The 6th International Conference on

Structural Health Monitoring and Integrity Management 2024 （ICSHMIM 2024）

Programme

November 9-11, 2024

ZhengZhou, China

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Welcome Message

It is our pleasure to welcome you to attend the 6th International Conference on Structural Health Monitoring and Integrity Management (ICSHMIM 2024), scheduled for November 2024 in Zhengzhou, China. This event is organized by the China Instrument and Control Society in collaboration with Henan University of Technology. ICSHMIM is dedicated to advancing the development and application of Structural Health Monitoring (SHM) technologies within our nation, enhancing academic collaboration in the SHM domain, and creating a platform for technical cooperation between domestic and international stakeholders.

In light of this mission, ICSHMIM established its biennial conference series, with the inaugural event taking place in 2012, organized by the Chinese Society for Instrumentation. Since then, five successful conferences have been conducted. ICSHMIM 2024 will serve as a platform for discussing the latest advancements and cutting-edge techniques in SHM and Artificial Intelligence. The conference will encompass a broad spectrum of topics, including Novel Sensing, Fiber Optic Sensing, Ultrasonic Sensing, Acoustic Emission Sensing, and Electromagnetic Sensing for SHM, as well as Multimodal Big Data Processing, Health Assessment, Failure Diagnosis, Prediction, Damage Identification, Reliability, Predictive Maintenance, and Smart Operation. The applications of SHM will extend across various sectors, including Special Equipment, Aerospace, Infrastructure, Petrochemical Equipment, Rail Transit, and Energy & Power Equipment.

Welcome to Zhengzhou. We are delighted to have you as a participant and wish you a productive and enjoyable experience at ICSHMIM 2024.

Prof. Zhishen Wu
Chairman of the Organizing Committee

Prof. Keqin Ding
Chairman of the Organizing Committee

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Session 12: Structural Health Monitoring of Petrochemical Equipment

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Session 14: Structural Health Monitoring of Energy and Power Equipments

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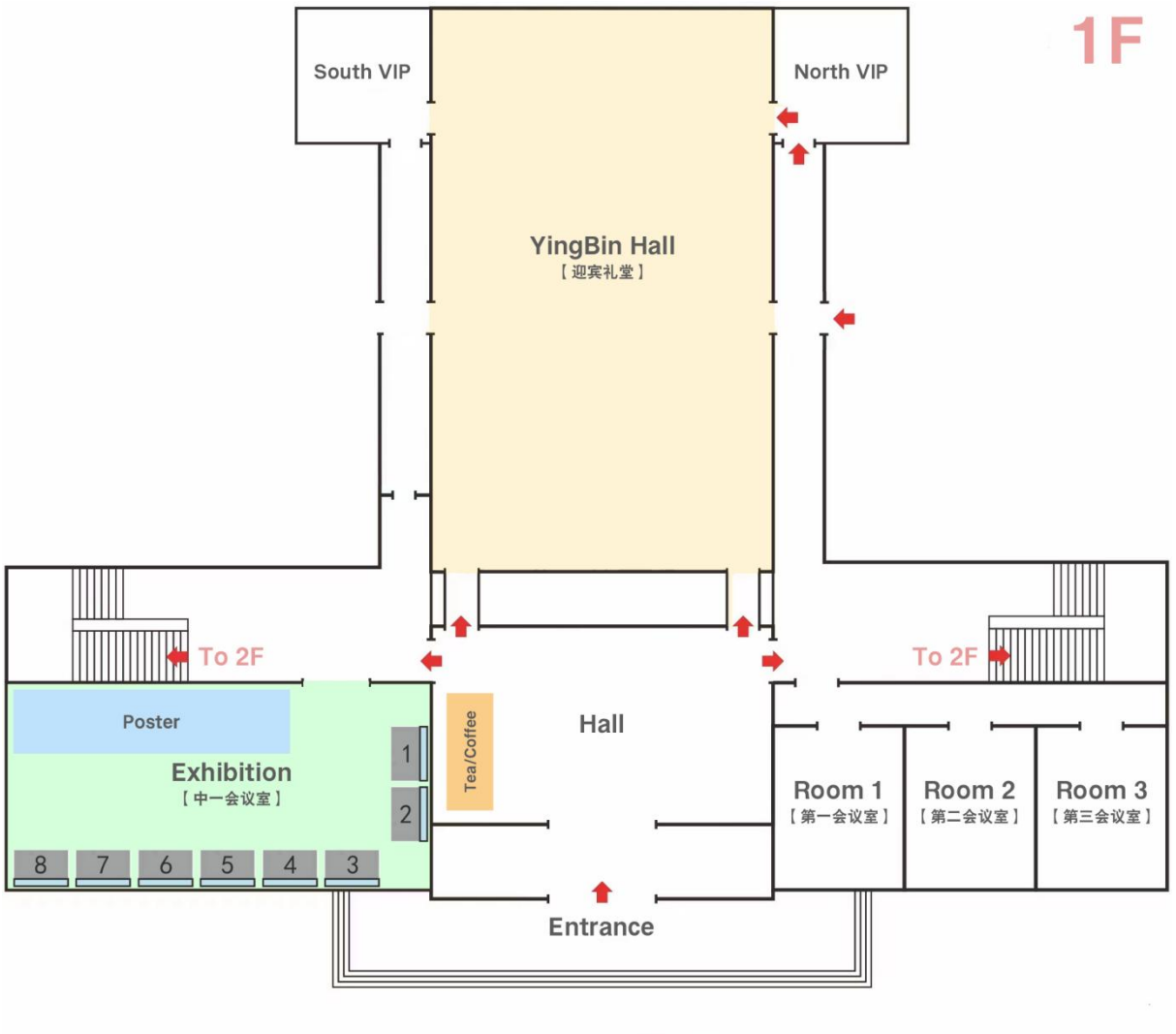
At-a-Glance

TIME		ITEMS										LOCATION
Nov.9	09:00-21:00	Registration										Building 10
	14:00-17:30	Best Paper Presentation for Students										Room1&Room2&Room3
Nov.10	08:30-09:00	Opening Ceremony										YingBin Hall
	09:00-09:20	Group Photo										
	09:20-10:20	Keynote Presentations 1~2										YingBin Hall
	10:20-10:40	Coffee/Tea Break										
	10:40-12:10	Keynote Presentations 3~5										YingBin Hall
	12:10-14:00	Buffet Lunch										Fuli Palace 1st Floor Building 10
	Parallel Sessions	Room 1	Room 2	Room 3	Room 5	Room 6	Room 7	Room 8	Room 9	Room 10	Room Z2	
	14:00-15:30	Session 1	Session 2	Session 3	Session 5	Session 13	Session 7	Session 8	Session 11	Session 10	Session9	
	15:40-16:00	Coffee/Tea Break										
	16:00-18:00	Session 12	Session 4	Session 3	Session 5	Session 13	Session 14	Session 8&6	Session 11	Session 10	Session9	
	18:30-21:00	Banquet										YingBin Hall
Nov.11	08:30-10:30	Keynote Presentations 6~9										YingBin Hall
	10:30-10:50	Coffee/Tea Break										
	10:50-12:20	Keynote Presentations 10~12										YingBin Hall
	12:20-13:30	Buffet Lunch										Fuli Palace 1st Floor Building 10
	Parallel Sessions	Room 1	Room 2	Room 3	Room 5	Room 6	Room 7	Room 8	Room 9	Room 10	Room Z2	
	13:30-15:10	Session 12	Session 4	Session 3	Session 2	Session 13	Session 7	Session 8	Session 11	Session 10	Session9	
	15:10-15:30	Coffee/Tea Break										
	15:30-17:10	Session 1	Session 4		Session 5	Session 14	Session 7		Session 11		Session9	
	17:20-18:00	Closing Ceremony										Room Z2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North VIP
YingBin Hall
【迎宾礼堂】
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Poster
Exhibition
【中一会议室】
1
2
Tea/Coffee
Hall
Room 1
【第一会议室】
Room 2
【第二会议室】
Room 3
【第三会议室】
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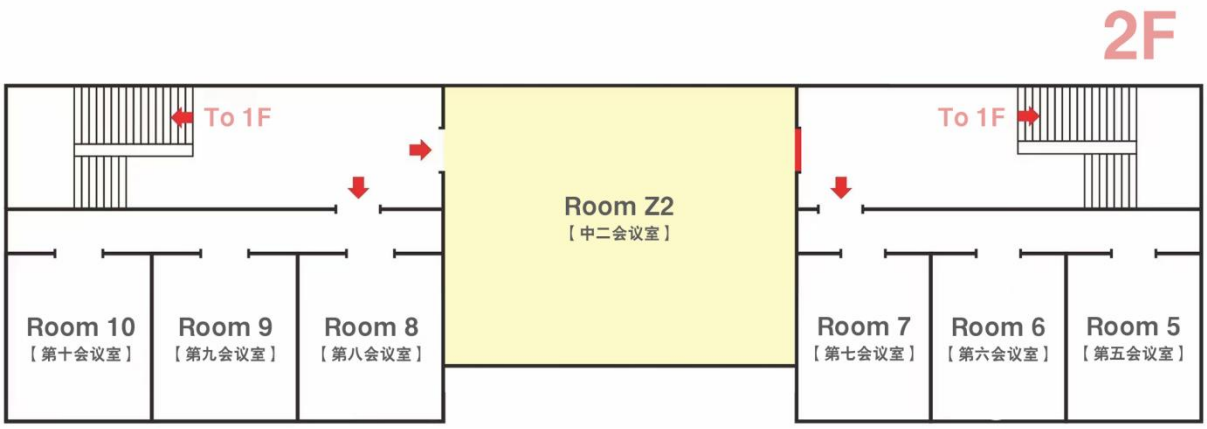
Entrance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Room Z2
【中二会议室】
Room 10
【第十会议室】
Room 9
【第九会议室】
Room 8
【第八会议室】
Room 7
【第七会议室】
Room 6
【第六会议室】
Room 5
【第五会议室】

Technical Program

Nov.10, 08:30-12:10	YingBin Hall
Opening Ceremony *Chair: Keqin Ding*	
08:30-09:00	Welcome speech by the Chair of the organizing committee Acknowledgements from the Leader of the Sponsors
09:00-09:20	Group Photo
Keynote Presentations 1~2 *Chair: Zhishen Wu*	
09:20-09:50	**The Health Monitoring and Safety Evaluation of Offshore Plateform and Wind-Power Structures** Jinping Ou (Harbin Institute of Technology/Chinese Academy of Engineering)
09:50-10:20	**Undetermined** Yanliang Du (Shenzhen University/Chinese Academy of Engineering)
10:20-10:40	Coffee/Tea Break
Keynote Presentations 3~5 *Chair: Maosen Cao, Tinghua Yi*	
10:40-11:10	**Self-Sensing FRP Composites and their Innovative Applications in Structural Enhancement and Health Monitoring** Zhishen Wu (Henan University of Technology)
11:10-11:40	**Development of a novel anomaly detection system for cast In-situ underground concrete structures** Mohammed Elshafie (University of Cambridge, UK)
11:40-12:10	**State estimation and fault diagnosability of multi-sensor networked systems** Yuanqing Xia (Zhongyuan University of Technology)
12:10-14:00	Buffet Lunch

Nov.11, 08:30-12:20 YingBin Hall

Keynote Presentations 6~9

Chair: Pizhong Qiao, Ying Lei

08:30-09:00	**Digital Twin-empowered prediction of microcrack initiation and propagation in weld zone of steel deck** Youlin Xu (The Hong Kong Polytechnic University)
09:00-09:30	**Nonparametric Phase Space Reconstruction: Methodology and Applications** Maosen Cao (Hohai University/European Academy of Sciences and Arts)
09:30-10:00	**Civil Structural Health Monitoring Enhances the Evaluation of the Load carrying Capacity of Ageing Bridges** Aftab Mufti (University of Manitoba, Canada)
10:00-10:30	**Smart Communities: Enhancing Structural Health Monitoring with Mobile Sensing and AI** F. Necati Catbas (University of Central Florida, USA / Online)
10:30-10:50	**Coffee/Tea Break**

Keynote Presentations 10~12

Chair: Shenfang Yuan, Hao Wang

10:50-11:20	**Vibration-based structural health monitoring innovative solutions for smart buildings and Cutting-edge infrastructures** Giuseppe Carlo Marano (Politecnico di Torino)
11:20-11:50	**Smart health monitoring of reinforced concrete infrastructure: ultrasonic wave-based interfacial debonding identification** Pizhong Qiao (Shanghai Jiao Tong University)
11:50-12:20	**Smart Health Monitoring of Valves for process industries** Shandong Tu (East China University of Science and Technology/Chinese Academy of Engineering)
12:20-13:30	**Buffet Lunch**

Nov.10, 14:00-18:00 Room 1

Session 1
Novel Sensing for Structural Health Monitoring
Chair: Xiaohui Zhang, Songlin Li

14:00-14:20	***Invited Speech:*** **Development and translation of intelligent sensor technologies for disease diagnosis** Daxiang Cui (Henan University / Shanghai Jiao Tong University)
14:20-14:40	***Invited Speech:*** **Smart terminal technology for home-based saliva monitoring of chronic obstructive pulmonary disease (COPD) exacerbation** Nuno Miguel Matos Pires (Chongqing Technology and Business University)
14:40-15:00	***Invited Speech:*** **Mechanisms of Enhanced Perception in Electroactive Polymer Sensors and Their Applications** Tao Dong (Xi'an Jiaotong University)
15:00-15:20	**Eliminating near-field interference in Thin-film nanocomposite piezoresistive ultrasonic transducers** Jing Rao (Beihang University)
15:20-15:40	**Research and application of new semiconductor gas sensor technology** Pengfei Cheng (Xidian University)
15:40-16:00	**Coffee/Tea Break**

Session 12
Structural Health Monitoring of Petrochemical Equipments
Chair: Jiuhong Jia, Xin Pan

16:00-16:20	***Invited Speech:*** **Coupling technology for high-temperature ultrasonic transducer in long-term stable monitoring** Jiuhong Jia (East China University of science and Technology)
16:20-16:40	***Invited Speech:*** **A methodology for fault diagnosis, early warning, and life prediction of rotating machinery based on blade tip monitoring** Weimin Wang (Beijing University of Chemical Technology)
16:40-17:00	***Invited Speech:*** **Research progress on artificial Self-recovery and equipment independent health technology of petrochemical equipment** Xin Pan (Beijing University of Chemical Technology)
17:00-17:20	***Invited Speech:*** **Localization of breathing debonding in laminated beams using nonlinear interface forces** Wei Xu (Hohai University)
17:20-17:40	**Health monitoring technology and system for High-temperature complete equipment** Wei Xin (China Special Equipment Inspection & Research Institute)
17:40-18:00	**Research on influencing factors of waveguide rod design for acoustic emission monitoring of high-temperature equipment** Anqing Shu (Wuhan Institute of Technology)

Nov.10, 14:00-18:00 Room 2

Session 2
Fiber Optic Sensing for Structural Health Monitoring
Chair: An Sun, Liyang Shao

14:00-14:20	***Invited Speech:*** **Intelligent distributed fiber sensing for structural monitoring** Liyang Shao (Southern University of Science and Technology)
14:20-14:40	***Invited Speech:*** **Research on the change rule of pile foundation curing process properties based on distributed fiber acoustic sensing technique** An Sun (Northwest University)
14:40-15:00	***Invited Speech:*** **Theory and practice of tunnel structure health monitoring system** Jun Huang (JSTI GROUP)
15:00-15:20	***Invited Speech:*** **Sapphire fiber bragg grating sensors for structural health monitoring in harsh environments** Jun He (Shenzhen University)
15:20-15:40	**Research on real-time online monitoring technology for strain and deformation field of engineering structures** Yongzheng Xu (Shenzhen University)
15:40-16:00	Coffee/Tea Break

Session 4
Acoustic Emission Sensing for Structural Health Monitoring
Chair: Dongsheng Li, Yu Yang

16:00-16:20	***Invited Speech:*** **Research on techniques of signal analysis and information extraction for composite material damage** Mei Yuan (Beihang University)
16:20-16:40	***Invited Speech:*** **Monitoring and evaluating the failure mechanisms for composite structures by acoustic emission technology** Dongsheng Li (Dalian University of Technology)
16:40-17:00	***Invited Speech:*** **Application and challenges of acoustic emission in ground testing of full scale Aircraft structures** Yu Yang (Aircraft Strength Research Institute)
17:00-17:20	***Invited Speech:*** **Study on acoustic emission detection of natural gas pipeline leakage** Han Zhang (The Institute of Acoustics of the Chinese Academy of Sciences)
17:20-17:40	***Invited Speech:*** **A non-iterative reconstruction technique for wave velocity field of damaged structures based on acoustic emission finite response** Hongyuan Qi (Beijing Jiaotong University)
17:40-18:00	**Compression method of acoustic emission signals based on LSTM and deep physics-informed neural network model** Jinke Li (Zhengzhou University)

Nov.10, 14:00-18:00 Room 3

Session 3
Ultrasonic Sensing for Structural Health Monitoring
Chair: Zenghua Liu, Yanfeng Shen

14:00-14:20	**Laser ultrasonic Multi-mode high resolution imaging of microdefects** Zenghua Liu (Beijing University of Technology)
14:20-14:40	***Invited Speech:*** **Control of nonlinear ultrasonic guided waves for structural health monitoring via elastic metamaterials** Yanfeng Shen (Shanghai Jiao Tong University)
14:40-15:00	***Invited Speech:*** **A novel High-resolution imaging method for the detection of adjacent Multi-damage in orthotropic CFRP structure using ultrasonic guided waves** Xiaobin Hong (South China University of Technology)
15:00-15:20	***Invited Speech:*** **Guided wave and sparse array based regionally coordinated damage monitoring for Large-scale structure** Qiang Wang (Nanjing University of Posts and Telecommunications)
15:20-15:40	***Invited Speech:*** **Wireless and passive surface acoustic wave based sensing sechnology and its applications** Wen Wang (Institute of Acoustics, Chinese Academy of Sciences)
15:40-16:00	**Coffee/Tea Break**

Session 3
Ultrasonic Sensing for Structural Health Monitoring
Chair: Jiaze He, Wentao Wang

16:00-16:20	***Invited Speech:*** **A study of guided wave phased arrays for damage detection in the Plane-like structures** Wentao Wang (Harbin Institute of Technology, Shenzhen)
16:20-16:40	***Invited Speech:*** **Ultrasonic wavefield imaging and flexible signal extraction techniques** Jiaze He (Harbin Institute of Technology)
16:40-17:00	***Invited Speech:*** **A novel method for stress measurement utilizing the rayleigh wave virtual superimposed interference spectrum** Yan Lv (Beijing University of Technology)
17:00-17:20	***Invited Speech:*** **Metasubstrate-based piezoelectric transducers for controllable excitation and reception of SH guided wave** Hongchen Miao (Southwest Jiaotong University)
17:20-17:40	***Invited Speech:*** **Super-sensitivity photogrammetry for Full-field measurement of structural dynamics** Yongchao Yang (Dongfang University of Science and Technology)
17:40-18:00	***Invited Speech:*** **Guided ultrasonic wave monitoring of defects in Thin-walled rocket engine cooling structures** Xudong Yu (Beihang University)

Nov.10, 14:00-18:00 Room 5

Session 5
Electromagnetic Sensing for Structural Health Monitoring
Chair: Songling Huang, Bin Gao

14:00-14:20	***Invited Speech:*** **Key technologies and applications of microscopic damage Magnetic-stress in pipeline internal detection** Bin Liu (Shenyang University of Technology)
14:20-14:40	***Invited Speech:*** **Multi-physics coupling simulation and experimental validation for Elasto-magneto-electric (EME) absolute-stress sensors** Yuanfeng Duan (Zhejiang University)
14:40-15:00	**Electromagnetic-acoustic Multi-physical field imaging technology and its applications** Yuedong Xie (Beihang University)
15:00-15:20	**Optimized design and evaluation of flexible capacitive sensors for pressure and temperature sensing** Nan Li (Xidian University)
15:20-15:40	**Research on crack imaging of flexible fractal eddy current sensor under pulse excitation** Guolong Chen (Lanzhou University of Technology)
15:40-16:00	**Coffee/Tea Break**

Session 5
Electromagnetic Sensing for Structural Health Monitoring
Chair: Yunze He, Bin Liu

16:00-16:20	***Invited Speech:*** **Electromagnetic multi-physical adjust sensing NDT technology and application** Bin Gao (University of Electronic Science and Technology of China)
16:20-16:40	***Invited Speech:*** **Research on eddy current testing (ECT) technology for carbon Fiber-reinforced plastics (CFRP)** Dehui Wu (Xiamen University)
16:40-17:00	**Motion control of magnetically controlled robot for vascular monitoring** Chuang Li (Liaoning Technical University)
17:00-17:20	**Microwave sensing system for NDT defect evaluation of materials** Haoran Sun (Chengdu University of Information Technology)
17:20-17:40	**Research on Non-destructive detection and diagnosis of infrastructure defects with ground penetrating radar** Jianwei Lei (Zhengzhou University)
17:40-18:00	**Research on Ultra-high sensitivity eddy current sensors for detecting rotational runout of large compressor rotors** Ping Huang (Shenyang University of Technology)

Nov.10, 14:00-18:00 Room 6

Session 13
Structural Health Monitoring of Rail Transit
Chair: Qibo Feng, Xuegeng Mao

14:00-14:20	***Invited Speech:*** **Multi source fault identification of high-speed train wheelset system** Yongqiang Liu (Shijiazhuang Tiedao University)
14:20-14:40	**Research on railway short-wave defect identification methods based on nonlinear statistical complexity model and time-frequency analysis** Xuegeng Mao (China Railway Academy of Sciences Group Co., Ltd.)
14:40-15:00	***Invited Speech:*** **A brand new 2D&3D fusion visual sensor and its application in dynamic detection of line infrastructure structures** Peng Dai (China Railway Academy of Sciences Group Co., Ltd.)
15:00-15:20	**Key technologies and systems for wayside dynamic monitoring of wheel-rail contact conditions** Qixin He (Beijing Jiaotong University)
15:20-15:40	**Measurement method of switch structure parameters based on global fast registration** Shengchun Wang (China Railway Academy of Sciences Group Co., Ltd.)
15:40-16:00	**Coffee/Tea Break**

Session 13
Structural Health Monitoring of Rail Transit
Chair: Kai Yao, Dechen Yao

16:00-16:20	***Invited Speech:*** **Research on defects detection method of railway tunnel portals and front slopes utilizing unmanned aerial vehicle image processing and deep learning techniques** Guiyang Xu (Beijing University of Civil Engineering and Architecture)
16:20-16:40	***Invited Speech:*** **Tread damage of wheel set tread based on improved YOLOv7** Zhifeng Zhang (Zhengzhou University of Light Industry)
16:40-17:00	**Railway vehicle wheelset-bearing system health management technology** Yao Cheng (Southwest Jiaotong University)
17:00-17:20	**Rolling contact performance testing techniques for forward design and maintenance of roller bearings** Yu Hou (Beijing Jiaotong University)
17:20-17:40	**Research on fault diagnosis and remaining useful life prediction of high-speed train axle box bearing** Zhenzhen Jin (Guangxi University)
17:40-18:00	**Composite fault diagnosis of train axle box bearing based on spectral coherent convergence SGMD** Yongliang Bai (Lanzhou Jiaotong University)

Nov.10, 14:00-18:00 Room 7

Session 7
Health Assessment, Failure Diagnosis, Prediction, and Damage Identification
Chair: Lan Wu, Lingling Lu

14:00-14:30	***Invited Speech:*** **Multi-objective dynamic collaborative optimization for the municipal wastewater treatment process** Honggui Han (Beijing University of Technology)
14:30-15:00	***Invited Speech:*** **Intelligent control, visual detection and fusion positioning of industrial robots** Yu Liu (South China University of Technology)
15:00-15:20	***Invited Speech:*** **Research on intelligent detection of grain and autonomous unmanned equipment** Lan Wu (Henan University of Technology)
15:20-15:40	***Invited Speech:*** **Study on the multi-parameter inversion problem of oblique incidence thermal loads based on multivariate thermal-mechanical response** Lingling Lu (Institute of Mechanics, Chinese Academy of Sciences)
15:40-16:00	**Two-dimensional semi-analytical wavelet finite element method for studying propagation characteristics of ultrasonic guided waves in complex waveguide** Yong Chang (Henan University of Technology)
16:00-16:20	**Coffee/Tea Break**

Session 14
Structural Health Monitoring of Energy and Power Equipments
Chair: Wei Teng, Zhenrong Yan

16:20-16:40	***Invited Speech:*** **Investigation on evolution of wind energy capture capability of wind turbines using historical field data** Juchuan Dai (Hunan University of Science and Technology)
16:40-17:00	***Invited Speech:*** **Wind turbine test technology based on drivetrain test bench** Deyi Fu (China Electric Power Research Institute)
17:00-17:20	***Invited Speech:*** **Research on failure and risk assessment of the ultra-supercritical boiler based on the thermal deviation** Zhenrong Yan (Shanghai University of Engineering Science)
17:20-17:40	***Invited Speech:*** **Research on IGBT junction temperature monitoring based on self-adhesive optical fiber sensors** Pingyu Zhu (Guangzhou University)
17:40-18:00	**Tacholess instantaneous angular speed estimation in wind turbines** Dikang Peng (North China Electric Power University)

Nov.10, 14:00-18:00 Room 8

Session 8
Reliability, Predictive Maintenance, and Smart Operation

Chair: Jinde Zheng, Haiyang Pan

14:00-14:20	***Invited Speech:*** **Digital twin-driven health management and remaining useful life prediction of the gearbox transmission system** Ke Feng (Xi'an Jiaotong University)
14:20-14:40	***Invited Speech:*** **Stockwell transform spectral amplitude modulation method for rotating machinery fault diagnosis** Yongbo Li (Northwestern Polytechnical University)
14:40-15:00	***Invited Speech:*** **Dynamic modelling and diagnosis methods of rolling element bearing with compound faults** Changfeng Yan (Lanzhou University of Technology)
15:00-15:20	***Invited Speech:*** **Health assessment and intelligent diagnosis of track traction motor bearings** Guangbin Wang (Lingnan Normal University)
15:20-15:40	***Invited Speech:*** **Degradation modeling and adaptive life prediction method for stochastic degradation process** Yu Wang (Xi'an Jiaotong University)
15:40-16:00	**Coffee/Tea Break**

Session 8&6
Reliability, Predictive Maintenance, and Smart Operation& Multimodal Big Data Processing and Big Models

Chair: Ke Feng,Changfeng Yan

16:00-16:20	***Invited Speech:*** **Low rank matrix classifier and its application in fault diagnosis of key components in mechanical equipment** Haiyang Pan (Anhui University of Technology)
16:20-16:40	**Graph neural network based intelligent diagnosis and prediction method for mechanical components** Liuyang Song (Beijing University of Chemical Technology)
16:40-17:00	**Fault modulation mechanism analysis of gear system and its application in data-driven diagnosis algorithm** Fei Jiang (Dongguan University of Technology)
17:00-17:20	**Guided wave-based monitoring of predominant fatigue damage mode in CFRP composites** Mengyue He (Shantou University)
17:20-17:40	**Research on damage detection of aerostat capsule structures driven by strain data** Yiwei Cheng (China University of Geosciences)
17:40-18:00	**Empowering digital social governance research based on big data and human computer interaction** Zongfeng Yang (Chongqing College of Humanities, Science and Technology)

Nov.10, 14:00-18:00 Room 9

Session 11
Structural Health Monitoring of Infrastructures
Chair: Yonggang Ding, Hui Jin

14:00-14:20	***Invited Speech:*** **Identification of structural dynamic loads-from physical methods to physical guided deep learning paradigm** Ying Lei (Xiamen University)
14:20-14:40	***Invited Speech:*** **Key technology for health assessment of long span cable-supported bridges** Tinghua Yi (Dalian University of Technology)
14:40-15:00	***Invited Speech:*** **Eco-friendly and durable retrofit approaches for civil structures and infrastructure systems** Marco Domaneschi (Politecnico di Torino)
15:00-15:20	***Invited Speech:*** **Automated identification of structural modal parameters and its application in long-term bridge monitoring data** Zhongdong Duan (Harbin Institute of Technology, Shenzhen)
15:20-15:40	***Invited Speech:*** **Recent advances in vehicle load monitoring for highway bridges** Lu Deng (Hunan University)
15:40-16:00	**Coffee/Tea Break**

Session 11
Structural Health Monitoring of Infrastructures
Chair: Zhi Zhou, Chunsheng Wang

16:00-16:20	***Invited Speech:*** **Technologies for Multi-Hazard Monitoring Information Acquisition in Tropical Island Engineering** Zhi Zhou (Hainan University)
16:20-16:40	***Invited Speech:*** **Long-term monitoring of the temperature fields and temperature action models for bridge structures** Chunsheng Wang (Chang'an University)
16:40-17:00	**Development of noncontact sensing techniques for construction quality inspection and rockfall disaster prevention systems monitoring of highway bridges** Yongding Tian (Southwest Jiaotong University)
17:00-17:20	**Research on deformation calculation and reliability of concrete filled steel tube subjected to lateral impact based on BP neural network** Yanhui Liu (Southwest Jiaotong University)
17:20-17:40	***Invited Speech:*** **Structural health monitoring using time-domain responses and deep neural networks** Dansheng Wang (Huazhong University of Science and Technology)
17:40-18:00	***Invited Speech:*** **A brief overview of application of AI-based approaches for structural health monitoring: a few case studies and recent developments** Mohammad Noori (California Polytechnic State University)

Nov.10, 14:00-18:00 Room 10

Session 10
Structural Health Monitoring of Aerospace
Chair: Lei Qiu, Jingjing He

14:00-14:20	***Invited Speech:*** **An Overview of The Requirement and Development of Health Monitoring on Large Aircraft** Anan Zhao (AVIC Xi'an Aircraft Industry (Group) Company Limited)
14:20-14:40	***Invited Speech:*** **Precision testing and non-destructive testing - the basis for aircraft health monitoring and integrity management** Xiaochuan Liu (China Aircraft Strength Research Institute)
14:40-15:00	***Invited Speech:*** **Load and damage monitoring of aircraft structure** Yanjun Zhang (603 Institute)
15:00-15:20	***Invited Speech:*** **Thermo-mechanical analysis of stretchable bio-integrated devices based on non-fourier thermal** Yuhang Li (Beihang University)
15:20-15:40	***Invited Speech:*** **The application of fiber optical sensing technology in aeronautical and astronautical structures** Lei Liang (Wuhan University of Technology)
15:40-16:00	**Coffee/Tea Break**

Session 10
Structural Health Monitoring of Aerospace
Chair: Sida Luo, Yuanqiang Ren

16:00-16:20	***Invited Speech:*** **Laser induced graphene structures and devices for multi-purpose applications in high-performance polymeric composites** Sida Luo (Beihang University)
16:20-16:40	**Research on the fatigue behavior and damage monitoring of wire and arc additive manufacturing materials** Jingjing He (Beihang University)
16:40-17:00	***Invited Speech:*** **The acoustics monitoring technology for abnormal conditions of aero-engine compressor** Baijie Qiao (Xi'an Jiaotong University)
17:00-17:20	***Invited Speech:*** **Guided wave based reliable damage imaging of Large-scale aircraft structures under time-varying service conditions** Yuanqiang Ren (Nanjing University of Aeronautics and Astronautics)
17:20-17:40	**Progress and challenges in the application of structural health monitoring for aircraft structural strength test** Guoqiang Liu (China Aircraft Strength Research Institute)
17:40-18:00	**Machine Learning-based passive impact monitoring for composite structures** Yishou Wang (Xiamen University)

Nov.10, 14:00-18:00 Room Z2

Session 9
Structural Health Monitoring of Special Equipments
Chair: Jie Chen, Guang Chen

14:00-14:20	***Invited Speech:*** **Research progress on structural health monitoring of special equipment** Keqin Ding (China Special Equipment Inspection and Research Institute)
14:20-14:40	***Invited Speech:*** **Application and practice of structural health monitoring and artificial intelligence technology on the integrity management of pressurized equipment in Nanjing Tech University** Jianping Zhao (Nanjing Tech University)
14:40-15:00	***Invited Speech:*** **Intelligent maintenance based on flux leakage detection for steel wire ropes** Zhiliang Liu (University of Electronic Science and Technology of China)
15:00-15:20	***Invited Speech:*** **The development of Micro-damage testing technology for in-service equipment material property and consideration of quality traceability** Bumei Wang (Jiangsu Special Equipment Safety Supervision and Inspection Institute, Jiangsu Provincial Key Laboratory of Market Supervision (Process Equipment Risk Prevention and Control Technology))
15:20-15:40	**Research on UAV high precision autonomous intelligent detection and evaluation system of large lifting equipment metal structure** Qianfei Zhou (Nanjing Special Equipment Safety Supervision and Inspection Institute)
15:40-16:00	**Coffee/Tea Break**

Session 9
Structural Health Monitoring of Special Equipments
Chair: Jie Chen, Li Chen

16:00-16:20	**Research on key technologies for health monitoring and visual warning of special equipment involving hazardous chemicals** Yu Li (Nanjing Boiler and Pressure Vessel Inspection Institute)
16:20-16:40	**Damage imaging of a complex box girder structure using FRF total focus method** Zhigang Xue (Jiangsu Special Equipment Safety Supervision and Inspection Institute)
16:40-17:00	**Study on high vacuum multi-layer insulation material for liquid hydrogen storage** Yi Ding (Jiangsu Special Equipment Safety Supervision and Inspection Institute)
17:00-17:20	**Study on the new principle, method and technique of the innovation negative-pressure arc welding for the metal structures of special equipment** Jian Luo (Shanghai University of Engineering Science)
17:20-17:40	**Health monitoring and intelligent maintenance technology of high-parameter elevators** Ao Hu (Wuhan Special Equipment Supervision and Inspection Institute)
17:40-18:00	**Research on the application of intelligent crane system based on binocular stereo vision** Aihua Pan (Jiangsu Special Equipment Safety Supervision and Inspection Institute)

Nov.11, 13:30-17:10 Room 1

Session 12
Structural Health Monitoring of Petrochemical Equipments
Chair: Jiuhong Jia, Xin Pan

13:30-13:50	**Research and application of comprehensive treatment technology for corrosion and scaling of oilfield water injection system** Chuang Tai (Institute of Metal Research, Chinese Academy of Sciences)
13:50-14:10	**Real time simulation of temperature field based on enhanced physical neural network** Kun Wang (Chongqing University of Science and Technology)
14:10-14:30	**Application of structural health monitoring system for coke tower** Sai Zhang (Yanshan Petrochemical Company of Sinopec)
14:30-14:50	**Study on non-destructive testing and quality evaluation of welded joints of polyethylene gas pipelines** Yi Zhang (China University of Petroleum (East China))
14:50-15:10	**Intelligent online detection technologies for valves** Yun Tu (East China University of Science and Technology)
15:10-15:30	**The current status of predictive diagnosis and health management system for rotating machinery in the pipeline industry** Wang Xiao (Western Pipeline Company Limited, National Pipe Network Group)
15:30-15:50	Coffee/Tea Break

Session 1
Novel Sensing for Structural Health Monitoring
Chair: Xiaohui Zhang, Chi Zhang

15:50-16:10	**Gas sensing and detection technology** Fangmeng Liu (Jilin University)
16:10-16:30	**The Safety Solution of Gas Pipeline Leak Monitoring** Zhang Jing (Henan Chicheng Electric Co., Ltd.)
16:30-16:50	**Eddy current magneto-optical imaging based on phase change for CFRP defects** Li Wang (Henan University of Technology)
16:50-17:10	**Monitoring of internal stress in stainless steel materials at high temperatures using optical FPI** Kaiyue Qi (Henan University of Technology)

Nov.11, 13:30-16:30 Room 2

Session 4
Acoustic Emission Sensing for Structural Health Monitoring
Chair: Fengjing Xu, Peng Wei

13:30-13:50	***Invited Speech:*** **Acoustic emission techniques application in structural health monitoring** Fengjing Xu (Beijing Physical Acoustics Technology Co., Ltd. Mistras Group Beijing Office)
13:50-14:10	***Invited Speech:*** **Construction and research of fiber optic ring acoustic emission detection system based on heterodyne method** Peng Wei (BeiHang University)
14:10-14:30	**Research on precise positioning technology for acoustic emission signals based on deep learning** Ruiyuan Wang (Aircraft Strength Research Institute of China)
14:30-14:50	**Damage evaluation and pattern recognition for FRP/steel-concrete composite beams by acoustic emission technique** Fangzhu Du (Shandong Jianzhu University)
14:50-15:10	**Identification of cable tension of long-span cable-stayed bridges during super typhoons: A case study** Xin Zhang (Nanjing University of Posts and Telecommunications)
15:10-15:30	**Coffee/Tea Break**

Session 4
Acoustic Emission Sensing for Structural Health Monitoring
Chair: Peng Wei, Xiaolin Li

15:30-15:50	***Invited Speech:*** **Structural health monitoring technology in aerospace static test** Xiaolin Li (Beijing Institute of Structure and Environment Engineering)
15:50-16:10	**Research on acoustic emission source localization technology based on AI deep learning** Jiehui Xie (QingCheng AE Institute (Guangzhou) Co., Ltd)
16:10-16:30	**Modal acoustic emission analytical modeling and signal processing method** Weilei Mu (Ocean University of China)

Nov.11, 13:30-14:50 Room 3

Session 3
Ultrasonic Sensing for Structural Health Monitoring
Chair: Fei Du, Yanping Zhu

13:30-13:50	***Invited Speech:*** **High speed train structural crack damage monitoring method based on Lamb waves under variable temperature environment** Jinsong Yang (Central South University)
13:50-14:10	***Invited Speech:*** **Research on the application of ultrasonic guided wave detection technology in structural health monitoring of rails** Xiaoyuan Wei (Lanzhou University of Technology)
14:10-14:30	***Invited Speech:*** **Ultrasonic testing and monitoring of bolted connections** Fei Du (Northwestern Polytechnical University)
14:30-14:50	***Invited Speech:*** **Helical solution of flexural modes in hollow cylinder** Yanping Zhu (Beijing university of technology)

Nov.11, 13:30-16:30 Room 5

Session 2
Fiber Optic Sensing for Structural Health Monitoring
Chair: Yiping Wang, Chunliu Zhao

13:30-13:50	***Invited Speech:*** **Optical fiber sensing technology and applications for extreme environment** Yiping Wang (Shenzhen University)
13:50-14:10	***Invited Speech:*** **Distributed acoustic sensing using linear modulation frequency pulse** Junfeng Jiang (Tianjin University)
14:10-14:30	***Invited Speech:*** **Multi-parameter sensing for main cable state of long-span suspension bridge based on ultra-weak fiber gratings** Chunliu Zhao (China Jiliang University)
14:30-14:50	***Invited Speech:*** **Monitoring of aerospace structures at harsh temperatures using optical fiber sensor** Qi Wu (Nanjing University of Aeronautics and Astronautics)
14:50-15:10	**High performance FBG array sensing technology for semi-distributed and distributed sensing** Feng Wang (Nanjing University)
15:10-15:30	**Coffee/Tea Break**

Session 5
Electromagnetic Sensing for Structural Health Monitoring
Chair: Yuanfeng Duan, Kai Yao

15:30-15:50	**Bio-impedance spectroscopy analysis: measurement and finite element based cell modelling** Jiawei Tang (Central South University)
15:50-16:10	**Evaluation of metamaterial structure integrity using microwave Near-field measurement** Chao Liu (Southeast University)
16:10-16:30	**Parametric analysis of weld defects in orthotropic steel bridge deck based on eddy current excitation method** Peijie Zhang (Changan University)

Nov.11, 13:30-16:30 Room 6

Session 13
Structural Health Monitoring of Rail Transit
Chair: Zhen Liu, Jinhai Wang

13:30-13:50	***Invited Speech:*** **Dynamic vision inspection technology and application of geometric dimensions of train wheel sets on main lines** Zhen Liu (Beihang University)
13:50-14:10	**Research on stress detection method for key components of high-speed train running gear based on RFID** Yating Yu (University of Electronic Science and Technology of China)
14:10-14:30	**From surface sensing to deep awareness: A wheel-rail force indirect measurement technology using deep learning method** Jinhai Wang (Beijing University of Civil Engineering and Architecture)
14:30-14:50	**Study on the evaluation and evolution trend of track irregularity driven by dynamic monitoring data of high-speed railway** Xiaohui Wang (Guangzhou University)
14:50-15:10	**Coffee/Tea Break**

Session 14
Structural Health Monitoring of Energy and Power Equipments
Chair: Wei Teng, Zhenrong Yan

15:10-15:30	**Condition monitoring of wind turbines** Xiaohang Jin (Zhejiang University of Technology)
15:30-15:50	**Compressed optimization unfolding network based bearing fault diagnosis** Chaohui Du (Northwestern Polytechnical University)
15:50-16:10	**Predictive analysis of high-temperature creep and fatigue damage of water-cooled walls in power station boilers** Yuanming Huo (Shanghai University Of Engineering Science)
16:10-16:30	***Invited Speech:*** **Spatio-temporal feature fusion method for fault warning in wind turbine drivetrain systems using ALGCN-LSTM** Wei Teng (North China Electric Power University)

Nov.11, 13:30-16:30	Room 7

Session 7
Health Assessment, Failure Diagnosis, Prediction, and Damage Identification

Chair: Weiling Luan, Jun Wu

13:30-13:50	***Invited Speech:*** **The application of embodied intelligence in the field of livestock meat robotic processing** Lei Cai (Henan Institute of Science and Technology)
13:50-14:10	***Invited Speech:*** **Advancing safety and durability of lithium-Ion batteries acomprehensive lifecycle perspective** Weiling Luan (East China University of Science and Technology)
14:10-14:30	***Invited Speech:*** **Prototype-guided class-incremental learning for continual unsupervised domain adaptation fault diagnosis of rotating machinery** Jun Wu (Huazhong University of Science and Technology)
14:30-14:50	**Bayesian inversion methods for ultrasonic guided wave nondestructive evaluation** Yong Huang (Harbin Institute of Technology)
14:50-15:10	**Intelligent Monitoring and Twin Operations Technique for Marine Engineering Facilities** Wenhua Wu (Dalian university of technology)
15:10-15:30	Coffee/Tea Break

Session 7
Health Assessment, Failure Diagnosis, Prediction, and Damage Identification

Chair: Yong Huang, Wenhua Wu

15:30-15:50	**Research on multi fault diagnosis of motor based on information fusion** Xiaoyun Gong (Zhengzhou University of Light Industry)
15:50-16:10	**Predictive O&M of concrete sewers based on 3D point cloud and corrosion model updating** Minghao Li (Dalian University of Technology)
16:10-16:30	**Application of three-dimensional space scanning technology and structural health monitoring on old pressure vessels** Zheng Cai (Special Equipment Safety Supervision Inspection Institute of Jiangsu Province)

Nov.11, 13:30-14:50 Room 8

Session 8
Reliability, Predictive Maintenance, and Smart Operation
Chair: Guangbin Wang, Zongyao Liu

13:30-13:50	**Phenomenological modeling and fault diagnosis of planetary gearboxes** Zongyao Liu (Henan University of Technology)
13:50-14:10	**Intelligent maintenance of manufacturing equipment based on self-sensing motor drive system** Yuan Yao (Henan University of Technology)
14:10-14:30	**Domain generalization fault diagnosis method for rail vehicle under unseen target working conditions** He Ren (Changzhou University)
14:30-14:50	**Structural reliability analysis of coke drum based on monitoring data** Fangxiong Tang (Tianjin University)

Nov.11, 13:30-15:30 Room 9

Session 11
Structural Health Monitoring of Infrastructures
Chair: Huang Huang, Raffaele Cucuzza

13:30-13:50	***Invited Speech:*** **Advances in exceptional wind effects on long-span bridges: monitoring, analysis, and control** Hao Wang (Southeast University)
13:50-14:10	***Invited Speech:*** **Long-term monitoring and seismic response monitoring of railway bridges based on fast-BOTDA sensing system** Huang Huang (Henan University of Technology)
14:10-14:30	***Invited Speech:*** **A new era of structural optimization: LCA-driven optimization tool for the design of civil structures made by reusing steel** Raffaele Cucuzza (Politecnico di Torino Henan University of Technology)
14:30-14:50	**Computer-vision based anomaly detection in structural dynamic systems using video data** Sifan Wang (University of Tsukuba)
14:50-15:10	**Real-time tracking and 3D collision warning for precast component installation based on LIDAR and camera fusion** Yan Xu (Southeast University)
15:10-15:30	Coffee/Tea Break

Nov.11, 15:30-17:10 Room 9

Session 11
Structural Health Monitoring of Infrastructures
Chair: Bin Xu, Xuping Zhang

15:30-15:50	***Invited Speech:*** **Interface debonding detection for large-scale concrete-filled steel tube members with PZT: Experiment, multi-physics simulation and engineering application in skyscraper and long-span bridges** Bin Xu (Huaqiao University)
15:50-16:10	***Invited Speech:*** **The health monitoring of pre-stressed concrete cylinder pipe based on distributed fiber optic sensing system** Xuping Zhang (Nanjing University)
16:10-16:30	***Invited Speech:*** **Dynamic response reconstruction technologies towards digital twin** Songye Zhu (The Hong Kong Polytechnic University)
16:30-16:50	**Fatigue failure mode identification of load-carrying welded cruciform joints based on various machine learning algorithms** Zezhong Wei (China Three Gorges University)
16:50-17:10	**Study on seismic performance of RC frame-rocking wall damping structure** Wei Nie (Henan University of Economics and Law)

Nov.11, 13:30-14:50 Room 10

Session 10
Structural Health Monitoring of Aerospace
Chair: Yishou Wang, Chen Yang

13:30-13:50	**Research on set Theory-based perception, identification and control of spacecraft dynamics** Chen Yang (Beihang University)
13:50-14:10	**Eddy Current-based structural health monitoring of bolted joints** Hu Sun (Xiamen University)
14:10-14:30	**Deep Learning-based impact localization strategy of plate structures** Yehai Li (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences)
14:30-14:50	**The acoustics monitoring technology for abnormal conditions of Aero-engine compressor** Jianguo Zhu (Jiangsu University)

Nov.11, 13:30-16:10 Room Z2

Session 9
Structural Health Monitoring of Special Equipments
Chair: Cheng Zhou, Guang Chen

13:30-13:50	**Research on safety and health monitoring of old elevators** Xiang Zhang (Weihai Special Equipment Inspection Institute)
13:50-14:10	**Research on the Digital-driven intelligent control technology for the whole cycle risks of cranes** Shuang Wang (Nanjing Special Equipment Safety Supervision and Inspection Institute)
14:10-14:30	**Health Monitoring Method for High-speed Elevator Traction Machine Based on Data-drive** Yang Lei (Wuhan Special Equipment Supervision and Inspection Institute)
14:30-14:50	**Research on stress monitoring technology for pressure bearing components of power plant boilers based on digital twin platform** Bin Liu (Qingdao Special Equipment Inspection and Research Institute)
14:50-15:10	**Research on online inspection of ammonia refrigeration equipment on digital twin platform and risk prediction under genetic algorithm** Shuai Niu (Qingdao Special Equipment Inspection and Research Institute)
15:10-15:30	Coffee/Tea Break

Session 9
Structural Health Monitoring of Special Equipments
Chair: Cheng Zhou, Li Chen

15:30-15:50	**Constitutive model and failure criterion analysis of high-density polyethylene pipe under Thermal-mechanical Load** Limin Shen (1.Jiangsu Special Equipment Safety Supervision and Inspection Institute 2.School of Chemical Engineering & Technology)
15:50-16:10	**Researchon Finite Element Simulation Method for Health Monitoring of Pirate Ship Pillar** Rui Tang (Wuhan Special Equipment Supervision and Inspection Institute)

Nov.09, 14:00-17:20 Room 1

Session 01
Best Paper Presentation for Students
Chair： Hui Jin, Yanfeng Shen

14:00-14:10	**Development a Miniature Charge Amplifier for Quasi-static Strain Measurement with PVDF Piezoelectric Film Sensors** Diwu Jiang
14:10-14:20	**Synthesis of high temperature-sensitive properties NaYbF4:Er3+ up-conversion nanoparticles** Jingyang Chen

14:20-14:30	**Research on Stroke Patient Rehabilitation Movement Quality Safety Detection and Early Warning System Based on Large Language Models and Motion Capture Systems** Renbo Liu
14:30-14:40	**Passive Strain Sensor Based on RFID Patch Antenna** Shuo Yang
14:40-14:50	**Eliminating Near-Field Interference in Thin-Film Nanocomposite Piezoresistive Ultrasonic Transducers** Xingchen Pan
14:50-15:00	**BODIPY as a Photosensitizer for Photodynamic Therapy: Mechanisms, Applications, and Future Prospects** Yiting Wu
15:00-15:10	**SKR-ShuffleNet v2: Efficient lightweight network rail fastener fault diagnosis method based on an attention mechanism** Quanyu Long
15:10-15:20	**Integrated State Monitoring and Fault Diagnosis of LNG Dynamic Equipment Systems via Fusion of Simulation and Experimental Multi-Source Data** Zemin Li
15:20-15:30	**Digital twin-based data-driven method for mechanical response inversion of deep-water jacket offshore platform** Aming Yue
15:30-15:50	**Break**
15:50-16:00	**Digital Twin-Driven Fault Diagnosis for Satellite Load-carrying Structures Based on Physical-Virtual Data Fusion** Naijian Gu
16:00-16:10	**Residual Shrinkage Prototypical Network for Fault Detection of Propulsion Shaft System with Few Labeled data** Qiming Shu
16:10-16:20	**Monitoring of Multimode Processes using Energy-based Model** Jinyu Song
16:20-16:30	**Federated Learning for Rolling Bearing Fault Diagnosis: A RepViT-Enabled Approach** Cheng Cheng
16:30-16:40	**Quantify the impact of fast-charging cycling on crack evolution in electrode material through machine learning algorithms** Zhiheng Yao

16:40-16:50	**A damage identification method using multimodal Lamb waves** Zhengchen Dai
16:50-17:00	**Damage Identification of bridge structures Based on Acceleration Statistical Moment and L0.5 Sparse Regularization** Fangyu Cheng
17:00-17:10	**The failure and acoustic emission source mechanisms of reinforced concrete beams under cyclic incremental loading** Tianjiao Miao
17:10-17:20	**An experimental-oriented thermal load inversion method for honeycomb sandwich structure based on data-driven method** Yunhao Liu

Nov.09, 14:00-17:00 Room 2

Session 02
Best Paper Presentation for Students

Chair：Kai Yao, Lingling Lu

14:00-14:10	**Strain Real-time Monitoring System Based on Optical Frequency Domain Reflection** Ying Wang
14:10-14:20	**Research on TPS structure damage identification method based on thermal vibration cycles** Haodong Zhong
14:20-14:30	**Novel Baseline-Free Indentation Damage Imaging of CFEP Composites based on Ultrasonic Guided Waves** Kai Luo
14:30-14:40	**Research on the stress gradient detection method based on variable frequency surface waves** Kaiyi Li
14:40-14:50	**A quantitative analysis of sparse Lamb waves reconstruction based on scaling method** Meiling Wang
14:50-15:00	**Fatigue crack propagation identification based on ultrasonic guided wave and machine learning** Qingxin Pang
15:00-15:10	**Research on Non-contact Detection Method for CFRP Thermography under Pulsed and Moving Laser Excitation** Shuaishuai Gao

15:10-15:20	**Piezoelectric Composites with Active Sensing Capability for Realizing Structural Self-awareness** Shulong Zhou
15:20-15:30	**Damage imaging and localization based on MUSIC- beamforming algorithm** Xiaozhen Zhang
15:30-15:50	**Break**
15:50-16:00	**A multi-channel integrated flexible guided-wave array for health monitoring of curved structures** Chenxi Xie
16:00-16:10	**Experimental study of metal corrosion and fatigue acoustic emission waveforms** Zhihai Hu
16:10-16:20	**Damage localization of concrete structures based on improved BP neural network** Tao Liu
16:20-16:30	**Research on piston aero-engine fault diagnosis based on multi-source information fusion by graph convolutional network** Yinghui Sun
16:30-16:40	**Research on the Application of AI in Acoustic Emission Waveform Data Pattern Recognition** Jiehui Xie
16:40-16:50	**Cluster Analysis of Acoustic Emission Signals Based on Unsupervised Deep Learning** Yanyang Wang
16:50-17:00	**Study on the optimal arrangement of acoustic emission monitoring sensors for pre-stressed steel strands in hollow slab bridges** Chao Wang

Nov.09, 14:00-17:30 Room 3

Session 03
Best Paper Presentation for Students
Chair： Jiuhong Jia, Wei Teng

14:00-14:10	**Research on magnetic flux leakage detection method of rail under impact load** Daluan Wang
14:10-14:20	**Sensing Flexural Strain and Temperature Simultaneous via Compact RFID Patch Antenna Sensor** Xiangyu Xie

14:20-14:30	**Optimized Design and Evaluation of Flexible Capacitive Sensors for Pressure and Temperature Sensing** Yifei An
14:30-14:40	**A Novel Hierarchical Framework for Financial Distress prediction Based on Online Q&A Text** Jiaxin Yuan
14:40-14:50	**An Explainable Multi-Level Approach for Financial Fraud Detection** Qin Wang
14:50-15:00	**A Mechanical Fault Diagnosis Model Compression Framework for Edge Devices** Hao Li
15:00-15:10	**Damage Imaging for Composite Storage Tanks Using Ultrasonic Guided Waves** Houfu Jiang
15:10-15:20	**A Meta-Learning-based AutoML Method for Aero-engine Rolling Element Bearing Fault Diagnostics** Hao Zhang
15:20-15:30	**Study on Monitoring Reliability of Flexible Eddy Current Sensor in Variable Temperature Environment** Chengjie Ping
15:30-15:50	**Break**
15:50-16:00	**Analysis of the effect of structural damage on the mechanical properties of hoisting steel derricks in a mine in Henan province** Zhuoqun Lu
16:00-16:10	**An improved prediction model of dynamic normal stress on silo wall based on gradient boosting and parameter optimizations** Huijie Guo
16:10-16:20	**A Bayesian Physics-informed LSTM for structural seismic response probabilistic prediction** Zhenglin Ji
16:20-16:30	**Wind &Wave Load, and Structural State Identification of Fixed Offshore Wind Turbines Considering Pile-Soil Interaction** Chang Yin
16:30-16:40	**Tread damage of Wheel Set Tread Based on Improved YOLOv7** Yuchen Ouyang

16:40-16:50	**Power spectral density transmissibility-based operational modal parameters identification of a wind turbine under seismic excitations** Wentao Zhang
16:50-17:00	**Damage Identification and Analysis of DTU 10MW Wind Turbine Tower Structure Based on Modal Parameters** Xinwei Huang
17:00-17:10	**Acoustic Emission Monitoring of Wind Turbine Blade Icing: Principles, Experimental Design, and Neural Network-based Recognition** Lei Jiang
17:10-17:20	**Numerical simulation of 12Cr1MoV grain size characterized by laser ultrasonic based on GA-BP neural network** Qianhua WANG
17:20-17:30	**Structure Parameter Identification Considering Randomness and Damage Detection Based on Gibbs Sampling** Haifeng Yang

Nov.11, 17:30-18:00 Room Z2

Closing Ceremony

Chair: Keqin Ding

17:30-17:45	**Conference Organization Awards**
17:45-18:00	**Conference Closing Summary**

Awards & Banquet

Nov.10, 18:30-21:00	YingBin Hall
Awards & Banquet *Chair: Guanglong Wang, Yonggang Ding*	
18:30-19:30	**Local Characteristic Programs &** **Best Students Presentation Award**
19:30-21:00	**Banquet**

Special Events & Activities

Nov.9, 15:00-16:30 **Room Z2**

全国设备结构健康监测标准化工作组
2024 年度工作和标准审查会议
Equipment Structural Health Monitoring
2024 Annual Work and Standards Review Meeting

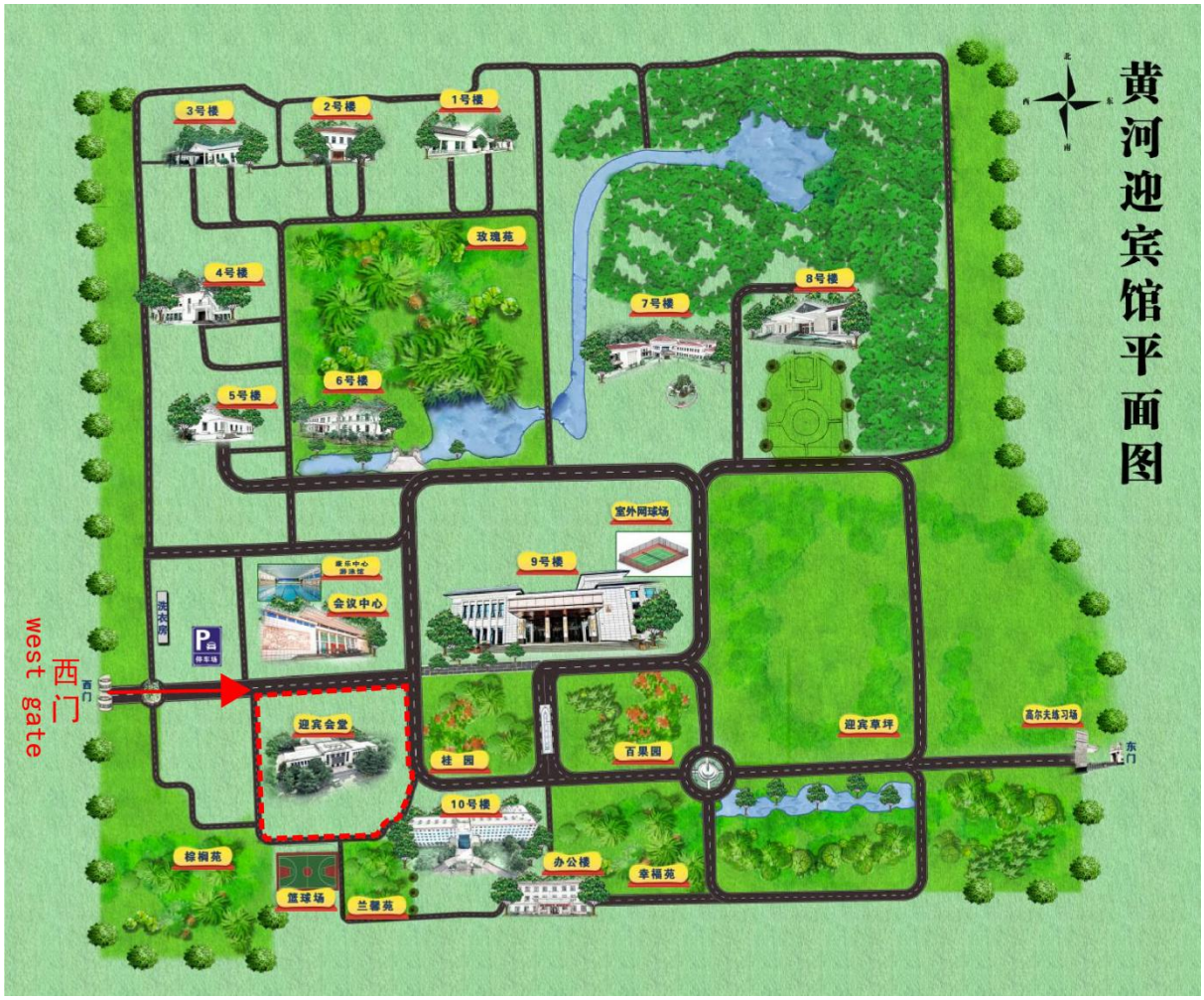
Nov.9, 19:30-20:00 **Room Z2**

中国仪器仪表学会设备结构健康监测与预警分会
三届二次常务委员会议
China Instrument and Control Society Equipment Structure Health Monitoring and Prognostics Institution
The Second Executive Committee Meeting of the Third Session

Nov.9, 20:00-21:00 **Room Z2**

中国仪器仪表学会设备结构健康监测与预警分会
三届二次委员会议
China Instrument and Control Society Equipment Structure Health Monitoring and Prognostics Institution
The Second Committee Meeting of the Third Session

Conference Venue



Yingbin Hall, Huanghe State Guest House, Zhengzhou, China

黄河迎宾馆迎宾会堂

No. 1 Yingbin Road, Huiji District, Zhengzhou, 450045

郑州市惠济区迎宾路 1 号

Transportations

1.Arriving at Zhengzhou East Railway Station by CRH train: Please take the [Metro Line 5] from [Zhengzhou Dong Station] to [Huanghe Road] and then transfer to [Metro Line 2] to reach [Exit K of Huangheyingbinguan Station].The entire journey takes approximately 40 minutes.

乘高铁抵达郑州东站：请从【郑州东站】乘坐【第 5 号地铁 】到【黄河路站】然后转【第 2 号地铁】到【黄河迎宾馆站的 K 口】,全程共计 40 分钟。

2.Arriving at Zhengzhou RailwayStation by train: Please take the [Metro Line 1] from [Zhengzhou Railway Station] to [Zijingshan Station],and then transfer to [Metro Line 2] to reach [Exit K of Huangheyingbinguan Station].The entire journey takes approximately 35 minutes.

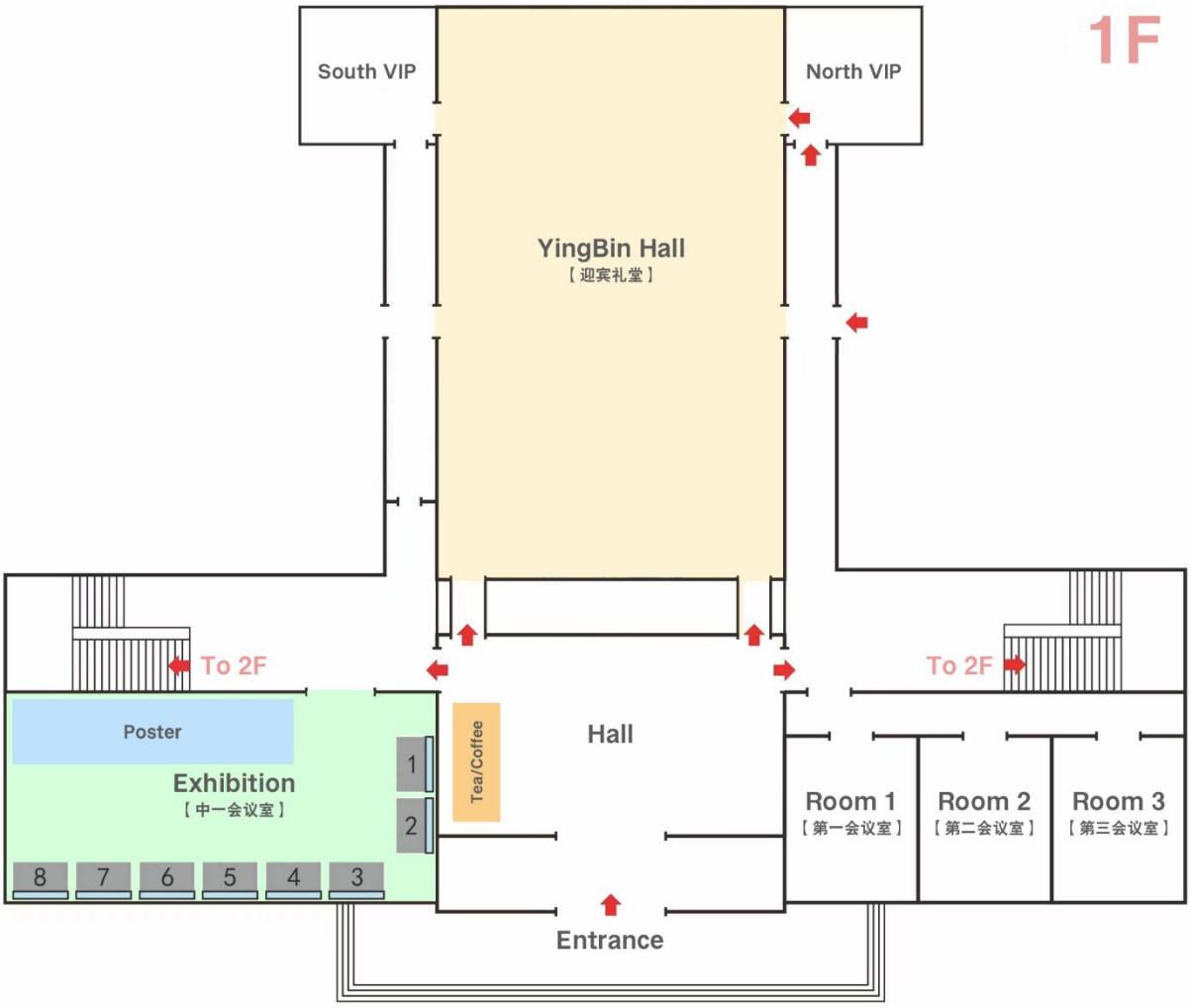
乘高铁抵达郑州火车站：请从【郑州火车站】乘坐【第 1 号地铁】到【紫荆山站】然后转【第 2 号地铁】到【黄河 迎宾馆站的 K 口】,全程共计 35 分钟。

3.Arriving at Zhengzhou Xinzheng International Airport by plane: Please takethe [Metro Line 2] from [Xinzheng International Airport Station] directly to [Exit K of Huangheyingbinguan Station].The entire journey takes approximately 1 hour and 20 minutes.

乘飞机抵达新郑机场：请从【新郑机场站】乘坐【第 2 号地铁】直达【黄河迎宾馆站的 K 口】,全程共计 1 小时 20 分 钟。

Exhibitions

Nov.10, 08:30- Nov.11, 18:00 **Exhibition Room**



1	山东双测安全信息技术产业研究院有限公司 Shandong Double Test Security Information Technology Industry Research Institute Co., Ltd	2	上海硕测电子科技有限责任公司 Shanghai Sotest Electronic Technology Co., Ltd
3	阿塔米智能装备（北京）有限公司 Atami Technologies Inc.	4	清诚声发射研究(广州)有限公司 QingCheng AE institute (Guangzhou) Co., Ltd
5	无锡市惠丰电子有限公司 Wuxi City Huifeng Electronics Co., Ltd	6	北京物声科技有限公司 Beijing Wusheng Technology Co., Ltd
7	北京科海恒生科技有限公司 Beijing Crahesion Science & Trade Co. Ltd	8	南京智慧基础设施技术研究院有限公司 Nanjing Intelligent Infrastructure Technology Research Institute Co., Ltd

Keynote Presentation Experts

Prof. Yanliang Du

Biography: Professor Du is the Academician of the Chinese Academy of Engineering, professor at Shenzhen University and Shijiazhuang Tiedao University, and expert in intelligent monitoring and safety control of large engineering structures. He currently serves as director of the Large Structure Health Diagnosis and Control Research Institute at Shijiazhuang Tiedao University and dean of the Urban Intelligent Transportation and Safety Operation and Maintenance Research Institute at Shenzhen University. He also holds the position of vice chairman of the Hebei Provincial Association for Science and Technology, executive deputy director of the National Key Laboratory for Green Longevity Road Engineering in Extreme Environments, chairman of the academic committee of the National Key Laboratory for Tunnel Boring Machines and Intelligent Operation and Maintenance, and chairman of the technical committee of the National Engineering Research Center for Digital Construction and Evaluation Technology of Urban Rail Transit. He has long engaged in research on intelligent transportation and safety operation and maintenance, leading his team to win two National Science and Technology Progress Awards (Special Prize), one First Prize, and three Second Prizes, as well as one First Prize and four Second Prizes for National Teaching Achievement Awards. He has been honored as National Outstanding Professional and Technical Talent, received Ho Leung Ho Lee Foundation Science and Technology Award, recognized as National Teaching Model, and awarded highest accolade, Zhan Tianyou Award.

Prof. Jinping Ou

Biography: Ph.D., Professor, Academician of the Chinese Academy of Engineering, School of Smart Civil and Marine Engineering, Harbin Institute of Technology (Shenzhen), China. His main research interests include Aseisimic and Wind-resistant Reliability of Structures, Structural Vibration and Control, Structural Damage Evolution and Health Monitoring, Offshore Structures and their Safety Management, FRP (Fiber Reinforced Polymer) Products and Structures.

Keynote Presentation Experts

Prof. Shandong Tu

Biography: Professor Tu received his B.Eng degree in 1982 and Ph.D degree in 1988 from Nanjing Tech University. He currently holds the position as Chair professor of Mechanical and Power Engineering, East China University of Science and Technology. Prior to this, he has worked in Nanjing Tech University and East China University of Science and Technology. He had also been a guest scientist at the Royal Institute of Technology in Sweden. He was elected as an academician of China Academy of Engineering in 2019.Prof. Tu has devoted his research to the area of high temperature engineering, including thermal effect on materials, structural integrity assessment and design of high temperature equipment against failures. He has authored over 400 papers and received a number of distinguished awards, including China National Science and Technology Progress Award, National Technology Invention Award, China Youth Science and Technology Award, ASME Best Paper Award, among others. He has been a fellow of The Chemical Industry and Engineering Society of China (since 2020), the honorary president of Chinese Pressure Vessel Institution (since 2010) and the honorary president of Chinese Materials Institution (since 2015) of China Mechanical Engineering Society, Chairman of China Structural Integrity Consortium, Chairman of Asian Oceanic Regional Committee of International Council for Pressure Vessel Technology, and a member of reliability committee of IFToMM. He is currently an honorary professor of the University of Nottingham. He is also serving as an editorial board member for a number of journals, including Applied Energy, Adv. Applied Energy, Frontiers of Chemical Sciences and Engineering, Int J Pres Ves and Piping, J of Materials Science and Technology, and so on.

Prof. Zhishen Wu

Biography: Professor Wu is the President of Henan University of Technology, the academician of the Japan Engineering Academy (foreign) and the European Academy of Sciences and Arts. He is recognized as a national leading talent by the Central Organization Department and a recipient of the National Science Fund for Distinguished Young Scholars and leads an innovative team under the Ministry of Education's "Changjiang Scholars and Innovative Research Teams Program". His research covers optical fiber sensing, fiber composites, and structural health monitoring. As the lead researcher, he has won the Second Prize of the National Science and Technology Progress Award and the Second Prize of the National Award for Technological Invention. He has also received four international awards, including the SHM Person of the Year Award and the IIFC Medal. He has published over 700 high-impact journal articles, and been listed as a Most Cited Chinese Researcher by Elsevier and among the top 2% of scientists globally.

Keynote Presentation Experts

Prof. Youlin Xu

Biography: Dr. You-Lin Xu is currently a Chair Professor of Southwest Jiaotong University, National Overseas High-Level Talent, Academician of Hong Kong Academy of Engineering Sciences. He was a Chair Professor and Dean of Faculty of Construction and Environment of the Hong Kong Polytechnic University. His research interests are in the fields of structural health monitoring, structural wind engineering, smart structures and digital twin technology. He published 3 English academic books and 350 SCI journal papers. The research results have been applied to practical large-scale projects, including Hong Kong Tsing Ma Suspension Bridge, Stonecutters Cable-Stayed Bridge, and Tseung Kwan O Arch Bridge. He has successively won the 2006 Croucher Outstanding Researcher Award in Hong Kong, the 2012 Scanlan Achievement Award from the American Society of Civil Engineers, the 2018 Davenport Achievement Award from the International Association of Wind Engineering, and the 12th Guanghua Engineering Science and Technology Award from the Chinese Academy of Engineering.

Prof. Maosen Cao

Biography: Professor Cao is an academician of the European Academy of Sciences and Arts and currently serves as a professor at Hohai University. He is the leader of the Jiangsu Provincial Science and Technology Innovation Team and a recipient of the National Excellent Doctoral Dissertation Award. Professor Cao holds positions such as the Deputy Director and Executive Director of the Jiangsu Collaborative Innovation Center for Major Infrastructure Safety, and the Director of the Jiangsu Foreign Academician Expert Studio for "Infrastructure Safety and Health along the Belt and Road." He has long been dedicated to the research of integrating mechanics and mathematics to address structural damage and safety issues. He has led 22 international and national projects, including the European Union's Seventh Framework Programme for Research and Technological Development (FP7) Marie Curie International Incoming Fellowships (IIF) project. Professor Cao has received numerous awards, including the first prize of the EU-China Dragon STAR Award for Science and Technology Innovation (ranked first), the Marie Curie Scholar Award from the European Union, and the Jiangsu Friendship Award (as the leader of the Chinese team).

Keynote Presentation Experts

Prof. Yuanqing Xia

Biography: Professor Xia is the President of Zhongyuan University of Technology, Chair Professor of Beijing Institute of Technology, Doctoral Supervisor, IEEE Fellow, the Yangtze River Scholar Distinguished Professor, the National Outstanding Youth Foundation of China, the Leading Talent of the Chinese Ten Thousand Talents Program, the Special Government Allowances of the State Council. He is a member of the 8th Disciplinary Review Group of the Academic Degrees Committee of the State Council, a member of the Big Data Expert Committee of the China Computer Federation, vice chairperson of the Internet of Things Working Committee of the China Instrument and Control Society, director of the specialized committee on cloud control and decision of the Chinese Institute of Command and Control, and deputy director of the National Key Laboratory of Space-based Intelligent Information Processing. His research interests include Information Processing and Control of Multi-Source Information Complex Systems, Cloud Control and Decision Theory and Application, Space-Air-Ground Integrated Network Collaborative Control. He has published more than 600 academic papers in important academic journals at home and abroad, 16 English monographs and 3 Chinese monographs, and his articles have been cited more than 30,000 times in total. He has been a highly cited scholar since 2014 by Elsevier. He obtained the Second National Award for Science and Technology (No. 2), the Second Natural Science Award of the Ministry of Education (No. 1) twice, also two times Beijing Science and Technology Award-2nd Class (No.1), National Defense Science and Technology Progress Award (No. 3), Wu Wenjun Artificial Intelligence Natural Science Award (No.2), Science and Technology Award of the CICC (No. 1), Natural Science of the Chinese Association of Automation (No. 2), Education and Teaching Achievement of the Chinese Association of Automation (No. 2), Education and Teaching Achievement of Beijing (No. 2), National Education and Teaching Achievement (No. 2).

Prof. Pizhong Qiao

Biography: Dr. Pizhong Qiao is a Chair Professor in School of Ocean and Civil Engineering, Shanghai Jiao Tong University. He is a registered professional engineer (PE) in Structural Engineering and certified in the practice of structural engineering from Structural Engineering Certification Board (SECB). He was named a Fellow of the American Society of Civil Engineers (ASCE) as well as a fellow of Engineering Mechanics Institute (EMI). He was a former Professor of Civil and Environmental Engineering and the Anjan Bose Outstanding Researcher Awardee at Washington State University. Dr. Qiao has been extensively working in development, research and application of advanced and high performance materials (smart materials, polymer composites, and sustainable concrete) in civil and aerospace engineering. His original technical contribution includes development of two novel and improved theories for mechanics and fracture of bi-material interface: shear deformable bi-layer beam theory and interface deformable bi-layer beam theory (called the “Qiao method” by the Boeing Company). He is the first scholar to introduce the Peridynamics method to the Chinese research community and develop the critical skew criterion for mode-II fracture. He serves as Associate Editor of three major journals (Structural Health Monitoring-International Journal, ASCE Journal of Engineering Mechanics, and ASCE Journal of Aerospace Engineering) and as Editor-in-Chief for a new journal Structural Materials and Engineering (Scilight).

Keynote Presentation Experts

Prof. F. Necati Catbas

Biography: F. Necati Catbas is Lockheed Martin St. Laurent Professor at the UCF Department of Civil, Environmental and Construction Engineering, and the founding director of the Civil Infrastructure Technologies for Resilience and Safety (CITRS) Lab. Prof. Catbas' research interests cover theoretical, experimental and applied aspects of structural identification, structural health monitoring, and non-destructive evaluation etcetera. He has been consistently ranked in the top 2% of his field in civil engineering worldwide published in articles by Stanford researchers (Ioannidis et al, 2020) as well as one of the top civil/structural engineering professors in the AD Scientific Index (2023). Prof. Catbas has received several awards and honors for his research, teaching and service activities, such as the Aftab Mufti Medal from the International Society for Structural Health Monitoring of Intelligent Infrastructure, and the Kikuchi-Karlaftis Award from the Transportation Research Board.

Prof. Aftab Mufti

Biography: Dr. Aftab A. Mufti is an Emeritus Professor of Civil Engineering and Director of SIMTReC Group at the University of Manitoba, Winnipeg, Manitoba, Canada. He is also the former Scientific Director and President of the Innovative Structures with Intelligent Sensing Canada Research Network, a Network of Centres of Excellence. His research interests include FRPs, FOSs, FEM, bridge engineering, Structural Health Monitoring (SHM). At the University of Manitoba he introduced new research area of Civionics Engineering to monitor deteriorating infrastructure. He has authored or co-authored 5 books, plus provided chapters for 2 others, edited 9 books, and written more than 350 technical publications. Dr. Mufti is the recipient of 24 awards. He is the holder of several patents on the steel-free bridge deck concept, of which he is the principal developer. He has been involved in the writing of bridge design codes since 1992, and was the Chair of the Technical Sub-Committee on the Fibre Reinforced Structures of the Canadian Highway Bridge Design Code, published in 2006. He is a fellow of 9 societies. On November 2013 he was elected as a Fellow of the Royal Society of Canada (FRSC) and on July 1, 2010 he was appointed as a Member of the Order of Canada, highest civilian honour bestowed on Canadian citizens, for his contribution to and leadership in the field of civil engineering, notably for researching the use of advanced composite materials and fibre optic sensors in the construction and monitoring of bridges and other infrastructures.

Keynote Presentation Experts

Prof. Giuseppe Carlo Marano

Biography: Ph.D. in Structural Engineering at the University of Florence (2000). Post-doctoral scholarship in "Civil Engineering Science" at Technical University of Bari in 2001 and Lecturer in structural engineering in the same university in 2001. Visiting assistant professor in Cambridge (2002), associate professor in 2011 at Politecnico di Bari and visiting Professor in Loughborough (2012) and at Hunan University, Changsha, Hunan Province (China) (2014), is research fellow at the SIBERC (Sustainable and Innovative Bridge Engineering Research Center), Fuzhou University, Fuzhou, Fujian Province, China and (2016/2018) full Professor in Structural Design, Faculty of Civil Engineering, Fuzhou University, Fuzhou, Fujian Province, China. From 2018 is full professor in structural Design at Politecnico di Torino, where he also covered vice director of the Department of Structural, Environmental and Geotechnical Engineering until 2023. His research interests deal with structural optimization, form finding and structural health monitoring. He is author of four European patents and more than 300 papers published in international journals or presented at conferences.

Prof. Mohammed Elshafie

Biography: Dr. Mohammed Elshafie is an Associate Professor and the Chair of the Graduate Studies and Research Committee at the Department of Civil and Environmental Engineering at Qatar University. Before joining Qatar University he was the Deputy Director and a University Senior Lecturer at the Laing O'Rourke Centre for Construction Engineering and Technology at the University of Cambridge. Dr Elshafie, currently holds a Senior Research Fellow position at Robinson College in Cambridge,UK. Dr Elshafie's research group has been at the forefront of applying advanced sensing technology on a wide range of civil engineering infrastructure applications. With over 80 field deployments worldwide this research work covers both large-scale infrastructure assets and small-scale modelling of construction activities focussing on understanding the performance of overground and underground infrastructure. Dr.Elshafie's work has been recognised by a number of high profile international awards including the Fleming Award 2013 for Geotechnical Engineering Excellence from the Institution of Civil Engineers (ICE) and the British Geotechnical Society (BGS) in London, the ICE Russell Crampton Award (2014) for the best paper in the ICE Proceedings of Geotechnical Engineering for 2014, the American Society of Civil Engineers' (ASCE) J. James R. Croes Medal (2019) and most recently the UK Institution of Civil Engineers (ICE) Case Histories Award (2023).

双测安全
DOUBLE TEST SECURITY

扫一扫关注公众号

山东双测安全信息技术产业研究院有限公司,成立于2018年,注册资本625万元。国家高新技术企业,拥有18项发明专利,15项实用新型专利,并顺利通过了1S09001、1S014001、1S045001管理体系认证。

主要产品

- 光纤声发射解调仪
- 光纤声发射传感器
- 自主研发前置放大器
- 耐高温高压光纤穿罐接口

应用范围

1 石油化工工业

各种压力容器、压力管道和海洋石油平台的测和结构完整性评价，常压贮罐底部、各种阀门和埋地管道的泄漏检测等。

2 电力工业

高压蒸汽汽包、管道和阀门的检测和泄漏监测，汽轮机叶片的检测，汽轮机轴承运行状况的监测，变压器局部放电的检测。

3 材料试验

材料的性能测试、断裂试验、疲劳试验、腐蚀监测和摩擦测试，铁磁性材料的磁声。

4 民用工程

楼房、桥梁、起重机、隧道、大坝的检测，水泥结构裂纹开裂和扩展的连续监视等。

5 航天和航空工业

航空器壳体和主要构件的检测和结构完整性评价，航空器的时效试验、疲劳试验检测和运行过程中的在线连续监测等。

6 金属加工

工具磨损和断裂的探测，打磨轮或整形装置与工件接触的探测，修理整形的验证，金属加工过程的质量控制，焊接过程监测，振动探测，锻压测试，加工过程的碰撞探测和预防。

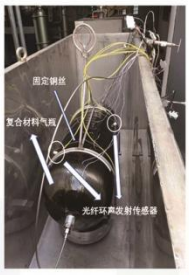
7 交通运输业

长管拖车、公路和铁路槽车及船舶的检测和缺陷定位，铁路材料和结构的裂纹探测，桥梁和隧道的结构完整性检测

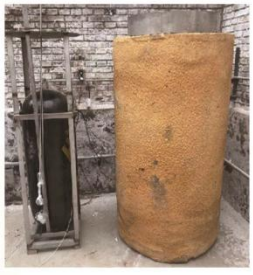
八通道光纤声发射解调仪


液体中使用的光纤环声发射传感器


液氮实验



液氧实验


液氢实验

诚招代理商！！

山东双测安全信息技术产业研究院有限公司　　地址：山东省潍坊高新区13159号高新大厦923房间
电话:0536-8223967　　陈经理 18660673607(微信同号)　　网址：www.sdscsafe.com

双测安全
DOUBLE TEST SECURITY

山东双测安全信息技术产业研究院有限公司主要从事光纤传感系统的开发与搭建、光电系统的研发与声发射检验检测服务。

公司技术力量雄厚,拥有十几项发明专利,拥有质量管理体系认证证书(证书编号:10421Q00632R0S)、环境管理体系认证证书(证书编号:10421E00390R0S)、职业健康安全管理体系认证证书(证书编号:10421S00359R0S),产品已在国防科工系统投入使用并获得认可。公司与北京航空航天大学建立了稳定的合作关系,吸收北航先进的技术成果,学院定期安排知名教授前往公司对研发工作进行指导。

SC800光纤声发射系统

性能参数	
通道数	8通道
规格尺寸	428mm×330mm×180mm
适用温度	-15°C-80°C

与传统的压电陶瓷声发射传感器对比，优势在于

- 本质安全，不会发生短路、断路、静电火花等。
- 不受电磁干扰。
- 传输距离远； 传感器与前置放大器之间使用光纤连接，传输线体积小，重量轻。
- 本产品为光纤材质，耐化学腐蚀、耐潮湿、耐盐碱。
- 可以适用于-270°C-270°C的极端恶劣环境。
- 本产品为实心传感器、耐高压。
- 方便灵活，可定制各种异形光纤声发射传感器。

性能参数	
基底噪声	25-30dB
信号幅值	>85dB
中心频率	30-150KHz(可选)
规格	D=30mm h=22.5mm
适用温度	-270°C-270°C


常温光纤声发射传感器


高温环境光纤声发射传感器

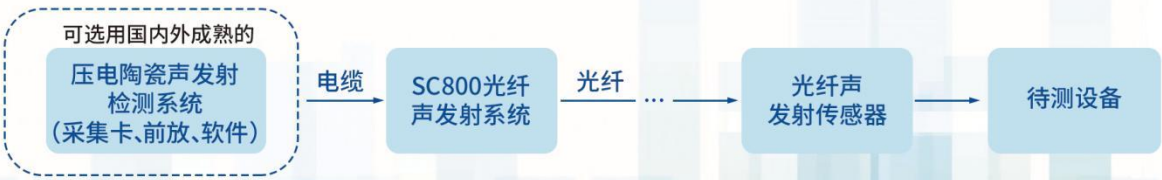

低温环境光纤声发射传感器


异种形状光纤声发射传感器


液体耦合光纤声发射传感器


空气耦合光纤声发射传感器

使用示意图



扫一扫 关注公众号

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山东双测安全信息技术产业研究院有限公司 地址：山东省潍坊高新区13159号高新大厦923房间
电话：0536-8223967 陈经理 18660673607(微信同号) 网址：www.sdscsafe.com

硕测电子
www.sotest.com.cn

上海硕测电子科技有限责任公司

上海硕测电子科技有限责任公司成立于 2020 年，注册资金 500 万元。我们专注于结构的健康安全，是美国 BROADSENS 公司中国区总代理。BROADSENS 总部位于美国加州硅谷，在结构健康监测（SHM）行业当中，拥有全球技术领先的超低功耗无线振动传感器及结构健康监测系统，拥有全球顶尖的技术团队，可以给客户提供客制化的解决方案。

超声结构健康监测

BroadScan D200

BroadScan D200 具有 16 个发射通道和 16 个接收通道。BroadScan D200 具有工业级连接块，可快速轻松地连接到带有明线的压电传感器。它结构紧凑而坚固，易于携带以进行现场测试和测量。

BroadScan D110C 是工业级的结构健康监测和损伤检测设备。它有专用的 17 路发射通道和 68 路接收通道，具有精度高，信噪比高，扫描距离远等优点。

BroadScan D110C

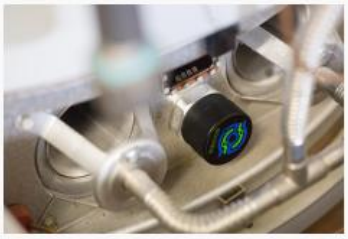
BroadScan D300(4G 版本)

BroadScan D300（4G 版本）是一款 32 通道超声波扫描和传感器数据采集的网络设备。它可以通过以太网或 WIFI 或 4G 连接到网络上。它使远程超声结构健康监测成为现实。

地址：上海市嘉定区白银路 311 弄 15 号 819 室
电话：400-103-1380　网址：www.sotest.com.cn

工业级超低功耗无线振动监测

Broadsens 无线振动传感器结构紧凑、重量轻，具有业内最高的电池效率。它们通过集成的无线加速度计和温度传感器为振动监测和预测性维护提供高性能。所有 Broadsens 无线振动传感器都包括三轴加速度计和精密温度传感器。温度传感器的分辨率为 0.01 摄氏度，精度为 +/-0.3 度。由于振动传感器具有自动校准功能，因此现场的加速度和温度测量都不需要校准。



机器状态监测

Broadsens 机器状态监测系统包括超低功耗无线振动传感器（加速度计）、无线温度传感器、无线角度传感器、无线应变计、压力传感器、位移传感器和超声波传感器。传感器收集的这些数据可用于监测机器的健康状况，并为基于状态的维护提供指导。对于某些应用，超声波测厚仪和无线压力传感器也用于提供有关机器和结构的更深入信息。

无线螺栓预紧力监测

Broadsens 无线超声波传感器使远程螺栓预紧/负载/张力监控成为现实。WUT 系列无线超声波传感器的电池寿命长达 10 年或更长，可以长期监测螺栓和紧固件的预紧力和张力。无线超声波传感器可以很容易地安装在海上风力涡轮机、铁路或石油平台等结构的螺栓上。无线传感器是非侵入式的，可以安装在任何现有的螺栓或螺母上，而无需修改安装机构。

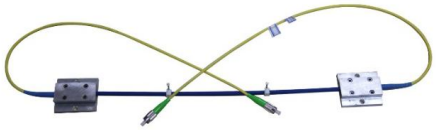
南京智慧基础设施技术研究院有限公司
Research Institute for Intelligent Infrastructure

南京智慧基础设施技术研究院有限公司成立于2018年，公司专注于新型传感材料及技术、高性能解调设备及应用技术、智能检测/监测控制工程技术、智能材料及超感知器件技术、城市系统安全保障及韧性设计智能技术、人工智能、信息通信等研发、生产、销售及工程应用一体化服务，为土建交通、能源电力、智能制造、航空航天等多个行业的监测、检测、安全运营、智能制造及建造、智慧运维等提供支撑。

公司主要产品：长标距区域分布式碳纤维传感器、长标距区域分布式光纤传感器、解调仪、智能材料（智能筋材、智能网格）、智能敲击锤检测设备、热红外隐蔽裂缝检测设备、超声波检测设备、DAS设备等，产品在桥梁、隧道、建筑、高铁、天然气管线、原油储罐等大量重要工程中得到广泛应用。

1 传感器系统

长标距区域分布式碳纤维传感器，一专多能，满足应力、应变、位移、转角等多种监测需求，可达到长期精度达到1με级、频率响应1KHz级结构动静态微小应变测量



长标距区域分布式光纤应变传感器通过精确测量动静态应变，直接获取内力、变形、转角和刚度等结构参数，追踪结构早期损伤及损伤演化过程，为大型桥梁、隧道、建筑、管道等建立长期稳定的结构健康监测系统提供有效的技术装备

分布式长标距FBG传感

- 量程: -1000~+10000με
- 分辨率 (με): 10^{-10}pm/με
- 标距(c m): 10~500cm
- 直径(mm): 2~3 mm

分布式长标距布里渊传感

- 量程: -1000~+10000 με
- 分辨精度(με): 5με
- 标距(c m): 10~500cm
- 直径(mm): 2~3 mm

分布式光纤声传感（DAS）

- 噪声水平: 2pε/√Hz@100Hz
- 空间分解能(m): 5~10m
- 应变分辨率 (nε): 0.5nε
- 信噪比: 51dB

对比项目	技术方法与水平	国际国内同类先进技术水平
光纤光栅传感系统	区域分布传感，寿命≥20年	点传感，寿命短
布里渊散射分布传感系统	精度优于5με，寿命≥20年，实用化	精度25με，寿命短，无法实用
分布式光纤声传感（DAS）技术	应变分辨率 0.5nε，信噪比51dB以上信噪比51dB以上，寿命≥20年	运算复杂、微振识别误差大仅适用于安防

2 监测设备

- 光学通道数: 1~128
- 波长变化范围（mm）：≥80mm
- 解调频率(Hz): 1~16000
- 稳定性（pm）：0.5
- 应变精度（με）：≥±0.2
- 工作温度(℃): -40℃~90℃

高性能光纤光栅解调仪通过特有的系统温度自补偿与误差自校准技术，极大提高了野外恶劣环境下的工作能力、长期稳定性与可靠性，可在野外-10℃~60℃恶劣环境下（潮湿、强电磁干扰）长期使用。在高速测量频率下，实现对波长变化的高分辨率与高精度解析

分布式光纤振动及声传感仪（DAS）设备是利用单根光纤作为传感传输二合一的器件，通过对直接触及光纤或通过承载物（如覆土、铁丝网、管道等）传递给光纤的各种扰动数据进行分析处理，探测距离长、最远可达50km，系统噪声大幅降低，信噪比51dB以上，噪声水平2pε/√Hz@100Hz，应变分辨率 0.5nε

3 检测设备

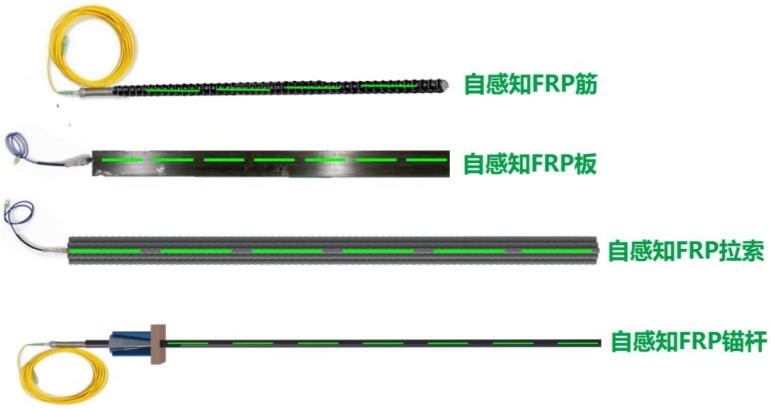
热红外检测设备用于建筑、桥梁、隧道等工程结构的无损检测，搭配移动检测车，可实20km/h的快速检测和15m的大范围检测

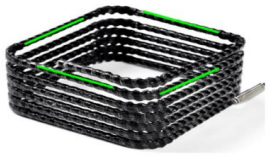
敲击法检测设备可满足巡检速度20km/h以上、混凝土探测深度20cm以上、声波有效采集半径5m以上的快速检测要求

超声波检测设备是一种集机器视觉、声呐探测、混凝土/水界面波检测等多种高科技检测方法于一体的水下混凝土结构无损检测机器人，下潜深度可达100m，可满足最小0.2mm级别的损伤检测

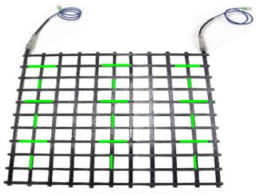
4 智能材料

通过在纤维复合材料的表面或者内部埋入分布式传感光纤或碳纤维传感器，形成受力与传感于一体的自传感智能材料，如智能筋、智能网格、智能锚杆等





自感知FRP箍筋



自感知FRP网格

主要传感、解调及监测系统装置与国内外先进技术对比

性能指标		技术现状	本技术	提升
碳纤维传感及解调装备		无	首创发明	国际首先实现定量测量
光纤光栅传感及解调装备	长期精度	3με	1με	3倍
	稳定性	存在漂移	优于1pm	长期稳定
	成本	100%	50%	减半
布里渊散射传感及解调装备	长期精度	25με	5με	5倍
	测速	5-10分钟/次	100Hz	实用化水平

南京智慧基础设施技术研究院有限公司
地址：南京市雨花台区宁双路19号云密城G栋705　电话：025-85263861

北京科海恒生科技有限公司
Beijing Kehai Hengsheng Technology Co.,Ltd.

我公司于 2000 年从德国 Vallen 公司引进声发射检测系统，该系统广泛应用于各个领域的结构健康检测和监测。声发射结构健康监测系统主要由声发射采集系统、全天候传感器、自动化管理软件和云数据平台组成。我公司可以提供多种监测技术于一体的整套监测系统的解决方案，包括数据采集、数据分析、数据的传输和存储等。软件兼容第三方采集系统采集的数据，可以根据客户的需要增加或定制相应的监测模块。目前德国 Vallen 公司用声发射技术监测的结构健康项目超过了 30 个，如摩天轮的监测、起重机械的监测、桥梁预应力钢筋断裂监测，悬索桥吊索、主缆监测，斜拉桥斜拉索监测，拱桥吊杆（索）、系杆监测等，欢迎感兴趣的来电咨询、交流，电话：01088909950，网址：www.cstndt.com。

清诚声发射研究(广州)有限公司
Qawrums Ltd.

清诚声发射研究(广州)有限公司(QCAE)(原公司名称:北京声华兴业科技有限公司)，成立于 2000 年，在广州(总部)和北京(分公司)设有办公场地。是一家专业从事声学检测设备的研发、生产和技术应用服务的企业。公司主导产品远程无人值守物联网声波（声发射）监测系统、声波（声发射）检测仪及声发射传感器主要作用于不同设备的故障诊断和状态监测，应用于特种设备检测、航空航天、石油石化、公路桥梁长遂、电力、高校等领域。如常见的水电蜗壳声发射检测、风电风机状态监测、桥梁断丝动态声发射监测、大型压力容器、常压储罐、长管拖车、压力管道、阀门泄漏状态监测、刀具磨损、结构裂纹开裂、转动轴承状态监测等。电话：400-6886499，网址：www.ae-ndt.com。

阿塔米智能装备（北京）有限公司
Atami Technologies Inc.

阿塔米智能装备（北京）有限公司致力于面向全国众多无损检测单位和无损检测人员提供无损检测领域“一站式”服务，提供世界范围内的高端检测产品和优质售后服务，引领中国 NDT 产品及技术革新。从模拟仿真到实际检测过程的通用应用平台，全过程指导产品检测工艺研发和应用。其中 CIVA 无损检测仿真平台可提供常规超声、TOFD、相控阵、全矩阵超声、常规射线、数字射线、CT、常规涡流、阵列涡流和脉冲涡流、结构健康监测等多种检测方法的仿真模拟，为实际检测提供指导和帮助。另外水浸超声检测系统、TOFD、相控阵超声、涡流及涡流阵列、SHM（结构健康监测）、电磁超声、射线和 DR、红外、太赫兹、激光超声、空气超声和光学测量等技术，可为用户提供丰富而专业的解决方案和产品。

北京物声科技有限公司
Beijing wusheng Technology Co., Ltd.

北京物声科技有限公司是集开发、应用、服务为一体的高新技术企业，也是 Mistras 集团/美国物理声学公司（PAC）的中国落地实施团队。北京物声科技有限公司主要为中国广大用户提供世界顶级的声发射和超声波检测产品，以及工业 NDT 和结构健康监测（SHM）解决方案。交流。随着全球工业 4.0 和中国工业 2025 时代的到来，面向工业，面向应用，转眼未来，我们正将声发射技术的应用从传统的无损检测向工业装备健康监测 SHM；从单一的声发射应用向大数据、人工智能 AI 及智能工厂、智慧运维领域拓展并大显身手。公司成立二十年以来，始终秉持“为客户创造价值”的终极目标，以工程问题为导向，以解决用户问题，创造价值为宗旨。为工业领域的无损检测和结构健康监测（SHM）提供高端解决方案。

无锡市惠丰电子有限公司
Wuxi City Huifeng Electronics Co., Ltd.

公司成立于 1998 年，分布在江苏无锡（占地 11000 平米）和浙江长兴（占地 22000 平米），设有上海和深圳两个办事处。从事特种陶瓷粉末及产品开发、生产、销售和服务。企业拥有自己专业研究团队和实验室。业务覆盖领域广泛，如：压电陶瓷在超声波功率驱动、信号接发、无损检测等场景，广泛应用于汽车电子、工业安防、医疗军工领域；红外热释电陶瓷应用于智能开关、信号报警监测、红外人体检测；微波介质陶瓷应用于微波通讯领域；结构陶瓷及其组装器件拓展在新能源汽车和半导体领域应用。Tel: 0510 - 85311787 - 8001 or 8002; 0510 - 85311865, 13921117642, Fax: 0510-8531068, E-mail: tdh@hfpzt.com; sales@hfpzt.com, Website: www.hfpzt.com.

深圳市捷德智能系统有限公司
Shenzhen Jiede Intelligent System Co., Ltd

深圳市捷德智能系统有限公司(简称“捷德智能公司”)成立于 2017 年 4 月，位于深圳市高新技术园龙岗智慧产业园，主要致力于工业设备健康监测领域的关键技术、器件研制、系统开发与应用服务。捷德智能公司将“创新、质量、服务、价值”理念贯穿到整个产品全生命周期，并倡导共赢、和谐、协同的共享文化，“共享的智慧”是捷德智能永续发展的最终动力。聚焦工业设备健康监测领域，重点发展应力/应变、振动/加速度、裂纹等先进传感器以及面向石油化工、能源电力、轨道交通等重点领域设备的智能服务机器人，为保障工业设备安全运行提供完整解决方案，致力于成为国内外设备结构健康监测先行者和领导者。

重庆采和析大数据科技有限公司
Chongqing AAA Big Data Technology Co.,Ltd.

重庆采和析大数据科技有限公司成立于 2017 年 5 月 21 日，经营范围包括工业设备数据收集、分析与数据服务；第三方计算机应用平台技术开发、技术转让、技术咨询、技术服务。定位：聚焦工业设备制造企业和应用企业这两类企业，发展工业大数据核心关键技术，开发面向制造企业的设备远程智能运维云服务平台、面向应用企业的设备智能健康管理云服务平台，实现工业大数据数据资产的价值，为工业设备制造企业和应用企业提供优质、高效的服务。目标：成为国内工业大数据应用领导者以及工业设备智能健康管理云服务、远程智能运维云服务解决方案一流供应商。

ICSHMIM

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