

2022 International Symposium on Structural Integrity  
Changsha, China  
October 14–17, 2022  
<https://issi2022.china-sic.net>

# Program

**IS 2022**  
**SI 22**

2022 International Symposium on Structural Integrity

Changsha, China

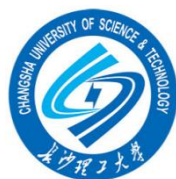
October 14-17, 2022

<https://issi2022.china-sic.net>

Hosted by

**CSIC** 中国结构完整性联盟  
China Structural Integrity Consortium

Locally organized by



Co-organized by



Supported by

National Natural Science Foundation of China

Chinese Materials Institution (Committee of High Temperature Strength of Materials)

Chinese Pressure Vessel Institution

Chinese Failure Analysis Institution

International Institute of Welding (IIW) - Pressure Vessels, Boilers & Pipelines

Sponsored by

Changsha Science and Technology Association



2022 International Symposium on Structural Integrity

Changsha, China

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# **Structural Integrity of Critical Infrastructure**

## **Technical Program**

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# Welcome from Chairs of ISSI2022

Dear Colleagues,

Welcome! The 2022 International Symposium on Structural Integrity (ISSI2022) will be held at Changsha, China, by Changsha University of Science and Technology, during October 14-17, 2022. The predecessor of the annual symposium, Fracture Mechanics series, took place each year from 2003 to 2009, was renamed as Structural Integrity series after 2010, and organized by China Structural Integrity Consortium (CSIC).



Critical infrastructure encompasses a vast array of engineered systems and assets, including the facilities for gas and oil storage, electrical power systems, transportation systems, etc. They are so vital that their incapacity or destruction would have a debilitation impact on the safety of people's lives and property, and even whole industry chain.

Undoubtedly, there is a significant need to ensure the security and durability of these infrastructure systems. To achieve the safety and sustainability of the critical infrastructure, one has to understand the science of failures from a tiny material defect to a large-scale collapse of the structures and constructions and develop the technology to prevent the failures. All this underpins the theme of ISSI2022, "**Structural Integrity of Critical Infrastructure**".



At present, many international exchanges may not have been fully restored. However, we attach great importance to ISSI2022 and regard it as an important activity to exchange ideas on academic progress, to strengthen friendship through mutual encouragement and to build bridges for further exchanges in the future. Best Student Paper and Best Poster will be bestowed at the closing session. Hope you enjoy the conference and life in Changsha.

With the very best wishes.

Prof. Shan-Tung Tu

A handwritten signature in black ink, appearing to read 'Shan-Tung Tu'.

Chairman of ISSI Symposium Series  
East China University of Science & Technology

Prof. Jian Chen

A handwritten signature in black ink, appearing to read 'Jian Chen'.

ISSI2022 Executive Chairman  
Changsha University of Science and Technology



## Program at a glance

Day	Time	Event	Place
Oct 14	19:30—22:00	Panel discussion: Funding Policy	CSUST+Tencent
Oct 15	08:30—08:45	<b>Conference opening</b>	CSUST+ZOOM
	08:45—10:30	Series session 1	CSUST+ZOOM
	10:30—11:00	<b>Group photos &amp; coffee break</b>	
	11:00—12:10	Series session 2	CSUST+ZOOM
	12:10—	<b>Lunch</b>	
	14:00—15:45	Series session 3	CSUST+ZOOM
	15:45—16:15	<b>Coffee break</b>	
	16:15—18:00	Series session 4	CSUST+ZOOM
	18:30—	<b>Conference dinner</b>	CSUST+ZOOM
Oct 16	08:30—10:10	Parallel sessions 1-8 & Student paper competition 1	ZOOM
	10:10—10:30	<b>Coffee break</b>	
	10:30—12:10	Parallel sessions 1-8 & Student paper competition 2	ZOOM
	12:10—	<b>Lunch</b>	
	13:30—15:30	Parallel sessions 1-8 & Student paper competition 3	ZOOM
	15:30—16:00	<b>Coffee break</b>	
	16:00—18:20	Parallel sessions 1-8 & Student paper communication	ZOOM
16:00—18:00	Poster Q&A session	ZOOM	
Oct 17	08:30—10:00	Series session 5	CSUST +ZOOM
	10:30—11:30	<b>Closing ceremony</b>	
<b>End</b>			

**NOTE:** Poster authors please send the posters (PDF format) to Dr. Chen (Email: weichen@csust.edu.cn) before October 13<sup>th</sup>. We will display the posters on: <https://issi2022.china-sic.net/>. The judges and authors will enter the Zoom meeting room (ID: 931 0750 7885, CODE: zoom10) for questions and answers during 16:00 and 18:00 on October 16<sup>th</sup>.

## Day 1: Detailed Program

### Panel discussion: Funding Policy

CSUST+Tencent: 675-765-336, CODE: 123456

Session chair: Jian-Feng Wen (East China University of Science and Technology, China)

19:30—19:50	<b>A bit of experience in NSFC proposal writing and review</b> Xu Chen <i>Tianjin University, China</i>
19:50—20:10	<b>Analysis of fundamental research in structural strength</b> Mingliang Zhu <i>National Natural Science Foundation of China, China</i>
20:10—20:30	<b>Fatigue and reliability for aero-engine's hot Section components</b> Dianyin Hu <i>Beihang University, China</i>
20:30—20:50	<b>Electronic packaging reliability</b> Yunhui Mei <i>Tiangong University, China</i>
20:50—21:10	<b>Some new viewpoints and thoughts on the mechanism of metal fatigue</b> Xiaogang Wang <i>Hunan University, China</i>
21:10—21:30	<b>Mechanical strengthening based on bioinspired strategy</b> Yunfei Jia <i>East China University of Science and Technology, China</i>

## Day 2: Detailed Program

### Conference Opening

//ZOOM ID: 84986422523, CODE: 123456

Session chair: Jian Chen (Changsha University of Science and Technology, China)

08:30	<b>Opening speech</b> <b>Shan-Tung Tu, Chairman of Symposium Series</b> <i>East China University of Science and Technology, China</i>
08:35	<b>Welcome address</b> <b>Yi-Jia Cao, President of CSUST</b> <i>Changsha University of Science and Technology, China</i>
08:40	<b>Welcome and program introduction</b> <b>Jian Chen, Executive chairman of ISSI2022</b> <i>Changsha University of Science and Technology, China</i>

### Series session 1

//ZOOM ID: 84986422523, CODE: 123456

Session chair: Shan-Tung Tu (East China University of Science and Technology, China)

08:45—09:20	<b>Solids in nano-scales - extreme strength and elasticity</b> <b>Wei Yang</b> <i>Zhejiang University, China</i>
09:20—09:55	<b>Engineer metals with internal interfaces for enhanced mechanical performance</b> <b>Huajian Gao</b> <i>Nanyang Technological University, Singapore</i>
09:55—10:30	<b>Multiscale mechanics and structural integrity of additive manufactured materials</b> <b>Jian Lu</b> <i>City University of Hongkong, China</i>
10:30—11:00	<b>Group photo &amp; coffee break</b>

### Series session 2

//ZOOM ID: 84986422523, CODE: 123456

Session chair: Yi-Jia Cao (Changsha University of Science and Technology, China)

11:00—11:35	<b>Status and challenge of oil and gas storage tank detection</b> <b>Laibin Zhang</b> <i>China University of Petroleum-Beijing, China</i>
11:35—12:10	<b>New durable asphalt pavement design theory and method</b> <b>Jianlong Zheng</b> <i>Changsha University of Science and Technology, China</i>



12:10— Lunch

**Series session 3**

//ZOOM ID: 84986422523, CODE: 123456

Session chair: Jian-Feng Wen (East China University of Science and Technology, China)

14:00—14:35 Strain-induced acceleration of the degradation of the crystallinity around grain boundaries in stainless steels under creep load at elevated temperature

Hideo Miura

*Tohoku University, Japan*

14:35—15:10 Design and characterisation of mechanical metamaterials for impact mitigation

Lin Ye

*Southern University of Science and Technology, China*

15:10—15:45 Research and application of anti-icing technology for power grid

Jiazheng Lu

*State Grid Hunan Electric Power Company Limited, China*

15:45—16:15 Coffee break

**Series session 4**

//ZOOM ID: 84986422523, CODE: 123456

Session chair: Lin Ye (Southern University of Science and Technology, China)

16:15—16:50 Structural integrity assessment of important components in nuclear power plants

Yinsheng Li

*Japan Atomic Energy Agency, Japan*

16:50—17:25 RFID sensors-based inspection and monitoring structural integrity

Guiyun Tian

*Newcastle University, UK*

17:25—18:00 Recent advances in ultrasonic array imaging and its implications for structural integrity assessment

Bruce Drinkwater

*University of Bristol, UK*

18:30—20:30 Conference dinner

## Day 3: Detailed Program

### Parallel session 1-1: Structural Integrity for Critical Infrastructure

ZOOM ID: 92968755085, CODE: zoom1

Session chair: Jiuyang Yu (Wuhan Institute of Technology, China)

08:30—08:50	<b>Keynote Lecture</b> <b>On structural operational integrity of infrastructure</b> Yuting He <i>Air Force Engineering University, China</i>
08:50—09:10	<b>Keynote Lecture</b> <b>From oil and gas to offshore wind turbine structures – fatigue design considerations</b> Yanhui Zhang <i>National Oil &amp; Gas Pipeline Network Group., China</i>
09:10—09:25	<b>A theoretical framework and software implementation for deep-sea structures system integrity management</b> Lei Zhou, Hongbing Liu, Weiwei Wang, Ankui Xie, Chuanyang Zhao, Xianqiang Qu <i>Harbin Engineering University, China</i>
09:25—10:20	<b>Coffee break</b>

### Parallel session 1-2: Fracture Mechanics

ZOOM ID: 92968755085, CODE: zoom1

Session chair: Xiang Guo (Tianjin University, China)

10:20—10:40	<b>Keynote Lecture</b> <b>Weight function theory and applications for crack analysis: a review and outlook</b> Xueren Wu <i>AECC Beijing Institute of Aeronautical Materials, China</i>
10:40—11:00	<b>Keynote Lecture</b> <b>The correlation of fatigue/creep-fatigue crack propagation rate with unified constraint parameter</b> Jie Yang, Haohan Guo, Hongwei Yuan, Rongsheng Lu, Runzi Wang, Xiancheng Zhang <i>University of Shanghai for Science and Technology, China</i>
11:00—11:15	<b>A novel theoretical characterization for the crack-tip stress fields of finite specimens with mode-I crack</b> Maobo Huang, Lixun Cai <i>Southwest Jiao Tong University, China</i>

## Parallel session 1-3: Miniaturized Specimen Technique

ZOOM ID: 92968755085, CODE: zoom1

Session chair: Chen Bao (Southwest Jiaotong University, China)

13:30—13:45	<p><b>Solutions and applications of 3D elastic-plastic constraints for clamped SENT specimens</b></p> <p>Zheng Liu, Zhe Zhang, Pengfei Jin, Xin Wang, Xu Chen <i>Tianjin University, China</i></p>
13:45—14:00	<p><b>Determination of fracture toughness of metallic materials by small punch test with a lateral notch</b></p> <p>Kaishu Guan, Ming Wang, Tong Xu, Jiru Zhong, Qiongqi Wang <i>East China University of Science and Technology, China</i></p>
14:00—14:15	<p><b>Mechatronics design and architecture of evaluation software for a portable instrumented indentation system PIIS3000TM</b></p> <p>Daniel Omacht, Yingzhi Li, Mingcheng Sun, Feng Zhang, Feng Yu <i>UTMdev s.r.o., Ostrava-Vitkovice, Czech Republic</i></p>
14:15—14:30	<p><b>Evaluation of hydrogen embrittlement susceptibility of X70, 2205 and A106b steels by small punch test</b></p> <p>Yingqiang Shan, Jiru Zhong, Qiongqi Wang, Kaishu Guan <i>East China University of Science and Technology, China</i></p>
14:30—14:45	<p><b>An in-site demonstration with a portable instrumented indentation system PIIS3000TM at power plant in Poland during maintenance</b></p> <p>Daniel Omacht, Yingzhi Li, Mingcheng Sun, Feng Zhang, Feng Yu <i>UTMdev s.r.o., Ostrava-Vitkovice, Czech Republic</i></p>
14:45—15:15	<p>Coffee break</p>

## Parallel session 1-4: Hydrogen Damage

ZOOM ID: 92968755085, CODE: zoom1

Session chair: Gang Chen (Tianjin University, China)

15:15—15:35	<p><b>Keynote Lecture</b></p> <p><b>Controlling factor on hydrogen induced cracking susceptibility of low alloy high strength steels</b></p> <p>Guangfu Li <i>Shanghai Research Institute of Materials, China</i></p>
15:35—15:55	<p><b>Keynote Lecture</b></p> <p><b>Hydrogen embrittlement mechanisms and hydrogen-tolerant design of advanced complex metallic materials</b></p> <p>Binhan Sun, Xiancheng Zhang, Dirk Ponge, Dierk Raabe <i>East China University of Science and Technology, China</i></p>
15:55—16:10	<p><b>Study on stress corrosion cracking growth behavior with tensile stress at crack tip based on cohesive zone model</b></p> <p>Shun Zhang, He Xue, Yubiao Zhang <i>Xi'an University of Science and Technology, China</i></p>

16:10—16:25	<b>Fatigue life analysis of high pressure seamless steel cylinder for hydrogen using autofrettage design</b> Mingpeng Pan, Wenhong Cao, <b>Yuebing Li</b> , Xiakang Ma <i>Zhejiang University of Technology, China</i>
16:25—16:40	<b>Hydrogen-induced ductility loss of Re-contained Ni-based single crystal superalloy</b> <b>Guangxian Lu</b> , Zhixun Wen, Haiqing Pei, Chengjiang Zhang, Zhufeng Yue <i>Northwestern Polytechnical University, China</i>
16:40—16:55	<b>Crack propagation under the coupling action of hydrogen diffusion and stress field</b> <b>Yinglu Han</b> , Shibo Wang, Liuzhi Song, Jianjun Chen <i>East China University of Science and Technology, China</i>

## Parallel session 2-1: Corrosion and Oxidation

ZOOM ID: 98532649861, CODE: zoom2

Session chair: Shuxin Li (Ningbo University, China)

08:30—08:50	<b>Keynote Lecture</b> <b>Corrosion Reliability</b> <b>Jianhua Zhou</b> <i>JHZ Strategic QA, Ann Arbor, USA</i>
08:50—09:05	<b>Effect of aluminizing and laser shock peening on high temperature oxidation resistance of AISI 321 stainless steel for solar thermal power generation heat exchanger</b> Wei Li, <b>Wenyang Qin</b> , Weiyang Huang, Jian Chen <i>Changsha University of Science &amp; Technology, China</i>
09:05—09:20	<b>Corrosion behavior of heterogeneous structure designed CoCrFeMnNi high entropy alloys</b> <b>Jiapan Wang</b> , Zhe Zhang, Xu Chen <i>Tianjin University, China</i>
09:20—09:35	<b>Prediction and analysis of sodium corrosion rate of nuclear grade 316 stainless steel</b> <b>Yaonan Dai</b> , Xiaotao Zheng, Jiuyang Yu <i>Wuhan Institute of Technology, China</i>
09:35—09:50	<b>Corrosion resistance behavior of directed energy deposited IN625/SS316L functionally graded material in hydrofluoric acid interface corrosion environment</b> <b>Shuyao Zhang</b> , Hailong Dai, Xu Chen <i>Tianjin University, China</i>
09:50—10:20	<b>Coffee break</b>

## Parallel session 2-2: Advanced Materials Testing

ZOOM ID: 9853264 9861, CODE: zoom2

Session chair: Guiyi Wu (Center of Excellence for Advanced Materials, China)

10:20—10:40	<p><b>Keynote lecture</b>  <b>Development and performance evaluation of advanced nuclear fuel cladding coatings for enhanced accident tolerance</b>  <b>Xianfeng Ma</b>, Jishen Jiang, Hailin Zhai, Shuai Wang, Wenjia Qiu, Huiji Shi  <i>Sun Yat-Sen University, China</i></p>
10:40—10:55	<p><b>Fracture toughness estimation of high-grade pipeline steel girth weld in ductile-brittle transition zone</b>  <b>Lele Gui</b>, Tianyu Zhou, Xuexin Shang, Yonghui Sun, Renyang He  <i>China Special Equipment Inspection and Research Institute, China</i></p>
10:55—11:10	<p><b>Evaluation of fracture toughness for steel structural materials based on continuous spherical indentation method</b>  <b>Zheng Meng</b>, Hui Chen, Hui Peng, Zuohua Fu, Zhongtian Fan  <i>Changsha University of Science and Technology, Changsha, China</i></p>
11:10—11:25	<p><b>Quick and accurate measurement of high-temperature elastic moduli and internal frictions of metals using an electromechanical impedance method</b>  <b>Faxin Li</b>, Mingyu Xie  <i>Peking University, Beijing, China</i></p>
11:25—11:40	<p><b>The research of uniaxial stress-strain relationship based on flat indentation method for homogeneous metal welds</b>  <b>Shuang Qi</b>, Wenxin Xiang, Lixun Cai, Xiaokun Liu, Ping Huang, Fangmao Ning, Jinhua Shi  <i>Suzhou Nuclear Power Research Institute, China</i></p>
11:40—11:55	<p><b>Localized damage behavior of welded joints based on crystal plasticity method</b>  <b>Dewen Zhou</b>, Xiaowei Wang, Jianming Gong  <i>Nanjing Tech University, China</i></p>
12:00—	<b>Lunch</b>

## Parallel session 2-3: Advanced Materials Modeling

ZOOM ID: 9853264 9861, CODE: zoom2

Session chair: Changyu Zhou (Nanjing Tech University, China)

13:30—13:50	<p><b>Keynote lecture</b>  <b>Strain localization of zirconium alloys induced by <math>\delta</math>-hydride precipitation</b>  <b>Xiaodong Zan</b>, <b>Xiang Guo</b>  <i>Tianjin University, China</i></p>
13:50—14:10	<p><b>Keynote lecture</b></p>

	<p><b>Viscoplastic constitutive modelling of the ratchetting behavior of 35CrMo steel subjected to cyclic loading considering the stress amplitude effect</b></p> <p><b>Xiaotao Zheng</b> <i>Wuhan Institute of Technology, China</i></p>
14:10—14:25	<p><b>An adaptive PD-FEM coupled model for complex fracture problems</b></p> <p><b>Han Dong</b>, Zhenwei Cai, Han Wang, Yingzheng Liu, Weizhe Wang <i>Shanghai Jiao Tong University, China</i></p>
14:25—14:40	<p><b>Strain and stress partitioning in a dual-phase steel using an experiment-modelling integrated approach</b></p> <p><b>Xiangbo Hu</b>, Xiaogang Wang, Chenghuan Liu, Chao Jiang <i>Hunan University, Changsha, China</i></p>
14:40—14:55	<p><b>Uncovering the high-temperature microstructural evolutions and creep-fatigue behaviors of CMSX-4 brazed joints</b></p> <p><b>Chuanyang Lu</b>, Zhulai Qin, Gangqiang Chen, Yafei Li, Shiyang Wang, Yuan Sun, Yanming He, Zengliang Gao, Jianguo Yang <i>Zhejiang University of Technology, China</i></p>
14:55—15:10	<p><b>Multi-phase-field fracture model for progress failure modelling of composites</b></p> <p><b>Liang Wang</b>, Haibo Su <i>Shanghai Jiao Tong University, China</i></p>
15:10—15:25	<p><b>Study on stress corrosion crack growth rate prediction model</b></p> <p><b>Tian Su</b>, Shuxian Lin, Yuhui Huang, Fuzhen Xuan <i>East China University of Science and Technology, China</i></p>
15:25—16:00	<p><b>Coffee break</b></p>

## Parallel session 2-4: Advanced Materials Modeling

**ZOOM ID: 9853264 9861, CODE: zoom2**

**Session chair: Jie Yang (University of Shanghai for Science and Technology, China)**

16:00—16:20	<p><b>Keynote Lecture</b></p> <p><b>Progresses on the modelling of creep cavitation, deformation, and creep fracture</b></p> <p><b>Qiang Xu</b> <i>University of Huddersfield, UK</i></p>
16:20—16:35	<p><b>Multi-scale modelling and characterization of intergranular cracking in austenitic stainless steel welded joints</b></p> <p><b>Lifeng Gan</b>, Baoyin Zhu, Chao Ling, Dongfeng Li, Esteban P. Busso <i>Harbin Institute of Technology, China</i></p>
16:35—16:50	<p><b>ANN-aided multi-scale modeling of nickel-base single crystal superalloys based on fabric tensors</b></p> <p><b>Huanbo Weng</b>, Huang Yuan <i>Tsinghua University, China</i></p>

16:50—17:05	<p><b>Cyclic deformation response of 316H at room temperature: Mechanical behaviour, microstructural evolution, physically-based evolutionary constitutive modelling</b></p> <p>Xueyan Qi, Lianyong Xu, Lei Zhao <i>Tianjin University, China</i></p>
17:05—17:20	<p><b>Consideration of crack driving force and stress triaxiality on ductile failure of SA508-3 steel: Experimental and numerical studies</b></p> <p>Fen Ren, Guiyi Wu <i>Centre of Excellence for Advanced Materials, China</i></p>
17:20—17:35	<p><b>Study on oxidation behavior of 3D C/SiC composites under high temperature environment by RVE model</b></p> <p>Linglei Meng, Qi Zheng, Yinglu Han, Chaojie Wu, Jianjun Chen <i>East China University of Science and Technology, China</i></p>

### Parallel session 3-1: Fatigue Behavior and Mechanism

ZOOM ID: 95754934389, CODE: zoom3

Session chair: Xiaotao Zheng (Wuhan Institute of Technology, China)

08:30—08:50	<p><b>Keynote Lecture</b></p> <p>Determination of the critical defect and fatigue life of high-speed railway axles under variable amplitude loads</p> <p>Shengchuan Wu <i>Southwest Jiaotong University, China</i></p>
08:50—09:05	<p><b>Exploration on the fatigue behavior of low-temperature carburized 316L austenitic stainless steel at elevated temperature</b></p> <p>Zhe Liu, Yawei Peng, Yajian Feng, Jianming Gong <i>Nanjing Tech University, China</i></p>
09:05—09:20	<p><b>Microstructure evolution and softening mechanism of 9-12% Cr martensitic steels under low cycle fatigue at elevated temperature</b></p> <p>Wei Sun, Yaroslav Rae <i>Wenzhou University of Technology, China</i></p>
09:20—09:35	<p><b>Thermomechanical fatigue behaviour and damage mechanisms of austenitic stainless steel</b></p> <p>Peng Yin, Wei Zhang, Qiaofa Yang, Guodong Zhang, Changyu Zhou <i>Nanjing Tech University, China</i></p>
09:35—09:50	<p><b>Fatigue Crack Growth and Slow Crack Growth of PE Pipes under Internal Pressure and Flat Plate Compression</b></p> <p>Bingjun Gao, Mingyuan Luo, Kaiming Lin, Juncai Ding, Botao Liu <i>Hebei University of Technology, Tianjin, China</i></p>
09:50—10:05	<p><b>A novel cold expansion method for improving high-temperature fatigue performance of hole structures</b></p>

**Jiajin Sun**, Xuelin Lei, Lvyi Cheng, Kaishang Li, Xiancheng Zhang, Shantung Tu  
*East China University of Science and Technology, China*

**10:05—10:30** Coffee break

### Parallel session 3-2: Fatigue Behavior and Mechanism

**ZOOM ID: 95754934389, CODE: zoom3**

**Session chair: Zhanguang Zheng (Guangxi University, China)**

- |                    |   |
|--------------------|---|
| <b>10:30—10:50</b> | <p><b>Keynote Lecture</b><br/> <b>Research on low cycle fatigue properties of nickel based single crystal structure with shaped gas film holes processed by femtosecond laser</b><br/> <b>Zhixun Wen</b><br/> <i>Northwestern Polytechnical University, China</i></p>       |
| <b>10:50—11:05</b> | <p><b>Microstructure-sensitive prediction of low cycle fatigue life of FGH4098 alloy using crystal plasticity.</b><br/>         Yang Zhao, Rong Jiang, Wentian Zhang, Lu Zhang, Yingdong Song<br/> <i>Nanjing University of Aeronautics and Astronautics, China</i></p>     |
| <b>11:05—11:20</b> | <p><b>Notch high cycle fatigue behavior of the Ti-5Al5Mo5V3Cr1Zr alloy with multilevel lamellar microstructure</b><br/> <b>Chaowen Huang</b><br/> <i>Guizhou University, China</i></p>  |
| <b>11:20—11:35</b> | <p><b>Study on fatigue crack growth behavior of selective laser-melted Ti6Al4V under different build directions, stress ratios, and temperatures</b><br/> <b>Liangliang Wu</b>, Zehui Jiao, Huichen Yu<br/> <i>Beijing Institute of Aeronautical Materials, China</i></p>   |
| <b>11:35—11:50</b> | <p><b>Fatigue crack propagation behavior of the grain size transition zone in a dual-property turbine disc.</b><br/> <b>Yicheng Wang</b>, Rong Jiang, Leicheng Zhang, Gaofeng Tian, Yingdong Song<br/> <i>Nanjing University of Aeronautics and Astronautics, China</i></p> |
| <b>11:50—12:05</b> | <p><b>The effect of overload on the deformation behavior of Inconel 718 superalloy under hybrid stress-strain controlled loading</b><br/> <b>Zitong Kang</b>, Xiaowei Wang, Jianming Gong<br/> <i>Nanjing Tech University, China</i></p>                                    |

### Parallel session 3-3: Creep-Fatigue Interaction

**ZOOM ID: 95754934389, CODE: zoom3**

**Session chair: Duoqi Shi (Beihang University, China)**

- |                    |  |
|--------------------|--|
| <b>13:30—13:50</b> | <p><b>Keynote Lecture</b><br/> <b>Damage assessment of high temperature materials under various creep fatigue loadings</b><br/> <b>Xiaowei Wang</b>, Tianyu Zhang, Jianming Gong</p> |
|--------------------|--|



	<i>Nanjing Tech University, China</i>
13:50—14:05	<b>Effect of thermal aging on creep-fatigue properties of 316L stainless steel</b> Shanghao Chen, Zaixiang Qin, Qinghui He, Liuyi Huang, Limin Xie, Shiyi Bao <i>Zhejiang University of Technology, China</i>
14:05—14:20	<b>Remnant tensile and creep properties of aluminized AISI 321 austenite stainless steel under prior creep-fatigue interaction</b> Huitao Chen, Wei Li, Wei Chen, Weiyang Huang, Cong Li, Jian Chen, Jianjun He, Wei Qiu, Yanjie Ren <i>Changsha University of Science &amp; Technology, China</i>
14:20—14:35	<b>Creep-fatigue reliability analysis integrated with surrogate modelling: application on industrial case studies</b> Runzi Wang, Hanghang Gu, Ken Suzuki, Hideo Miura, Xiancheng Zhang, Shantung Tu <i>Tohoku University, Japan</i>
14:35—14:50	<b>Experimental and numerical investigation on creep-fatigue behavior of blade-like specimen: failure mechanism and life estimation</b> Wenqing Hao, Duoqi Shi, Zhenlei Li, Hao Xu, Xiaoguang Yang <i>Beihang University, China</i>
14:50—15:05	<b>A new creep-fatigue damage characterization method of a 9-12%Cr welded joint based on nanoindentation characterization</b> Xuecheng Gu, Yuxuan Song, Weiya Jina, Yi Ma, Zengliang Gao <i>Zhejiang University of Technology, China</i>
15:05—15:30	Coffee break

### Parallel session 3-4: Creep Behavior and Mechanism

ZOOM ID: 95754934389, CODE: zoom3

Session chair: Xianfeng Ma (Sun Yat-sen University, China)

15:30—15:50	<b>Keynote Lecture</b> <i>Basic models for primary creep</i> Rolf Sandström <i>KTH Royal Institute of Technology, Sweden</i>
15:50—16:10	<b>Keynote Lecture</b> <b>Predicting high temperature hydrogen attack and creep deformation in Low Alloy Steels</b> Kamran Nikbin <i>Imperial College London. UK</i>
16:10—16:25	<b>Prediction of high temperature creep deformation of DZ411 alloy based on Zc parameters</b> Wen Kang, Tieshan Cao, Congqin Cheng, Jie Zhao <i>Dalian University of Technology, China</i>
16:25—16:40	<b>Creep behaviour of HP40Nb alloy with high-temperature carburisation</b>

	<p><b>treatment</b>  <b>Chengming Fuyang</b>, Jianming Gong, Luyang Geng  <i>Nanjing Tech University, China</i></p>
16:40—16:55	<p><b>Nano indentation investigation on the remnant creep behavior and fracture mechanism of a 9% Cr steel under prior conventional creep</b>  <b>Ting Yu</b>, Yuxuan Song, Weiya Jin, Yi Ma, Zengliang Gao  <i>Zhejiang University of Technology, China</i></p>
16:55—17:10	<p><b>Self healing of creep damage in Fe-based alloys by precipitation from super-saturated solutes</b>  <b>Haixing Fang</b>  <i>Univ. Grenoble Alpes, France</i></p>
17:10—17:25	<p><b>Creep behaviors and mechanisms of AlCoCrFeNi<sub>2.1</sub> eutectic high-entropy alloy at 700-900°C</b>  <b>Yafei Li</b>, Weijian Chen, Chuanyang Lu, Huaxin Li, Wenjian Zheng, Yinghe Ma, Ying Jin, Weiya Jin, Zengliang Gao, Jianguo Yang, Yanming He  <i>Zhejiang University of Technology, China</i></p>
17:25—17:40	<p><b>Effects of thermal aging on creep behaviors of 16MND5 Steel</b>  <b>Anyu Liao</b>, Jiadong Yang, Zengliang Gao, Jianfeng Mao  <i>Zhejiang University of Technology, China</i></p>
17:40—17:55	<p><b>Tensile fracture and long-term creep properties of structurally and functionally integrated carbon fiber reinforced plastic at room temperature</b>  <b>Jikang Li</b>, Zheng Liu, Yue Liu, Yongzhong Zhao, Min Wang, Hongtao Wang, Xu Chen  <i>Tianjin University, China</i>  <i>Dynamic Machinery Institute of Inner Mongolia, China</i></p>
17:55—18:10	<p><b>Self healing of creep-induced damage in a ternary Fe-based system: from model alloys to designed steels</b>  <b>Yifan Fu</b>, Sybrand van der Zwaag and N. H. van Dijk  <i>Delft University of Technology, The Netherlands</i></p>

## Parallel session 4-1: Materials Characterization

ZOOM ID: 92990362998, CODE: zoom4

Session chair: Miao Song (Shanghai Jiao Tong University, China)

08:30—08:50	<p><b>Keynote Lecture</b>  <b>Designing and engineering metal and amorphous ceramic composites for applications under extreme conditions</b>  <b>Jian Wang</b>, Bingqiang Wei  <i>University of Nebraska-Lincoln, USA</i></p>
08:50—09:05	<p><b>Multiscale investigation of mechanical properties of 2205 duplex stainless steel welded joints including material heterogeneity</b>  <b>Xuefang Xie</b>, Zhilong Dong, Wenchun Jiang</p>

	<i>China University of Petroleum (East China), China</i>
<b>09:05—09:20</b>	<b>Study on the compatibility of Mg-Ca-Zn heat storage materials with steel containers</b> Wei Qiu, <b>Yuru Wang</b> , Jian Chen, Wei Chen <i>Changsha University of Science &amp; Technology, China</i>
<b>09:20—09:35</b>	<b>Microsegregation induced precipitations and its effect on bending properties of 9% Ni steel weldments filled with nickel-based alloys</b> <b>Qiang Li</b> , Shipin Wu, Caiyan Deng, Dongpo Wang <i>Tianjin University, China</i>
<b>09:35—09:50</b>	<b>Behavior and mechanism studies of AM60 alloy modified by Ca/C</b> Wei Qiu, <b>Qifeng Li</b> , Jian Chen, Wei Chen <i>Changsha University of Science &amp; Technology, China</i>
<b>09:50—10:40</b>	<b>Coffee break</b>

## Parallel session 4-2: Materials Characterization

**ZOOM ID: 92990362998, CODE: zoom4**

Session chair: **Wei Li (Changsha University of Science and Technology, China)**

<b>10:40—10:55</b>	<b>Characterization of mechanical properties of in-service nickel-based alloy by continuous indentation</b> <b>Jianlong Zhang</b> , Shengyong Mu, Hongchang Li <i>Chang'an University, China</i>
<b>10:55—11:10</b>	<b>Effect of Ca content on the microstructure, texture and mechanical properties of Mg-3Al-0.4Mn-xCa alloys</b> Weiyong Huang, <b>Jianhua Chen</b> , Zhen Jiang, Xi Xiong, Wei Qiu, Jian Chen, Xianwei Ren, Liwei Lu <i>Changsha University of Science &amp; Technology, China</i>
<b>11:10—11:25</b>	<b>Research on properties of welded joints between G115 steel and Sanicro25 steel</b> <b>Maohong Yang</b> , Guiyi Wu, Yanrong Liu, Zheng Zhang <i>Centre of Excellence for Advanced Materials, Dongguan, China</i>
<b>11:25—11:40</b>	<b>First Principles of Strain-induced Changes in Photoelectric Properties of Metal Halide Perovskite Films</b> <b>Jiayao Ju</b> , Jianlin Chen, Wei Zhao, Zihan Wu, Yuxi Zeng, Zhuoyin Peng, Wei Li, Jian Chen <i>Changsha University of Science and Technology, China</i>

## Parallel session 4-3: Materials Characterization

**ZOOM ID: 92990362998, CODE: zoom4**

Session chair: **Yunfei Jia (East China University of Science and Technology)**

<b>13:30—13:50</b>	<b>Keynote Lecture</b> <b>Radiation induced void swelling in additively manufactured 316L</b>
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13:50—14:05	<p>stainless steel  <b>Miao Song</b>  <i>Shanghai Jiao Tong University, China</i></p> <p><b>Effect of cooling rate on the microstructure and mechanical property of a near <math>\beta</math> TB17 alloy</b>  <b>Xing Li, Ke Liu, Zhishou Zhu, Sujun Wu</b>  <i>Beihang University, China</i></p>
14:05—14:20	<p><b>Anisotropic mechanical properties of Ti-15Mo manufactured by selective laser melting</b>  Jian Chen, <b>Xiangrui Xiao</b>, Libo Zhou, Erkang Peng, Jian Tang  <i>Changsha University of Science and Technology, China</i></p>
14:20—14:35	<p><b>Failure mechanism and damage evolution of 316H steel under the random cyclic loads</b>  <b>Weitong Zhou, Guoyan Zhou, Xueyao Xiong, Zunquan Liu, Fuzhen Xuan, Shantung Tu</b>  <i>East China University of Science and Technology, China</i></p>
14:35—14:50	<p><b>Research on process parameters and 3D reconstruction technology of high voltage cable buffer layer radiographic testing</b>  <b>Yucong Zhang, Wei Qiu, Xianhui Cao, Weike Liu, Rong Huang, Yi Xie</b>  <i>Changsha University of Science &amp; Technology, China</i></p>
14:50—15:05	<p><b>Tensile mechanical properties and constitutive model of commercial pure titanium TA2 welded joint at medium-low temperature</b>  <b>Qing Zhao, Le Chang, Yixiang Zheng, Gaofeng Song, Youjun Ye, Yi Xie, Xuelong Tan</b>  <i>Jiangsu Province Special Equipment Supervision Institute, China</i></p>
15:05—15:20	<p><b>In-situ analysis of microscopic plastic and failure behaviors of Mg-3Al-2.8Y alloys during uniaxial tensile testing under three different extrusion ratios</b>  Weiyang Huang, <b>Xi Xiong</b>, Yanjie Ren, Cong Li, Libo Zhou, Jian Chen  <i>Changsha University of Science &amp; Technology, China</i></p>
15:20—15:35	<p><b>On the research of cryogenic-temperature properties of additively manufactured medium-entropy alloy with heterogeneous structure</b>  <b>Ning Yao, Tiwen Lu, Binhuan Sun, Xiancheng Zhang, Shantung Tu</b>  <i>East China University of Science and Technology, China</i></p>
15:35—15:55	<p><b>Keynote Lecture</b>  <b>Fundamental aspects of high-temperature corrosion of metallic materials in gaseous environments typical of combustion and gasification of solid fuels</b>  <b>Yan Niu</b>  <i>Changsha University of Science &amp; Technology, China</i></p>
15:55—16:20	<p><b>Coffee break</b></p>

## Parallel session 4-4: Additive Manufacturing

ZOOM ID: 92990362998, CODE: zoom4

Session chair: Shengchuan Wu (Southwest Jiaotong University, China)

16:20—16:40	<p><b>Keynote Lecture</b>  <b>Fracture and failure analysis of additively manufacture titanium lattice structures</b>  <b>Yu'e Ma</b>  <i>Northwestern Ploytechnical University, China</i></p>
16:40—17:00	<p><b>Keynote Lecture</b>  <b>Additive manufacturing of Gamma-TiAl: opportunities and challenges for a technological breakthrough</b>  <b>Bo Chen, Hui Peng</b>  <i>University of Leicester, UK</i>  <i>Beihang University, China</i></p>
17:00—17:15	<p><b>The study of microstructural tailoring and tensile fracture mechanism of titanium alloy fabricated by additive manufacturing</b>  <b>Libo Zhou, Jinshan Sun, Jian Chen, Wei Chen, Yanjie Ren, Yan Niu, Cong Li, Wei Qiu</b>  <i>Changsha University of Science and Technology, China</i></p>
17:15—17:30	<p><b>High temperature endurance of 25Cr35NiNb alloy fabricated by laser additive manufacturing</b>  <b>Zhichao Fan, Jizhan Li, Guangfei Guo</b>  <i>Hefei General Machinery Research Institute Co., LTD, China</i></p>
17:30—17:45	<p><b>Study of the compression and fatigue properties of gradient porous Ti-15Mo alloy fabricated by selective laser melting</b>  <b>Jian Chen, Erkang Peng, Libo Zhou, Xiangrui Xiao, Jian Tang</b>  <i>Changsha University of Science and Technology, China</i></p>

## Parallel session 5-1: Structure Health and Integrity Monitoring

ZOOM ID: 98967113076, CODE: zoom5

Session chair: Yanfeng Shen (Shanghai Jiao Tong University, China)

08:30—08:50	<p><b>Keynote Lecture</b>  <b>Fatigue evaluation and life prediction of composite materials using laser ultrasonic technique</b>  <b>Jinhao Qiu, Hongli Ji, Chao Zhang, Chongcong Tao</b>  <i>Nanjing University of Aeronautics and Astronautics, China</i></p>
08:50—09:05	<p><b>Sparse reconstruction of monitoring defects in high-temperature structure using waveguide array</b>  <b>Ziqi Guan, Zuoyu Liao, JiuHong Jia, Shantung Tu</b>  <i>East China University of Science and Technology, China</i></p>
09:05—09:20	<p><b>Optical fiber sensor and assembly method for measuring tensile strain of nickel-based directionally solidified superalloy in high temperature</b></p>

	<b>environment</b> Zhixun Wen, <b>Yating Liu</b> , Jundong Wang <i>Northwestern Polytechnical University, China</i>
<b>09:20—09:35</b>	<b>Advanced structural health monitoring (SHM) in cross-sea bridges: a case study of self-powered wireless SHM system</b> <b>Wentao Li</b> , Jianzhang Liu, Kequan Xia, Fengzhong Qu, Zhiwei Xu, Zhiguo He, Pengcheng Jiao <i>Zhejiang University, China</i>
<b>09:35—09:50</b>	<b>Numerical simulation of oil vapor diffusion and mass transfer in external floating roof tank under small breathing condition</b> <b>Weichao Luo</b> , Wei Xia, Qiangwei Yan, Tongze Su, Jinzhu Tan <i>Nanjing Tech University, China</i>
<b>09:50—10:20</b>	<b>Coffee break</b>

### Parallel session 5-2: Structure Health and Integrity Monitoring

ZOOM ID: 98967113076, CODE: zoom5

Session chair: Jinhao Qiu (Nanjing University of Aeronautics and Astronautics, China)

<b>10:20—10:40</b>	<b>Keynote Lecture</b> Exploring and manipulating guided wave features for enhanced performance of structural health monitoring systems <b>Yanfeng Shen</b> <i>Shanghai Jiao Tong University, China</i>
<b>10:40—10:55</b>	<b>Online FDM monitoring and feedback control with ultrasonic waveguide based on residual stresses</b> <b>Qi Zhu</b> , Duo Xu, Yuanjun Zhang, Haiyan Zhang, Qingqing Zhang <i>Shanghai University, China</i>
<b>10:55—11:10</b>	<b>Electro-mechanical Impedance Spectroscopy for Real-time Monitoring of Industrial Fluids Degradation</b> <b>Runye Lu</b> , Yanfeng Shen <i>Shanghai Jiao Tong University, China</i>
<b>11:10—11:25</b>	<b>Structural health monitoring of railway infrastructure using acoustic emission</b> <b>Shengrun Shi</b> , Guiyi Wu <i>Centre of Excellence for Advanced Materials, Dongguan, China</i>
<b>11:25—11:40</b>	<b>SH0 wave monitoring and particle filter based fatigue crack growth prediction</b> <b>Zehou Wang</b> , Jiuhong Jia, Ruikai Zhang, Shantung Tu <i>East China University of Science and Technology, China</i>

### Parallel session 5-3: Life Management and Extension

ZOOM ID: 98967113076, CODE: zoom5

Session chair: Yilei Li (Nuclear Power Institute of China, China)

13:30—13:45	<p><b>Study on RPV materials' fracture toughness based on specimen reconstitution technology</b>  <b>Ping Huang</b>, Shuang Qi, Minyu Fan, Wangjie Qian, Kexin Cai, Yanwei Zhang, Qunjia Peng, Guodong Zhang  <i>Suzhou nuclear power research institute, China</i></p>
13:45—14:00	<p><b>Combined tension and bending fatigue life prediction method of a blade-like specimen considering the effect of multiple damage modes</b>  <b>Jiangbo Fan</b>, Duoqi Shi, Zhenlei Li, Hao Xu, Xiaoguang Yang  <i>Beihang University, China</i></p>
14:00—14:15	<p><b>Fatigue life prediction of aluminum to steel dissimilar spot welds using organic mechanochromic luminescence</b>  <b>Xiaowen Wei</b>, Zhe Zhang, Jidong Kang, Xu Chen  <i>Tianjin University, China</i></p>
14:15—14:30	<p><b>Simulation study on damage location prediction and repair welding residual stress of high temperature pressure pipe under extended service</b>  <b>Bin Yang</b>, Minghao Xiu, Wei Peng, Wenchun Jiang, Zhenhao Jia  <i>China University of Petroleum (East China), China</i></p>
14:30—14:45	<p><b>Ratcheting fatigue behaviors and life prediction of Z2CN18.10 austenitic stainless steel elbow</b>  <b>Caiming Liu</b>, Oluwadamilola Ogunmola, Xu Chen  <i>Zhejiang Institute of Tianjin University, China</i></p>
14:45—15:00	<p><b>Root cause analysis and safety assessment of the fracture of the lacing lugs of the last stage blades of half-speed nuclear power steam turbine</b>  <b>Minjin Tang</b>  <i>Suzhou Nuclear Power Research Institute, China</i></p>
15:00—15:15	<p><b>Structure integrity evaluation of fillet welds of primary piping</b>  <b>Li Yu</b>, Jiacheng Luo, Peng Tang, Juan Luo, Di Yao, Ding Zhou  <i>Nuclear Power Institute of China, China</i></p>
15:15—16:00	<p><b>Coffee break</b></p>

## Parallel session 5-4: Fatigue behavior and Mechanism

ZOOM ID: 98967113076, CODE: zoom5

Session chair: Xiaogang Wang (Hunan University, China)

16:00—16:20	<p><b>Keynote Lecture</b>  <b>Low cycle fatigue behavior and deformation mechanism of high-entropy alloy with heterogeneous structure</b>  <b>Zhe Zhang</b>, Xinyu Zhai, Gang Chen, Xu Chen  <i>Tianjin University, China</i></p>
16:20—16:35	<p><b>Failure mechanism and life prediction of GH4169 in a very high cycle fatigue regime</b>  <b>Yifan Yang</b>, Jian-Feng Wen, Shan-Tung Tu  <i>East China University of Science and Technology, China</i></p>
16:35—16:50	<p><b>LCF life prediction of UFG AA 6061 based on crystal plasticity</b></p>



	<p><b>Teng Sun</b>, Tao Xu, Zanpeng Sun, Zhanguang Zheng, Changji Xie, Zeng Huang  <i>Guangxi University, China</i></p>
16:50—17:05	<p><b>Improving the static mechanical and fatigue properties of rolled ZK60 magnesium alloy by properly combining pre-torsion deformation and low-temperature aging</b>  <b>Weishuai Shi</b>, Jiaqi Hu, Hong Gao  <i>Tianjin University, China</i></p>
17:05—17:20	<p><b>Low-frequency and high-frequency fatigue stability of gradient lamellar structured nickel</b>  <b>Liwen Zhu</b>, Wenxiang Shu, Yunfei Jia, Xiancheng Zhang  <i>East China University of Science and Technology, China</i></p>
17:20—17:35	<p><b>Fatigue life prediction of T-welded aluminum alloy based on equivalent crack method</b>  <b>Chao Wang</b>, Tao Zhu, Bing Yang, Shoune Xiao, Guangwu Yang  <i>Southwest Jiaotong University, China</i></p>
17:35—17:50	<p><b>Study of MLCF life prediction models of CP-Ti under various loading conditions</b>  <b>Tian-Hao Ma</b>, Chang-Yu Zhou, Le Chang, Xiao-Hua He  <i>Nanjing Tech University, China</i></p>
17:50—18:05	<p><b>Enhancement of the fatigue strength of 6082-T6 friction stir welds with kissing bonds by high frequency mechanical impact and mechanical rolling treatments</b>  <b>Rui Zhan</b>, Dongpo Wang, Caiyan Deng, Baoming Gong, Hang Liang, Wei Guan  <i>Tianjin University, China</i></p>
18:05—18:20	<p><b>LCF Life Prediction of Laser Shot Peened FGH4098 Ni-based Superalloy Using Critical Distance Theory.</b>  <b>Jingpeng Zhang</b>, Rong Jiang, Ze Yu, Sihai Luo, Chao You, Yingdong Song.  <i>Nanjing University of Aeronautics and Astronautics, China</i></p>
18:20—18:35	<p><b>Investigation of the inhomogeneous mechanical and crack growth behaviour of low alloy steel SA508 and its welded 309/308L stainless steel cladding.</b>  <b>Shuai Wang</b>, He Xue, Zheng Wang, Shun Zhang, Kuan Zhao, Xiaoyan Gong.  <i>Xi'an University of Science and Technology, China</i></p>

## Parallel session 6-1: NDT and Evaluation

ZOOM ID: 98424131662, CODE: zoom6

Session chair: Shuncong Zhong/Bing Wang (Fuzhou University, China)

08:30—08:50	<p><b>Keynote lecture</b>  <b>Ultrasonic wave field imaging and inversion in non-destructive</b></p>
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	<p><b>evaluation and structural health monitoring</b>  <b>Jiaze He</b>  <i>The University Alabama, USA</i></p>
08:50—09:05	<p><b>A novel incremental spherical indentation test (ISIT) in detecting the uniaxial mechanical properties of ferritic-austenitic stainless steel dissimilar metal welds (DMWs)</b>  <b>Tairui Zhang</b> , Minghang Wang, Jianxun Li  <i>Southeast University, Nanjing, 211189, China</i></p>
09:05—09:20	<p><b>Non-destructive evaluation of uneven coating thickness and interior defects based on active long pulse thermography</b>  <b>Lijun Zhuo</b>, Chaoyi Li, Changhu Liu, Jianguo Zhu  <i>Jiangsu University, China</i></p>
09:20—09:35	<p><b>Multi-mode total focusing method using a phased array on small diameter pipe nozzle fillet welds</b>  <b>Yangguang Bu</b>, Jingwei Cheng, Zhichao Fan, Wei Chen, Zhe Wang, Haibin Wang  <i>Hefei General Machinery Research Institute, China</i></p>
09:35—09:50	<p><b>Application of acoustic emission detection technology for tank floor leakage</b>  <b>Shi Wang</b>, Liang Du  <i>China Special Equipment Inspection and Research Institute, China</i></p>
09:50—10:05	<p><b>Coffee break</b></p>

## Parallel session 6-2: NDT and Evaluation

ZOOM ID: 98424131662, CODE: zoom6

Session chair: JiuHong Jia (East China University of Science and Technology, China)

10:05—10:25	<p><b>Keynote Lecture</b>  <b>Excitation of odd harmonics of torsional guided waves in pipelines using magnetostrictive sensor</b>  Yao Liu, <b>Xiucheng Liu</b>, Bin Wu  <i>Beijing University of Technology, China</i></p>
10:25—10:40	<p><b>Online crack length estimation in additive-remanufactured components with acoustic emission via transferred GAT</b>  <b>Jie Liu</b>, Yubo Xu, Mengyu Cao, Jingjing He  <i>Beihang University, China</i></p>
10:40—10:55	<p><b>Recent progress of ultrafast super-resolution functional ultrasonic imaging</b>  <b>Kailiang Xu</b>, Jianping Song, Qiuming Le  <i>Fudan University, China</i></p>
10:55—11:10	<p><b>Crack profile description using specular reflections and tip diffractions of Lamb waves</b>  <b>Nan Zhang</b>, Liang Zeng, Jing Lin</p>

	<i>Xi'an Jiaotong University, China</i>
11:10—11:25	<b>Ultrasonic nonlinear evaluation of tensile plastic damage in Nickel based single crystal superalloy</b> Jiajia Wang, Zhixun Wen, Haiqing Pei <i>Northwestern Polytechnical University, China</i>
11:25—11:40	<b>Application of f-k domain mode separation and stacking imaging in steel structure inspection</b> Ziping Wang, Binqian Li, Donghui Hao, Yue Fei <i>Jiangsu University, China</i>

### Parallel session 6-3: Reliability-Based Design and Manufacturing

ZOOM ID: 98424131662, CODE: zoom6

Session chair: Ke Wang (Zhengzhou University, China)

13:30—13:50	<b>Keynote Lecture</b> Physics-based machine learning method for fatigue life prediction of AM materials Shunpeng Zhu <i>University of Electronic Science and Technology of China, China</i>
13:50—14:05	<b>Discussion and case application of ASME Code Case 2842</b> Zizhen Zhao, Dongxuan Bi, Mengli Li <i>Qilu University of Technology(Shandong Academy of Sciences), China</i>
14:05—14:20	<b>Influence of crystal orientation on deformation and damage mechanisms on thermomechanical fatigue of a nickel-base single crystal superalloy</b> Luo Cheng, Yuan Huang <i>Tsinghua University, China</i>
14:20—14:35	<b>Performance study on molding properties of resin based GFRP</b> Qi Chen, Jiuyang Yu, Zhonghao Wang, Yazhong Xia <i>Wuhan Institute of Technology, China</i>
14:35—14:50	<b>Effect of laser shock peening and aluminizing on the corrosion resistance of AISI 321 steel to molten Al-Si alloy</b> Wei Li, Changke Yu, Weiyang Huang, Song Ni, Lei Yu, Shunpeng Zhu, Jian Chen, Anqi Chen, Shengde Zhang, Ling Huang <i>Changsha University of Science &amp; Technology, China</i>
14:50—15:05	<b>Characteristics of resistance spot welded joint between galvanized DP590 dual-phase steel and A6061-T6 aluminum alloy</b> Chunliang Wang, Jie Wang, Nie Yu, Qiaobo Feng, Guoyan Zhou <i>Shanghai University of Electric Power, China</i>
15:05—15:20	<b>Fatigue reliability assessment of offshore wind turbine blade trailing edge under the influence of multiple environmental stresses</b> Yongjie Li, Zhenfeng He, Liang Tu, Zheng Liu, Jinlong Liang <i>Guangzhou University, China.</i>

15:20—15:35	<p><b>Effect of reaction temperature and time on mechanical property of 6.5 wt% silicon steel fabricated by CVD method</b></p> <p><b>Anan Sun, Jiacong Ying, Jianjun Chen</b>  <i>East China University of Science and Technology, China</i></p>
15:35—16:00	<b>Coffee break</b>

## Parallel session 6-4: Reliability-Based Design and Manufacturing

**ZOOM ID: 98424131662, CODE: zoom6**

**Session chair: Shunpeng Zhu (University of Electronic Science and Technology of China, China)**

16:00—16:20	<p><b>Keynote Lecture</b></p> <p><b>Fatigue behavior and mechanism of aluminized steel for solar thermal power exchange tube</b></p> <p><b>Wei Li</b>  <i>Changsha University of Science &amp; Technology, China</i></p>
16:20—16:35	<p><b>Fatigue evaluation method for composite materials based on guided wave mode conversion effect</b></p> <p><b>Yuxiang Huang, Chao Zhang, Chongcong Tao, Hongli Ji, Jinhao Qiu</b>  <i>Nanjing University of Aeronautics and Astronautics, China</i></p>
16:35—16:50	<p><b>Overspeed burst prediction and reliability evaluation of turbine disk</b></p> <p><b>Yuhuai Xie, Qiang Liu, Shunpeng Zhu, Haihe Sun, Yun He, Qingyuan Wang</b>  <i>University of Electronic Science and Technology of China, China</i></p>
16:50—17:05	<p><b>Cross-scale strengthening mechanisms and fatigue performance of laser melting multi-layer nickel-based superalloys upon heat treatments</b></p> <p><b>Tinglian Zhang, Huang Yuan</b>  <i>Tsinghua University, China</i></p>
17:05—17:20	<p><b>Fatigue characteristics of Selective laser melting austenitic stainless steel based on combined heat treatment and low-temperature thermochemical surface strengthening</b></p> <p><b>Yajian Feng, Han Duan, Yawei Peng, Jianming Gong</b>  <i>Nanjing Tech University, China</i></p>
17:20—17:35	<p><b>Shakedown analysis of thick cylindrical vessels with cross holes under cyclic loads</b></p> <p><b>Yangxi Chen, Sujuan Guo</b>  <i>East China University of Science and Technology, China</i></p>

## Parallel session 7-1: Residual Stress

**ZOOM ID: 97481406053, CODE: zoom7**

**Session chair: Jianguo Yang (Zhejiang University of Technology, China)**

08:30—08:50	<p><b>Keynote Lecture</b></p> <p><b>Treatment of residual stress in strain-based fracture assessment of pipeline girth welds</b></p>
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	<b>Guiyi Wu</b> <i>Centre of Excellence for Advanced Materials, Dongguan, China</i>
<b>08:50—09:05</b>	<b>Study on welding residual stress distribution of 12Cr2Mo1R butt girth weld</b> <b>Yuchen Wang</b> , Wenchun Jiang, Guoyan Zhou, Shantung Tu <i>Ritsumeikan University, Japan</i>
<b>09:05—09:20</b>	<b>Residual stress reconstruction from vibrational modal data for thin plates</b> <b>Ce Huang</b> , Tong Liu, Ke Wang <i>Zhengzhou University, China</i>
<b>09:20—09:35</b>	<b>Distribution model of full field residual stress in narrow gap grith welding of thick wall</b> <b>Baozhu Zhang</b> , Wenchun Jiang, Yun Luo <i>China University of Petroleum (East China), China</i>
<b>09:35—09:50</b>	<b>A new strip clad welding method for welding deformation control on tube sheets with large size</b> <b>Yao Zhang</b> , Yun Luo, Wenchun Jiang <i>China University of Petroleum (East China), China</i>
<b>09:50—10:20</b>	<b>Coffee break</b>

## Parallel session 7-2: Residual Stress

**ZOOM ID: 97481406053, CODE: zoom7**

**Session chair: Wenchun Jiang(China University of Petroleum (East China), China)**

<b>10:20—10:40</b>	<b>Keynote Lecture</b> <b>An International benchmark on residual stress assessment for welding repair in nuclear power plant</b> <b>Qingrong Xiong</b> , Vincent Robin, Mike C Smith <i>Shandong University, China</i> <i>EDF R&amp;D, France</i> <i>University of Manchester, UK</i>
<b>10:40—10:55</b>	<b>Experiment-based study of cavitation jet treatment in air to enhance fatigue life of SAF2205 weld joint</b> <b>Jingyu Zang</b> , Yun Luo, Hongxiang Zheng, Wenchun Jiang <i>China University of Petroleum (East China), China</i>
<b>10:55—11:10</b>	<b>Residual stress evaluation of multilayer viscoelastic composites using ultrasonic acoustoelastic effects</b> <b>Houfu Jiang</b> , Yanfeng Shen <i>Shanghai Jiao Tong University, Shanghai, 200240, China</i>
<b>11:10—11:25</b>	<b>Study on solid phase transformation and residual stress of nuclear power SA508-3 steel welding joint</b> <b>Yu Wan</b> , Yangguang Deng, Wenchun Jiang, Xinyue Qi <i>China University of Petroleum (East China), China</i>
<b>11:25—11:40</b>	<b>High cycle fatigue behavior prediction of Ti-6Al-4V alloy considering</b>

	<b>residual stress</b> <b>Shuai Chang</b> , Jianping Tan, Shantung Tu <i>East China University of Science and Technology, China</i>
<b>11:40—11:55</b>	<b>Welding residual stress measurement by indentation energy difference method</b> <b>Wei Peng</b> , Wenchun Jiang, Bin Yang, Yiting Zhang, Guanghua Sun, Xiaoming Shao, Shantung Tu <i>China University of Petroleum (East China), China</i>

### Parallel session 7-3: Structure Health and Integrity Monitoring

ZOOM ID: 97481406053, CODE: zoom7

Session chair: Zhe Zhang (Tianjin, University)

<b>13:30—13:45</b>	<b>Online state monitoring and life prediction using hyper reduction approach with viscoplastic constitutive model</b> <b>Genghui Jiang</b> , Zhenwei Cai, Weizhe Wang <i>Shanghai Jiao Tong University, China</i>
<b>13:45—14:00</b>	<b>An approach to simulate crack growth path and mechanical state at SCC crack tip in dissimilar metal welded joint</b> <b>Zheng Wang</b> , He Xue, Shuai Wang, Yubiao Zhang, Xiaoyan Gong <i>Xi'an University of Science and Technology, China</i>
<b>14:00—14:15</b>	<b>Research on guided wave propagation characteristics of quartz ceramic thermal protection structure for structural health monitoring</b> <b>Hui Zheng</b> , Yuanqiang Ren, Lei Qiu, Shenfang Yuan, Xiaofei Yang <i>Nanjing University of Aeronautics and Astronautics, China</i>
<b>14:15—14:30</b>	<b>Cable force measurement using pulse magnetoelastic method</b> <b>Shuangsheng Yan</b> , Yujue Wang, Xiucheng Liu, Bin Wu, Cunfu He <i>Beijing University of Technology, Beijing</i>
<b>14:30—14:45</b>	<b>Pre-fatigue enhancing the long-term stability of direct-ink-writing printed sensor accompanying improved sensitivity</b> Zhiyang Guo, <b>Peishi Yu</b> , Junhua Zhao <i>Jiangnan University, China</i>
<b>14:45—15:00</b>	<b>A Multi-Level Damage Classification Technique of Aircraft Plate Structures Using Lamb Wave-Based Deep Transfer Learning Network</b> <b>Weihan Shao</b> , Hu Sun <i>Xiamen University, China</i>
<b>15:00—16:00</b>	<b>Coffee break</b>

### Parallel session 7-4: Artificial Intelligence and Big Data

ZOOM ID: 97481406053, CODE: zoom7

Session chair: Yunhui Mei (Tiangong University, China)

<b>16:00—16:20</b>	<b>Keynote Lecture</b> <b>Artificial neural network and direct method-based probabilistic low</b>
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	<p><b>cycle fatigue and creep-fatigue analyses for pressurized components</b>  Xiaoxiao Wang, Zhiyuan Ma, Haofeng Chen  <i>University of Strathclyde, UK</i></p>
16:20—16:35	<p><b>Creep lifetime prediction of 9% Cr martensitic heat-resistant steel based on ensemble learning method</b>  Yumeng Tan, Xiaowei Wang, Jianming Gong  <i>Nanjing Tech University, China</i></p>
16:35—16:50	<p><b>Physics based neural networks for strain behavior prediction in heterogeneous materials</b>  Luyuan Ning, Zhenwei Cai, Yingzheng Liu, Weizhe Wang  <i>Shanghai Jiao Tong University, China</i></p>
16:50—17:05	<p><b>Prediction model of marine corrosion rate based on machine learning after optimizing features</b>  Minghui Pei, Yuhui Huang, Fuzhen Xuan  <i>East China University of Science and Technology, China</i></p>
17:05—17:20	<p><b>A multi-scale convolutional neural network based automatic displacement field recognition approach</b>  Xiangyun Long, Wei Xiong, Chao Jiang  <i>Hunan University, China</i></p>
17:20—17:35	<p><b>Research on motion control of tracked pipeline robot</b>  Wenfeng Xia, Jiuyang Yu, Yaonan Dai, Dean Zhang, Tianhao HU, Guanghao Fang  <i>Wuhan Institute of Technology, China</i></p>
17:35—17:50	<p><b>Machine learning-based prediction and inverse design of 2D metamaterial structures with tunable deformation-dependent Poisson's ratio</b>  Jie Tian, Keke Tang, Xianyan Chen, Xianqiao Wang  <i>Tongji University, China</i>  <i>University of Georgia, USA</i></p>

## Parallel session 8-1: Fluid-Structure Interaction and Structural Integrity of Biometric Materials

ZOOM ID: 98613044518, CODE: zoom8

Session chair: Guoyan Zhou (East China University of Science and Technology, China)

08:30—08:45	<p><b>Numerical analysis of vibration characteristics of heat transfer tubes in steam generator based on bidirectional fluid-solid coupling</b>  Wenjing Lin, Peng Ren, Sijiu Qi, Guorui Zhu, Wei Tan  <i>Tianjin university, China</i></p>
08:45—09:00	<p><b>Effect of inclination angles on creep properties of film cooling holes in blades under real flow field</b>  Dongxu Zhang, Menghui Lv, Zhuang Luo, Xiaowen Li, Jiapo Wang, Junhong Jia  <i>Shaanxi University of Science &amp; Technology, China</i></p>

09:00—09:15	<b>Fluid-structure coupling in shell side flow field of PRHR HX based on sub-cooled boiling</b> Ruosi Xu, Wei Tan, Bowen Tang, Guori Zhu <i>Tianjin university, China</i>
09:15—09:30	<b>A multi-objective optimization model for designing load-bearing bioinspired materials</b> Bo Dong, Wenxiang Shu, Yunfei Jia <i>East China University of Science and Technology, China</i>
09:30—09:45	<b>Energy harvesting of flow induced vibration enhanced by non-smooth surfaces</b> Bowen Tang, Jiawei Wang, Zihan Sun, Xiantao Fan, Wei Tan <i>Tianjin University, China</i>
09:45—10:00	<b>Research on crack propagation of cold rolled strip based on GTN model by shell element</b> Chaojie Wu, JianJun Chen, LingLei Meng, YingLu Han, Qi Zheng <i>East China University of Science and Technology, China</i>
10:00—10:20	Coffee break

## Parallel session 8-2: Structure Health and Integrity Monitoring

ZOOM ID: 98613044518, CODE: zoom8

Session chair: Zhixun Wen (Northwestern Polytechnical University, China)

10:20—10:35	<b>Structural health and integrity monitoring system for Hong Kong-Zhuhai-Macao bridge</b> Wentao Wang, Bin Han, Jianing Wang, Jingtang Xu, Guangyou Mu, Yang Li <i>University of Michigan, USA</i>
10:35—10:50	<b>Switch rail defect monitoring experiment based on magnetostrictive guided wave sensor</b> Xiafei Li, Xiucheng Liu, Bin Wu, Yao Liu, Huan Wang <i>Beijing University of Technology, China</i>
10:50—11:05	<b>Guided wave method for grain size estimation in GH742 superalloy</b> Chenjun Gao, Jingjing He, Xuefei Guan <i>Beihang University, China</i>
11:05—11:20	<b>In-Situ measurement of Zero-Group-Velocity lamb waves using PVDF-TrFE transducers and integrity monitoring of multilayer bonded structures</b> Zechen Luo, Qijian Liu, Yehai Li, Kai Wang, Menglong Liu, Xinlin Qing <i>Xiamen University, China</i>
11:20—11:35	<b>Crack characterization of high temperature structure using wave guide array and sparse inversion model</b> Zuoyu Liao, Ziqi Guan, Ji Yuan, Jiuhong Jia, Shantung Tu <i>East China University of Science and Technology, China</i>
11:35—11:50	<b>Finite element simulation of SH0 modal guided wave detection for</b>



spherical crown defects

Huan Wang, Xiucheng Liu, Bin Wu, Yao Liu, Xiafei Li

Beijing University of Technology, China

### Parallel session 8-3: The Safety of Power Battery

ZOOM ID: 98613044518 , CODE: zoom8

Session chair: Chuanchang Li (Changsha University of Science and Technology, China)

13:30—13:50	<b>Keynote Lecture</b> Key issues on future power battery's reliability and safety Weiling Luan <i>East China University of Science and Technology, China</i>
13:50—14:05	<b>Experimental testing and numerical simulation of lithium-ion battery modules with an array of prismatic cells</b> Yunlong Qu, Yulong Ge, Yong Xia <i>Tsinghua University, China</i>
14:05—14:20	<b>Evolution of thermal runaway behavior of lithium-ion batteries caused by anode lithium plating</b> Senming Wu, Weiling Luan, Yulong Zhang <i>East China University of Science and Technology, China</i>
14:20—14:35	<b>The electrochemical performance of PEM fuel cells under different assembly forces</b> Tongze Su, Jinzhu Tan, Jiaran Liu <i>Nanjing Tech University, Nanjing, 211816, China</i>
14:35—14:50	<b>Research on high temperature creep-fatigue damage behavior of solid oxide fuel cell</b> Hongxiang Zheng, Wenchun Jiang, Yun Luo, Ming Song, Shaohua Li, Wanying Zeng <i>China University of Petroleum (East China), China</i>
14:50—15:05	<b>Experimental study on a novel fuel supply mode for improved water management of proton exchange membrane fuel cells with a dead-ended anode</b> Caiting Zhou, Jinchi Han, Jing Zhao <i>Changsha University of Science and Technology, China</i>
15:05—15:20	<b>Research of aging materials in lithium-ion batteries based on in-situ optical microscopy</b> Yiming Yao, Weiling Luan, Min Sun <i>East China University of Science and Technology, China</i>
15:20—16:00	Coffee break

### Parallel session 8-4: Students Paper Communication

ZOOM ID: 98613044518 , CODE: zoom8

Session chair: Bingjun Gao (Hebei University of Technology, China)

16:00—16:15	Nondestructive inspection of the change of micro texture in Ni-base
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16:15—16:30	<p><b>superalloys by spectrum analysis of reflected visible light</b>  <b>Hayato Matsuda</b>, Runzi Wang, Ken Suzuki, and Hideo Miura          Tohoku University, Japan</p> <p><b>Probabilistic modelling of the size effect in fatigue using the calibrated weakest-link theory</b>  <b>Jinchao He</b>, Shunpeng Zhu, Yuanhao Shan, Qingyuan Wang          University of Electronic Science and Technology of China, China</p>
16:30—16:45	<p><b>On the evaluation of uniaxial tensile properties of Ti-6Al-4V by spherical indentation tests with different calculation models</b>  <b>Jianxun Li</b>, Minghang Wang, Ying Li, Haofeng Chen, Tairui Zhang, Weiqiang Wang          Shandong University, China</p>
16:45—17:00	<p><b>Probability statistical analysis for fracture toughness of Chinese SA508-III steel</b>  <b>Qin Zhou</b>, Qinghui He, Xiaotong Ma, Xuehua He, Shiyi Bao          Zhejiang University of Technology, China</p>
17:00—17:15	<p><b>Tube-to-tube impact wear behavior and damage detection of 690 alloy heat transfer tubes</b>  <b>ZuMing Zhao</b>, Wei Chen, ChengMing Lou, WenFei Chen, FengPing Zhong, Lijia Luo, ShiYi Bao          Zhejiang University of Technique, China</p>
17:15—17:30	<p><b>Effect of warpage defects on edge crack propagation of cold rolled sheet</b>  <b>Jiacong Ying</b>, Anan Sun, Wenchao Wu, Jianjun Chen          East China University of Science and Technology, China</p>
17:30—17:45	<p><b>Tightening condition monitoring of bolted joints using a nonlinear ultrasound method</b>  <b>Jingjing Fan</b>, Wenfei Chen, Ling Yan, Yincheng Wang, Zuming Zhao, Shiyi Bao, Lijia Luo, Zhenyu Ding          Zhejiang University of Technology, China</p>

## Parallel session 9-1: Student Paper Competition

ZOOM ID: 91298565749 , CODE: zoom9

Session chair: Jianming Gong (Nanjing Tech University, China)

08:30—08:50	<p><b>On the plastic deformation and fatigue properties of Al<sub>0.3</sub>CoCrFeNi high entropy alloy: In-situ SEM study and crystal plasticity analysis</b>  <b>Hailin Zhai</b>, Yanying Hu, Zhaolong Li, Xianfeng Ma, Hui-Ji Shi          Sun Yat-sen University, Guangdong</p>
08:50—09:10	<p><b>Evaluation of low cycle fatigue and creep-fatigue damage based on exhaustion of static toughness</b>  <b>Li Sun</b>, Xiancheng Zhang, Runzi Wang, Xiaowei Wang, Shan-Tung Tu, Ken Suzuki, Hideo Miura          East China University of Science and Technology, China</p>
09:10—09:30	<p><b>Acceleration of Intergranular Cracking in Ni-base Alloy GH4169 by the</b></p>

	<p><b>Growth of-Phase Precipitates under Creep Loading at Elevated Temperature</b>  <b>Ayumi Nakayama</b>, Runzi Wang, Ken Suzuki, Hideo Miura  <i>Tohoku University, Japan</i></p>
09:30—09:50	<p><b>Creep-ratcheting effect and lifetime prediction of advanced 9-12% Cr ferritic steel at 600°C</b>  <b>Peishan Ding</b>, Xiaotao Zheng  <i>Wuhan Institute of Technology, Wuhan, China</i></p>
09:50—10:10	<p><b>Process-performance-prediction integration oriented to fatigue life improvements: implementation in cold expansion process based on a dual-scale modelling approach</b>  <b>Kaishang Li</b> , Runzi Wang , Xiancheng Zhang, Shulei Yao , Lvyi Cheng , Xuelin Lei , Shan-Tung Tu  <i>East China University of Science and Technology, Shanghai, China</i></p>
10:10—10:30	<p><b>Strain rate dependence of the creep-fatigue damage in Ni-base alloys at elevated temperature</b>  <b>Koki Nakayama</b>, Runzi Wang, Ken Suzuki, Hideo Miura  <i>Tohoku University, , Japan</i></p>
10:30—10:50	<p><b>Coffee break</b></p>

## Parallel session 9-2: Student Paper Competition

ZOOM ID: 91298565749 , CODE: zoom9

Session chair: Jianming Gong (Nanjing Tech University, China)

10:50—11:10	<p><b>High-temperature oxidation behaviour of SLM 316L and rolled AISI 316L exposed to 1 atm oxygen atmospheres at 800-1000°C</b>  <b>Yutong Li</b>, Weiyong Huang, Yanjie Ren, Cong Li, Jian Chen, Libo Zhou, Jie Huang, Zhicheng Xie, Yan Niu  <i>Changsha University of Science &amp; Technology, China</i></p>
11:10—11:30	<p><b>Experimental characterization and yield strength model for process-structure-property of selective laser melted 316L</b>  <b>Yefeng Chen</b>, Xiaowei Wang, Dong Lia, Dewen Zhou, Yong Jiang, Xinyu Yang, Chenglu Liu, Sean B. Leen, Jianming Gong  <i>Nanjing Tech University, China</i></p>
11:30—11:50	<p><b>In-situ EBSD analysis of microstructural evolution and damage behavior of Mg-Al-Ca-Mn alloys with different extrusion ratios</b>  <b>Jiang Zhen</b>, Huang Weiyong, Chen Jian, Li Cong, Qiu Wei, Ren Yanjie , Zhou Libo, Wu Yuanzhi  <i>Changsha University of Science &amp; Technology, China</i></p>

## Parallel session 9-3: Student Paper Competition

ZOOM ID: 91298565749 , CODE: zoom9

Session chair: Jianming Gong (Nanjing Tech University, China)

13:30—13:50	<p><b>Preparation, electro-heat conversion and electrode corrosion investigation of the microcrystalline graphite-based composite phase</b></p>
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13:50—14:10	<p><b>change material</b>  <b>Baoshan Xie</b>, Chuanchang Li, Jian Chen  <i>Heat Transfer and Energy Laboratory at Nantes, CNRS, France.</i></p> <p><b>Shear stiffening gel under low-speed impact: Solid-mechanical characterization, protective analysis and structural design</b>  <b>Pengfei Ying</b>, Wenxuan Shen, Yulong Ge, Yong Xia  <i>Tsinghua University, China</i></p>
14:10—14:30	<p><b>Extended constant life diagrams for low cycle fatigue and creep-fatigue assessments of high-temperature structures</b>  <b>Zhiyuan Ma</b>, Haofeng Chen  <i>University of Strathclyde, UK</i></p>
14:30—14:50	<b>Coffee break</b>

### Parallel session 9-4: Student Paper Communication

ZOOM ID: 91298565749 , CODE: zoom9

Session chair: Yanjie Ren (Changsha University of Science and Technology)

14:50—15:05	<p><b>Molecular dynamics analysis on the degradation of the strength of grain boundaries under creep load at elevated temperature</b>  <b>Shogo Tezuka</b>, Ken Suzuki, Hideo Miura  <i>Tohoku University, Japan</i></p>
15:05—15:20	<p><b>An approach to simulate crack growth Path and mechanical state at SCC crack tip in dissimilar metal welded joint</b>  <b>Zheng Wang</b>, He Xue, Shuai Wang, Yubiao Zhang, Xiaoyan Gong  <i>Xi'an University of Science and Technology, China</i></p>
15:20—15:35	<p><b>T-stress solution for plate specimen with I-II mixed mode semi-elliptical surface crack under compressive load</b>  <b>Qi Pei</b>, Lizhu Jin, Ning Gao, Xiaohua He, Changyu Zhou  <i>Nanjing Tech University, China</i></p>
15:35—15:50	<p><b>Analysis of mixed-mode compact-tension-shear (CTS) specimens with deflected cracks</b>  <b>Pengfei Jin</b>, Zheng Liu, Xin Wang, Xu Chen  <i>Tianjin University, China</i></p>
15:50—16:05	<p><b>Ratcheting and low cycle fatigue of Nickel-based alloy GH3536 formed by selective laser melting at 800°C</b>  <b>Lingfeng Pan</b>, Peishan Ding, Kun Yan, Linwei Ma, Xiaotao Zheng  <i>Wuhan Institute of Technology, China</i></p>
16:05—16:20	<p><b>Fatigue fracture failure mechanism and research on 304 stainless steel main shaft of multistage centrifugal pump</b>  <b>Jiadong Yang</b>, Anyu Liao, Jianfeng Mao  <i>Zhejiang University of Technology, China</i></p>
16:20—16:35	<b>Effect of Cu content on creep behavior of Ni-Cu single crystal alloy</b>

	<b>basing on nano-indentation simulation</b> <b>Yongqing Wang</b> , Keli Liu, Jiangshuai Chen, Tong Liu, Ke Wang <i>Zhengzhou University, China</i>
<b>16:35—16:50</b>	<b>Fatigue life prediction of aluminum alloy T-welded joints root failure based on improved equivalent crack method.</b> <b>Chao Wang</b> , Tao Zhu, Xiaochen Tian, Bing Yang, Shoune Xiao, Guangwu Yang <i>Southwest Jiaotong University, China</i>

### Parallel session 9-5: Best Poster Competition

**ZOOM ID: 931 07507885, CODE: zoom10**

**Session chair: Huiji Shi(Tsinghua University )**

<b>16:00—18:00</b>	<b>Poster Q&amp;A session</b>
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## Day 4: Detailed Program

### Series session 5

//ZOOM ID: 84986422523, CODE: 123456

Session chair: Jian Chen(Changsha University of Science and Technology)

08:30—09:05	<p>Probing reversible noncovalent molecular interactions toward developing multifunctional soft materials and surfaces</p> <p><b>Hongbo Zeng</b> <i>University of Alberta, Canada</i></p>
09:05—09:40	<p>Design of ultra high performance concrete for resilient infrastructures</p> <p><b>Caijun Shi</b> <i>Hunan University, China</i></p>
09:40—10:15	<p>Multi-source uncertainty quantification, propagation and optimization design for mechanical structures</p> <p><b>Xu Han</b> <i>Hebei University of Technology, China</i></p>
10:15—10:40	Coffee break

### Closing Ceremony

//ZOOM ID: 84986422523, CODE: 123456

10:40	<p>Best paper/poster awarding</p> <p><b>Jian-Feng Wen</b> <i>East China University of Science and Technology, China</i></p>
11:00	<p>Conference summary: TBD</p> <p><b>Shan-Tung Tu</b> <i>East China University of Science and Technology, China</i></p>
11:40	<p>Overview of FESI and plans for ESIA17/ISSI2023</p> <p><b>John Sharples</b> <i>Forum for Engineering Structural Integrity, UK</i></p>

# A list of posters

## Poster Q&A session

- 1) (Beihang University) Ke Liu, Sujun Wu, Huichen Yu. Effects of Microstructures on Corrosion and Mechanical Behavior of AlTiVCrCu<sub>0.4</sub> Dual-phase High-Entropy Alloys
- 2) (Beihang University) Ben Xu, Mei Yuan, Shaopeng Dong, Juanru Zhao, Yufeng Qu. Research on damage location technology of spherical composite tank shell based on improved RAPID algorithm.
- 3) (Central South University) Huang Jia, Zhenzhuo He, Jianan Song, Jinlong Liu, Yantao Sun, Zhizhong Fu, Yongzhao LV, Guolei Miao. Creep Strengthening Behavior and Mechanism of Ni-Based Single Crystal Alloy under Cyclic Loading / Unloading.
- 4) (Changsha University of Science and Technology) Jinchi Han, Caiting Zhou, Jing Zhao. Research on an efficient thermal management strategy based on ultra-thin vapor chamber.
- 5) (Changsha University of Science and Technology) Huanyu Tian, Jianjun He. Stress analysis and fatigue fracture mechanism of wind turbine blade root bolts based on Abaqus and nCode.
- 6) (Changsha University of Science and Technology) Yuming Liu, Wei Chen, Jian Chen, Cong Li, Libo Zhou, Qifeng Li. The mechanical behavior and microstructural evolution of a near  $\beta$ -Ti alloy under extreme service conditions.
- 7) (Changzhou University) Yi Tu, Jian Peng, Jiacheng Gu, Xiangxuan Geng. Study on micro-region mechanical property of nickel-based welding joint based on small punch test, DIC and microhardness.
- 8) (Changzhou University) Xinting Miao, Haishen Hong, Xinyi Hong, Jian Peng. Mechanical behavior ahead of crack tip for I-III mixed mode fatigue crack.
- 9) (China University of Petroleum (East China)) Lin Hai, Yang Bin, Tangzheng Lu, Shiyong Jun. Stress Analysis and Safety Assessment of Long-Term Service Pressure Pipeline with Defects.
- 10) (China University of Petroleum (East China)) Gu Wenbin, Jiang Wenchun, Luo Yun, Yu Haowen. Residual stress release mechanism of overall and local heat treatment.
- 11) (East China University of Science and Technology) Zhi Luo, Yong Li, Shaoping Zhou, Qinfei Li, Jinliang Li. Baseline-free Lamb wave tomography for hidden corrosions based on velocity variation rules of multi-modes.
- 12) (East China University of Science and Technology) Kaiyuan Xu, Ning Wang, Zihao Huang, Yue Li, Jianping Tan, Shan-Tung Tu. Creep rupture life prediction of welded joints of domestic 2.25Cr1Mo0.25V steel based on creep crack propagation method.
- 13) (East China University of Science and Technology) Ji Wang, Runzi Wang, Kaishang Li, Rongshen Lu, Xianchang Zhang, Shang-Tung Tu. An energy-based fatigue and creep-fatigue crack propagation model at elevated temperature
- 14) (East China University of Science and Technology) Ying Chen, Weiling Luan, Haofeng Chen, Shan-Tung Tu. Failure Behavior of NCM cathode in lithium-ion batteries based on stress field.
- 15) (Jiangsu Province Special Equipment Supervision Institute, Nanjing TECH University) Zhao Qing, Chang Le, Zhou Chang-yu, Wang Yi-ning, Ma Xin, Pu Jiang, Wang Zhi-cheng Effect of pre-strain on tensile

mechanical properties of commercially Pure titanium TA2 welded joints.

- 16) (Jiangsu Province Special Equipment Supervision Institute, Nanjing TECH University) Zhao Qing, Chang Le, Zheng Yi-xiang, Song Gao-feng, Ye You-jun, Xie Yi, Tan Xue-long. Constitutive model of industrial pure titanium welded joint in medium-low temperature was established by studying the tensile behavior
- 17) (Jiangsu Province Special Equipment Safety Supervision Inspection Institute) Xin Ma, Yining Wang, Yi Xie ,Youjun Ye. Identification of typical damage modes of large coke drum in delayed coking unit.
- 18) (Jiangsu University of Technology) Qile Bao, Qiao Dai, Jueheng He. Study on Notch Fatigue Behavior of Commercial Pure Titanium TA2 Based on DIC.
- 19) (LongYan University) Ting Ye, Haozhi Guo, Jian Li. Study of High Temperature Smoke and Dust Diffusion in Blast Furnace Cast House Based on CFD Technology.
- 20) (Nanjing TECH University) Yanqiang Wei, Yang Li, Weichao Luo, Tongze Su, Jinzhu Tan. Optimal design of structural size for symmetrical serpentine flow field.
- 21) (Nanjing TECH University) Peiheng Qiao, Yujie Xu, Yong Jiang, Pengjie Tang, Bin Liang, Yilan Lu, Jianming Gong. Mechanical properties of  $\sigma$ -phase and its effect on the mechanical properties of austenitic stainless steel.
- 22) (Nanjing TECH University) Wei Zhang, Ning Gao, Fei Liang, Guodong Zhang, Changyu Zhou. On the multiaxial low cycle fatigue behaviour and life prediction method of P92 steel at high temperature.
- 23) (Nanjing University of Aeronautics and Astronautics) Chen Ling, Xu Jia, Ziwen Zhang, Rong Jiang, Yingdong Song. Effect of impact damage on high cycle fatigue of Ni-based superalloy K444 under hot corrosion.
- 24) (Nanjing University of Aeronautics and Astronautics) Dawei Wang, Yanhong Hou, Rong Jiang, Yingdong Song, Xu Jia. Study on foreign object impact properties of fan blades repaired by electron beam welding.
- 25) (Nanjing University of Aeronautics and Astronautics) Ziwen Zhang, Xu Jia, Chen Ling, Rong Jiang, Yingdong Song. Effect of foreign object damage on high cycle fatigue property of Ni-based superalloy GH4169.
- 26) (Northwestern Polytechnical University) Fei Li, Zhixun Wen, Zhufeng Yue, Zhiyan Wu. Surface Integrity Quantification and Fatigue Life Prediction of Nickel based Single Crystal with Film Cooling Holes Based on EIFS Concept.
- 27) (Shanghai Jiao Tong University) Jiixin Huang, Chen Sun, Jubing Chen. Experimental recognition of plastic domain in contact problem based on full field metrology and neural network.
- 28) (South China University of Technology) Haiqing Pei, Fei Li, Xiaohu Yao, Zhixun Wen. Effect of film cooling holes on fatigue limit of Ni-based single crystal superalloy.
- 29) (Tianjin University) Jiaqi Hu, Zheng Liu, Zuoliang Ning, Hong Gao. Effects of orientation on the fatigue crack growth behaviors of the ZK60 magnesium alloy in air and PBS.
- 30) (Tianjin University) Siyuan Li, Dongpo Wang, Baoming Gong, Caiyan Deng. Research on OSD Arc Notch Fatigue Life Predictions by Contour Integral Method.
- 31) (Tianjin University) Bingbing Li, Yiming Zheng, Xu Chen. A comparison on Isothermal and

thermomechanical fatigue behavior of 316LN stainless steel.

- 32) (Tongji University) Xiao Cai, Kunrong Chen, Keke Tang. Coordinated effect of microstructure and defect on fatigue accumulation in dual-phase Ti-6Al-4V: linear characterization.
- 33) (Yanshan University) Jiapo Wang, Jianwei Liang, Yan Peng. Rhenium effect on nickel-based single crystal plasticity mechanism in terms of planar faults and dislocation: A comprehensive atomistic view.
- 34) (Zhejiang University of Technology) Yuting Zhang, Yuebing Li, Zhibo He. An investigation of warm prestress effect on tensile strength using the crystal plasticity finite element method.
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