10th Japan-China Bilateral Symposium on High Temperature Strength of Materials

Technical Program

Sponsored by
The Committee on High Temperature Strength of Materials,
the Society of Materials Science, Japan
and
The High Temperature Strength and Materials Committee
Society of Materials, Chinese Mechanical Engineering Society

October 25-29, 2019, Kagoshima, Japan


Asahikawa
2013
Dalian
2010
Nagaoka
1995
Sendai
2007
Luoyang
1992
Tsukuba
2001
Xi'an
2004
Nanjing
1998
Kagoshima
2019
Changsha
2016

10th Japan-China Bilateral Symposium on High Temperature Strength of Materials

October 25-29, 2019

October 25: Reception
October 26-27: Symposium
October 28-29: Technical Tours

Kagoshima University
Kagoshima, Japan

The Committee on High Temperature Strength of Materials,
the Society of Materials Science, Japan
&
The High Temperature Strength and Materials Committee
Society of Materials, Chinese Mechanical Engineering Society

Objective of Symposium

The 10th Japan-China Bilateral Symposium on High Temperature Strength of Materials will be held at Kagoshima, Japan, during the period October 25-29, 2019. The symposium series was initiated by the High Temperature Strength and Materials Committee, the Society of Materials, Chinese Mechanical Engineering Society and the Committee on High Temperature Strength of Materials, the Society of Materials Science Japan. This Symposium is a sequel to the successful meetings of the 1st Japan-China Bilateral Symposium held in **Luoyang**, China,1992; the 2nd bilateral Symposium held in **Nagaoka**, Japan, 1995; the 3rd held in **Nanjing**, China,1998; 4th held in **Tsukuba**, Japan, 2001; 5th held in **Xi'an**, China, 2004; 6th held in **Sendai**, Japan, 2007; 7th held in **Dalian**, China, 2010; 8th held in **Asahikawa**, Japan, 2013; 9th held in **Changsha**, China, 2016. The purpose is intended to promote academic and technical exchange between Japanese and Chinese scientists, engineers and to strengthen the technical contacts in the field of high temperature strength of materials between the two nearby countries. The main theme of this symposium includes: High Temperature Deformation and Fracture Mechanisms; Deformation and Fracture of Advanced High Temperature Materials Including Intermetallic Alloys; Ceramics and Composites etc.; High Temperature Strength of Electronic Materials; Experimentation at High Temperature; Creep and Fatigue Interaction; Defect Assessment and Life Prediction of High Temperature Materials and Components.

Symposium Chairmen

Professor Takamoto Itoh, Ritsumeikan University (Japan)
Professor Jianming Gong, Nanjing Tech University (China)

Advisory Board

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Professor Masakazu Okazaki, Nagaoka University of Technology
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Professor Shan-Tung Tu, East China University of Science and Technology
Professor Jie Zhao, Dalian University of Technology
Professor Zhengdong Wang, East China University of Science and Technology
Professor Xiaoguang Yang, Beihang University
Professor Jian Chen, Changsha University of Science & Technology

Technical Program Committee

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Professor Xiancheng Zhang, East China University of Science and Technology

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Dr. Nobuhiro Isobe, Mitsubishi Hitachi Power Systems, Ltd.
Dr. Akihiro Ito, Chubu Electric Power Co., Inc.
Professor Takamoto Itoh, Ritsumeikan University
Dr. Takanori Karato, Mitsubishi Heavy Industries, Ltd.
Professor Kazuhiro Ogawa, Tohoku University
Professor Fumiko Kawashima, Kumamoto University
Dr. Yasutaka Noguchi, Shinnittetsu Sumitomo Metal Industries, Ltd.
Dr. Masataka Yatomi, IHI Co., Ltd.
Professor Hiroyuki Waki, Iwate University
Professor Noritake Hiyoshi, University of Fukui
Professor Motoki Sakaguchi, Tokyo Institute of Technology
Professor Toshihiro Ohtani, Shonan Institute of Technology
Dr. Masatsugu Yaguchi, Central Research Institute of Electric Power Industry

Members from Chinese side:

Professor Hui Ding, Wuhan University
Professor Fuzhen Xuan, East China University of Science and Technology
Professor Huichen Yu, Beijing Institute of Aeronautical Materials
Professor Lixun Cai, Southwestern Jiao Tong University
Professor Xu Chen, Tianjin University
Professor Zhichao Fan, Hefei General Machinery Research Institute
Professor Zengliang Gao, Zhejiang University of Technology
Professor Tao Chen, Hefei General Machinery Research Institute
Professor Guangfu Li, Shanghai Research Institute of Materials
Professor Ke Wang, Zhengzhou University
Professor Chengyu Zhang, Northwestern Polytechnical University
Professor Huiji Shi, Tsinghua University
Professor Duoqi Shi, Beihang University
Professor Sugui Tian, Shenyang University of Technology
Professor Huachun Yang, Dong Fang Boiler Group Co., Ltd
Professor Wenchun Jiang, Beijing Institute of Aeronautical Materials

Professor Lanting Zhang, Shanghai Jiaotong University
Dr. Binsheng Zhou, Shanghai Special Equipment Inspection and Research Institute
Dr. Rongcan Zhou, Xi'an Thermal Power Research Institute Co., Ltd
Dr. Jianfeng Wen, East China University of Science and Technology

Local Organizing Committee

Chairman

Professor Shin-ichi Komazaki, Kagoshima University

Members

Dr. Shengde Zhang, Central Research Institute of Electric Power Industry

Scope

The organizer invites offers of papers on topics which contribute towards providing improvements in the understanding of the high temperature strength of materials and structures. A non-exclusive listing of relevant topics includes:

- High Temperature Deformation and Fracture Mechanisms.
- Behavior of Superalloys at High Temperature.
- Microstructural Study of Heat-Resistant Materials.
- Superalloys and Composites for High Temperature Use.
- Deformation and Fracture of Advanced High Temperature Materials Including Intermetallics, Ceramics and Composites etc.
- Creep and Fatigue at High Temperatures.
- Creep and Fatigue Interaction.
- High Temperature Damage Analysis and Design Control.
- Defect Assessment and Life Prediction of High Temperature Materials and Components.
- Life Extension of High Temperature Components and Plants.

Best Paper Awards

The best paper awards will set up for young authors presented at the symposium.

Venue

Student Community Plaza

Korimoto Campus, Kagoshima University

1-21-24, Korimoto, Kagoshima 890-8580, Japan

From Kagoshima Airport to JR Kagoshima Chuo Station

✓ By Airport Shuttle Bus: Approx. 50 minutes, 1,300 JPY

✓ By Taxi: Approx. 40 minutes, 12,000 JPY

From JR Kagoshima Chuo Station to Faculty of Engineering, Kagoshima Univ.

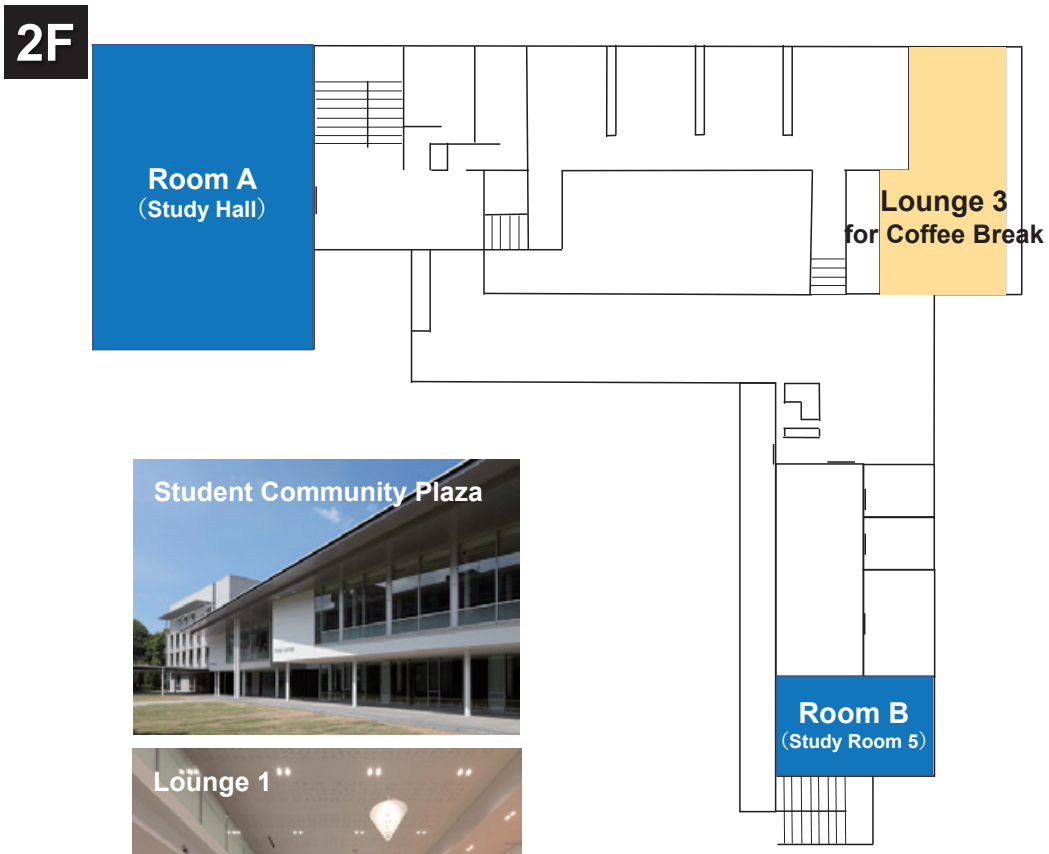
✓ By Tram: Approx. 10 minutes, 170 JPY, get off at the tram stop “TOSO”

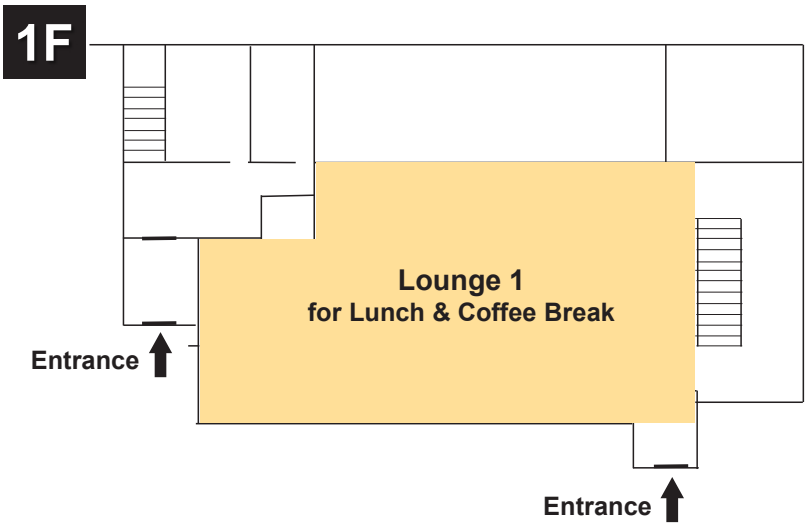
✓ By Taxi: Approx. 5 minutes, 750 JPY

✓ Walking: It takes about 25 minutes.

Korimoto Campus

Student Community Plaza





Program at-a-glance

	Morning	Afternoon	Evening
Oct. 25th			Welcome Reception
Oct. 26th	Opening Address Technical Sessions	Technical Sessions Company's PR Session	Conference Dinner
Oct. 27th	Technical Sessions	Technical Sessions Closing Address	Conference Dinner
Oct. 28th	Technical Tour 1		Dinner
Oct. 29th	Technical Tour 2		

		Study Hall - **Room A** -	Study Room 5 - **Room B** -	Lounge 1 Lounge 3
26th	08:00-08:30	Registration		
	08:30-08:50	Opening Address		
	08:50-10:10	Fatigue 1	Weld & Damage	
	10:10-10:30			Coffee Break
	10:30-12:10	Fatigue 2	Life Prediction & Damage	
	12:10-13:20			Lunch
	13:20-14:40	Fatigue 3	Microstructure & Damage	
	14:40-15:00			Coffee Break
	15:00-16:40	Fatigue 4	Coating & Oxidation	
	16:40-17:00	Company's PR Session		
	17:30-20:30	Conference Dinner		
27th	08:00-08:30	Registration		
	08:30-10:10	Creep 1	Multiscale Modeling & Molecular Dynamics	
	10:10-10:30			Coffee Break
	10:30-12:10	Creep 2	Mechanical Property & Ratcheting	
	12:10-13:20			Lunch
	13:20-14:40	Creep-Fatigue 1	Small Specimen Testing Technique 1	
	14:40-15:00			Coffee Break
	15:00-16:00	Creep-Fatigue 2	Small Specimen Testing Technique 2	
	16:00-16:20	Closing Address		
	17:00-18:00	Beer Tram		
	18:00-20:30	Conference Dinner		

Saturday, Oct. 26th

Room A

08:30-08:50 Opening Address Prof. Takamoto Itoh & Prof. Jianming Gong

08:50-10:10 Fatigue 1 Chairman: Prof. Kazuhiro Ogawa

A1 08:50-09:10 The High Cycle Fatigue Behavior of Selective Laser Melted Ti6Al4V Alloy: the Anisotropy and Defect Effects
Zehui Jiao, Ruida Xu, Huichen Yu, Xueren Wu
Beijing Institute of Aeronautical Materials

A2 09:10-09:30 Fatigue Behavior and Life Evaluation of a Titanium Alloy (Ti6Al4V) Produced by Selective Laser Melting
R.D. Xu, Z.H. Jiao, H.C. Yu
Beijing Institute of Aeronautical Materials

A3 09:30-09:50 LCF Behavior and Life Prediction of CMSX-4 Single Crystal Superalloy
Zhihua Zhang, Hui Chen Yu, Shi Chao ZHANG
Beijing Institute of Aeronautical Materials

A4 09:50-10:10 A Phenomenological Fatigue Damage Accumulation Model for Fatigue Life Prediction in Low-High Path
Zhenlei Li[1], Duoqi Shi[1,2], Xiaoguang Yang[1,2,3]
[1]Beihang University, [2]Beijing Key Laboratory of Aero-Engine Structure and Strength, [3]Nanchang Hangkong University

10:10-10:30 Coffee Break

10:30-12:10 Fatigue 2 Chairman: Prof. Huichen Yu

A5 10:30-10:50 Fatigue Life Prediction Model of a Powder Metallurgy Nickel-Based Superalloy: Natural and Artificial Defects
Yi SHI[1], Didi YANG[1], Xiaoguang YANG[1,2], Duoqi SHI[1], Guolei MIAO[1]
[1]Beihang University, [2]Nanchang Hangkong University

A6 10:50-11:10 Effect of Different Additive Manufacturing Directions on High Cycle Fatigue Performance of Ti6Al4V Alloy
Chang-Hao Tan[1], Zhong-Wei Xu[1], Xi-Shu Wang[1], Pei-Bao Gao[2], Hai-Ming Guo[2]
[1]Tsinghua University, [2]Xin Jinghe Laser Technology Development Co., Ltd.

A7 11:10-11:30 High Temperature Fatigue Evaluation of Turbine Disc Alloys Considering Notch and Size Effects
Ding Liao, Shun-Peng Zhu, Yang Ai
University of Electronic Science and Technology of China

A8 11:30-11:50 Thermal Gradient Mechanical Multiaxial Fatigue Assessment of a Nickel-Based Superalloy
Huang YUAN, Jingyu SUN
Tsinghua University

A9 11:50-12:10 Transition Behavior from Mode I to Crystallographic Cracking in a Nickel-Base Single Crystal Superalloy
Xiaosheng CHEN, Yu KITAHARA, Motoki SAKAGUCHI
Tokyo Institute of Technology

12:10-13:20 Lunch

13:20-14:40 Fatigue 3 Chairman: Prof. Fumiko Kawashima

A10 13:20-13:40 Fretting Fatigue Behaviours of Ni-Based Single Crystal Superalloys at High Temperature
Yue Su[1], Qi-Nan Han[1,2], Li-Sha Niu[1], Hui-Ji Shi[2]
[1]Tsinghua University, [2]College of Energy and Power Engineering

A11 13:40-14:00 Research on Mechanical Properties of Ti-6Al-4V Alloy after Superplastic Forming
Xiaogang Liu, Zhenhao Wu, Lei Xu
Nanjing University of Aeronautics and Astronautics

A12 14:00-14:20 In-Situ Investigation on Fatigue Micro Crack Propagation of Ti6Al4V Alloy
Zhong-Wei Xu[1], Chang-Hao Tan[1], Xi-Shu Wang[1], Yuzo Nakamura[2], Pei-Bao Gao[3], Hai-Ming Guo[3]
[1]Tsinghua University, [2]Kagoshima University, [3]Xin Jinghe Laser Technology Development Co., Ltd.

A13 14:20-14:40 Effects of Microstructure and Temperature on Fatigue Crack Propagation in Forging TiAl Alloys
Wenxiang GONG, Motoki SAKAGUCHI, Yoshinori NIWA, Hirotsugu INOUE
Tokyo Institute of Technology

14:40-15:00 Coffee Break

15:00-16:40 Fatigue 4 Chairman: Prof. Xu Chen

A14 15:00-15:20 Short Crack Propagation in a Single Crystal Ni-Base Superalloy under Thermo-Mechanical Fatigue
Yasuhiro Yamazaki, Maiki Miura
Chiba University

A15 15:20-15:40 The Influence of Absorbed-Particles on the Fatigue Crack Growth Behaviour of Aluminum Alloy
Y.Q. Chen[1], S.P. Pan[2], W.H. Liu[1], Y.F. Song[1], X. Liu[1], B.W. Zhu[1]
[1]Hunan University of Science and Technology, [2]Central South University

A16 15:40-16:00 Fatigue Crack Initiation and Propagation Behaviours in Powder Metallurgy Ni-Based Superalloys for Turbine Disk Application
Rong Jiang[1,2], Leicheng Zhang[1], Xuteng Hu[1], Yingdong Song[1], Philippa Reed[2]
[1]Nanjing University of Aeronautics and Astronautics, [2]Unversity of Southampton

A17 16:00-16:20 Temperature-Dependent Cyclic Plastic Deformation of U75VG Rail Steel: Experiments and Simulations
Qianhua Kan, Guozheng Kang, Han Jiang, Xiang Xu, Ziyi Wang, Ping Wang
Southwest Jiaotong University

A18 16:20-16:40 Experimental Investigation on Temperature-Dependent Uniaxial Cyclic Deformation of AZ31B Magnesium Alloy
Hang Li, Guozheng Kang, Qianhua Kan, Yujie Liu
Southwest Jiaotong University

16:40-17:00 Company's PR Session Chairman: Prof. Shin-ichi Komazaki

16:40-16:50 Kobe Material Testing Laboratory, Co., Ltd., **Tan Zixi**

16:50-17:00 NIPPON STEEL TECHNOLOGY Co., Ltd., **Toshiro Anraku**

Room B

08:50-10:10 Weld & Damage Chairman: Dr. Masatsugu Yaguchi

B1 08:50-09:10 Weldability Evaluation and Damage Analysis of New-to-Aged Reformer Furnace Tube
Cheng-ming Fuyang[1,2], Lu-yang Geng[1,2], Jian-ming Gong[1,2], Yong Jiang[1,2], Xiao-feng Guo[3], Jian-qun Tang[1,2]
[1]Nanjing Tech University, [2]Key Laboratory of Design and Manufacture of Extreme Pressure Equipment, [3]Inner Mongolia University of Science & Technology

B2 09:10-09:30 Microstructure and Mechanical Properties Study of CMT Fusion-Brazed Aluminium/Steel Dissimilar Joints
Qi Xiong, Shanglei Yang, Jiaxin Gu, Chenfeng Duan, Yubao Huang, Yu Fang, Xuan Meng
Shanghai University of Engineering Science

B3 09:30-09:50 Failure Analysis on Stress Relaxation Crack of 304H Stainless Steel Weld
Kaishu Guan, Jinye Qian, Jiru Zhong
East China University of Science and Technology

B4 09:50-10:10 Damage Assessment of Near Surface Area of High Temperature Furnace Tube
Qin Jiayi, Qian Jinye, Guan Kaishu
East China University of Science and Technology

10:10-10:30 Coffee Break

10:30-12:10 Life Prediction & Damage Chairman: Prof. Guozheng Kang

B5 10:30-10:50 Creep Rupture Time Prediction for Ti-43Al Alloys with θ-Projection Method
Noritake HIYOSHI, Masaki ARAYA, Takuya UEDA
University of Fukui

B6 10:50-11:10 Remaining Life Assessment of Welded Joint of Piping on Site Considering Heat-to-Heat Variations
Masatsugu Yaguchi
Central Research Institute of Electric Power Industry

B7 11:10-11:30 Creep Induced Nonlinear Ultrasonics in an Austenitic Stainless Steel
Toshihiro OHTANI[1], Yutaka ISHII[1], Masaaki TABUCHI[2], Kota SAWADA[2], Hiromichi HONGO[2]
[1]Shonan Institute of Technology, [2]National Institute for Materials Science

B8 11:30-11:50 Creep Lifetime Prediction of Ferritic Steels by Larson-Miller Parameter
Tetsuya Matsunaga, Hiromichi Hongo, Masaaki Tabuchi
National Institute for Materials Science

B9 11:50-12:10 The Change of the Fractal Dimension of Grain Boundary of FGHAZ of Mod. 9Cr-1Mo Steel Driven by Creep and the Relation between Other Creep Damage Indications
Fumiko Kawashima, Tatsuya Nishimura, Kazuki Hamasaki, Ryotaro Okado, Kazuhito Fujiwara
Kumamoto University

12:10-13:20 Lunch

13:20-14:40 Microstructure & Damage Chairman: Prof. Toshihiro Ohtani

B10 13:20-13:40 Precipitation Improvement of the Grain Boundary Phase in 25Cr20NiNbN Heat-Resistant Steel
Tieshan Cao, Congqian Cheng, Jie Zhao, Jian Liu,Xv Hongbo
Dalian University of Technology

B11 13:40-14:00 Evaluation of High Temperature Properties and Related Microstructures in Two Newly Developed Titanium Alloys
Cong Li[1,2], Jian Chen[1]
[1]Changsha University of Science and Technology, [2]Delft University of Technology

B12 14:00-14:20 Microstructural Analysis of As-cast Ni-Base Superalloys and Precipitation during Service Operation
Victor M. Lopez-Hirata[1], Maribel L. Saucedo-Muñoz[1], Erika O. Avila-Davila[2]
[1]Instituto Politécnico Nacional, ESIQIE, [2]Tecnológico Nacional de México/Instituto Tecnológico de Pachuca (DEPI)

B13 14:20-14:40 Investigation of Surface Damage and Roughness for Nickel-Based Superalloy GH4169 under Hard Turning Processing
Z.R. Wu, L. Pan, L. Fang, Y.D. Song
Nanjing University of Aeronautics and Astronautics

14:40-15:00 Coffee Break

15:00-16:40 Coating & Oxidation Chairman: Prof. Wen-Chun Jiang

B14 15:00-15:20 Numerical Investigation on the Cracking Behaviors of TBC Coated Single Crystal Superalloy under Different Thermal Mechanical Load
Jianan Song[1], Duoqi Shi[1,2], Shaolin Li[1,2] , Hongyu Qi[1,2], Xiaoguang Yang[1,2]
[1]Beihang University, [2]Collaborative Innovation Center of Advanced Aero–Engine

B15 15:20-15:40 Effect of Aluminum-Yittrium Alloy Morphology on Oxidation Resistance of High Temperature Furnace Tube
Qiong liu[1], **Yuhui Huang**[1], Yibin Zhan[2], Fu-Zhen Xuan[1], Shan-Tung Tu[1]
[1]East China University of Science and Technology, [2]Shanghai Zhuoran Engineering Technology co.

B16 15:40-16:00 Microstructural Characterization of the Oxidation Assisted Intergranular Crack in TP347H Austenitic Steel
Jian Li, Tieshan Cao, Congqian Cheng, Jie Zhao
Dalian University of Technology

B17 16:00-16:20 Cracking and Delamination during Solidification and Adhesion Process of Paraffin Droplet Impacted on a Metal Substrate
Chao KANG, Motoki SAKAGUCHI, Akito SAITO, Hirotsugu INOUE
Tokyo Institute of Technology

B18 16:20-16:40 Effects of SiC Addition for Self-Healing Property of Yb Silicate Environmental Barrier Coatings
Takumi KITAHARA[1], Yuji ICHIKAWA[1], Kazuhiro OGAWA[1], Takaya MASUDA[2], Kazuto SATO[2]
[1]Tohoku University, [2]FUJIMI INCORPORATED

Sunday, Oct. 27th

Room A

08:30-10:10 Creep 1 Chairman: Dr. Masaaki Tabuchi

A19	08:30-08:50	Effects of Low Angle Boundaries on Stress Rupture Properties of a Third Generation Single Crystal Superalloy DD9 at 1093°C/158 MPa **Yang Wanpeng**, Li Jiarong, Liu Shizhong, Wang Xiaoguang, Zhao Jinqian, Shi Zhenxue Beijing Institute of Aeronautical Materials
A20	08:50-09:10	Creep Behaviour of an Ex-Service 1.25Cr-0.5Mo Steel **Bin Yang**, Wen-Chun Jiang, Wen-Qi Sun, Ming-Chao Li, Yan-Ling Zhao, Ming-Lei Wang China University of Petroleum (East China)
A21	09:10-09:30	Carburization and Creep Interactive Control based Embrittlement Criterion Study of the Tubes under High Temperature Carburizing Environment **Luowei Cao**[1,2], Zhiyuan Han[1,2], Haoyuan Kang[1,2], Guoshan Xie[1,2] [1]China Special Equipment Inspection and Research Institute, [2]Key Laboratory of Special Equipment Safety and Energy-saving of SAMR
A22	09:30-09:50	Influence of Ru on Creep Behaviors and Concentration Distribution of 4.5%Re Single Crystal Nickel-Based Superalloy at High Temperature **Zhao Guoqi**[1,2], Tian Sugui[1,2], Tian Ning[1], Yan Huajin[1], Wang Guangyan[1], Liu Lirong[2] [1]Guizhou University of Engineering Science, [2]Shenyang University of Technology
A23	09:50-10:10	Prediction of the Subsequent Creep Deformation Behaviour of 9%Cr Steel Based on the Microstructural Damage Induced by Prior Fatigue Loadings **Xiaowei Wang**[1,2], Tianyu Zhang[1,2], Wei Zhang[1,2], Jianming Gong[1,2] [1]Nanjing Tech University, [2]Jiangsu Key Lab of Design and Manufacture of Extreme Pressure Equipment
10:10-10:30		Coffee Break

10:30-12:10 Creep 2 Chairman: Prof. Xiaoguang Yang

A24	10:30-10:50	Effect of Creep Deformation on the Microstructure Evolution of A-USC Ni-Based Superalloy **Jie Zhao**, Tieshan Cao, Huifang Li Dalian University of Technology
A25	10:50-11:10	Creep and Creep-Ratcheting Behaviours of Cr-Mo Steels Hao Jiang[1], Zizhen Zhao[2], Shensi He[1], **Xu Chen**[1] [1]Tianjin University, [2]Qilu University of Technology
A26	11:10-11:30	Creep Deformation and Rupture Behaviors of Ni-Based HR6W Welded Joint Using Full Thickness Specimen **Shengde Zhang**, Hiroyuki Fukutomi Central Research Institute of Electric Power Industry
A27	11:30-11:50	Creep Crack Growth Behavior of Ni-Based Alloy 617 and Alloy 740H **Haruhisa Shigeyama**, Shengde Zhang, Yukio Takahashi Central Research Institute of Electric Power Industry
A28	11:50-12:10	Grain Boundary Cracking of SUS316L under Creep Loading at Elevated Temperatures **Yukako Takahashi**, Ken Suzuki, Hideo Miura Tohoku University
12:10-13:20		Lunch

13:20-14:40 Creep-Fatigue 1 Chairman: Prof. Tadashi Hasebe

A29	13:20-13:40	Application of ASME Code Case 2605 to Evaluate Creep-Fatigue Life of 2.25Cr-1Mo-0.25V Hydrogenation Reactors **Xiao-Cheng Zhang**, Kai-Shu Guan East China University of Science and Technology
A30	13:40-14:00	Creep-Fatigue Life Assessment of GH4169 Superalloy at 650 °C Based on Metallographic Interpretation of Mechanisms **Run-Zi Wang**, Xian-Cheng Zhang, Shan-Tung Tu East China University of Science and Technology
A31	14:00-14:20	Creep-Fatigue Life Prediction of the Turbine Disc **Sujuan Guo**, Runzi Wang, Keming Chen, Jianfeng Wen, Xiancheng Zhang, Shandong Tu East China University of Science and Technology
A32	14:20-14:40	Aspects of Creep Fatigue Lifetime Assessment for High Temperature Components **C. Kontermann**, S. Linn, M. Oechsner Technische Universitaet Darmstadt
14:40-15:00		Coffee Break

15:00-16:00 Creep-Fatigue 2 Chairman: Prof. Christian Kontermann		
A33	15:00-15:20	Multiaxial Creep-Fatigue Failure Mode for High Chromium Steel Considering Interaction of Creep Damage and Loading Non-Proportionality **Yuuki KASAMUTA**[1], Fumio OGAWA[1], Takamoto ITOH[1], Hiroyasu TANIGAWA[2], Takashi NOZAWA[2] [1]Ritsumeikan University, [2]National Institutes for Quantum and Radiological Science and Technology
A34	15:20-15:40	Evaluation of Creep-Fatigue Properties for Mod.9Cr-1Mo Steel under Proportional and Non-Proportional Loading **Kotaro FUKUIKE**[1], Fumio OGAWA[1], Noritake HIYOSHI[2], Takamoto ITOH[1] [1]Ritsumeikan University, [2]University of Fukui
A35	15:40-16:00	Clarification of the Degradation Mechanism of Grain Boundaries in Nickel-Based Alloy 625 Under Creep-Fatigue Loadings at Elevated Temperatures **Yifan Luo**, Ken Suzuki, Hideo Miura Tohoku University
16:00-16:20 Closing Address Prof. Takamoto Itoh & Prof. Jianming Gong		

Room B

08:30-10:10 Multiscale Modeling & Molecular Dynamics Chairman: Prof. Huiji Shi		
B19	08:30-08:50	Computational Seamless Description of Deformation-Fracture Transitions Based on FTMP **Tadashi Hasebe** Kobe University
B20	08:50-09:10	FTMP-Based Evaluations of Dislocation Wall Structures **Shiro Ihara**, Tadashi Hasebe Kobe University
B21	09:10-09:30	Multiscale Modeling and Simulations of Creep Rupture Process of Lath Martensite Block/Packet Structures for High Cr Steels Based on FTMP **Yasutaka Matsubara**, Tadashi Hasebe Kobe University
B22	09:30-09:50	Molecular Dynamics Analysis of Accumulation of Vacancies and Dislocations around a Grain Boundary under Creep Loading at Elevated Temperature **Yiqing Fan**, Ryo Kikuchi, Ken Suzuki, Hideo Miura Tohoku University
B23	09:50-10:10	Molecular Dynamics Analysis of Grain Boundary Cracking Caused by Accumulation of Vacancies and Dislocations **Ryo Kikuchi**, Yiqing Fan, Ken Suzuki, Hideo Miura Tohoku University
10:10-10:30		Coffee Break
10:30-12:10 Mechanical Property & Ratcheting Chairman: Prof. Jie Zhao		
B24	10:30-10:50	Theoretical Characterizations on Temperature Dependent Mechanical Properties of Materials **Weiguo Li**, Ying Li Chongqing University
B25	10:50-11:10	Effect of α Phase Fraction on the Mechanical Properties of ZrTi Alloy **Baifeng Luan**, Zhongni Liao, Qing Liu Chongqing University
B26	11:10-11:30	An Optimized Scheme for Hot Bolting Retightening **Zhou Jian-Hang**, Guan Kai-Shu East China University of Science and Technology
B27	11:30-11:50	Damage-Coupled Ratcheting Behaviours of SA508-3 Steel at Elevated Temperature: Experiments and Simulations **Jun Tian**[1], Xuejiao Shao[1], Xiaolong Fu[1], Liping Zhang[1], Qianhua Kan[2] [1]Nuclear Power Institute of China, [2]Southwest Jiaotong University
B28	11:50-12:10	A Ratcheting Prediction Model of 35CrMo Bolt Steel Considering the Effect of Stress Amplitude Wei Wang, **Xiaotao Zheng** Wuhan Institute of Technology
12:10-13:20		Lunch

13:20-14:40 Small Specimen Testing Technique 1 Charman: Dr. Petr Dymáček

B29 13:20-13:40 Analysis of the Main Factors that Controlling Measuring Accuracy of Small Specimen Creep Testing
Fa-Kun Zhuang[1], Hao-Yuan Kang[1], Shan-Tung Tu[2], Guo-Shan Xie[1], Jian-Ping Tan[1], Luo-Wei Cao[1]
[1]China Special Equipment Inspection and Research Institute, [2]East China University of Science and Technology

B30 13:40-14:00 Investigation of Stress Regime-Dependent Creep Behavior Based on Small Specimen Techniques Using Different Constitutive Equations
Li Si-Kuan[1], Zhang Kun[1], Tan Jian-Ping[1], Zhuang Fa-Kun[2],Wen Jian-Feng[1], Tu Shan-Tung[1]
[1]East China University of Science and Technology, [2]China Special Equipment Inspection and Research Institute

B31 14:00-14:20 A Study on Determination of Flow Properties at Elevated Temperatures from Spherical Indentation Tests (SITs)
Tairui Zhang[1, 2], Weiqiang Wang[1, 2], Aiju Li[1]
[1]Shandong University, [2]Engineering and Technology Research Center for Special Equipment Safety of Shandong Province

B32 14:20-14:40 Creep Property Assessment of Service-Exposed 2.25Cr-1Mo Steel Boiler Piping by Small Punch Test
Kotaro MURAKAM[1], Shin-ichi KOMAZAKI[1], Toshiki MITSUEDA[2]
[1]Kagoshima University, [2]Hokkaido Electric Power Co., Inc.

14:40-15:00 Coffee Break

15:00-16:00 Small Specimen Testing Technique 2 Chairman: Prof. Kaishu Guan

B33 15:00-15:20 Towards the Development of a Universal Formula for Conversion of Small Punch Data to Conventional Creep Data
Ferdinand DOBEŠ[1], Petr DYMÁČEK[1], Shin-ichi KOMAZAKI[2], Yingzhi Li[3]
[1]Institute of Physics of Materials ASCR, [2]Kagoshima University, [3]DNV-G

B34 15:20-15:40 Round Robin and Standardization of Small Punch Creep Test in Europe
Petr Dymáček[1], Ferdinand Dobeš[1], Daniel Omacht[2], Zdeněk Kuboň[2], Matthias Bruchausen[3], Stefan Holmström[3], Rob Lancaster[4], Spencer Jeffs[4], Roger Hurst[4], Yingzhi Li[5]
[1]Institute of Physics of Materials ASCR, [2]Materiálový a metalurgický výzkum a.s., [3]JRC Petten, [4]Swansea University, [5]DNV-GL

B35 15:40-16:00 Effect of Carbide Precipitation on Creep Strength of 5Cr-0.5Mo Steel
Maribel L. Saucedo-Muñoz[1], Valeria Miranda-López[1], Shin-ichi Komazaki[2], Victor M. Lopez-Hirata[1]
[1]Instituto Politécnico Nacional, ESIQIE, [2]Kagoshima University

WELCOME RECEPTION

10th Japan-China Bilateral Symposium on High Temperature Strength of Materials
October 25-29, 2019, Kagoshima, Japan

18:30-20:30, Friday, October 25

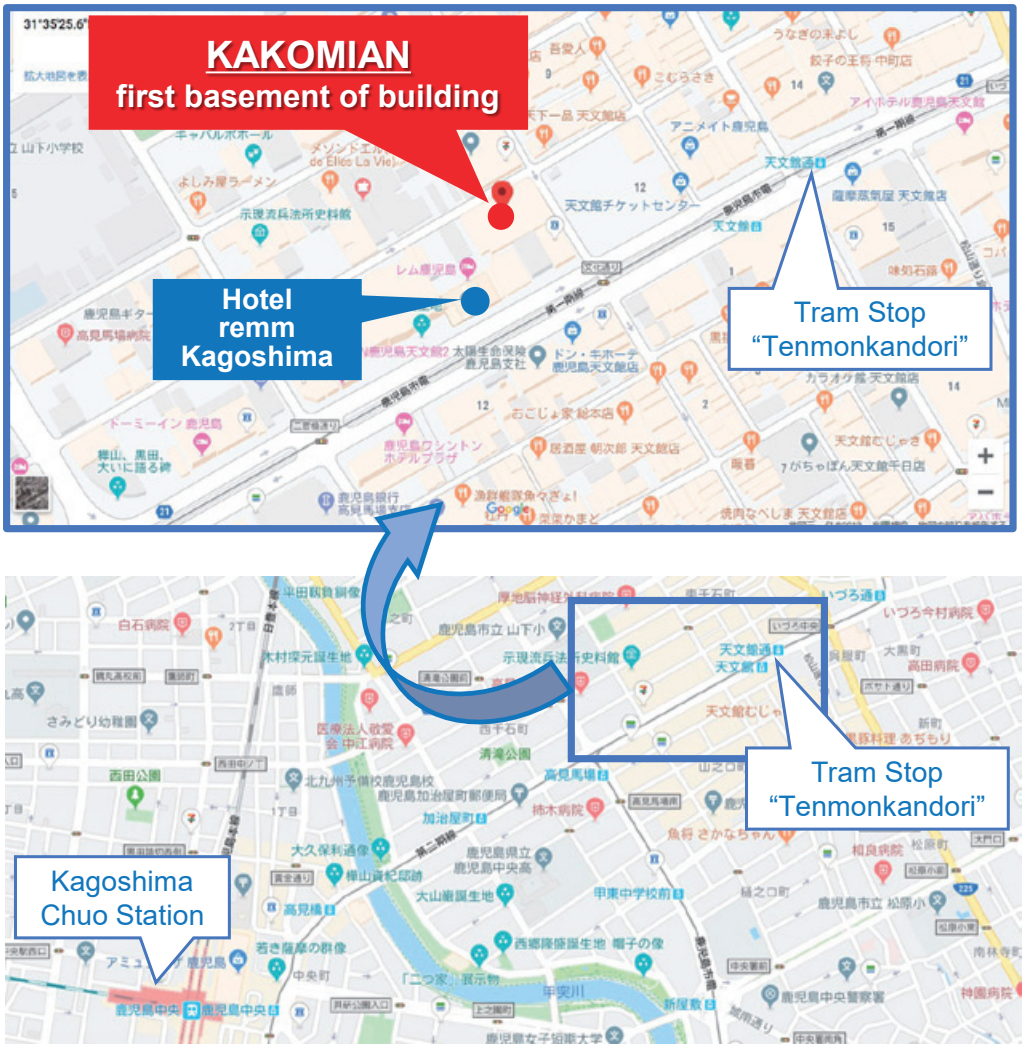
The welcome reception will be held at the Japanese bar restaurant "KAKOMIAN".

■ かこみ庵 鹿児島天文館 本店（B1F）

KAKOMIAN Kagoshima Tenmonkan, Honten (B1F)

Japanese: https://kakomian-tenmonkan.owst.jp/
Chinese: https://kakomian-tenmonkan.owst.jp/zh-cn/
English: https://kakomian-tenmonkan.owst.jp/en/

A staff will be standing in front of "Hotel remm Kagoshima" during 18:00-18:30 for guiding you. Of course, you can go to "KAKOMIAN" by yourself.



CONFERENCE DINNER

10th Japan-China Bilateral Symposium on High Temperature Strength of Materials
October 25-29, 2019, Kagoshima, Japan

Saturday, October 26

17:30-20:30

■ **マリンパレス鹿児島**
MARINE PALACE Kagoshima
http://www.maripala.com/

- ✓ Meeting Time & Point: **17:10**, Conference Venue
- ✓ The bus will be waiting for us and leave the university at 17:15.
- ✓ You can enjoy a welcome drink before the dinner.
- ✓ After the dinner, the bus will take you to “University”, “Kagoshima Chuo Station” or “Tenmonkan”, at which you wish to get off.

Sunday, October 27

17:00-18:00

■ **ビアトラム**
Beer Tram
http://www.kotsu-city-kagoshima.jp/kanko/train/

- ✓ Meeting Time & Point: **16:30**, Conference Venue
- ✓ We will move to the tram stop “Kotsukyoku-mae” on foot (5 min), and then ride in four separate trams (cars).
- ✓ You can enjoy a city view from the car window with a beer (50 min). We will get off at tram stop “Tenmonkandori” and go to “Zino” for the dinner.

18:00-20:30

■ **ジーノ**
Zino
https://tabelog.com/kagoshima/A4601/A460101/46000124/

TECHNICAL TOUR

10th Japan-China Bilateral Symposium on High Temperature Strength of Materials
October 25-29, 2019, Kagoshima, Japan

Technical Tour 1　October 28, Monday

－Ibusuki/Makurazaki Area－

■ 薩摩酒造 明治蔵
Meijigura, Satuma Shuzo

http://www.satsuma.co.jp/index.html
http://www.meijigura.com/

昼　食:　唐船峡そうめん流し
Lunch:　Soumen Nagashi, Tosenkyo
https://www.youtube.com/watch?v=wFoYkWmS_z0
https://www.youtube.com/watch?v=za4XVUVbRKM

夕　食:　ガーデンレストラン“ホルト”，城山観光ホテル
Dinner:　Garden Restaurant “holt”, SHIROYAMA HOTEL kagoshima
https://www.shiroyama-g.co.jp/restaurant/holt/
https://www.shiroyama-g.co.jp/en/

Technical Tour 2　October 29, Tuesday

－Kagoshima City－

■ 桜 島
Sakurajima

http://www.sakurajima.gr.jp/

■ 仙巌園
SENGAN-EN

https://www.senganen.jp/

昼　食:　桜華亭，仙巌園
Lunch:　Ohkatei Restaurant, SENGAN-EN
https://www.senganen.jp/en/food-shopping/ohkatei-restaurant/


COMMITTEE ON HIGH TEMPERATURE STRENGTH OF MATERIALS
JSMS
SINCE 1959