Thursday 2 July 2015 (Day 4)

Auditorium A

09:15～10:55

Heat Resisting Steels 7 Welding 3

Chairperson: *T. U. KERN* (Siemens, Germany)

09:15～ 3H-24 **Invited** **Creep Damage Assessment of High Cr Steel Welds**
Keiji KUBUSHIRO, Noriko SAITO

09:40～ 3H-25 **Microstructure Characterization of Simulated HAZ in Mod.9Cr-1Mo Steel**
Kota SAWADA, Toru HARA, Masaaki TABUCHI, Kazuhiro KIMURA, Keiji KUBUSHIRO

10:05～ 3H-26 **Study on the Observation Condition of Type IV Creep Damage of Mod.9Cr-1Mo Steel**
Fumiko KAWASHIMA, Atomu SATO, Yoshitsugu IRIE, Kohei YAMAKAWA, Kazuhito FUJIWARA, Hidehiro HATA

10:30～ 3H-27 **The Influence of Welding Process on HAZ Microstructure and Type IV Cracking Resistance**
John ROTHWELL, Hiroto KITAGUCHI

11:10～12:25

Heat Resisting Steels 8 Fundamental 4 (ODS & Ferritic Steels)

Chairperson: *Y. YAMAMOTO* (Oak Ridge National Laboratory, USA)

11:10～ 3H-28 **Keynote** **Nanoscaled ODS Ferritic and Austenitic Steels - a New Class of Creep Resistant High Temperature Alloys?**
M. HEILMAIER, D. SCHLIEPHAKE, S. SEILS, A. KAUFFMANN, E. BRUDER, J. N. WAGNER, D. JANDA

11:35～ 3H-29 **Keynote** **Feasibility Study of ODS Ferritic Steels for A-USC Turbine Application**
S. UKAI, Naoko OONO, Shigenari HAYASHI Takanari OKUDA, Yuka KOYAMA

12:00～ 3H-30 **Keynote** **Microstructure Stability of Ferritic-Martensitic, Austenitic and Fully Ferritic Steels under Fluctuating Loading Conditions**
Bernd KUHN, Michal TALIK, Jennifer LOPEZ BARRILAO, Lorenz SINGHEISER

14:00～15:15

Heat Resisting Steels 9　Fundamental 5 (Microstructural Evolution) ------

Chairperson: *Y. HASEGAWA* (Nippon Steel & Sumitomo Metal Corporation, Japan)

14:00～ 3H-31 **Martensitic 12% Cr Steels for Advanced Steam Power Plants**
John HALD

14:25～ 3H-32 **Creep Deformation Behavior and Microstructural Evolution during Creep in 10%Cr Steel Large Forging for High Temperature Steam Turbines**
Masato MIKAMI

14:50～ 3H-33 **Numerical Simulation of Long-Term Precipitate Evolution in Heat-Resistant Steels for Power Plants**
Jae-Hyeok SHIM, Jin-Yoo SUH, Woo-Sang JUNG, Kyu-Ho LEE, Brian D. WIRTH, Erwin POVODEN-KARADENIZ, Ernst KOZESCHNIK

15:55～17:30

Heat Resisting Steels 10　Development & Creep Behavior ----------

Chairperson: *M. MIKAMI* (Japan Casting & Forging Corporation, Japan)

15:55～ 3H-34 **Keynote** **Evolution of Production Technologies for High Performance-High Temperature Rotor Forgings**
Yasuhiko TANAKA

16:20～ 3H-35 **Keynote** **Creep Rupture Ductility Drop in the Long-Term of Creep Strength Enhanced Ferritic Steels**
Kazuhiro KIMURA, Kota SAWADA

16:45～ 3H-36 **Development of High Strength 9Cr-3W-3Co-Nd-B Heat-Resistant Steel Tube and Pipe**
Tomoaki HAMAGUCHI, Hirokazu OKADA, Hiroyuki SEMBA, Hiroyuki HIRATA, Atsuro ISEDA, Mitsuru YOSHIZAWA

17:05～ 3H-37 **Material and Design Aspects for High Temperature Steam Turbines**
Torsten-Ulf KERN, Holger KIRCHNER, Henning ALMSTEDT

Auditorium B

09:15～10:55

Superalloys 6　A-USC Turbine 1

Chairperson: *Y. TERADA* (Tokyo Institute of Technology, Japan)

09:15～ 3S-21 **Materials and Component Qualification for Advanced Supercritical Power Plants**
Andreas KLENK

09:40～ 3S-22 **Lifetime Assessment of a Thick-Walled Sample Header Made of Nickel Base Alloys**
Daniel HUEGGENBERG, Andreas KLENK

10:05～ 3S-23 **Low Cycle Fatigue Life of Ni-based Alloy 617 Base and Welded Joint**
Shengde ZHANG, Yukio TAKAHASHI

10:30～ 3S-24 **Microstructural Characterization of γ' Precipitates in Wrought Ni-based Superalloy Inconel X-750**
Hiromu HISAZAWA, Yoshihiro TERADA, Naoki TAKATA, Masao TAKEYAMA

11:10～12:25

Superalloys 8　A-USC Turbine 2

Chairperson: *A. KLENK* (MPA Stuttgart, Germany)

11:10～ 3S-29 **Development of Ni-Based Alloy for Advanced 700℃ Class Steam Turbine Rotor**
Ryuichi YAMAMOTO, Hiroaki FUKUSHIMA, Kenji KAWASAKI, Yoshikuni KADOYA, Hiroyuki END, Shin NISHIMOTO, Yoshinori TANAKA

11:35～ 3S-30 **Effects of Phosphorus on Creep Properties of Nickel-Iron Base Superalloy**
Koichi TAKASAWA, Hibiki CHINEN, Takuya OHKAWA, Eiji MAEDA, Takashi HATANO

12:00～ 3S-31 **Performance Dependence of a Fe-Ni Base Superalloy on the Temperature Between 700-750℃**
Jingbo YAN, Fei SUN, Yuefeng GU

14:00～15:40

Superalloys 9　A-USC Boiler 1

Chairperson: *P. TORTORELLI* (Oak Ridge National Laboratory, USA)

14:00～ 3S-32 **Invited** **Development of Ni-base Boiler Tubes and Pipes for Advanced USC Power Plants**
Hiroyuki SEMBA, Hirokazu OKADA, Tomoaki HAMAGUCHI, Hiroyuki HIRATA, Toshihide ONO, Atsuro ISEDA

14:25～ 3S-33 **Evaluation of Reheat Cracking Sensitivity in Ni-Based Alloy for an Advanced USC Boiler**
Nobuhiko SAITO, Keita HASHIMOTO, Nobuyoshi KOMAI, Yasuhiro TAKEI

14:50～ 3S-34 **Tensile Deformation Behavior of a New Wrought Ni-Fe-Based Superalloy for Steam Boiler Applications**
Fei SUN, Jingbo YAN, Yuefeng GU

15:15～ 3S-35 **Modified USC141 for 700℃ Class A-USC Boiler Tubes**
Toshihiro UEHARA, Chuya AOKI, Naoya SATO, Masaru SHIMIZU, Takashi SATO, Shinya IMANO, Michael SPIEGEL, Patrik SCHRAVEN

15:55～17:30

Superalloys 10　A-USC Boiler 2

Chairperson: *S. IMANO* (Mitsubishi Hitachi Power Systems, Ltd., Japan)

15:55～ 3S-36 **Invited** **Effect of Precipitation Behavior on Creep in Ni-23Cr-7W Alloy**
Hirokazu OKADA, Hiroyuki SEMBA, Toshihide ONO, Atsuro ISEDA

16:20～ 3S-37 **Creep-Rupture Behavior of Haynes alloy 282R under Conditions Relevant to Advanced Ultrasupercritical Boilers**
P.F. TORTORELLI, K.A. UNOCIC, H. WANG, M.L. SANTELLA

16:45～ 3S-38 **Effect of Pre-Strain on Creep Strength for Ni-Based Alloy263**
Naoya KANNO, Keiji KUBUSHIRO, Kyohei NOMURA, Hirokatsu NAKAGAWA

17:05～ 3S-39 **Proper Slag Selection Method in the ESR process**
Kenichi YAGUCHI, Masato ITO, Yasuhiro HAYASHI, Tadashi FUKUDA, Takanori MATSUI

Conference Room 1

09:15～10:55

Superalloys 7 Fatigue / Oxidation ----------

Chairperson: *B. GLEESON* (Univ. Pittsburgh, USA)

09:15～ 3S-25 **Invited** **Hold-Time Low Cycle Fatigue of Single-Crystal Ni-Base Superalloys - Crack Growth and Role of TGO -**
Akane SUZUKI, Yan GAO, Don LIPKIN, Mallik KARADGE, Anjali SINGHAL, PR SUBRAMANIAN, Doug KONITZER, Jonathan ALMER, Tresa POLLOCK

09:40～ 3S-26 **Oxide/Metal Interface Investigations Ahead of a Crack Tip in an Advanced Polycrystalline Nickel Based Superalloy**
H.S. KITAGUCHI, M.F. GITTOS, I.P. JONES, M.P. MOODY, Sergio-Lozano PEREZ

10:05～ 3S-27 **CMAS Damage Progress in a Thermal Barrier Coated Specimen and Its Non-Destructive Detection**
Yuki HAYASHI, Satoshi YAMAGISHI, Masakazu OKAZAKI

10:30～ 3S-28 **Damage Evolution in A Ni-Based Superalloy Thermal Barrier Coating Specimen during Thermo-Mechanical Fatigue Loading**
Subramanian RAJIVGANDHI, Satoshi YAMAGISHI, Masakazu OKAZAKI

11:10～12:25

Environment-Resistant Characteristics 1 Oxidation 1 (Al_2O_3 Former) ---

Chairperson: *D. J. YOUNG* (University of New South Wales, Australia)

11:10～ 3E-01 **Invited** **Assessment of Al_2O_3-Scale Establishment on Ni-Based Alloys During the Early Stages of High Temperature Oxidation**
Brian GLEESON, Wei ZHAO, Yihong KANG, Juan M.ALVARADO-OROZCO

11:35～ 3E-02 **Invited** **High-Temperature Oxidation of Cu-Modified Fe-Ni-Cr-Al Alloys**
Shigenari HAYASHI, Daiki KUDO, Shigeharu UKAI

12:00～ 3E-03 **In-Situ X-Ray Diffraction Analysis of Fe-Cr-Al Alloys During Initial Oxidation using Synchrotron Radiation**
Suzue YONEDA, Shigenari HAYASHI, Shigeharu UKAI, Masao TAKEYAMA

14:00～15:15

Environment-Resistant Characteristics 2　Oxidation 2　(Cr_2O_3 Former) --

Chairperson: *M. UEDA* (Tokyo Institute of Technology, Japan)

14:00～ 3E-04 **Keynote** **Protect from Oxidation on Cu for SOFC Metal Interconnects by Using Hydrogen Permeation**
Kenichi KAWAMURA Yuichiro UENISHI

14:25～ 3E-05 **Invited** **Heat-Transfer Property of Steam-Side Oxide Scale on 9%Cr Steel Tubes in Actual Thermal Power Plants**
Yoshitaka NISHIYAMA, Hiroshi NOGAMI, Yasushi HASEGAWA

14:50～ 3E-06 **Invited** **Carburization of Metals and Alloys Beneath Otherwise Protective Chromia Scales**
David J. YOUNG

15:55～17:30

Advanced Materials & Processing 5　FeAl ----------

Chairperson: *S. KOBAYASHI* (Tokyo Institute of Technology, Japan)

15:55～ 3A-17 **Re-Ordering Behavior Assisted by Thermal Vacancies in Fe-rich B2-Type FeAl**
Mi ZHAO, Kyosuke YOSHIMI, Junya NAKAMURA, Kunio YUBUTA, Takamasa SUGAWARA

16:20～ 3A-18 **B2/f.c.c FeNiMnAl Alloys for High Temperature Applications**
Ian BAKER, Fanling MENG, Zhanhwei WANG, Margaret WU

16:45～ 3A-19 **Influence of the Al Content on the Fracture Toughness and Creep Resistance of Fe-Al-Nb Alloys**
Srdjan MILENKOVIC

17:05～ 3A-20 **Two-Phase Binary Fe-Al Alloys with Fine-Scaled Lamellar Microstructure and the Effect of Ternary Additions on Microstructure, Stability, and Mechanical Behavior**
Xiaolin LI, Anke SCHERF, Daniel JANDA, Martin HEILMAIER, Frank STEIN