On Improved Dynamic Multi-scale Principal Component Analysis, (Shenyang Architectural University)
14:15-14:30

[10206] Zhan Wang, Fenglong Zhu*, Analysis on high-speed spindle online dynamic balance regulation characteristics, (Shenyang Architectural University)
14:30-14:45

[10207] Guo Xiaozhong, Shi Zhaoyao, Gear Matching Predicting Method Based on GIE and Bayesian Network, (Beijing University of Technology)
14:45-15:00

[10208] Mingxing Lin*, Xiaojun Ju, Aiwei Song, Research on Permanent Magnet Brushless DC Motor Drive Control Algorithm Used in Small Electric Vehicles, (Shandong University)
15:00-15:15

[10211] A. Senatore1*, C. D Auria1, M. Pisaturo1, FRICTIONAL BEHAVIOUR AND ENGAGEMENT CONTROL IN DRY CLUTCH BASED AUTOMOTIVE TRANSMISSIONS, (University of Salerno)
15:15-15:30

[10220] Lei Zhang*, Ran Bo, Analysis and Establishment of Control Model of Rolling Process for the Metal belt of Automotive CVT, (Northeastern University)

15:30-15:45

[10222] Shengwen Shi, Ao Zhang, He Li, The stability study of stick-slip vibrations with the nonlinear delay force in deep hole drilling with PDC drag bits, (Northeastern University)

ProMinent-3, 2F, Bochuan Library (普罗名特厅-3，伯川图书馆 2 楼)- Precision Manufacturing Technology and Control (1)

Chair: Miaomiao Li, Nanjing University of Aeronautics and Astronautics, China

14:00-14:15

[10508] Zhan Wang, Wei Tu, Jie Li ,Yu Zhang, Precision Manufacturing Technology and Control Online dynamic balance detection method of high speed motorized spindle based on Labview, (Shenyang Architectural University)

14:15-14:30

[10502] Xingyuan Wang, Zhifeng Lou*, Xiaodong Wang, The influence of non-contact regions on press-fit process of small interference fitting parts, (Dalian University of Technology)

14:30-14:45


14:45-15:00


15:00-15:15

[10506] Xiaolun Yun, Zhengbang Hu*, Xuesong Mei, Gedong Jiang, Development and Experimental Study of the Online Dynamic Balance System for Grinding Machine, (Xi'an Jiaotong University)

ProMinent-4, 2F, Bochuan Library (普罗名特厅-4，伯川图书馆 2 楼)- MEMS/NEMS & 3D Printing (1)

Chair: Junsheng Liang, Dalian University of Technology, China

14:00-14:15


14:15-14:30

[10612] Xiaojun Zhao, Dazhi Wang, Fabricate nanostructure by coaxial electrohydrodynamic jet
print, (Dalian University of Technology)
14:30-14:45

[10651] Yi Luo, Zhixin Li, Zicheng Yu, Xiaodong Wang, Influence of Parallel and Trapezoidal Wick Structures to the Heat Transfer Capability of MHPs, (Dalian University of Technology)
14:45-15:00

[10606] ZHANG Zhao-yun, SU Wei*, TANG Bin, XIONG Zhuang, CHEN Yin-hui, GAO Yang, PENG Bo, Z-cut quartz etching in ammonium bifluoride solutions containing surfactant additives, (China Academy of Engineering Physics)
15:00-15:15

[10608] Jiaxin Yu, Guoming Xia, Anping Qiu, Qin Shi*, The Analysis and Design of Closed-loop Controlled System of MEMS Vibratory Gyroscopes, (Nanjing University of Science and Technology)
15:15-15:30

[10609] Honglin Cheng, Jianzhong Li*, Zuyuan Yu, A Tool Wear Model of Pre-sintered Ceramic Body Micro-milling, (Dalian University of Technology)
15:30-15:45

[10611] Feng SUN, He LU*, Fangchao XU*, Optimization Design and Analysis of Piezo-driven Hourglass Displacement Amplification Platform, (Shenyang University of Technology)

Coffee Break 15:45-16:00

Technical Session 2 16:00-18:15 2F, Bochuan Library (伯川图书馆 2 楼)

ProMinent-1, 2F, Bochuan Library (普罗名特厅-1, 伯川图书馆 2 楼)-Advanced Mechatronics Devices (2)
Chair: Rui Yang, Dalian University of Technology, China
16:00-16:15

[10121] Xiaodong Tan, Laichao Qin, Yuanyuan Wu, A Research and Design of Intelligent Controlling System for Robot Assembly Force, (Dalian Jiaotong University)
16:15-16:30

[10122] Fangzhou Zhao, Junyao Gao, Haoxiang Cao, Yi Liu, Jinchao Zhao, Xuanyang Shi, Chuzhao Liu Zhong Huang, Cunqiu Liu, Research on the Steering Characteristic of Six-wheeled Miniature Reconnaissance Robot, (University of Science and Technology Beijing)
16:30-16:45

[10152] Kee-Bong Choi, JaeJong Lee1, GeeHong Kim, HyungJun Lim, SoonGeun Kwon, Jin-Gyu Kim, A Flexure-based Micro XYθ Stage Driven by Piezo Actuators, (Korea Institute of Machinery and Materials)
16:45-17:00


17:00-17:15

[10201] Miaomiao Li*, Rupeng Zhu, Weiming Wu, Experimental study on active vibration based on smart spring, (Nanjing University of Aeronautics and Astronautics)

17:15-17:30

[10754] Te-Yen Huang* and Shao-Yu Hsu, Designing the Partially Porous Journal Bearings of an Aerostatic Spindle, (Lunghua University of Science and Technology)

17:30-17:45

[10755] Chi MA*, Jun Yang, Xuesong Mei, Liang Zhao, Hu Shi, Dynamic Thermal-Structure Coupling Analysis and Experimental Study on Ball Screw Feed Drive System of Precision Machine Tools, (Xi'an Jiaotong University)

17:45-18:00

[10108] Lijin Fang*, Longfei Sun, Error Sensitivity Analysis of A Novel A/B Bi-rotary Head Based on Differential Drive, (Northeastern University)

18:00-18:15


ProMient-2, 2F, Bochuan Library (普罗名特厅-2, 伯川图书馆2楼)-Mechatronics Control (2)
Chair: Jianwei Ma, Dalian University of Technology, China

16:00-16:15

[10223] Ao Zhang, Shengwen Shi, He Li*, FAN Liting, Analysis of the effect on the vibration characteristics of a permanent magnet motor with rotor eccentricity, (Northeastern University)

16:15-16:30


16:30-16:45

[10226] Xuyang Cao, Binghan Xi, Yunlan Qu*, Yanhong Xi, Research of the Automatic Travelling Control System and Path Planning for the Overhead Crane in Complex Environments, (Dalian University of Technology)

16:45-17:00
[10227] Xiaoqing Tian, Kang Zhang, Nan Bai, Xuejun Zhu1, Online prediction control model of CO2 concentration for Pleurotus Eryngii in the sporocarp period Based on Matlab and LabVIEW, (Ningxia University)
17:00-17:15

[10253] Xuan Ba Dang, Kyoung Kwan Ahn, An Predictive Optimal Control Approach for an Electro-hydraulic System, (University of Ulsan)
17:15-17:30

[10255] Minh Nhat NGUYEN, Duc Thien TRAN, Kyoung Kwan AHN, Vibration control of a single Flexible-link manipulator using PD controller and Input-Shaping algorithm, (University of Ulsan)
17:30-17:45

[10256] Thanh Liem DAO and Kyoung Kwan AHN, A Study on Torque Prediction of DC Motor using Smart Grey Predictor-based Adaptive PID Model, (University of Ulsan)
17:45-18:00

[10203] Pengfei Zeng, Gedong Jiang, Chuang Zou*, Xian Zhang, Chengxuan Xie, Nonlinear Friction Compensation of a Flexible Robotic Joint with Harmonic Drive, (Xi'an Jiaotong University)

ProMinent-3, 2F, Bochuan Library (普罗名特厅-3，伯川图书馆 2 楼)- Precision Manufacturing Technology and Control (2)
Chair: Yun Wang, Jiangsu University, China
16:00-16:15

[10510] Dongsheng Chai, Dongdong Wu, Guangyi Ma, Siyu Zhou, Zhiyi Jin, Dongjiang Wu*, Effects of Pulse Parameters on Weld Geometry and Microstructure in Pulsed Laser Welding Ni-base Alloy Thin Sheet with Filler Wire, (Dalian University of Technology)
16:15-16:30

[10512] Jianwei MA*, Yuanyuan GAO, Dening SONG, Xin ZHANG, Optimization of Machining Parameters in High-speed Milling of Aviation Aluminum-alloy Thin-walled Parts, (Dalian University of Technology)
16:30-16:45

[10513] Guo Haiyang, Xu Zhixiang, The application of laser-generated ultrasound technology in coating-substrate systems, (Dalian University of Technology)
16:45-17:00

[10514] Yu bin Huang*, Wei Sun, Qing chao Sun, Yue Ma, Numerical analysis of thermal error for a 4-axises horizontal machining center, (Dalian University of Technology)
17:00-17:15

[10515] Yu bin Huang*, Yue Ma1, Qing chao Sun, Wei Sun, Wen bin Yue, Dynamic modeling and
Optimal Design of a horizontal machining center base on Experimental Modal Analysis, (Dalian University of Technology)
17:15-17:30

[10516] Xinrong Wang*, Huaizhi Lu, Xia Zhang, Dong Wang, Research on the Machining Error Control and Simulation of the Motor Frame in Vertical Lathe Machining, (Jiamusi University)
17:30-17:45

17:45-18:00

[10524] Xiao-peng LI, Yuan-gang WANG, Fu-ling Zhao, Meng-hua WU, Fabrication of Functional Gradient Materials Electrode and its Application in Micro-EDM, (Dalian University)

ProMinent-4, 2F, Bochuan Library (普罗名特厅-4， 伯川图书馆 2 楼)- MEMS/NEMS & 3D Printing (2)

Chair: Zhaoyun Zhang, China Academy of Engineering Physics, China
16:00-16:15

16:15-16:30

[10615] Xu Fang, Jinhe Yang, Junsheng Liang, Fabrication of High-voltage insulation Thin Film for Micro Devices by using Photosensitive polyimide solution, (Dalian University of Technology)
16:30-16:45

[10616] Sheng Zheng, Jinpeng Wang, Junsheng Liang, Influence of Parallel and Trapezoidal Wick Structures to the Heat Transfer Capability of MHPs, (Dalian University of Technology)
16:45-17:00

17:00-17:15

[10652] Xiaohai Li, Beibei Xue, Yanfang Gao and Shuming Wang, Experiments of Electrochemical Micromachining with Ultra-short Pulse Current, (Jiamusi University)
17:15-17:30

17:30-17:45

[11002] Lilong Zhang, Yu Liu, Peng Yan, Yanqiu Chen, A Study on Voice Coil Motor Based Jetting Dispenser, (Shandong University, Chengdu Green Energy and Green Manufacturing Technology R&D Center, Beijing University of Aeronautics and Astronautics)

17:45-18:00

[10720] H.T. Qiao, Concurrent topology optimization of lightweight cellular materials and structures, (Shenyang University of Technology)

17:45-18:15

[10618] Lei Wang1, Jingmin Li1, Junshan Liu1, Chong Liu1*, The Evaporation Mechanism of an Artificial-Leaf Micropump, (Dalian University of Technology)

Banquet 18:30-20:30 Multi-function Hall, 1F, DUT International Conference Center (大连理工大学国际会议中心 1楼多功能厅)

[October 30 (Sun), 2016]

Keynote Session 2 8:30-9:50 Lecture Hall, 2F, Bochuan Library (伯川图书馆 2楼报告厅)
Chair: Nobuyuki Iwatsuki, Tokyo Institute of Technology, Japan
8:30-9:10  Keynote Speech 1
Professor Yuri Chugui (Technological Design Institute of Scientific Instrument Engineering Siberian Branch of the Russian Academy of Sciences, Russia)
9:10-9:50  Keynote Speech 2
Professor Tianhong Cui (University of Minnesota, USA)
Coffee Break 9:50-10:00 Hall, 2F, Bochuan Library (伯川图书馆 2楼)
Keynote Session 3 10:00-11:20 Lecture Hall, 2F, Bochuan Library (伯川图书馆 2楼报告厅)
Chair: Xuesong Mei, Xi'an Jiaotong University, China
10:00-10:40  Keynote Speech 1
Professor Robert Dorey (University of Surrey, UK)
10:40-11:20  Keynote Speech 2
Professor Zhongde Shan (China Academy of Machinery Science & technology, China)
Luncheon 12:00-14:00 Multi-function Hall, 1F, DUT International Conference Center (大连理工大学国际会议中心 1楼多功能厅)
Technical Session 3 14:00-15:45 Bochuan Library, (伯川图书馆 2楼)
ProMinent-1, Bochuan Library (普罗名特厅-1，伯川图书馆 2楼)- Precision Manufacturing Technology and Control (3)
Chair: Te-Yen Huang, Lunghwa University of Science and Technology, Taiwan
14:00-14:15  
[10519] Yuzhi Chen*, Weifang Chen, Ruijun Liang, Ting Feng, Machining allowance optimal distribution of thin-walled structure based on deformation control, (Nanjing University of Aeronautics and Astronautics)

14:15-14:30  
[10529] Weidong He, Yinghui Zhang, Fulai Zhang*, Optimization of gear modification for boom and crowing mechanism used in large mining excavator, (Dalian Jiaotong University)

14:30-14:45  
[10522] Shuai YAN, Dongjiang WU*, Laser Engineered Net Shaping of Al2O3-ZrO2(Y2O3) eutectic ceramics periodically banded structure characteristics of formation mechanism, (Dalian University of Technology)

14:45-15:00  
[10523] Bangsheng Xing and Le Xu, Feature Extraction of Bearing based on LMD Energy Feature, (Jiangsu Normal University)

15:00-15:15  
[10526] Jianwei Ma*, Dening Song, Yuanyuan Gao, Zhen Liu, A High-precision Parametric Interpolation Method for NURBS Interpolator, (Dalian University of Technology)

15:15-15:30  
[10528] Zewei Yuan*, Yue Qin, Zhu Ji, Peng Zheng, Synergistic Effects of Surface Strengthening and Surface Micro-texture on Spherical Plain Bearing Tribological Properties, (Shenyang University of Technology)

15:30-15:45  
[10517] Liu Yajun*, Zhan Shuyan, Ye Jiakun, Xie Wenhua, New designs in fuel dispensing system to control maximum flow of volatile liquid, (South China University of Technology)
[10407] Yao Fang, Sijin Wu*, Lianxiang Yang, Synchronous measurement of three-dimensional deformations using tri-channel spatial-carrier digital speckle pattern interferometry, (Beijing Information Science and Technology University)
14:45-15:00

[10408] Zhenbang Hu*, Xuesong Mei, Gedong Jiang1, Changjiang Chen, Xialun Y, Non-stationary Signal Purification and Rotor Axis Orbit Feature Extraction under Machine Tool Spindle Cutting Process, (Xi'an Jiaotong University)

Chair:  Adolfo Senatore, University of Salerno, Italy
14:00-14:15

[10257] Yue Ming, Coordinated path tracking control for an underactuated tractor-trailer vehicle via MPC and SMC approaches, (Dalian University of Technology)
14:15-14:30

14:30-14:45

[10301] Yan Cui, Jinyong Zhao, Jinkui Chu, Le Guan, Ran Zhang, A Study on Polarization Pattern of Full Moonlight based on the Neutral Points and the Meridian, (Dalian University of Technology)
14:45-15:00

15:00-15:15

[10304] So-Nam Yun*, Young-Bog Ham, Jung-Ho Park, A Study on the PWM Signal Control Technique of a Proportional Solenoid Actuator, (Korea Institute of Machinery & Materials and Korea University of Science and Technology)

Chair:  Jingmin Li, Dalian University of Technology, China
14:00-14:15

[10901] Fuben He, Roberto Bortoletto, Yande Liang*, Enrico Pagello, A Novel Design of Musculoskeletal Bipedal Robot Applied with Bio-inspired Elastic Actuation, (Dalian University of Technology)
14:15-14:30
[10902] Fuben He, Ruifeng Wang, Yande Liang*, Hongzhe Zhang, The Influences of Bio-inspired Elasticity Applied to Robotic Manipulator during Human-Robot Interactions, (Dalian University of Technology)
14:30-14:45

[10903] Junxia Zhang, Yunhong Cai*, Lin Cao, Yang Li, The research of characteristics and balance adjustment regulation of different structure environment on human walking gait, (Tianjin University of Science and Technology)
14:45-15:00

[10904] Jinan Wang, Zhongliang Xia, Yan Su, Mincong Lu, Ying Wan*, Yong He, Handheld, One-step, and Rapid Electrochemical Biosensor Platform with Smartphone Interface, (Nanjing University of Science and Technology)
15:00-15:15

[10905] Ruixia Liu, Yinglong Wang, Minglei Shu, Spectral Efficiency of Wireless Body Area Networks Coexistence, (Shandong University of Science and Technology)
15:15-15:30

[11101] Jian Yu, Junyi Cao, Chengguang Li, Jing Lin, Dynamic modeling and complexity analysis of human lower-limbs under various speeds, (Xi'an Jiaotong University)
15:30-15:45


Coffee Break 15:45-16:00

Technical Session 4 16:00-18:15

ProMinent-1, 2F, Bochuan Library (普罗名特厅-1，伯川图书馆2楼)- Precision Manufacturing Technology and Control (4)
Chair: Kazuhiro Yoshida, Tokyo Institute of Technology, Japan
16:00-16:15

[10530] WEI Yan-gang, ZHANG Guo-liang, XU Kai, Research on Bearing Load Distribution under Different Contact States for Tapered Roller Bearing of High Speed Train Axle Bo (Dalian Jiaotong University)
16:15-16:30

[10531] Xiaodong Tan, Feihang Shi, Research on Control Algorithm of Generator Stator Bar Insulation Based on Fuzzy PID, (Dalian Jiaotong University)
16:30-16:45

[10532] Xiaodong Tan, Linghao Kong*, Daoru Li, Research on the Intelligent Algorithm of Generator Stator Bar Solidification Process Parameters Based on BP Neural Network, (Dalian
Jiaotong University
16:45-17:00

[10533] Mingwei Xu*, The Research on the Performance of Gear Lubrication Based on Romax, (Dalian Jiaotong University)
17:00-17:15

[10535] Yanqing Huang, Weihu Zhou, Naixun Sun, Dengfeng Dong, Zhongyu Wang, Estimation of random vibration signals with small samples using bootstrap maximum entropy method, (Chinese Academy of Sciences, Academy of Opto-electronics)
17:15-17:30

17:30-17:45

[10555] Yun WANG, Liyu CHEN, Xiaming YANG, Yan Zhao, Zhenying XU, Xuepeng WANG, Numerical Optimization of Shrinkage and Warpage on the Injection Molding Process Parameters of Electrical Connector, (Jiangsu University)
17:45-18:00

[10559] Li Zhiyong, Wei Xiuting*, Lu Wenwen, Cui Qingwei, Comparative analysis of flow field in mixed and non mixed gas electrochemical machining for turbine blade cooling holes, (Shandong University of Technology)
18:00-18:15

[10123] Hongtao Pan*, Yuntao Song*, Yong Cheng, Jun Zhang, Wenlong Zhao, Yu Zhang, YangLi, Design and implementation of 3-DOF Gripper for Maintenance Tasks in EAST Vacuum Vessel, (Institute of plasma physics, Chinese Academy of Sciences)

Chair: Tongqun Ren, Dalian University of Technology, China
16:00-16:15

[10416] ZHAO Jing, LI Ying, WANG Shi-jie, YAN Ming-yin, Theoretical and Experimental Study on Mechanical Force of Transformer Coil Short Circuit, (Shenyang University of Technology)
16:15-16:30

[10411] TONG Anshi, XIE Liyang, BAI Xin, MENG Weiyng, and QIN Bo, Damage monitoring and analysis of fiber-mental laminates with an open hole using digital image correlation, (Northeastern University)
16:30-16:45
[10412] Yanqing Wang, Weihu Zhou, Zhongyu Wang, Estimation of random vibration signals with small samples using bootstrap maximum entropy method, (Chinese Academy of Sciences, Beijing University of Aeronautics and Astronautics)
16:45-17:00

[10413] Yinghui Zhang, Xiaoyu Wang*, Weidong He, The Precise Measurement Technology for Manufacturing Error of Cycloidal Gear Used in RV Reducer, (Dalian Jiaotong University)
17:00-17:15

17:15-17:30

[10409] Liangsheng Zhang, Wanduo Wu, Tingting Wu, Rui Zhang, Qiangxian Huang*, A Laser Measurement Method to Achieve 1D Linear and 2D Angular Displacements Measuring Simultaneously, (HeFei University of Technology)
17:30-17:45

17:45-18:00

18:00-18:15

16:00-16:15

[10305] K. Suzuki, Y. Yamazaki*, The experiment of autonomous rescue robot which mounted pyroelectric infrared sensor, (Meisei University)
16:15-16:30

16:30-16:45

16:45-17:00

[10311] Jian ZHAO, Shengtian CAI, Renjing GAO, Shutian LIU, Junfei GUO, Nonlinear Threshold Mass Detection through Response Amplitude Tracking, (Dalian University of Technology)

17:00-17:15

[10351] Xuan Dinh TO, Duc Thien TRAN, Minh Truong BUI NGOC, Kyoung Kwan AHN, Backtracking Search Algorithm based NARX fuzzy inverse control for piezo nanopositioning stage, (University of Ulsan)

17:15-17:30

[10352] Bin-bin HAN, Ying-jun LI*, Gui-cong WANG, Shu HUANG, Yang SUN, Study on Decoupling Algorithms for Piezoelectric Six-dimensional Force/Moment Sensor Based on BP Neural Network, (University Of Jinan)

17:30-17:45


17:45-18:00

[10212] Han Hui, Hao Li-na*, Zhang Qi, The Trapezoid Counterweight Method in Dynamic Balance of Symmetric Flexible Rotor, (Northeastern University)

18:00-18:15

[10254] Quang Hoan Le, Sung Woong Choi, Tae Un Kim, Soon Yong Yang, A Study on Intuitive Configuration of Joystick for Operator in Flattening task of Excavator, (University of Ulsan)

18:15-18:30

[10807] Xiaomin LIU, Ming WEI and Xing WANG, Performance Analysis and Optimization Selection of ORC System Configurations for Low Temperature Binary-Cycle Geothermal Plant, (Xi'an Jiaotong University)

ProMinent-4, 2F, Bochuan Library (普罗名特厅-4，伯川图书馆 2 楼)- Renewable Energy and Energy Saving Technologies/ Production Systems

Chair: Yingli Zhu, Tianjin University of Science and Technology, China

16:00-16:15

[10752] Kenta Koremura, Y. Inoue, K. Nakamoto, Machining Process Evaluation Indexes of Multi-tasking Machine Tools, (Tokyo University of Agriculture and Technology)

16:15-16:30

[10801] Wang Jinlong, Zhang Yuanliang, Zhao Qingchen*, Gou Wanqiang, Guo Junfei, Shen Yihong, Study of fatigue defect critical threshold and remanufacturability judgment based on fatigue defect, (Dalian University of Technology)

16:45-17:00

[10804] Tri Dung DANG, Kyoung Kwan AHN, A study on control-stiffness-mechanism for wave energy converter, (University of Ulsan)

17:00-17:15


17:15-17:30


17:30-17:45

[10701] FANG Li-jin, LI Li1, WANG Guo-xun, Integration of Cutting Robot with CAD_CAM System Based on STEP-NC, (Northeastern University)

17:45-18:00

[10702] Zhang Wei, Tian Zhi-xing, Hao Li-na*, Liu Shu-bing, Qu Bing-yin, Preliminary Study of PHM System based on Data Driven, (Northeastern University)

18:00-18:15

[10703] Wang Hao, Zhixing Tian, Niexin, Lina Hao*, Shubing Liu, Bingyin Qu, Research on Data Acquisition Scheme in PHM System Based on Data Driven, (Northeastern University)

18:15-18:30


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<th>18:30-20:30</th>
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<td>(大连理工大学国际会议中心 1 楼多功能厅)</td>
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International Steering Committee Meeting 19:00-20:30 (Meet at the lobby of DUT International Conference Center at 18:30)

[October 31(Mon), 2016]

Technical Visit 9:00-11:00

Collaborative Innovation center of Major Machine Manufacturing in Liaoning

| Luncheon          | 12:00-14:00 | Multi-function Hall, 1F, DUT International Conference Center |
1 West Gate (西门)
2 Bochuan Library (伯川图书馆)
3 DUT International Conference Center (大连理工大学国际会议中心)
4 South Gate (南门)

**Registration/Hotel site (注册/酒店地点)**
DUT International Conference Center  
Dalian University of Technology  
No. 2 Linggong Road, High-tech Park District, Dalian City  
Liaoning Province, P.R. China  
大连理工大学国际会议中心  
大连理工大学  
大连市高新技术园区凌工路 2 号  
中国辽宁省

**Conference site (会议地点)**
Bochuan Library  
Dalian University of Technology  
No. 2 Linggong Road, High-tech Park District, Dalian City  
Liaoning Province, P.R. China  
伯川图书馆  
大连理工大学  
大连市高新技术园区凌工路 2 号  
中国辽宁省

**Contacts:**
Tel: 0411-84708084  
Mobile: 15040408605  18641114062
# Program at a Glance

| October 28 (Fri) | Whole Day Registration  
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| 18:00-20:30      | Welcome Reception  
|                  | (Multi-function Hall, 1F, DUT International Conference Center) |

| October 29 (Sat) | 9:00-9:30 Opening Session  
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| 9:30-9:45        | Memorial Photo  
|                  | Bochuan Library |
| 9:45-10:00       | Coffee Break  
|                  | Hall, 2F, Bochuan Library |
| 10:00-10:40      | Keynote Speech 1: Professor K.P. Rajurkar  
|                  | (University of Nebraska-Lincoln, USA) |
| 10:40-11:20      | Keynote Speech 2: Professor Tadahiko SHINSHI  
|                  | (Tokyo Institute of Technology, Japan) |
| 11:20-12:00      | Keynote Speech 3: Dr. Charles Wang  
|                  | (President of Optodyne, USA)  
|                  | (Lecture Hall, 2F, Bochuan Library) |
| 12:00-14:00      | Luncheon  
| (Multi-function Hall, 1F, DUT International Conference Center) |
| 14:00-15:45      | Advanced Mechatronics Devices (1)  
| (ProMinent-1, 2F, Bochuan Library) |
| 14:00-15:45      | Mechatronics Control (1)  
| (ProMinent-2, 2F, Bochuan Library) |
| 14:00-15:45      | Precision Manufacturing Technology and Control (1)  
| (ProMinent-3, 2F, Bochuan Library) |
| 14:00-15:45      | MEMS/NEMS & 3D Printing (1)  
| (ProMinent-4, 2F, Bochuan Library) |
| 15:45-16:00      | Coffee Break |
| 16:00-18:15      | Advanced Mechatronics Devices (2)  
| (ProMinent-1, 2F, Bochuan Library) |
| 16:00-18:15      | Mechatronics Control (2)  
| (ProMinent-2, 2F, Bochuan Library) |
| 16:00-18:15      | Precision Manufacturing Technology and Control (2)  
| (ProMinent-3, 2F, Bochuan Library) |
| 16:00-18:15      | MEMS/NEMS & 3D Printing (2)  
| (ProMinent-4, 2F, Bochuan Library) |
| 18:30-20:30      | Banquet  
| (Multi-function Hall, 1F, DUT International Conference Center) |

| October 30 (Sun) | 8:30-9:10 Keynote Speech 1: Professor Yuri Chugui  
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<td>9:10-9:50</td>
<td>Keynote Speech 2: Professor Tianhong Cui</td>
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<td>9:00-10:00</td>
<td>Coffee Break</td>
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<td>12:00-14:00</td>
<td>Luncheon (Multi-function Hall, 1F, DUT International Conference Center)</td>
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<td>14:00-15:45</td>
<td>Precision Manufacturing Technology and Control (3) (ProMinent-1, Bochuan Library)</td>
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<td>14:00-15:45</td>
<td>Precision Measurement Technology (1) (ProMinent-2, Bochuan Library)</td>
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<td>14:00-15:45</td>
<td>Sensors and Actuators &amp; Mechatronics Control (1) (ProMinent-3, Bochuan Library)</td>
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<td>14:00-15:45</td>
<td>Bioengineering/biomedical Mechatronics (ProMinent-4, Bochuan Library)</td>
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<td>16:00-18:15</td>
<td>Precision Manufacturing Technology and Control (4) (ProMinent-1, 2F, Bochuan Library)</td>
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<td>16:00-18:15</td>
<td>Precision Measurement Technology (2) (ProMinent-2, 2F, Bochuan Library)</td>
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<td>16:00-18:15</td>
<td>Sensors and Actuators &amp; Mechatronics Control (2) (ProMinent-3, 2F, Bochuan Library)</td>
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<td>16:00-18:15</td>
<td>Renewable Energy and Energy Saving Technologies/Production Systems (ProMinent-4, 2F, Bochuan Library)</td>
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<td>18:30-20:30</td>
<td>Buffet (Multi-function Hall, 1F, DUT International Conference Center)</td>
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<tr>
<td>19:00-20:30</td>
<td>International Steering Committee Meeting</td>
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<tr>
<td><strong>October 31 (Mon)</strong></td>
<td>Technical Visit Collaborative Innovation center of Major Machine Manufacturing in Liaoning</td>
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