

# 2021 International Symposium on Structural Integrity

## Third Announcement



### 1. Aims and Scope of the Symposium

The 2021 International Symposium on Structural Integrity (ISSI2021) will be held at **Hangzhou, China**, by Zhejiang University of Technology, during **October 8-11, 2021**. Due to COVID-19, ISSI2021 will be held on line and on site simultaneously. 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).

Carbon reduction has been closely bound up with the economy and social development. An increasing number of countries have issued their targets and roadmaps for carbon neutrality, which requires more efficient, energy-saving and reliable technology and equipment. The integrity of structures in the relevant industries, as a guarantee, plays an important role in the realization of carbon neutrality. All this underpins the theme of ISSI2021, **“Structural Integrity in the Context of Carbon Neutrality”**.

A higher demand for structural integrity is brought to meet the requirements for carbon neutrality, either for ageing management or for design of advanced energy systems. To support the realization of carbon neutrality, it is necessary to improve structural integrity theory and technology in terms of failure evaluation, life prediction, repair and remanufacturing, safety inspection and health monitoring.

The aim of this symposium is hence to bring together people from both academic and industrial communities to exchange ideas and network friendship by discussing emerging structural integrity issues related to carbon neutrality, where papers toward are mostly welcome.

### 2. Organizers

#### **China Structural Integrity Consortium**

including following members:

East China University of Science and Technology

Hefei General Machinery Research Institute

China Special Equipment Inspection and Research Institute

Zhejiang University

Beihang University  
Nanjing Tech University  
Zhejiang University of Technology  
Zhengzhou University  
Southwest Jiaotong University  
Shandong University  
Changsha University of Science and Technology  
Tianjin University  
Jiangsu Province Special Equipment Supervision Institute  
Suzhou Nuclear Power Research Institute  
Centre of Excellence for Advanced Materials, Dongguan

### **3. Local organizers**

Zhejiang University of Technology  
Hangzhou Special Equipment Inspection Institute  
MOE Engineering Research Center of Process Equipment and Remanufacturing  
Innovation Research Institute of Zhejiang University of Technology, Shengzhou

### **4. Invited speakers**

- 1) Fracture strength behaviors of ultra-high-temperature materials  
Prof. Daining Fang, Beijing Institute of Technology, China
- 2) Mechanisms of fracture and damage-tolerance in new metallic alloys  
Prof. Robert O. Ritchie, University of California-Berkeley, USA
- 3) Fatigue fracture of materials and structures  
Prof. Wanlin Guo, Nanjing University of Aeronautics and Astronautics, China
- 4) Challenges and technology enablers for design and manufacture of multi-materials lightweight structures for achieving carbon neutrality  
Prof. Pingsha Dong, University of Michigan, USA
- 5) Strength, plasticity and the ductility loss of FCC HEAs  
Prof. Jian Wang, University of Nebraska-Lincoln, USA
- 6) Structural integrity monitoring and enhancement using additively manufactured sensors  
Prof. Zhongqing Su, Hong Kong Polytechnic University, China
- 7) Deeper inside understanding of lithium-ion battery safety  
Prof. Xiangming He, Tsinghua University, China
- 8) State of the art and knowledge gaps in storage of high pressure gaseous hydrogen  
Prof. Jinyang Zheng, Zhejiang University, China
- 9) Acoustic emission testing—a practical technique for evaluating the structural integrity of pressure vessels  
Prof. Gongtian Shen, CSEI, China
- 10) Processing parameter optimization and fatigue cracking mechanism of actively manufactured Ti-6Al-4V

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- Prof. Youshi Hong, Institute of Mechanics, Chinese Academy of Sciences, China
- 11) Offshore wind energy for a green industrial revolution: Structural integrity challenges and opportunities  
Dr. Ali Mehmanparast, Cranfield University, UK
  - 12) Analysis and design of ductile quasi-disordered FCC lattice materials  
Prof. Wei Sun, University of Nottingham, UK
  - 13) Probabilistic structural integrity assessment of nuclear pressure equipment  
Prof. Zengliang Gao, Zhejiang University of Technology, China
  - 14) Fundamental researches needed to underpin structural integrity  
Prof. Mingliang Zhu, East China University of Science and Technology, China
  - 15) Contribution of marine clean energy to carbon neutral: R&D and large-scale application of LHD marine tidal power station  
Mr. Dong Lin, Hangzhou Lindong New Energy Technology Co., Ltd., China
  - 16) Accumulated emissions from power plant and its operation lifetime  
Dr. Jia Li, Shanghai Jiao Tong University, China
  - 17) Design and fabrication of mechanical metamaterials for impact mitigation  
Prof. Lin Ye, Sydney University, Australia
  - 18) Fatigue of magnesium alloys  
Prof. Yanyao Jiang, University of Nevada-Reno, USA
  - 19) Effect of grain size on tensile and creep behaviour of 304HCu SS and modelling of creep curves  
Dr. Sardari Lal Mannan, Indira Gandhi Centre for Atomic Research, India
  - 20) A two-way fluid-structure interaction method for the vibration research of heat exchanger tubes  
Prof. Wei Tan, Tianjin University, China
  - 21) Safety Design and Modification of Rechargeable Battery  
Dr. Zhaoyin Wen, Shanghai Institute of Ceramics, CAS, China
  - 22) The status of safety and reliability of fuel cell system for vehicle application  
Dr. Zhongjun Hou, Shanghai Hydrogen Propulsion Technology Co., Ltd., China
  - 23) Typical failure modes and strategies of fuel cell powertrain system during freeze start  
Dr. Shuang Zhai, REFIRE, China
  - 24) Residual stress characterisation techniques and applications  
Dr. Shuyan Zhang, Centre of Excellence for Advanced Materials, China
  - 25) Application of strain-based fracture modeling to hydrogen embrittlement problems  
Prof. Yun-Jae Kim, Korea University, Korea
  - 26) The acceleration mechanism of the degradation of the strength of heat-resistant alloys under creep-fatigue loading at elevated temperatures  
Prof. Hideo Miura, Tohoku University, Japan
  - 27) Recent development of probabilistic fracture mechanics analysis code PASCAL for reactor pressure vessels  
Dr. Yinsheng Li, Japan Atomic Energy Agency, Japan
  - 28) Carbon reduction through quality and reliability

- Dr. Jianhua Zhou, JHZ Strategic QA, USA
- 29) Design, preparation and damage detection of high performance thermal barrier coatings  
Prof. Weize Wang, East China University of Science and Technology, China
- 30) Power battery: Whole life cycle safety mechanism and active regulation  
Prof. Weiling Luan, East China University of Science and Technology, China
- 31) Battery accident investigation: Principles, mechanisms and countermeasures  
Dr. Xvning Feng, Tsinghua University, China
- 32) Safety testing & Evaluation of traction battery  
Dr. Fang Wang, China Automotive Technology and Research Center, China
- 33) From battery failure to safety standards  
Dr. Penglin He, China Electronics Standardization Institute, China
- 34) Multiscale theories and applications: From microstructure design to macroscopic assessment  
Prof. Junhua Zhao, Jiangnan University, China
- 35) Impression creep and small punch creep studies on nuclear structural materials  
Dr. M.D. Matthew, Indira Gandhi Centre for Atomic Research, India
- 36) Modeling and simplified formulas to quantify hardening effect on stress corrosion cracking in high temperature water environments  
Prof. Guangfu Li, Shanghai Research Institute of Materials (SRIM), China
- 37) Stacking fault deformation in additively manufactured entropy alloys  
Dr. WanChuck Woo, Korea Atomic Energy Research Institute, Korea
- 38) Manifold learning assisted reconstruction of structural defects  
Prof. Dianzi Liu, University of East Anglia, UK
- 39) Quantitative non-destructive evaluation of thin films using optical coherence tomography & Terahertz pulsed imaging  
Prof. Shuncong Zhong, Fuzhou University, China
- 40) A floquet-based bar-spring model for load-bearing biological and bioinspired composites  
Prof. Zuoqi Zhang, Wuhan University, China
- 41) Strength and ductility of layered metals revisited from local stress and local strain  
Prof. Guohua Fan, Nanjing Tech University, China
- 42) How does cell switch swirling direction upon one-way torsional drive?  
Prof. Bin Chen, Zhejiang University, China
- 43) Damage assessment of structural materials by small sample testing technique  
Prof. Shin-ichi Komazaki, Kagoshima University, Japan
- 44) Plating in li-ion batteries: recent progress and current challenges  
Dr. Dongsheng Ren, Tsinghua University, China
- 45) Aging mechanisms of  $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$ /graphite battery after overcharging at low temperatures  
Prof. Shixue Wang, Tianjin University, China
- 46) Semiconductor material design towards batteries and solar cells with improved stability

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- Prof. Lianzhou Wang, The University of Queensland, Australia
- 47) Mechanical failure assessment of lithium battery electrode  
Prof. Haofeng Chen, University of Strathclyde, UK
- 48) Highly Stressed Volume Approach in Notch Fatigue Analysis: Recent Advances and Challenges  
Prof. Shun-Peng Zhu, University of Electronic Science and Technology of China, China
- 49) Prediction of creep damage with the help of basic cavitation models  
Prof. Rolf Sandstrom, KTH Royal Institute of Technology, Sweden
- 50) Common SI approaches to corrosion fatigue in the Carbon Neutral Energy Era  
Prof. Kamran Nikbin, Imperial College London, UK
- 51) High-reliability manufacture and repair of single-crystal hot section components from Ni-base superalloy powders: Trends, opportunities and challenges  
Prof. Bo Chen, University of Leicester, UK
- 52) A Data-Driven Approach to Predicting the Anisotropic Mechanical Behaviour of Voided Single Crystals  
Prof. Esteban Busso, Harbin Institute of Technology-Shenzhen, China
- 53) Integrated computation of welding residual stress and strain  
Prof. Hao Lu, Shanghai Jiao Tong University, China
- 54) The Recent Developments on Ultrasonic Fatigue Testing Method for Very High Cycle Fatigue  
Prof. Chong Wang, Sichuan University, China
- 55) Fracture behaviour of additively manufactured IN718 in the presence of crack-like defects  
Dr. Guiyi Wu, Centre of Excellence for Advanced Materials, China
- 56) Polylactide for green manufacturing: Its mechanical property, processability, applicability and durability  
Dr. Rui-hua Hu, Zhengzhou University of Industrial Technology, China
- To be continued.

## 5. Schedule of ISSI2021

Day	Time(UTC/GMT+08:00)	Event
Oct 8	10:00—22:00	Registration
	15:00—17:00	Seminar (some participants only)
Oct 9	08:30—08:45	Conference opening
	08:45—12:00	Series session
	12:00—	Lunch
	14:00—18:00	Series session
	18:30—	Conference dinner
Oct 10	08:30—12:20	Panel discussions & Parallel sessions & Student paper competition
	12:20—	Lunch

	13:30—17:50	Parallel sessions & Student paper competition
	16:00—18:30	Poster presentation
	18:30—	Buffet for dinner
Oct 11	08:30—10:00	Parallel sessions
	10:30—11:30	Closing ceremony
	Afternoon	Technical visiting (some participants only)
<b>End</b>		

**Note:** In case of a covid-19 travel ban, the speakers who intend to give an online presentation please send the abstract's ID, abstract's title, and a request to [issi2021@china-sic.net](mailto:issi2021@china-sic.net) before September 30, 2021.

## 6. Registration and accommodation

The ISSI2021 will be held at Deefly Zhejiang Hotel, located at 278 Santaishan Road, Hangzhou, China. Registration fee will be 360 USD and 270 USD for **on-site** official participants and students, respectively. The registration fee covers admission to all technical sessions; two refreshment breaks each day of the conference, lunches, dinners, conference banquet, and a copy of the conference proceedings, but not accommodation. Accommodation at the conference venue needs to be pre-booked. The **online participants** will be **free** of registration fee.

## 7. ISSI2021 Awards

The China Structural Integrity Consortium is delighted to sponsor **Best Student Paper Awards** and **Best Poster Awards** at ISSI2021. The details of awards can be found at <http://issi2021.china-sic.net/page.asp?call=Awards>.

## 8. Contact Information

### Symposium Secretariat

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More information can be found at ISSI2021 website (<http://issi2021.china-sic.net>).

Special thanks are due to the following Institutions/Universities/Companies:

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

Zhejiang University of Technology

Hangzhou Special Equipment Inspection Institute

MOE Engineering Research Center of Process Equipment and Remanufacturing

Innovation Research Institute of Zhejiang University of Technology, Shengzhou

East China University of Science and Technology

Zhengzhou University

Xiamen Weldbond New Material Co., Ltd

Phenom China

Sinotest Equipment Co., Ltd.

MTS System

**China Structural Integrity Consortium**

September 23, 2021