Wednesday 1 July 2015 (Day 3)

Auditorium A

09:15～10:35

Plenary Lecture 5 – 6

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

09:15～ 2P-05 **Aubert & Duval solutions for power generation and the energy policy in France**
Philippe HERITIER

09:55～ 2P-06 **Progress on A-USC Materials Technology in the U.S.**
John SHINGLEDECKER, Howard HENDRIX, Robert PURGERT

10:45～12:25

Heat Resisting Steels 3 Fundamental 3 (New Austenitic Steels)

Chairperson: *J. SHINGLEDECKER* (EPRI, USA)

10:45～ 2H-08 **Invited Creep strength of the GTAW welded joint of new 18at%Cr-30at%Ni-Nb austenitic steel at 700°C**
Yasushi HASEGAWA, Mitsuharu YONEMURA, Masaaki IGARASHI, Hiroshi MORIMOTO, Masao TAKEYAMA

11:10～ 2H-09 **Grain Boundary Nucleation of Fe2Nb Laves Phase in a Novel Austenitic Heat Resistant Steel of Fe-20Cr-35Ni-2.5Nb**
Fagang GAO, Naoki TAKATA, Satoru KOBAYASHI, Masao TAKEYAMA

11:35～ 2H-10 **Invited Steam Oxidation Resistance of the Modified Fe-20Cr-35Ni-2.5Nb (at.%) Steel at 1073 K**
Mitsutoshi UEDA, Kei CHIKAMA, Masao TAKEYAMA

12:00～ 2H-11 **Investigation of the Influence of Laves phase and NiAl Precipitation on Mechanical Properties in an Alumina-Forming Austenitic Stainless Steel**
Geneva TROTTER, Ian BAKER

15:20～17:00

Heat Resisting Steels 5　Welding 1

Chairperson: *M. MITSUHARA* (Kyushu University, Japan)

15:20～ 2H-16 **Invited** **Effect of Chemical Composition on the Creep Rupture Strength of Mod. 9Cr-1Mo Steel Weldments**
Nobuyoshi KOMAI, Ko ARISUE, Nobuhiko SAITO, Kimihiko TOMINAGA, Masaaki FUJITA

15:45～ 2H-17 **Creep and Damage Investigations of MARBN Welded Joints**
C. SCHLACHER, M. DIKOVITS, C. SOMMITSCH, P. MAYR

16:10～ 2H-18 **High Temperature Creep Behavior of Cross-weld Specimens of Weld Joint between T92 Martensitic and Super304H Austenitic Steels**
Sung-Min HONG, Myung-Yeon KIM, Jin-Yoo SUH, Jae-Hyeok SHIM, Woo-Sang JUNG, Jung-Chel CHANG, Dong-Joon MIN

16:35～ 2H-19 **Performance Improvement of Creep-Resistant Ferritic Steel Weldments through Thermo-Mechanical Treatment and Alloy Design**
Yukinori YAMAMOTO, Sudarsanam Suresh BABU, Benjamin SHASSERE, Xinghua YU

17:15～18:30

Heat Resisting Steels 6　Welding 2

Chairperson: *K. SAWADA* (National Institute for Material Science, Japan)

17:15～ 2H-20 **Verification of Creep Life Improvement of Post Weld Normalized and Tempered 9Cr1MoVNb Steel Weldment**
T. TOKAIRIN, T. SATO, H. HARADA, S.KIKUHARA

17:40～ 2H-21 **Microstructural Evolution of Welded Joint During Creep in High Cr Ferritic Heat-Resistant Steel**
Masatoshi MITSUHARA, Shinya AKADA, Shigeto YAMASAKI, Hideharu NAKASHIMA, Minoru NISHIDA, Yasushi HASEGAWA

2H-22 **Canceled**

18:05～ 2H-23 **Creep Damage Evaluation of Gr.122 Welded Joint by Hydrogen Thermal Desorption Analysis**
Shin-ichi KOMAZAKI, Hayato YAMASHITA, Masafumi OSHIMA

Auditorium B

10:45～12:25

Superalloys 3　Fundamental 2 (Mechanical Properties) ----------

Chairperson: *T. M. POLLOCK* (University of California Santa Barbara, USA)

10:45～ 2S-09 **Keynote** **Time-Resolved Synchrotron Diffractometry of Phase Transformations in High Strength Nickel-Based Superalloys**
D. M. COLLINS, D. J. CRUDDEN, E. ALABORT, T. CONNOLLEY, R. C. REED

11:10～ 2S-10 **Microstructure and Tensile Properties of IN 718 Built Up by Selective Laser Melting**
Yen-Ling KUO, Koji KAKEHI, Yoshihiro NAKAYAMA, Shota HORIKAWA

11:35～ 2S-11 **Crystallographic Orientation Dependence on Cyclic Frictional Behavior in a Single Crystal Ni-Base Superalloy**
Balavenkatesh RENGARAJ, Masakazu OKAZAKI

12:00～ 2S-12 **Creep Damage Evaluation of Ni-base Superalloy based on X-ray Diffraction Line Broadening**
Y. MUKAI, T. HAYASHI, H. DEGUCHI, H. KAGAWA

15:20～17:00

Superalloys 4　Gas Turbine ----------

Chairperson: *P. HELITIER* (Aubert & Duval, France)

15:20～ 2S-13 **Keynote** **ONERA's Trajectory in R & D of Materials for Aircraft Gas Turbine Engines**
Shigehisa NAKA

15:45～ 2S-14 **Invited** **Alloy Design and Innovative Manufacturing Process of High Strength Ni-base Forged Alloys for High Efficiency Thermal Power Plants**
Shinya IMANO, Yun SATO, Takashi SHIMAYAMA, Atsuo OTA

16:10～ 2S-15 **Trial Production of Large Sized Gas Turbine Disk of Ni-based Superalloy FX550**
Naoya SATO, Toshiaki NONOMURA, Eiji SHIMOHIRA, Toshihiro UEHARA, Takashi SHIBAYAMA, Shinya IMANO

16:35～ 2S-16 **Development of Microstructure Prediction Technology for Super-Alloy Turbine Discs in Free-Forging Process**
Takuma OKAJIMA, Shingo SAKURAI, Masanao FUJIWARA

17:15～18:55

Superalloys 5 Coating

Chairperson: *K. KUROKAWA* (Tomakomai National College of Technology, Japan)

17:15～ 2S-17 **Microstructure Changes and Oxidation Resistance of Aluminized Ni-Based Superalloys**
Kazuki KASAI, Hideyuki MURAKAMI

17:40～ 2S-18 **Gadolinium Zirconate/YSZ Thermal Barrier Coatings: Mixed-Mode Interfacial Fracture Toughness and Sintering Behavior**
Martin FROMMHERZ, Alfred SCHOLZ, Matthias OECHSNER

18:05～ 2S-19 **On the Corrosive Behaviour of Nickel-based Superalloys for Turbine Engines: Oxide Growth and Internal Microstructural degradation**
Karl Michael KRÄMER, Christoph BAUMANN, Alfred SCHOLZ, Matthias OECHSNER

18:30～ 2S-20 **Development of a Sol-Gel Ceramic Coating for the Protection against High-Temperature Corrosion in Waste-to-Energy Plants**
Stan VERDEROSA, Julien GARCIA, Jean-Michel SOBRINO, Jérôme FAVERGEON

Conference Room 1

10:45～12:25

Heat Resisting Steels 4　Life Assessment ----------

Chairperson: *N. KOMAI* (Mitsubishi Hitachi Power Systems, Ltd., Japan)

10:45～ 2H-12 **Keynote** **Code Specification Issues and Life Prediction of Advanced Ferritic Steels for Power Applications**
Fujimitsu MASUYAMA

11:10～ 2H-13 **Keynote** **Aberrant P91 and the Development of New Inspection and Life Assessment Techniques**
Ahmed SHIBLI

11:35～ 2H-14 **Investigations on Precipitation Evolution of MarBN Steels for Microstructure Based Life-Time Assessments**
E. PLESIUTSCHNIG, S. VUJIC, C. SOMMITSCH

12:00～ 2H-15 **Assessment of Crack Initiation in the Creep Regime**
Alexander HOBT, Magdalena SPECHER, Andreas KLENK

15:20～17:00

Advanced Materials & Processing 3　Co-Al-W / Ni Intermetallics ----------

Chairperson: *I. BAKER* (Thayer School of Engineering, Dartmouth College, USA)

15:20～ 2A-09 **Keynote** **Development of Dual Two-Phase Ni_3Al and Ni_3V Intermetallic Alloys**
Takayuki TAKASUGI, Yasuyuki KANENO

15:45～ 2A-10 **Invited** **Alloy Design of Co-Al-W-Based Superalloy**
Toshihiro OMORI, Kazuya SHINAGAWA, Ikuo OHNUMA, Ryosuke KAINUMA, Kiyohito ISHIDA

16:10～ 2A-11 **Long Term Phase Stability of a γ' Precipitation Strengthened Co-Ni-Al-W Alloy under Exposure at High-Temperature Range**
Mototsugu OSAKI, Shigeki UETA, Toshihiro OMORI, Kiyohito ISHIDA

16:35～ 2A-12 **Invited** **Effect of Alloying with Cr on High Temperature Oxidation in Co-Based two-Phase Superalloys**
Shogo IKEDA, Takahiko ITO, Katsushi TANAKA

17:15～18:55

Advanced Materials & Processing 4　Silicides & Others ----------

Chairperson: *M. HELLMAIER* (Karlsruhe Institute of Technology, Germany)

17:15～ 2A-13 **Directional Solidification of Ternary Nb-Si-Cr Eutectics and Its Influence on the Creep Resistance**
Florian GANG, Martin HEILMAIER

17:40～ 2A-14 **Invited** **Tensile Creep Properties of TiC-Added Mo-Si-B Alloys in the Ultrahigh Temperature Region**
Kyosuke YOSHIMI, Daiki KANEKON, Shiho YAMAMOTO, Joung Wook KIM,
Junya NAKAMURA, Kouichi MARUYAMA

18:05～ 2A-15 **Solidification Pathway and Microstructure Evolution of a Ternary Eutectic Mo-Si-B Alloy for High Temperature Applications**
Georg HASEMANN, Florian GANG, Martin PALM, Iurii BOGOMOL, Manja KRÜGER

18:30～ 2A-16 **Thermodynamic Assessment of the Al-Mo System and of the Al-Ni-Mo System**
Jian PENG, Peter FRANKE, Hans J. SEIFERT