

***THERMEC'2025***  
***INTERNATIONAL CONFERENCE***  
***on***  
***PROCESSING &***  
***MANUFACTURING OF***  
***ADVANCED MATERIALS***  
**June 30 - July 4, 2025**

*University of Tours, France*

**CONFERENCE PROGRAM**



THERMEC 2025 Program Matrix Table

	June 30		July 01		July 02		July 03		July 04	
Session	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
<b>A</b>	Adv. Steels 1	Adv. Steels 2	Adv. Steels 3	Adv. Steels 4	Adv. Steels 5	Adv. Steels 6	Adv. Steels 7	Adv. Steels 8	9	10
<b>B</b>	Additive Manufacturing 1	Additive Manufacturing 2	Additive Manufacturing 3	Additive Manufacturing 4	Additive Manufacturing 5	Additive Manufacturing 6	Additive Manufacturing 7	Additive Manufacturing 8	9	10
<b>C</b>	Fusion & Reactor Mat 1	Fusion & Reactor Mat 2	HEA 3	HEA 4	HEA 5	HEA 6	HEA 7	HEA 8	9	10
<b>D</b>	Al Alloys 1	Al Alloys 2	Al Alloys 3	Al Alloys 4	Al Alloys 5	Al Alloys 6	Interfaces, GB, ICGBE 7	Interfaces, GB, ICGBE 8	Interfaces, GB, ICGBE 9	10
<b>E</b>	Mg Alloys 1	Mg Alloys 2	Mg Alloys 3	Mg Alloys 4	LPSO 5	Smart/Intel. Materials 6	Composites 7	Composites 8	9	10
<b>F</b>	High & UHT Mat. 1	High & UHT Mat. 2	High & UHT Mat. 3	UFG 4	Materials Performance 5	Materials Performance 6	Materials Performance 7	Materials Performance 8	Materials Performance 9	10
<b>G</b>	Welding 1	Welding 2	Welding 3	Welding 4	Cold Spray 5	Fuel Cells 6	Fuel Cells 7	Mat. Extreme Env. 8	Mat. Extreme Env. 9	10
<b>H</b>	Ti Alloys 1	Ti Alloys 2	Metallic Glasses 3	Metallic Glasses 4	Metallic Glasses 5	Modelling 6	Modelling 7	Modelling 8	Modelling 9	10
<b>I</b>	Nanomaterials Energy Applic. 1	Nanomaterials Energy Applic. 2	Nanomaterials Energy Applic. 3	Adv. Bioeng & Nano Medicine 4	Adv. Bioeng & Nano Medicine 5	Adv. Bioeng & Nano Medicine 6	Biomimetic Mat 7	Biomimetic Mat 8	9	10
<b>J</b>	Solid State Processing 1	Solid State Processing 2	Neutron & X-ray Scattering 3	Neutron & X-ray Scattering 4	Adv. Coatings 5	Adv. Coatings 6	7	8	9	10
<b>K</b>			3	POSTERS 4	5	6	7	8	9	10

## Room Allocations

Session	Room	Session	Room
A	Chaumont	G	Loire
B	Chambord	H	Berry
C	Chenonceaux	I	Cher
D	Amboise	J	Sologne
E	Villandry	K	Sports Hall
F	Blois		

# **Plenary Presentations**

# SESSION- PLENARY 1

June 30, 9:00 – 9:30

Venue: Chaumont and Chambord

**Professor Alexis Deschamps**  
*Grenoble INP – Phelma, France*

**High throughput microstructure characterisation: Mapping phase transformation kinetics in composition and processing space**

**Chairperson: Professor Yoshihito Kawamura**

*Kumamoto University, Japan*

# SESSION- PLENARY 2

July 01, 9:00 – 9:30

Venue: Chaumont and Chambord

**Professor Roland Logé**  
*EPFL - Lausanne, Switzerland*

**Architected microstructures and zero-defect tolerance in additive  
manufacturing of metals and alloys**

**Chairperson: Professor Christof Sommitsch**

*Graz University of Technology, Austria*

# Oral Presentations

# SESSION- A

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**Session: A1, Venue: Chaumont**

**Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 1**

**Session Chairs: Nobuo Nakada, Ed Pickering**

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**A1 June-30 10:30 Keynote**

**\* Inverse steel design**

Yoshitaka Adachi

*Nagoya University, Japan*

**A1 June-30 11:00**

**\* Mechanism of pearlite colony formation via various orientation relationships between ferrite and cementite**

Endo Shiori, Nobuo Nakada, Toshihiko Teshima, Makoto Kosaka

*Institute of Science Tokyo, Japan*

**A1 June-30 11:20**

**\* High-throughput mapping of phase transformation kinetics in steel**

Hugo Van Landeghem, Imed-Eddine Benrabah, Marion Bregeault, Vuk Manojlovic, Olha Nakonechna, Sebastien Allain, Benoit Denand, Alexis Deschamps, Guillaume Geandier, Veijo Honkimaki, Muriel Veron, Hatem Zurob

*SIMaP, University of Grenoble-Alpes, France*

**A1 June-30 11:40**

**\* Austenite Plasticity and Martensite Microstructures**

Indradev Samajdar, Saurabh Kumar, Namit Pai, Junaid Akhtar

*IIT Bombay, India*

**A1 June-30 12:00**

**Microstructural characterisations of static strain ageing in C-Mn steel welds of the secondary circuit of pressurized water reactors**

Ronan Riverie, Veronique Massardier, Sylvain Dancette, Ben Salem Ghassen, Deborah Clement, Marie Stephane

*Framatome, France*

**A1 June-30 12:20**

**Impact of Non-Metallic Inclusions and Grain Structures Modified by Fast Heating Annealing on Tensile Properties and Fracture Modes in a V-microalloyed High-Mn TWIP Steel**

Atef Hamada, Tuomas Alatarvas, Matias Jaskari, Walaa Abdelaal, Tarek Allam, Antti Jarvenpaa, Pentti Karjalainen

*University of Oulu, Finland*

**A1 June-30 12:40**

**Unravelling precipitation kinetics in nanosteels using Small Angle Neutron Scattering**

Zamran Zahoor Khan, Niels Van Dijk, Sven Erik Offerman, Steven R. Parnell

*Delft University of Technology, Netherlands*

**Lunch break 13:00 - Sessions restart at 14:30**

*\* Invited Presentation*

Thermec'2025 Conference Programme  
Intl' Conf. on Processing & Manufacturing of Advanced Materials, June 30-July 04, 2025, Tours, France

# SESSION- A

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**Session: A2, Venue: Chaumont**

## **Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 2**

**Session Chairs: Yoshitaka Adachi**

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A2 June-30 14:30

\* Investigation of metal embrittlement in galvanized quenching and partitioning steels

Christof Sommitsch, Matthias Wallner, Katharina Steineder, Reinhold Schneider

*Graz University of Technology, Austria*

A2 June-30 14:50

\* Evaluating LME susceptibility in third-generation AHSS: The role of testing methodologies and silicon concentration

Katharina Steineder, Martin Gruber, Simone Kaar-Schickinger, Matthias Wallner, Korbinian Höger, Martin Arndt, Reinhold Schneider

*University of Applied Sciences Upper Austria, Austria*

A2 June-30 15:10

Effect of nitrogen in yielding behavior of austenitic stainless steels

Kento Hani, Genichi Shigesato, Toshihiro Tsuchiyama, Takuya Maeda, Shuichi Nakamura

*Kyushu University, Japan*

A2 June-30 15:30

\* Dynamic recrystallization of 15-5 HP steel associated with the quantum mechanics and relativistic frequency parameter M and wavelength of electromagnetic spectrum

Juan Munoz-Andrade

*Universidad Autonoma Metropolitana, Mexico*

**Session A2: Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 2**

Coffee / Tea break 15:50 to 16:20

A2 June-30 16:20- *Student*

Heterogeneous deformation behavior of pre-strained 18%Ni martensitic steel

Ayumu Yamada, Takuro Masumura, Toshihiro Tsuchiyama, Eriko Shimoda

*Kyushu University, Japan*

A2 June-30 16:40

Effect of intercritical annealing temperature and holding time to mechanical performance of hot-rolled medium manganese steel

Tuomas Perkio, Pekka Kantanen, Antti Kaijalainen

*University of Oulu, Finland*



# SESSION- A

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**Session: A3, Venue: Chaumont**

## **Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 3**

**Session Chairs: Shoichi Nambu**

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### **A3 July-01 10:30 Keynote**

**\* Nanoprecipitates-strengthened ultrastrong stainless steel with excellent work hardening**

Zhongwu Zhang, Junpeng Li, Weiguo Jiang

*Harbin Engineering University, China*

A3 July-01 11:00

\* Uncovering the interplay between thermo-mechanical processing parameters and microstructure of V, Cr-microalloyed steels

Elena Pereloma, Gholam Baqeri, Navjeet Singh, Andrii Kostyryzhnev, Chris Killmore

*University of Wollongong, Australia*

A3 July-01 11:20

Modelling the effect of prior martensite on the kinetics of bainite formation

Avila Daniel Dos Santos, Stefan Van Bohemen, Sven Erik Offerman, Maria Santofimia Navarro

*Delft University of Technology, Netherlands*

A3 July-01 11:40

Enhancing Cryogenic Strength of Austenitic Stainless Steels Through Thermo-Mechanical Controlled Processing and Nitrogen Alloying

Ali Smith, Frank Hoffmann, Mahesh Somani, Ahmed Abdelghany, Marta Muratori

*RINA Consulting - Centro Sviluppo Materiali SpA, Italy*

A3 July-01 12:00

Effect of Cold-Forming on Mechanical Properties of AHSS Steel

Tun Tun Nyo, Laura Autio, Juha Tulonen, Antti Kaijalainen

*University of Oulu, Finland*

A3 July-01 12:20

Microstructure and impact wear behavior of a V-Ti microalloyed carbide-containing high manganese steel

Yongjin Wang, Renbo Song, Siyao Bi

*University of Science and Technology Beijing, China*

A3 July-01 12:40

Laser heat treatments on spheroidized steels

Felipe Castro Cerda, Patricio Mendez

*Universidad de Santiago, Chile*

<b>Lunch break 13:00 - Sessions restart at 14:30</b>
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# SESSION- A

**Session: A4, Venue: Chaumont**

## **Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 4**

**Session Chairs: Kuo-Cheng Yang, Zhongwu Zhang**

A4 July-01 14:30

\* Three-dimensional analysis of microstructure formation in the initial stage during martensitic transformation in low-carbon steel

Shoichi Nambu

*The University of Tokyo, Japan*

A4 July-01 14:50

\* Difference in dislocation microstructure and mechanical property between as-quenched and deformation-induced martensite

Takuro Masumura, Toshihiro Tsuchiyama, Shota Yamasaki

*Kyushu University, Japan*

A4 July-01 15:10

Revealing the microstructure and mechanical properties of rapidly quenched and tempered 51CrV4 steel processed via a continuous induction line

Ahmed Abdelghany, Oskari Haiko, Antti Jarvenpaa, Antti Kaijalainen

*University of Oulu, Finland*

A4 July-01 15:30

A novel strategy to achieve uniform fine grains in carburised gear by tailoring the deformation gradient through the forging process

Wanli Sun, Haibin Wang, Chaolei Zhang

*University of Science and Technology Beijing, China*

**Session A4: Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 4**

Coffee / Tea break 15:50 to 16:20

A4 July-01 16:20 - *Student*

Thermal stabilization by prior deformation in metastable austenitic steel undergoing “gamma epsilon alpha” transformation

Manato Otaki, Takuro Masumura, Toshihiro Tsuchiyama, Yamasaki Shota

*Kyushu University, Japan*

A4 July-01 16:40

Influence of Mo and N Additions on the Precipitation and Tensile Properties Behaviors in Austenitic Stainless Steel during Aging

Seungkook Bang, Jongho Shin, Geunsu Jung, Dojin Cha, Youngwha Ma

*Doosan University, South Korea*

# SESSION- A

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**Session: A5, Venue: Chaumont**

**Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 5**

**Session Chairs: Elena Pereloma**

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**A5 July-02 9:00 - Keynote**

**\* Relation between low elastic limit and mobile dislocation density in as-quenched martensitic steel**

Toshihiro Tsuchiyama, Yushi Takenouchi, Shuhei Wada, Yuto Ochiai, Takuro Masumura, Hiroshi Okano

*Kyushu University, Japan*

A5 July-02 9:30

**\* Effect of Annealing Process on Microstructures and Mechanical Properties of Cold-Rolled Martensitic Steels for Automotive Structural Parts**

Kuo-Cheng Yang, J. F. Tu, T. F. Wu, P. C. Hsieh, P. H. Liu

*China Steel Corporation, Taiwan*

A5 July-02 9:50

**Thermomechanical rolling of thick Nb-Ti-V-Ni high strength structural steel plate**

Rorisang Nkarapa Maubane, Kevin Banks, Tracy Luthuli

*University of Pretoria, South Africa*

**Session A5: Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 5**

Coffee / Tea break 10:10 to 10:40

A5 July-02 10:40

**Effect of EAF impurities on microstructure and mechanical properties of low-carbon steels**

Anttu Hoikkaniemi, Oskari Haiko, Antti Kaijalainen

*University of Oulu, Finland*

A5 July-02 11:00 - *Student*

**Carbides in ferritic steels: defects and atomic diffusion from AB-initio based studies**

Adrien Lemerrier, Chu-Chun Fu, Frederic Soisson, Jean-Luc Bechade

*SRMP, France*

A5 July-02 11:20

**Assessing the Origins of Autogeneous Recrystallisation During the Austenitisation of Low-Alloy Steels: Comparing In-Situ EBSD and In-Situ Synchrotron XRD**

Mark Taylor, Rhys Thomas, Albert Smith, Yahya Mozumder, Jack Donoghue, Philip Prangnell, Fabio Scenini, Christopher Hutchinson, Ed Pickering

*University of Manchester, UK*

A5 July-02 11:40

**\* On the static recrystallization characteristics and kinetics of austenitic stainless steels under development for LH2 storage applications**

Mahesh Somani, Ahmed Abdelghany, Sumit Ghosh, Ali Smith, Marta Muratori, Frank Hoffmann

*University of Oulu, Finland*

# SESSION- A

A5 July-02 12:00

On the Chemical Boundary Engineering of Hot-Rolled Medium Mn Steel

Saeed Sadeghpour, Vahid Javaheri, Jukka Komi, Pentti Karjalainen

*University of Oulu, Finland*

A5 July-02 12:20

\* A web application for predicting steel hardenability using artificial neural networks

Hai-Lin Chen, Yunpeng Ma, Qing Chen

*Thermo-Calc, Sweden*

A5 July-02 12:40

Engineering steel microstructures using ICME to meet industry goals

Savya Sachi, John Aristeidakis, Hoda Dini, David Linder, Ida Berglund

*QuesTek Europe AB, Sweden*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- A

**Session: A6, Venue: Chaumont**

## **Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 6**

**Session Chairs: Indradev Samajdar**

A6 July-02 14:30

\* Revealing the Mechanisms of Austenitisation in Low-Alloy Steels Using In-situ EBSD

Ed Pickering, Mark Taylor, Albert Smith, Jack Donoghue, Rhys Thomas, Christopher Hutchinson, Philip Prangnell, Fabio Scenini

*University of Manchester and Henry Royce Institute, UK*

A6 July-02 14:50

\* Formation mechanism of detrimental grain boundary kappa-carbide during age hardening of austenitic high manganese lightweight steel

Dirk Ponge, Mohamed N. Elkot, Binhan Sun, Dierk Raabe

*Max Planck Institute for Sustainable Materials, Germany*

A6 July-05 15:10

\* Solution nitriding of 304 stainless steel for hydrogen embrittlement resistance

Young-Je Kwon, Jee-Hyun Kang

*Yeungnam University, South Korea*

A6 July-02 15:30

Microstructure and precipitation evolution in the state of art seamless tube rolling mills

Ricardo N. Carvalho, Clelia R. Oliveira, Chynthia S. B. Castro, Neice F. Santos, Anderson C.

Jesus, Josao Rocha, Paulo Haddad, Ronaldo Barbosa

*CIT Senai, Brazil*

### **Session A6: Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 6**

Coffee / Tea break 15:50 to 16:20

A6 July-02 16:20

Hydrogen-related effects in austenitic steels: Contribution to deformation behavior and hydrogen embrittlement resistance

Ivan Gutierrez-Urrutia, Yuhei Ogawa, Akinobu Shibata

*National Institute for Materials Science (NIMS), Japan*

A6 July-02 16:40

Discovery of nano-scaled promising strengthening factor in 316L stainless steel fabricated by laser powder bed fusion

Fei Sun, Yoshitaka Adachi, Kazuhisa Sato, Takuya Ishimoto, Takayoshi Nakano, Yuichiro Koizumi

*Nagoya University, Japan*

A6 July-02 16:40

Internal Friction and Hydrogen Embrittlement of Steel

Sanjay Manda, Ajay S. Panwar, Indradev Samajdar

*Indian Institute of Technology Bombay, India*

\* Invited Presentation

Thermec'2025 Conference Programme

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# SESSION- A

**Session: A7, Venue: Chaumont**

## **Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 7**

**Session Chairs: Young-Je Kwon**

A7 July-03 9:00

\* Evolution of the microstructure and properties of a steel subjected to a Q&P treatment including a galvanizing step

Jessica Calvo, Marcel Carpio, Omar Garcia, Juan Pablo Pedraza, Jose Maria Cabrera  
*Universitat Politecnica de Catalunya, Spain*

A7 July-03 9:20

Effect of Mn concentration in Cementite on austenitization behavior of Fe-C-Mn Alloy

Kai Fujikura, Nobuo Nakada, Ryota Nagashima, Shohei Yabu  
*Institute of Science Tokyo, Japan*

A7 July-03 9:40

\* Thermomechanical processing of 0.17C-4Mn-0.8Al-0.5Si QP-treated steels based on deformation-continuous-cooling-transformation diagrams

Adam Grajcar, Adam Skowronek, Tullu Firew Kassaye, Oguz Gulbay, Alexander Gramlich, Ulrich Krupp  
*Silesian University of Technology, Poland*

A7 July-03 10:00

Recent Development of Hot-rolled 780 and 980MPa AHSS for Automotive Lightweight Chassis

Jewoong Lee, Taejin Song, Sungil Kim, Youngroc Im  
*POSCO, South Korea*

### **Session A7: Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 7**

Coffee / Tea break 10:20 to 10:50

A7 July-03 10:50

Towards a comprehensive understanding of the effect of continuous annealing process conditions on the microstructure development of cold-rolled dual-phase (DP) steels and their correlations with mechanical and magnetic properties

Amaia Iza-Mendia, Denis Jorge-Badiola, Sergio Fernandez-Sanchez, Iosu Aramendi, Mikel Cuenca-Ariza, Ane Martinez-De Guereñu, Luis Vitores Valcarcel  
*Ceit-Member of Basque Research & Technology Alliance (BRTA), Spain*

A7 July-03 11:10

Exploring Carbon Partitioning, Carbide Precipitation, and Bainite Formation During Q&P Processing in Medium-Carbon Steel Using In-Situ Synchrotron XRD

Aalipour Hafshejani Zeynab, Sumit Ghosh, Jukka Komi, Vahid Javaheri  
*University of Oulu, Finland*

A7 July-03 11:30

A Novel Approach to Predict Martensitic Transformations in High-carbon Bearing Steels

Aysel Aysu Catal-Isik, Enrique Galindo-Nava, Lizeth Johana Sanchez-Camacho, Vikram Bedekar, Mangesh Vyankat Pantawane  
*University College London, United Kingdom*

\* Invited Presentation

# SESSION- A

A7 July-03 11:50

Thermodynamic and Algorithmic Optimization of Medium Manganese Steel Composition Design, Non-Metallic Inclusion Analysis, and Microstructural Insights

Mahmoud Elaraby, Mohammed Ali, Mamdouh Eissa, Jukka Komi, Pentti Karjalainen, Henri Tervo, Tuomas Alatarvas, Ehsan Ghassemali, Jacob Steggo, Vahid Javaheri

*University of Oulu, Finland*

A7 July-03 12:10

On the conditions of pearlitic cementite nucleation at a migrating austenite-ferrite interface

Daniel Ogris, Johannes Kreyca, Ernst Gamsjaeger, Sabine Zamberger

*Voestalpine Forschungsservicegesellschaft Donawitz GmbH, Austria*

A7 July-03 12:30

Multi-scale and multi-modal microstructure imaging for in-situ studying creep damage and healing in ferritic steels at ID11/ESRF

Haixing Fang, Abdelrahman Hussein, Wolfgang Ludwig, Jonathan Wright, Sybrand Van Der Zwaag, Niels Van Dijk

*European Synchrotron Radiation Facility, France*

A7 July-03 12:50

Analysis on hydrogen embrittlement of SUS304 and SUS316 steels by In-situ X-ray diffraction using Synchrotron radiation during low temperature and high pressure H<sub>2</sub> gas tensile testing with 0.3mm thin wall hollow specimen

Shiro Torizuka, Atsushi Ito

*University of Hyogo, Japan*

**Lunch break 13:10 - Sessions restart at 14:30**

# SESSION- A

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**Session: A8, Venue: Chaumont**

**Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 8**

**Session Chairs: Katharina Steineder**

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A8 July-03 14:30

Influence of the phase state variations on the impact toughness of lean alloyed 19â€“22 wt% Cr ferritic-austenitic stainless steels

Sampo Uusikallio, Mohammad Moallemi, Jukka Komi

*University of Oulu, Finland*

A8 July-03 14:50

Impact of Aluminium in comparison to Silicon on Liquid Metal Embrittlement of 3rd Generation AHSS

Korbinian Hoeger, Simone Kaar-Schickinger, Matthias Wallner, Reinhold Schneider, Katharina Steineder, Martin Gruber, Christof Sommitsch

*Graz University of Technology, Austria*

A8 July-03 15:10

Detecting iron in vanadium carbide nanoprecipitates by atomic-resolution scanning transmission electron microscopy techniques

Amir Sabet Ghorabaei, Bart J. Kooi

*Zernike Institute of Advanced Materials, Netherlands*

A8 July-03 15:30

Strain hardening behaviour of a metastable AISI 301LN austenitic stainless steel as a function of temperature

Charles Siyasiya

*University of Pretoria, South Africa*

**Session A8: Advanced Steels & TMP Microalloyed Steels (Prof. Y Adachi Symposium) 8**

Coffee / Tea break 15:50 to 16:20

A8 July-03 16:20

Analysis of white strip defects in the galvanized coating surface of hot dip galvanized DP steel

Guang Chen, Min Zhu, Weichen Mao

*Baoshan Iron & Steel Co. Ltd, Shanghai, China*

A8 July-03 16:40

Evolution of inclusions in physically simulated heat-affected zones of a weld metal used with a 500 MPa offshore steel

Henri Tervo, Marcell Gaspar, Judit Kovacs, Antti Kaijalainen, Vahid Javaheri, Johannes Sainio, Tuomas Alatarvas, Jukka Komi

*University of Oulu, Finland*



# SESSION- B

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**Session: B1, Venue: Chambord**

## **Additive Manufacturing 1**

**Session Chairs: Masakazu Tane, Fernando Carreno**

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### **B1 June-30 10:30 Keynote**

**\* Generating a Digital Twin of the Laser Powder Bed Fusion Process**

Dermot Brabazon

*Dublin City University, Ireland*

B1 June-30 11:00

**\* Co-sintering of LTCC-gold system: Coupled experimental, analytical and numerical approaches**

Guy Antou, Nicolas Pradeilles, Nicolas Delhote, Alexandre Maitre

*University of Limoges, France*

B1 June-30 11:20

**\* Additive manufacturing of recycled Ti-6Al-4V powder by Fused Granular Fabrication (FGF)**

Florian Pyczak

*Helmholtz-Zentrum, Germany*

B1 June-30 11:40

**Effect of microstructural heterogeneity on slip localization in L-PBF processed AlFeCrX alloys**

Carmen Cepeda-Jimenez, Farid Bahari-Sambran, Fernando Carreno, Alberto Orozco

*Polytechnic University of Madrid, SpainJapan*

B1 June-30 12:00

**\* Design of high entropy alloy with suppressed elemental segregation for laser powder bed fusion process**

Ozkan Gokcekaya, Yong Seong Kim, Takayoshi Nakano

*Osaka University, Japan*

B1 June-30 12:20

**Microstructure engineering of ultra-high strength martensitic steel produced by advanced manufacturing processes**

Yahya H. Mozumder, Mark Taylor, Philip B. Prangnell, Ed J. Pickering, Fabio Scenini

*University of Manchester, UKCanada*

B1 June-30 12:40

**\* Phase selection during laser-powder bed fusion**

Charles-Andre Gandin, Gildas Guillemot, Paul Martin

*Mines Paris, France*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- B

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**Session: B2, Venue: Chambord**

## **Additive Manufacturing 2**

**Session Chairs: Takahiro Kunimine, Ozkan Gokcekaya**

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B2 June-30 14:30

\* Electron Microscopy Studies on Orientation-Controlled 316L Austenitic Stainless Steel  
Produced by Laser Powder Bed Fusion  
Kazuhisa Sato, Shunya Takagi, Satoshi Ichikawa, Takuya Ishimoto, Takayoshi Nakano  
*Osaka University, Japan*

B2 June-30 14:50

\* Low Cycle Fatigue Response of Additive Manufactured Advanced Structural Alloys: Insights into high performance alloy fatigue life  
N C Santhi Srinivas, Chattopadhyay Kausik, Vasu Shreyasi, R. Kumar Pavan, Jaydeep Vishwakarma  
*Indian Institute of Technology, Varanasi, India*

B2 June-30 15:10

\* 3D Volume Construction Methodology for Cold Spray Additive Manufacturing  
Hongjian Wu, Frank Gaertner, Thomas Klassen  
*Helmut Schmidt University, Germany*

B2 June-30 15:30

Environmental applications of 3D printed metallic materials  
Oriol Rius-Ayra, Tahchieva Alisiya Biserova, Nuria Llorca-Isern  
*University of Barcelona, Spain*

### **Session B2: Additive Manufacturing 2**

Coffee / Tea break 15:50 to 16:20

B2 June-30 16:20- *Student*

Influence of increasing chromium content on additively manufactured tool steels: microstructural and mechanical evolution before and after heat treatment  
Nicole Ofner, Sabine Carmen Bodner, Peter Kunnas, Atacan Asci, Kevin Kutlenja, Andreas Stark, Philipp Habenreich, Christin Aumayr, Liang Wu, Christoph Turk, Jozef Keckes, Michael Meindlhumer  
*Leoben University, Austria*

B2 June-30 16:40

Enhancing fatigue performance of additively manufactured H13 tool steel through surface finishing processes  
Hassan, Hosseinlou Mohsen Shakeri, Matias Jaskari, Ahmed Abdelghany, Antti Jarvenpaa, Atef Hamada  
*University of Oulu, Finland*

B2 June-30 17:00

Functionally graded materials by multi-layer friction stir (MLFS) deposition  
Farzad Khodabakhshi, Sina Vaghefi, Aude Simar  
*University of Tehran, Iran*

# SESSION- B

B2 June-30 17:20

Temperature sensitive isotropic sintering model for 316L binder jetting parts

Alexander Abanobi, Etienne Martin

*Polytechnic University of Montreal, Canada*

# SESSION- B

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**Session: B3, Venue: Chambord**

## **Additive Manufacturing 3**

**Session Chairs: Dermot Brabazon, Ken Cho**

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### **B3 July-01 10:30 Keynote**

**\* Innovative design of crystallographic textures and macroscopic shapes via metal additive manufacturing**

Takayoshi Nakano

*Osaka University, Japan*

B3 July-01 11:00

**\* Substrate tubing heater suitable for large volume 3D printing with extrusion of thermo-reversible hydrogel**

Andreas Engels, Sandy Speck, Volker Schlegel, Hannes Jacobs, Rene Krenz-Baath, Andrea Boehme

*Technical University of Applied Sciences Wildau, Germany \**

B3 July-01 11:20

**Towards controlling 4D printing for developing innovative architected microstructures**

Laura Rose Perrin, Reza Esmaeilzadeh, Jamasp Jhabvala, Lucas Schlenger, Shruti Banait, Mathijs Van Der Meer, Roland Loge

*Polytechnic University of Lausanne, Switzerland*

B3 July-01 11:40

**\* Elastic properties of laser powder bed fusion processed  $\beta$ -phase Ti alloys**

Masakazu Tane, Shota Higashino, Eisuke Miyoshi, Takuya Ishimoto, Takayoshi Nakano

*Osaka University, Japan*

B3 July-01 12:00

**Novel cellular structure with phase-separation induced dislocation-network in Ti-Zr-Nb-Ta-Zr high entropy alloy fabricated by laser powder bed fusion**

Daisuke Egusa, Han Chen, Ryosuke Ozasa, Masayuki Okugawa, Taisuke Sasaki, Takuya Ishimoto, Koizumi Yuichiro, Takayashi Nakano, Eiji Abe

*University of Tokyo, Japan*

B3 July-01 12:20

**\* Minimum ductility at intermediate temperatures of Al-Fe-Cr-X alloys processed by L-PBF**

Fernando Carreno, Farid Bahari-Sambran, Alberto Orozco-Caballero, Carmen Cepeda-Jimenez

*Polytechnic University of Madrid, Spain*

B3 July-01 12:40

**\* Microstructural evolution and strengthening mechanisms in Ti-6Al-4V alloys processed via electron beam powder bed fusion**

Kenta Yamanaka, Manami Mori, Neeraphat Kunbuala, Phacharaphon Tunthawiroon, Shota Kariya, Katsuyoshi Kondoh, Yusuke Onuki, Shigeo Sato

*Tohoku University, Japan*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- B

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**Session: B4, Venue: Chambord**

## **Additive Manufacturing 4**

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**Session Chairs: N C Santhi Srinivas, Hongjian Wu**

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B4 July-01 14:30

\* Microstructure control of TiAl alloys using peculiar thermal history of additive manufacturing  
Ken Cho, Hiroyuki Y. Yasuda, Masao Takeyama, Takayoshi Nakano  
*Osaka University, Japan*

B4 July-01 14:50

Microstructure, Mechanical and Thermal Conductivity Properties of Pure Copper Fabricated by Metal Material Extrusion Additive Manufacturing Process  
Kee-Ahn Lee, So-Yeon Park, Na-Yoon Yee, Michelle Baek  
*Inha University, South Korea*

B4 July-01 15:10

\* Influence of a modulated laser irradiation on the LPBF process stability, induced microstructures and mechanical properties of Al10SiMg alloy  
Patrice Peyre, Pierre Hebrard, Bassem Barkia, Emilie Leguen, Ali Gokhan Demir, Francesco Galbusera, Leonardo Caprio  
*Polytechnic University of Milano, Italy*

B4 July-01 15:30

Functionally graded wear-resistant lightweight steel manufactured by laser powder bed fusion deposition  
Jin-Su Park, Joonoh Moon  
*Changwon National University, South Korea*

### **Session B4: Additive Manufacturing 4**

Coffee / Tea break 15:50 to 16:20

B4 July-01 16:20 - *Student*

Combinatorial design of lightweight steels using multi-nozzle direct energy deposition (DED)  
Chahee Jung, Seungjin, Nam Chung Hyun, Heechan Jeong, Hyunjoo Choi, Su Sohn Seok  
*Korea University, South Korea*

B4 July-01 16:40

\* Effect of Surface Conditions on Mechanical Properties of IN718 and IN625 Manufactured by Additive/Subtractive Laser Powder Bed Fusion Technology  
Sheida Sarafan, Priti Wanjara, Javad Gholipour, Sila Atabay, Josh Soost  
*National Research Council of Canada, Canada*

B4 July-01 17:00

Effect of laser beam distribution on the glassy state of 3D printed Zr-based bulk metallic glass during in-situ synchrotron heat treatment  
Sepide Hadibeik  
*University of Leoben, Austria*

# SESSION- B

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**Session: B5, Venue: Chambord**

## **Additive Manufacturing 5**

**Session Chairs: Andreas Engels, Masahiro Kusano**

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B5 July-02 9:00

\* Towards the defect-tolerant design of laser powder bed-fused metal parts: example of Ti64 alloy

Vladimir Brailovski

*Ecole de Technologie Supérieure, Canada*

B5 July-02 9:20

\* Additive Manufacturing and Post-Processing to Produce Microstructure Electrodes and Application Potentials

Andrea Boehme, Torsten Doehler

*Technical University of Applied Sciences Wildau, Germany*

B5 July-02 9:40

Development and optimization of metastable beta titanium-based alloys by laser powder bed fusion for biomedical applications

Nolwenn Rince, Philippe Castany, Thierry Gloriant

*National Institute of Applied Sciences Rennes, France*

B5 July-02 10:00

Influence of temperature and print orientation on anisotropy sintering in binder jet stainless steels of 316 L and 17-4 PH

Khadijeh Esmati, Etienne Martin, Srinivas Pendurti, Arunkumar Natarajan

*Polytechnic University of Montreal, Canada*

**Session B5: Additive Manufacturing 5**

Coffee / Tea break 10:20 to 10:50

B5 July-02 10:50

Development of an environmentally friendly and low-cost binder for 17-4PH metal part printing via Fused Deposition Modeling

Sheyda Khazaee, Etienne Martin, Rachid Boukhili, Elie Bitar-Nehme, Jovan Kostenov, William Regnaud

*Polytechnic University of Montreal, Canada*

B5 July-02 11:10 - *Student*

Optimizing thermal cycles in Wire-Arc Additive Manufacturing: Investigating inter-pass time and the use of an external cooling system

Anas Rassane

*Institut de Recherche Technologique Jules Verne, France*

B5 July-02 11:30

Nano-scaled solidification microstructure characteristics in additively manufactured 316L stainless steel

Fei Sun, Yoshitaka Adachi, Kazuhisa Sato, Takuya Ishimoto, Takayoshi Nakano, Yuichiro Koizumi

*Nagoya University, Japan*

# SESSION- B

B5 July-02 11:50

\* A Novel Strategy for the Control of Crystallographic Texture of Metals with Non-Cubic Crystal System via Powder Bed Fusion using a Laser-Beam of Metals

Ryosuke Ozasa, Koji Hagihara, Takayoshi Nakano

*Osaka University, Japan*

B5 July-02 12:10 - *Student*

Influence of hierarchical structure on mechanical properties of additive manufactured IN718 alloys

Kippe Yamashita, Ken Cho, Hiroyuki Y. Yasuda, Takuma Saito, Taisuke Sasaki, Sawaizumi Katsuhiko, Masayuki Okugawa, Koizumi Yuichiro, Takayoshi Nakano

*Osaka University, Japan*

B5 July-02 12:30

Applications of CALPHAD-based tools for welding and additive manufacturing

Alisson Da Silva Kwiatkowski, Andreas Markstrem, Amer Malik, Do Quang Minh, Johan Jeppsson

*Thermo-Calc Software AB, Sweden*

B5 July-02 12:50

\* Hybrid additive manufacturing of HTCC passive components for hyper frequency applications

Vincent Pateloup, Herbert Knoblauch, Anna Junger

*IRCER, France*

**Lunch break 13:10 - Sessions restart at 14:30**

# SESSION- B

**Session: B6, Venue: Chambord**

## **Additive Manufacturing 6**

**Session Chairs: Takayoshi Nakano, Guy Antou**

B6 July-02 14:30

\* NiTi shape memory alloy by laser powder bed fusion: how manufacturing parameters influence the nature of the alloy and its mechanical properties

Yang Yang, Thierry Gloriant

*National Institute of Applied Sciences Rennes, France*

B6 July-02 14:50

The compensation of geometric errors during the design phase

Anass El-Qemary, Ikram, Kabbouri Said Boutahari, Mouhssine Chahbouni

*University Sidi Mohamed Ben Abdellah, Morocco*

B6 July-05 15:10

\* Growth of Antiphase Domain in Laser-Irradiated Region and Superelasticity of Single-Crystal-Like Fe<sub>3</sub>Al Fabricated by Laser Powder Bed Fusion Process

Yuheng Liu, Tsubasa Sato, Masayuki Okugawa, Kazuhisa Sato, Hiroyuki Y. Yasuda, Takayoshi Nakano, Yuichiro Koizumi

*Osaka University, Japan*

B6 July-02 15:30

Investigating the Reaction Mechanisms and Structural Enhancements in Maraging Steel 300

Reinforced with In-Situ TiC+TiB<sub>2</sub> via Laser Powder Bed Fusion

Biranchi Narayan Sahoo, Soni Harsh, Sardar Vallabhbhai

*National Institute of Technology, India*

## **Session B6: Additive Manufacturing 6**

Coffee / Tea break 15:50 to 16:20

B6 July-02 16:20

Effect of Scanning Rotation Angle on the Properties of IN939 Fabricated by Laser Powder Bed Fusion

Merve Nur Dogu, Seren Ozer, Mustafa Alp Yalcin, Kemal Davut, Hengfeng Gu, Dermot Brabazon

*Dublin City University, Ireland*

B6 July-02 16:40

B6 July-02 17:00

Characteristics of Solidification by Super-Thermal Field in Powder Bed Fusion: Comparison with Conventional Rapid Solidification Processes

Yuichiro Koizumi, Masayuki Okugawa, Yuheng Liu

*Osaka University, Japan*

B6 July-02 17:20

Effect of additive manufacturing-induced metastable retained austenite and austenite reversion on the mechanical properties of Corrax® stainless steel

Chuan Tsai, Hung-Wei Yen, Ming-Wei Wu

*National Taiwan University, Taiwan*



# SESSION- B

B6 July-02 17:40 - *Student*

Effect of chemical surface post-processing on the surface roughness of Niti fabricated by laser powder bed fusion

Meris Meric Ikiz

*Dublin City University, Ireland*

# SESSION- B

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**Session: B7, Venue: Chambord**

**Additive Manufacturing 7**

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**Session Chairs: Ho Jin Ryu, Sheida Sarafan**

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B7 July-03 9:00

\* Microstructures and Hardness of WC-Co and WC-HEA Cemented Carbides Additively Manufactured by the Multi-Beam Laser Directed Energy Deposition  
Takahiro Kunimine, Wenheng Guo, Kaito Ebihara, Yorihiro Yamashita, Shintaro Yasui  
*Kanazawa University, Japan*

B7 July-03 9:20

\* Phase stability and thermal expansion property of super-invar alloy fabricated by laser powder bed fusion  
Senlin Cai, Ryota Nagashima, Chai Yaw Wang, Sakaguchi Naoki, Nakada Nobuo  
*Institute of Science Tokyo, Japan*

B7 July-03 9:40

Towards new high-strength and heat-resistant Al alloy design enabled by additive manufacturing  
Gang Ji, Siming Ma, Ahmed Addad, Zhe Chen  
*University of Lille, France*

B7 July-03 10:00

Laser additively manufacturing of steels  
Qiyang Tan, Ju Yao, Jeffrey Venezuela, Chris Hutchinson, Mingxing Zhang  
*The University of Queensland, Australia*

**Session B7: Additive Manufacturing 7**

Coffee / Tea break 10:20 to 10:50

B7 July-03 10:50

\* Effect of building conditions on high-temperature tensile properties of IN738LC fabricated by laser powder bed fusion  
Masahiro Kusano, Toshio Osada, Makoto Watanabe  
*National Institute for Materials Science Tsukuba, Japan*

B7 July-03 11:10

Effect of heat treatment on the microstructure and impact toughness of PBF-LB manufactured 17-4 PH stainless steel  
Renata De Oliveira Melo, Ji Gang, Grosjean Christophe, Baustert Eric, Tran Nhu-Cuong, Villaret Flore, Bouquerel Jeremie  
*UMR, France*

B7 July-03 11:30

Evaluation of Porosity and Hardness in Aerospace-Grade Aluminium Alloys Processed by Friction Surfacing  
Halil Ibrahim Erol, Umutcan Galletutan, Ahmetcan Gunayd, Sertac Altinok  
*Turkish Aerospace Industries, Turkey*

# SESSION- B

B7 July-03 11:50 - *Student*

Effect of Build Orientation on Crystallographic Texture and Fatigue Performance of Selective Laser Melted Ti-6Al-4V ELI Parts

Mintu Pal, Anil Meena, Ashwin Polishetty

*Indian Institute of Technology Madras, India*

B7 July-03 12:10 - *Student*

Electropolishing of NiTi cardiovascular stents produced via laser powder bed fusion technique

Neha Agarwal, Muhannad Ahmed Obeidi, Dermot Brabazon

*Dublin City University, Ireland*

B7 July-03 12:30 - *Student*

Simulation based estimation of local heat build-up during Laser Powder Bed Fusion processing

Lucas Schlenger, Philip Depond, Gabe Guss, Roland Loge

*Polytechnic University of Lausanne, Switzerland*

B7 July-03 12:50

\* Microstructure and mechanical properties of high strength Al-alloys produced by laser powder bed fusion

Maulik Patel, Richard Woods, Anthony Stones, Sven Vogel

*University of Liverpool, UK*

**Lunch break 13:10 - Sessions restart at 14:30**

# SESSION- B

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**Session: B8, Venue: Chambord**

**Additive Manufacturing 8**

**Session Chairs: Ryosuke Ozasa, Patrice Peyre**

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B8 July-03 14:30

\* Improving High-Temperature Performance of Inconel 718 Using Ceramic Particle-Coated Superalloy Powders in Laser Additive Manufacturing

Wonjong Jeong, Chaerin Kim, Ho Jin Ryu

*KAIST, South Korea*

B8 July-03 14:50

\* Additive Manufacturing of Cell-Based 3D Bone-Mimetic Collagen/Apatite Structures

Aira Matsugaki, Takayoshi Nakano

*Osaka University, Japan*

B8 July-03 15:10

\* Microstructural and mechanical characterisation of additively manufactured S235 and 430L steel components by cold spraying

Chen Jiangnan

*Helmut Schmidt University, Germany*

B8 July-03 15:30

\* Application examples of network tele-microscopy for additive manufacturing

Nagase Takeshi

*University of Hyogo, Japan*

**Session B8: Additive Manufacturing 8**

Coffee / Tea break 15:50 to 16:20

B8 July-03 16:20

Characterization and Effects of Anodized Aluminum Oxide Film on Additively Manufactured AlSi10Mg Alloy

Atef Hamada, Timo Rautio, Matias Jaskari, Tun Tun Nyo, Antti Jarvenpaa, Ahmed Abdelghany

*University of Oulu, Finland*

B8 July-03 16:40

Printability and Green Mechanical Properties of Binder jet Additive Manufactured Co-Cr-Mo Parts

Mohsen Moradi, Natarajan Shriya, Azzi Marwan, Bitar-Nehme Elie, Natarajan Arunkumar, Martin Etienne

*Polytechnic University of Montreal, Canada*

B8 July-03 17:00 - *Student*

Microstructural Evolution and Performance of LPBF Ti-6Al-4V Lattice Structures upon Hot Isostatic Pressing

Thadayil A. S. Kavunkara, Ahmad Farhadi, Shane Keaveney, Denis Dowling, Mert Celikin

*Dublin City University, Ireland*

\* *Invited Presentation*

# SESSION- B

B8 July-03 17:20- *Student*

Biomimetic 3D-printed polymer-ceramic composite scaffold for vascularized bone defect repair  
Yuyao Liu, Marko Dobricic, Claudio Intini, Fergal J. O'Brien, Javier Llorca, Monica Echeverry  
*IMDEA, Spain*

B8 July-03 17:40

Innovations in Wire Arc Additive Manufacturing: Hybrid Methods and Their Impact  
Ganesan Gunasekaran  
*Indian Institute of Technology Bombay, India*

# SESSION- C

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**Session: C1, Venue: Chenonceaux**

## **Materials & Technologies in Fusion, and Thermomechanical Treatment of Reactor Materials 1**

**Session Chairs: Long Cheng**

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### **C1 June-30 10:30 Keynote**

#### **\* Defect-Impurity/Solute Interactions in Irradiated Nuclear Materials Studied by Noble Microstructural Analysis Methods**

Yasuyoshi Nagai, Koji Inoue, Zhaokuan Zhang, Takeshi Toyama, Atsushi Kinomura, Yuji Hatano, Takashi Sawabe, Fumihiro Nakamori, Takeshi Sonoda

*Tohoku University, Japan*

C1 June-30 11:00

\* Re-design of low-activation vanadium alloys based on impurity control for fusion reactor applications

Takuya Nagasaka, Takamasa Sugawara, Seiji Sakurai, Ken-Ichi Fukumoto, Yuji Yamauchi, Kazunari Katayama, Hideo Watanabe, Valentyn Tsisar

*National Institute for Fusion Science, Japan*

C1 June-30 11:20

\* Downselection of Cladding Materials for Hydride Moderators

Erik Luther, Caitlin Kohnert, Mary O'Brien, Thomas Nizolek

*Los Alamos National Laboratory, United States*

C1 June-30 11:40

\* In-situ EBSD phase transition analysis in ODS martensitic steels

Maissa Fekih, Denis Sornin, Lionel Germain, Julien Guyon, Nathalie Gey

*Universite Paris-Saclay, France*

C1 June-30 12:00

Development of NDE Infrastructure for Fusion Device Relevant Materials and Components at EPRI

James Wall, Brian Hohmann, Ryan Meyer, Paul Panetta

*Electric Power Research Institute, United States*

C1 June-30 12:20

\* Thermo-mechanical properties evaluation in chromium-doped UO<sub>2</sub>

Adrien Terricabras, Miguel Pena, Maria Kosmidou, Rijul Chauhan, Christopher Butler, Joseph Serrano, Arjen Van Veelen, Sarah Finkeldei, Joshua White

*Los Alamos National Laboratory, United States*

C1 June-30 12:40

Definition of Cu-alloys and Steels uniform water corrosion laws for ITER Activated Corrosion Products study

Simone Noce, Dario Carloni, Andrea Colangeli, Frederic Dacquait, Marta Damiano, Davide Flammini, Nicola Fonnesu, Xavier Litaudon, Eugenio Lo Piccolo, Michele Lungaroni, Fabio Moro, Alberto Previti, Takayuki Shimaoka, Nicholas Terranova, Rosaria Villari

*Italian National Agency for New Technologies, Italy*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- C

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**Session: C2, Venue: Chenonceaux**

## **Materials & Technologies in Fusion, and Thermomechanical Treatment of Reactor Materials 2**

**Session Chairs: Denis Sornin**

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C2 June-30 14:30

\* Phase diagram of Ni-Si-Mn precipitates in reactor pressure vessel steels

Yoshitaka Matsukawa

*Kumamoto University, Japan*

C2 June-30 14:50

\* Helium concentration dependence of retarded recrystallization in tungsten

Long Cheng, Jiaguan Peng, Yue Yuan, Guang-Hong Lu

*Beihang University, China*

C2 June-30 15:10

DTT Bolometry and Soft X-Rays Diagnostics Design Facing Engineering and Physics Requirements

Emmanuele Peluso, Andrea Belpane, Simone Noce, Silvia Palomba, Valentina D'agostino, Gerarda Apruzzese, Luca Boncagni, Lori Gabelleri, Pasquale Gaudio

*University of Rome - Tor Vergata, Italy*

C2 June-30 15:30

\* Engineering of a Functionally Graded Interlayer to Reduce the Thermal Stresses inside the Plasma-Facing Components in a Fusion Reactor

Giacomo Dose, Selanna Roccella, Francesco Romanelli

*University of Rome - Tor Vergata, Italy*

### **Session C2: Materials & Technologies in Fusion, and Reactor Materials 2**

Coffee / Tea break 15:50 to 16:20

C2 June-30 16:20

\* Phase diagram of Ni-Si-Mn precipitates causing irradiation-induced embrittlement of nuclear reactors

Yoshitaka Matsukawa, Hideto Fujieda, Masayuki Terao, Sadahiro Tsunekawa, Hiroaki Muta, Fumihiro Nakamori, Hideki Yuya, Ryuta Kasada, Kenta Yoshida, Kiyohiro Yabuuchi, Masatake Yamaguchi, Nina Abad

*Kumamoto University, Japan*

C2 June-30 16:40

Microstructures and Irradiation Hardening in Low-activation Fe-Mn-Cr-Al-V-C Alloys

Kazuyuki Furuya, Koichi Tsuchiya, Eiichi Wakai

*National Institute for Materials Science Tsukuba, Japan*

# SESSION- C

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**Session: C3, Venue: Chenonceaux**

## **High Entropy Alloys (Prof. Brian Cantor Symposium) 1**

**Session Chairs: Rajarshi Banerjee, Dan Miracle**

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**8:20-8:30 Opening remarks from Brian Cantor**

### **C3 July-01 8:30 Keynote**

**\* Strengthening multicomponent alloys with ordered precipitates: the role of partitioning and site occupancy**

Kamanio Chattopadhyay

*Indian Institute of Science Bangalore, India*

### **C3 July-1 9:00 Keynote**

**\* Great compositional discovery in materials history**

Jien-Wei Yeh

*National Tsing Hua University, Taiwan*

C3 July-01 9:30

**\* The compositional space of HEAs and CCAs: from immensity to narrow practical domains**

Franck Tancrét, Ali Benmansour, Rafael Herschberg, Dinesh Ram, Lisa Rateau, Koutheir Riahi, Mounzer Nasser, Mathieu Traversier, Didier Bardel, Jean Dhers , Anna Fraczekiewicz

*Institut des Matériaux de Nantes Jean Rouxel, France*

C3 July-01 9:50

**\* What role might high entropy alloys play in a circular economy?**

Matthew Barnett, Stephane Gorsse

*Deakin University, Australia*

C3 July-01 10:10

**\* Plastic deformation behavior of single crystals of the equiatomic high- and medium-entropy alloys of the Cr-Mn-Fe-Co-Ni system**

Le Li, Zhenghao Chen, Kyosuke Kishida, Haruyuki Inui

*Kyoto University, Japan*

**Session C3: High Entropy Alloys (Prof. Brian Cantor Symposium) 1**

Coffee / Tea break 10:30 to 11:00

C3 July-01 11:00

**\* Some insights into the high temperature phase stability of the BCC + B2 microstructure in aluminum containing refractory high entropy alloys**

Vishal Soni, Rajarshi Banerjee

*University of North Texas, United States*

C3 July-01 11:20

**\* Impact of Grain Size on Strain-Induced Phase Transformation in a CrCoNi Multi-Principal Element Alloy**

Francisco Coury, Gustavo Bertoli, Amy Clarke, Claudio Kiminami, Michael Kaufman

*Universidade Federal de Sao Carlos, Brazil*



# SESSION- C

C3 July-1 11:40

\* Development of Bimodal-Grained Microstructure in Metastable Multicomponent Alloys via Reversion of Strain-Induced BCC Phase

Jeongho Han

*Hanyang University, South Korea*

C3 July-1 12:00

\* Kinetics of Chemical Order Formation and Its Influence on Diffusivity in CrCoNi Medium Entropy Alloy

Shigenobu Ogata

*Osaka University, Japan*

C3 July-1 12:20

\* Characteristic Dislocation Slips in Polycrystalline HfNbTiZr Medium Entropy Alloy

Nobuhiro Tsuji, Qian He, Shuhei Yoshida, Shinji Okajyo, Masaki Tanaka

*Kyoto University, Japan*

C3 July-1 12:40

\* Diffusion in high-entropy alloys: sluggish or anti-sluggish? Lattice structure vs. chemical complexity

Sergiy Divinski

*University of Muenster, Germany*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- C

**Session: C4, Venue: Chenonceaux**

## **High Entropy Alloys (Prof. Brian Cantor Symposium) 2**

**Session Chairs: An-Chou Yeh, Koichi Tsuchiya**

### **C4 July-01 14:30 - Keynote**

#### **\* Novel FeNiMnAlCr Multi-Principal Component Alloys**

Ian Baker

*Dartmouth College, United States*

C4 July-01 15:00

#### **\* Transformation pathways and deformation mechanisms in refractory high entropy alloys**

Hamish Fraser, Brian Welk, Paraic O'Kelly, Gopal Viswanathan

*The Ohio State University, United States*

C4 July-01 15:20

#### **\* Elucidating the microstructural formation pathways in Refractory Metal High Entropy Alloys using in situ high energy diffraction**

Nick Jones, S-T Yang, N. L. Church, G. J. Wise, R. P. Thompson, R. F. L. Mellor, H. J. Stone

*University of Cambridge, United Kingdom*

C4 July-01 15:40

#### **\* Creep behavior of a precipitation-strengthened A2-B2 refractory high entropy alloy**

Alexander Kauffmann, Liu Yang, Sandipan Sen, Daniel Schliephake, Raja J. Vikram, Stephan Laube, Aparajita Pramanik, Ankur Chauhan, Martin Heilmaier

*Karlsruhe Institute of Technology, Germany*

### **Session C4: High Entropy Alloys (Prof. Brian Cantor Symposium) 2**

Coffee / Tea break 16:00 to 16:30

C4 July-1 16:30

#### **\* The Role of Interstitials on Phase Metastability and Dislocation Pathways in BCC Refractory Multi-Principal Element Alloys**

Daniel S. Gianola

*University of California Santa Barbara, United States of America*

C4 July-1 16:50

#### **\* Innovative design of high-performance multicomponent alloys: from disordered solid-solution alloys to chemically complex ordered intermetallics**

Tao Yang, C. T. Liu, Bo Xiao

*City University of Hong Kong, China*

C4 July-1 17:10

#### **\* Optimizing Al content to eliminate the brittle phase in lightweight TiZrNbTa<sub>0.1</sub>Al<sub>x</sub> refractory high-entropy alloys**

Wei-Bing Liao

*Shenzhen University, China*

# SESSION- C

C4 July-1 17:30

\* An Assessment of the Viability of the Refractory Metal High Entropy Alloy  
AlMo<sub>0.5</sub>NbTa<sub>0.5</sub>TiZr for High Temperature Structural Applications

George Wise, Nicole Church, Hon Tong Pang, Robert Thompson, Howard Stone, Nicholas Jones  
*University of Cambridge, United Kingdom*

C4 July-1 17:50

\*Application APT to Understand High-Entropy Alloy and Materials

Gang Sha

*Nanjing University of Science and Technology, China*

C4 July-1 18:10 - *Student*

Plastic deformation of BCC medium-entropy alloys in the Ti-Zr-Nb system

Shu Han, Zhi Wang, Le Li, Kyosuke Kishida, Haruyuki Inui

*Kyoto University, Japan*

# SESSION- C

**Session: C5, Venue: Chenonceaux**

## **High Entropy Alloys (Prof. Brian Cantor Symposium) 3**

**Session Chairs: Ian Baker, Stephane Gorsse**

### **C5 July-02 8:30 Keynote**

**\* Phase transformation and deformation behavior in a B2-base high-entropy alloy**

Peter. K. Liaw, Rui Feng, You Rao, Kaijun Yin, Chuan Zhang, Maryam Ghazisaeidi, Jian-Min Zuo, Ke An

*The University of Tennessee Knoxville, USA*

### **C5 July-02 9:00 Keynote**

**\* The power and beauty of Cantor's First Experiment. A 20-year retrospective**

Miracle Dan

*Air Force Research Laboratory, United States*

### **C5 July-02 9:30**

**\* Hierarchical structures of submicron and nanoscale blocks evolved through deformation twinning in CrCoNiSi0.3 medium entropy alloy under ballistic impact**

Jer-Ren Yang, Jia-Jun Chen, Po-Han Chiu, Tzu-Ching Tsao

*National Taiwan University, Taiwan*

### **C5 July-02 9:50**

**\* Instrumented indentation studies on the hydrogenated high- and medium-entropy alloys**

Jae-Il Jang

*Hanyang University, South Korea*

### **C5 July-02 10:10**

**\* Characterization of a CoCrFeMnNi(Al<sub>x</sub>) alloy produced from ferroalloys and scraps with an industrial foundry process**

Iban Vicario, Ester Villanueva, Joseba Albizuri, Maria Teresa Guraya, Gurutze, Arruabarrena Borja Escauriza

*Fundacion Tecnalia Research & Innovation, Spain*

## **Session C5: High Entropy Alloys (Prof. Brian Cantor Symposium) 3**

Coffee / Tea break 10:30 to 11:00

### **C5 July-02 11:00**

**\* ICME and Microstructure Informatics framework for the development of multicomponent alloys**

M. R. Rahul

*Indian Institute of Technology Dhanbad, India*

### **C5 July-02 11:20**

**\* Machine Learning-Assisted Design of Advanced Bilayer TBC Systems Using Multicomponent R2TiO5**

Satoshi Kitaoka, Makoto Tanaka, Naoki Kawashima, Takafumi Ogawa, Taishi Ito, Kei Nakayama, Takeharu Kato, Norio Yamaguchi, Hiroaki Suzuki, Haruo Shibata, Akira Kawasaki  
*Japan Fine Ceramics Centre, Japan*

# SESSION- C

C5 July-02 11:40

\* Computational microstructural engineering for multi-phase HEAs

Yunzhi Wang, Shalini Konern, Kamalnath Kadirvel, Shiddhartha Ramprakash, Hamish Fraser  
*The Ohio State University, United States*

C5 July-02 12:00

\* Enhanced ductility via high-density nanoprecipitates driven by chemical supersaturation in a flash-heated precipitation-strengthened high-entropy alloy

Yang Zhang, Liyuan Liu, Zhongwu Zhang  
*Harbin Engineering University, China*

C5 July-02 12:20

\* Designing cobalt-free FCC high-entropy alloys: Microstructure, mechanical properties and radiation resistance

Wenyi Huo  
*National Centre for Nuclear Research, Poland*

C5 July-02 12:40

\* Laves Phases in Compositionally Complex Alloys: Microstructure and Mechanical Properties

Pinaki Bhattacharjee  
*Indian Institute of Technology Hyderabad, India*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- C

**Session: C6, Venue: Chenonceaux**

## **High Entropy Alloys (Prof. Brian Cantor Symposium) 4**

**Session Chairs: Alexander Kauffmann, Nick Jones**

### **C6 July-02 14:30 Keynote**

#### **\* Heterogeneous Structured High Entropy Alloys**

Hyoungh Seop Kim

*Pohang University of Science and Technology, South Korea*

C6 July-02 15:00

#### **\* Hierarchical nanotwin-driven mechanism in cryogenically-deformed CoCrFeNi HEA alloys**

Tsaifu Chung, Po-Kai Chiu, Chien-Nan Hsiao, An-Chou Yeh

*National Yang Ming Chiao Tung University, Taiwan*

C6 July-02 15:20

#### **\* Advancements in high-entropy alloys through the liquid metal dealloying process**

Soo-Hyun Joo

*Dankook University, South Korea*

C6 July-02 15:40

#### **\* Evolution of short-range order and its effects on yield strength in single crystals of the equiatomic Cr-Mn-Fe-Co-Ni high-entropy alloy**

Yue Yu, Le Li, Zhenghao Chen, Kyosuke Kishida, Haruyuki Inui

*Kyoto University, Japan*

### **Session C6: High Entropy Alloys (Prof. Brian Cantor Symposium) 4**

Coffee / Tea break 16:00 to 16:30

C6 July-02 16:30

#### **\* Mechanical Responses to Hydrogen in Entropy-Driven Alloys**

Hung-Wei Yen, Yi-Ting Lin, Zen-Hao Lai, Yi-Hsuan Sun, Tzu-Chi Huang, Xianghai An, Che-Wei Tsai, Jui-Fan Tu

*National Taiwan University, Taiwan*

C6 July-02 16:50

#### **\* High Entropy Alloys for Applications in Hydrogen and Cryogenic Environments**

Young Sang Na, Young-Kyun Kim, Jae-Ho Lee, Seung-Min Jeon

*Korea Institute of Materials Science, South Korea*

C6 July-02 17:10

#### **\* Deformation behavior of a 3D-printed high-entropy alloy**

Dhruv Bajaj, Aihan Feng, Shoujiang Qu, Dongyang Li, Daolun Chen

*Toronto Metropolitan University, Canada*

C6 July-02 17:30

#### **\* Microstructures and Properties of CoCrFeMn High Entropy Shape Memory Alloys Produced by Laser Direct Energy Deposition**

Wookjin Lee, Minsu Park

*Pusan National University, South Korea*

# SESSION- C

C6 July-02 17:50

\* Synthesis of TiFeNiMn high-entropy alloy via combined ball milling and laser cladding

Yi Chen, Wei Sha, Chi Wai Chan, Peter Nockemann, Leila Moura

*Queen's University Belfast, United Kingdom*

C6 July-02 18:10

\* Effect of Boron Addition on High-Temperature Tensile Properties of FeCrCoMoNi high entropy alloys

Seonho Shin, Hyunjoo Choi, Jae Bok Seol, Hyokyung Sung

*Kookmin University, South Korea*

# SESSION- C

**Session: C7, Venue: Chenonceaux**

## **High Entropy Alloys (Prof. Brian Cantor Symposium) 5**

**Session Chairs: Peter Liaw, Krishanu Biswas**

### **C7 July-03 8:30 Keynote**

**\* Effect of Stacking Fault Energy on Deformation Mechanism and Low-Cycle Fatigue Property in Co-Cr-Mo-Ni Medium Entropy Alloys**

Koichi Tsuchiya

*National Institute for Materials Science, Tsukuba, Japan*

C7 July-03 9:00

**\* Nanoprecipitate-strengthened high entropy alloys**

Zhongwu Zhang, Yang Zhang

*Harbin Engineering University, China*

C7 July-03 9:20

**\*Analyses of Oxidation Behaviours with Alloy Components in High Entropy Alloys with Pack Cementation Coatings at High Temperatures**

Jeong Seok Oh, Jini Park, Joon Sik Park

*Hanbat National University, South Korea*

C7 July-03 9:40

**\* High Hardness Nanotwinned High Entropy Alloys CoCrFeNi Thin Films with radiation resistance**

Wei-Cheng Chang, Maulik Patel, Fan-Yi Ouyang

*University of Liverpool, United Kingdom*

C7 July-03 10:00

**\* Development of high entropy alloy thin films for energy-related research**

Jyh-Wei Lee, Bih-Show Lou

*Ming Chi University of Technology, Taiwan*

### **Session C7: High Entropy Alloys (Prof. Brian Cantor Symposium) 5**

Coffee / Tea break 10:20 to 11:00

C7 July-03 11:00

**\* High Entropy Nonlinear Dielectric System**

Ying-Hao Chu

*National Tsing Hua University, Taiwan*

C7 July-03 11:20

**\* High-Entropy Alloys as Advanced Metal Hydrides for Efficient Hydrogen Storage**

Ricardo Floriano

*University of Campinas, Brazil*

C7 July-03 11:40

**\* Development of Non-Equimolar CoCrCuFeNi High Entropy Alloys for Aerospace Brazing**

Samuel Ross, Daniel Butcher, Shahin Mehraban, Caroline Goddard, Peter Cookson, Nicholas

*Lavery Swansea University, United Kingdom*



# SESSION- C

C7 July-03 12:00

\* The microstructural evolution of FCC high-entropy alloy after gas tungsten arc weld and friction stirring weld

Tsai Chewei, Yutaka S. Sato, Jien-Wei Yeh

*National Tsing Hua University, Taiwan*

C7 July-03 12:20

\* Development of Ti based bio-high entropy alloys

Mitsuharu Todai, Nagi Takahashi, Neiro Tanaka, Daisuke Tanaka, Takeshi Nagase, Aira Matsugaki, Takayoshi Nakano

*National Institute of Technology, Japan*

C7 July-03 12:40

\* Shape memory effect in CrMnFeCoNi high-entropy alloys with high Co/Ni ratio

Je In Lee, Jinsurang Lim, Hwiyun Jeong

*Pusan National University, South Korea*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- C

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**Session: C8, Venue: Chenonceaux**

## **High Entropy Alloys (Prof. Brian Cantor Symposium) 6**

**Session Chairs: Hyoungseop Kim, An-Chou Yeh**

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C8 July-03 14:30

\* Effect of Laves phase on hydrogen storage properties of BCC Ti-V-Nb-Cr-Mn multicomponent alloys

Katia Regina Cardoso, Leandro Bernardes Serrano, Larissa Nunes Hirata, Maria Moussa, Santos Sydney Ferreira, Jean-Louis Bobet  
*Federal University of Sao Paulo, Brazil*

C8 July-03 14:50

\* Short-range order in multiple principal element alloys: Thermally and mechanically activated

Jaebok Seol, Hyokyung Sung, Hyunjoo Choi, Wonseok Ko, Seoksu Sohn, Yoonuk Heo, Hyoungseop Kim  
*Kookmin University, South Korea*

C8 July-03 15:10

\* Development of High Specific Modulus Multicomponent Alloys with An FCC Structure

Mustafa Seker, Colin Freeman, Russell Goodall  
*The University of Sheffield, United Kingdom*

C8 July-03 15:30

\* Room temperature deformation of high entropy diborides

Zhi Wang, Zhenghao Chen, Kyosuke Kishida, Haruyuki Inui  
*Kyoto University, Japan*

**Session C8: High Entropy Alloys (Prof. Brian Cantor Symposium) 6**

Coffee / Tea break 15:50 to 16:20

C8 July-3 16:20 - *Student*

Effect of Re and Ru on two-phase A2+B2 Ta-Mo-Ti-Cr-Al refractory high entropy alloys  
Liu Yang, Sandipan Sen, Vikram Raja, Daniel Schliephake, Martin Heilmaier, Alexander Kauffmann  
*Karlsruhe Institute of Technology, Germany*

C8 July-3 16:35 - *Student*

Achieving remarkable strength and ductility through via nano-twinning enabled by L12 nano-precipitates in CoNiMoAl medium-entropy alloys

Minyoung Sung, Tae Jin Jang, Sang Yoon Song, Gunjick Lee, Kenhee Ryou, Sang-Ho Oh, Byeong-Joo Lee, Pyuck-Pa Choi, Jorg Neugebauer, Blazej Grabowski, Fritz Koermann, Yuji Ikeda, Alireza Zargar, Seok Su Sohn  
*Korea University, South Korea*

C8 July-3 16:50 - *Student*

Deciphering the operative mechanisms affecting the strain rate sensitivity in (FeCrNi)<sub>99</sub>Si<sub>1</sub> medium entropy alloy during high-pressure torsion

Swati Mahato, Krishanu Biswas, Nilesh Prakash Gurao  
*Indian Institute of Technology, Kanpur, India*

# SESSION- C

C8 July-3 17:05 - *Student*

Creep Strength of AlCoCrFeNi High-Entropy Alloy Fabricated by Spark Plasma Sintering  
Naoki Ohgi, Ryota Honda, Lei He, Mie Kawabata, Tomoko Kuno, Kei Ameyama, Hiroshi Fujiwara, Takamoto Itoh  
*Ritsumeikan University, Japan*

C8 July-3 17:20 - *Student*

Enhancing strength and hydrogen embrittlement resistance by discontinuous L12 precipitation in high-entropy alloy  
Sang Yoon Song, Tae Jin Jang, Chang-Gi Lee, Dae Cheol Yang, Min Young Sung, Gunjick Lee, Jung Hun Han, Ju-Hyun Baek, Jin-Yoo Suh, Alireza Zargaran, Aparna Saksena, Baptiste Gault, Won-Seok Ko, Se-Ho Kim, Seok Su Sohn  
*Korea University, South Korea*

C8 July-3 17:35 - *Student*

Towards multifunctionality in novel high entropy alloy by compositional variation and thermo-mechanical processing  
Akshit Dutta, Ming-Hung Tsai, Saurabh Nene  
*Indian Institute of Technology Jodhpur, India*

C8 July-3 17:50

Investigation of a Spinel Oxide Coating based on CoCuFeMnNi High-Entropy Alloy for SOFC application  
An-Chou Yeh, Cheng-Ju Tsai, Hideyuki Murakami, Toda Yoshiaki, Fan-Yi Ouyang  
*National Tsing Hua University, Taiwan*

**18:10 Closing remarks from Brian Cantor**

# SESSION- D

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**Session: D1, Venue: Amboise**

## **Aluminium Alloys 1**

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**Session Chairs: Hyoungwook Kim, Irmgard Weissensteiner**

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### **D1 June-30 10:30 Keynote**

#### **\* Application of Artificial Neural Networks for Microstructure Models ALFLOW and ALSOFT**

Knut Marthinsen, Daniel Preminger, Tomas Manik

*Norwegian University of Science and Technology, Norway*

D1 June-30 11:00

\* Thermomechanical Testing and Precipitation Modelling of Al-Mg-Si Alloys for Hot Forming Applications

Ole Runar Myhr, Asle J. Tomstad, Calin D. Marioara, Tore Borrvik, Odd Sture Hopperstad

*Hydro Aluminium, R&D Sunndalsra, Norway*

D1 June-30 11:20

\* Evaluation of slip behavior of mobile dislocations during in-situ tensile-testing TEM observation of Al-Mg-Si alloys

Shoichi Hirosawa, Daiki Inoue

*Yokohama National University, Japan*

D1 June-30 11:40

On the order-disorder transformation within a main hardening precipitate in Al-Mg-Si alloys

Lipeng Ding, Flemming Ehlers, Zhihong Jia

*Nanjing Tech University, China*

D1 June-30 12:00

Effect of heat treatment and rolling process on microstructure and deformation behavior in Al-Si alloy

Toko Tokunaga, Hirono Reiji, Tsuyoshi Mayama, Koji Hagihara

*Nagoya Institute of Technology, Japan*

D1 June-30 12:20

Five-fold symmetry structure inhibiting the growth of an otherwise perfect  $\eta_2$  phase in Al-Zn-Mg-Cu alloys

Flemming Ehlers, Kaiyun Xiang, Lipeng Ding, Zhihong Jia

*Nanjing Tech University, China*

D1 June-30 12:40

Strengthening in-situ Fe-aluminide reinforced aluminum matrix composites through an optimized twostep thermal processing method; sintering and uniaxial forging

Tapabrata Maity

*National Institute of Advanced Manufacturing Technology, India*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- D

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**Session: D2, Venue: Amboise**

## **Aluminium Alloys 2**

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**Session Chairs: Ole Runar Myhr, Xiaodong Wu**

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### **D2 June-30 14:30 - Keynote**

#### **\* In-situ nanometallurgy in transmission electron microscopy**

Stefan Pogatscher, Thomas Kremmer, Matheus A. Tunes, Phillip Dumitraschkewitz  
*Montanuniversitat Leoben, Austria*

D2 June-30 15:00

\* Mechanical properties of aluminum clad sheets fabricated by roll bonding process for automotive application

Hyoungwook Kim, Dea-Han Jeong, Kwangjun Euh, Won-Kyeong Kim  
*Korea Institute of Materials Science, South Korea*

D2 June-30 15:20

An assessment of the brazing performance of cast Al-Mn-Ni aluminum alloy

Xiaojie Jin, Huiying Zhu, Lai Chen, Guanglei Zhu, Xueyang Wang, Hiromi Nagaumi  
*Weiqiao Lightweight Research Center at Soochow, China*

D2 June-30 15:40

Advanced Manufacturing and Characterization of High-Performance Aluminium Alloys

Chengyi Dan, Qiwei Shi, Shuwei Zong, Hongru Zhong, Yudong Zhang, Ji Gang, Chen Zhe, Haowei Wang  
*Shanghai Jiao Tong University, China*

**Session D2: Aluminium Alloys 2**

Coffee / Tea break 16:00 to 16:30

D2 June-30 16:30 - *Student*

The effect of intensification pressure on the microstructure of non-heat treated HPDC AlSi9MnVZr alloy

Saria Akhtar, Shou-Mei Xiong  
*Tsinghua University, China*

D2 June-30 16:50 - *Student*

Visualization of Dynamic Deformation Behavior of Al-Mg Alloys Using Electronic Speckle Pattern Interferometry

Yuto Takanezawa, Tomohiro Sasaki, Sanichiro Yoshida  
*Niigata University, Japan*

# SESSION- D

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**Session: D3, Venue: Amboise**

## **Aluminium Alloys 3**

**Session Chairs: Stefan Pogatscher**

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### **D3 July-01 10:30 Keynote**

\* Interfacial Structure of Mg<sub>2</sub>Si in Al-Mg-Si Alloy

Kenji Matsuda, Abrar Ahmed, Taiki Tsuchiya, Seungwon Lee, Susumu Ikeno

*University of Toyama, Japan*

D3 July-01 11:00

\* The influence of continuous retrogression and re-ageing treatment on the mechanical properties, corrosion behaviour and microstructure of an Al-Zn-Mg-Cu alloy

Xiaodong Wu, Cao Lingfei, Guangjie Huang

*Chongqing University, China*

D3 July-01 11:20

Effects of ROI Selection and User-Defined Parameters on Cluster Analysis in Aluminum Alloys

Miyoung Lee, Jiwook Park, Dieter Isheim, David Seidman, Seokjae Lee, Jaehwang Kim

*National University, South Korea*

D3 July-01 11:40

Formation mechanism of dense and uniform structure during tailor welding of Aluminum Foam Structure preform

Ming-Jen Tan

*Nanyang Technological University, Singapore*

C3 July-01 12:00

A Novel Modelling Framework for the Portevin Le Chatelier Effect in AA5182 Alloy

Jianbin Xu, Bjorn Holmedal, Odd Sture Hopperstad, Tomas Manik, Knut Marthinsen

*Norwegian University of Science and Technology, Norway*

D3 July-01 12:20

Microstructure observation of Al-7%Si-Mg alloys in T6 condition

Taiki Tsuchiya, Seungwon Lee, Susumu Ikeno, Kenji Matsuda

*University of Toyama, Japan*

D3 July-01 12:40

Study on improving corrosion resistance of 6000-series alloys with high Cu content

Zibin Wu, Hiromi Nagaumi, Zhixin Feng, Haitao Zhang

*Soochow University, China*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- D

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**Session: D4, Venue: Amboise**

## **Aluminium Alloys 4**

**Session Chairs: Chihiro Iwamoto**

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D4 July-01 14:30

\* Impact of Microstructure of Aluminum Electrodes on the Performance of Aluminum-Based Batteries

Irmgard Weissensteiner, Ghadir Razaz

*Montanuniversitat Leoben, Austria*

D4 July-01 14:50

Precipitation Kinetics of Aluminum Alloys During SPD Processes Investigated by SAXS/WAXS

Elizabeth Mathew, Juergen Markmann, Chang Yin-Cheng Chan, Henry Ovri, Uceu Fuad Hasan

Suhuddin, Julia Ivanisenko, Peter Staron, Benjamin Klusemann

*Helmholtz- Zentrum Hereon, Germany*

D4 July-01 15:10

\* A novel model for of cluster nucleation during quenching of 6xxx Al alloys

Ernst Kozeschnik, Ya Li, Robert Kahlenberg

*TU-Wien, Austria*

D4 July-01 15:30

Microstructural evolution and mechanical behaviour of multiple-pass friction stir processed

Al5083-SiC nanocomposite produced stir casting

Gaurav Rajan, Suhrit Mula

*Indian Institute of Technology Roorkee, India*

### **Session D4: Aluminium Alloys 4**

Coffee / Tea break 15:50 to 16:20

D4 July-01 16:20 - *Student*

Simulation of self-healing in Al-Cu alloys

Christoph Doesinger, Anika Wiebogen, Marlene Eichlseder, Cecilia Poletti, Lorenz Romaner

*Montanuniversitat Leoben, Austria*

D4 July-01 16:40

Effects of Copper Content on Microstructure and Mechanical Properties of AlMgSi(Cu) Alloys

Konrad Zylka, Bartolomiej Plonka, Piotr Korczak, Krzysztof Remsak, Kamila Limanowka, Sonia

Boczek, Wojciech Szymaski, Dariusz Lesniak

*Institute of Non-Ferrous Metals, Poland*

# SESSION- D

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**Session: D5, Venue: Amboise**

## **Aluminium Alloys 5**

**Session Chairs: Kenji Matsuda, Shoichi Hirose**

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D5 July-02 9:00

\* Ultrasonic Bonding Process of Al

Chihiro Iwamoto

*Ibaraki University, Japan*

D5 July-02 9:20

\* Insights for the design of high-performance secondary cast aluminium alloys

Maria Cecilia Poletti, Stefan Fortmueller, Bernhard Stauder, Ilse Letofsky-Papst, Raul Arrabal,

Erwin Povoden-Karadeniz

*Institute of Materials Science, Joining and Forming, Austria*

D5 July-02 9:40

\* Corrosion Behaviour and Microstructures of Directionally Solidified Al-Si Alloys

Alejandra Silvina Roman, Edgar Rolando Ibarrez, Paula Regina Alonso, Alicia Ares

*Universidad Nacional de Misiones, Argentina*

<b>Session D5: Aluminium Alloys 5</b>
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Coffee / Tea break 10:00 to 10:30
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D5 July-02 10:30

The combined effects of trace element Sn/Cu and double-step pre-aging on the precipitation kinetics of Al-Mg-Si alloys

Jingwei Zhao, Pizhi Zhao

*Chinalco Materials Application Research Institute Co., Ltd., China*

D5 July-02 10:50

Solute clustering and early-stage precipitation in Al-Mg-Si alloys

Chunan Li, Calin Marioara, Constantinos Hatzoglou, Sigmund Andersen, Randi Holmestad,

YanJun Li

*Norwegian University of Science and Technology, Norway*

D5 July-02 11:10

Effect of Er on the stability of precipitates in AlCuMgSiSc alloys after different homogenization treatment

Xingkai Hou, Shengping Wen, Wei Wu, Xiaolan Wu, Hui Huang, Kunyuan Gao, Xiangyuan

Xiong, Bolong Li, Zuoren Nie, Shangshang Liang, Peng Qi

*Beijing University of Technology, China*

D5 July-02 11:30

Modeling precipitation evolution and intermetallics fragmentation in 6xxx Series Aluminum Alloys during industrial hot rolling

Seyyed Ezzatollah Moosavi, Cyril Cayron, Jonathan Friedli, Loic Aron, Zeqin Liang, Elisa

Cantergiani, Roland Loge

*Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland*



# SESSION- D

D5 July-02 11:50

Effect of microalloying on precipitation strengthening and mechanical properties of Al-Mg-Si alloys

Yaoyao Weng, Lipeng Ding, Zhihong Jia

*Nanjing Institute of Technology, China*

D5 July-02 12:10

Design of easier separable Fe-containing intermetallics in Al-Si alloy by thermodynamic properties prediction and three-dimensional morphology regulation

Xiaozu Zhang, Dongtao Wang, Hiromi Nagaumi

*Soochow University, China*

D5 July-02 12:30

\* Characterization of Directionally Solidified Al-Si Alloys

Edgar Rolando Ibarrez, Paula Regina Alonso, Alicia Ares

*Universidad Nacional de Misiones, Argentina*

**Lunch break 12:50 - Sessions restart at 14:30**

# SESSION- D

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**Session: D6, Venue: Amboise**

## **Aluminium Alloys 6**

**Session Chairs: Maria Cecilia Poletti, Ernst Kozeschnik**

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D6 July-02 14:30

Study on grain refinement of high-purity aluminium by intermittent permanent magnet stirring technique

Jing Zou, Haitao Zhang, Hiromi Nagaumi

*Soochow University, China*

D6 July-02 15:00

Competitive nucleation of  $\alpha$ -Al(MNFECr)Si dispersoids in Al-Mg-Si 6xxx alloys by adding indium

Zhen Li, Kang Gao, Jian Qin, Hiromi Nagaumi

*Weiqiao Lightweight Research Center at Soochow, China*

D6 July-05 15:20

The Research and Application Trends Of Aluminum Alloy Automotive Body Sheet In China

Pizhi Zhao

*CHINALCO Materials Application Research Institute Co., Ltd. Beijing, China*

D6 July-02 15:40

Influence of Ag on microstructure and mechanical properties of as-cast Al-33Zn-2Cu high-zinc aluminum alloy

Haitao Zhang, Donghui Yang, Hiromi Nagaumi

*Northeastern University, Shenyang, China*

**Session D6: Aluminium Alloys 6**

Coffee / Tea break 16:00 to 16:30

D6 July-02 16:30 - *Student*

Investigation on friction surfacing layers of AA2024 studs produced via friction extrusion

Pietro Aspes, Zina Kallien, Lars Rath, Uceu Suhuddin, Benjamin Klusemann

*Helmholtz- Zentrum Hereon, Germany*

D6 July-02 16:50

Deformation induced precipitate evolution during thermomechanical processing of Al7068 alloy

Raja Nitish

*Indian Institute of Technology Patna, India*

# SESSION- D

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**Session: D7, Venue: Amboise**

## **Interfaces, Grain Boundaries & ICGBE 1**

**Session Chairs: Sadahiro Tsurekawa, Masato Wakeda**

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### **D7 July-03 9:00 - Keynote**

#### **\* Atom-Resolved Observations of Grain Boundary Dynamics in Oxides**

Yuichi Ikuhara

*The University of Tokyo, Japan*

D7 July-03 9:30

\* Structural change of Ga<sub>2</sub>O<sub>3</sub> layer formed on GaN(0001) substrate under various fabrication conditions

Toshihide Nabatame, Yoshihiro Irokawa, Tomomi Sawada, Hiromi Miura, Manami Miyamoto, Yasuo Koide, Kazuhito Tsukagoshi

*National Institute for Materials Science, Japan*

D7 July-03 9:50

\* Quantification of the grain boundary structure and determination of migration mechanisms

Luis Barrales-Mora, Gashaw Bizana

*Georgia Institute of Technology, United States*

D7 July-03 10:10

\* Spintronic technologies for germanium devices

Kohei Hamaya

*Osaka University, Japan*

**Session D7: Interfaces, Grain Boundaries & ICGBE 1**

Coffee / Tea break 10:30 to 11:00

D7 July-03 11:00

\* A Computational Approach to Design Thermally Stable Metal-Metal Interfaces

Bernard Gaskey, Cheryl Hawk, Robert Hackenberg, Claire Adams, David Field, John Carpenter

*Los Alamos National Laboratory, United States*

D7 July-03 11:20

Quantitative assessment of low temperature ausformed medium carbon nanobainitic steels

Sumit Ghosh, Kritika Singh, Mahesh Somani, Jukka Komi

*University of Oulu, Finland*

D7 July-03 11:40

\* Plasmon loss imaging at grain boundaries obtained by STEM-EELS and the grain boundary dependence

Seiichiro Ii, Toru Hara

*National Institute for Materials Science, Japan*

D7 July-03 12:00

Graphite Crystallization in Austenitic Ductile Iron: Insights from TKD and TEM Diffraction

Tomasz Tokarski, Karolina Wojciak, Marcin Gorny, Jan Marosz

*AGH University of Krakow, Poland*

# SESSION- D

D7 July-03 12:20

\* Automated in situ thermomechanical analysis of hexagonal materials under EBSD  
Ines Addi, Pierre-Antoine Dubos, Baptiste Girault, Samuel Branchu, David Gloaguen  
*Nantes University, France*

D7 July-03 12:40

Fabrication of Large-Scale Single-Crystal Copper Foils with Atomic-Scale Flatness via  
Muscovite-Assisted Method  
Tzu-Ming Chan, Ying-Hao Chu  
*National Tsing Hua University, Taiwan*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- D

**Session: D8, Venue: Amboise**

## **Interfaces, Grain Boundaries & ICGBE 2**

**Session Chairs: Ikuhara Yuichi, Toshihide Nabatame**

### **D8 July-03 14:30 - Keynote**

**\* Structure-dependent electrical properties of grain boundaries**

Sadahiro Tsurekawa

*Kumamoto University, Japan*

D8 July-03 15:00

**\* Atomistic Modelling and Design of Mechanical Properties of Grain Boundaries in Alloys**

Masato Wakeda

*National Institute for Materials Science, Japan*

D8 July-03 15:20

**Precipitation and growth behavior of  $\beta_0$  phase in the  $\alpha_2/\gamma$  lamellar colonies of an intermetallic Ti-43.5Al-4Nb-1Mo-0.1B alloy**

Limei Cha

*Guangdong Technion-Israel Institute of Technology, China*

D8 July-03 15:40

**\* Deformation behavior of magnesium bicrystals with  $90^\circ\langle 10\text{-}10 \rangle$  and  $90^\circ\langle 11\text{-}20 \rangle$  grain boundaries: Changing grain boundary character and boundary proximity**

Kevin Bissa, Marcel Schreiber, Konstantin Molodov, Talal Al-Samman, Dmitri Molodov

*RWTH Aachen University, Germany*

### **Session D8: Interfaces, Grain Boundaries & ICGBE 2**

Coffee / Tea break 16:00 to 16:30

D8 July-03 16:30

**\* Effect of low-angle grain boundary network on high cycle fatigue in grain boundary engineered 409L type ferritic heat resistant steel**

Shigeaki Kobayashi, Daiju Kobori, Sadahiro Tsurekawa

*Ashikaga University, Japan*

D8 July-03 16:40 - *Student*

**Recrystallization in ferritic stainless steels: experimental and modeling approaches**

Julien Favre, Hennocque Louis, Nicolas Meyer, Sourisseau Thomas, Piot David, Montheillet

Frank, Latu-Romain Laurence, Guillaume Kermouche

*École des Mines de Saint-Étienne, France*

D8 July-03 17:00

**\* Grain boundary segregation beyond the dilute limit with atomistic simulations and CALPHAD**

Lorenz Romaner, Tobias Spitaler, Christoph Doesinger

*Montanuniversität Leoben, Austria*

# SESSION- D

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**Session: D9, Venue: Amboise**

## **Interfaces, Grain Boundaries & ICGBE 3**

**Session Chairs: Shigeto Nishitani, Seiichiro Ii**

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D9 July-04 9:00

\* A Systematic Study of Grain Boundary Segregation in Nanocrystalline Alloys

Michael Chandross, Ian Winter, David Montes De Oca Zapiain, Yasir Mahmood, Fadi Abdeljawad, Mark Asta, John Curry

*Sandia National Laboratories, United States*

D9 July-04 9:20

\* Effect of deformation twinning on the strength anisotropy in textured Ti: Insights from atomic simulations and slip transfer theory

Tomotsugu Shimokawa

*Kanazawa University, Japan*

D9 July-04 9:40

\* Shift and delete effect on aluminum twist grain boundary energy

Shigeto Nishitani, Tomoyuki Tamura, Ryo Kobayashi Kwansei

*Gakuin University, Japan*

D9 July-04 10:00

\* Atomic level revealing nitride multilayer deformation

Zhuo Chen, Yong Huang, Zaoli Zhang

*Erich Schmid Institute of Materials Science, Austria*

**Session D7: Interfaces, Grain Boundaries & ICGBE 3**

Coffee / Tea break 10:20 to 10:50

D9 July-04 10:50

\* Gradient B2-BCT Transition and Interface Introduced by Deformation in Eutectic High-Entropy Alloy

Bingbing Zhao, Qingsong Shu, Xianping Dong, Lanting Zhang

*Shanghai Jiao Tong University, China*

D9 July-04 11:10 - *Student*

Plastic deformation propagation across grain boundaries in Fe-3%Si bicrystals: A comparative study of twist and tilt grain boundaries

Yoshitake Ichimura, Dmitri Molodov, Seiichiro Ii, Sadahiro Tsunekawa

*Kumamoto University, Japan*

D9 July-04 11:30

Grain boundary precipitation behavior of Ni-Cr phase in  $\gamma$ -Ni matrix in Ni-Cr binary alloys

Ryota Nagashima, Nobuo Nakada

*Institute of Science Tokyo, Japan*

# SESSION- D

D9 July-04 11:50

Recrystallization mechanisms activated during multi-pass forging of austenitic stainless steels

Hugo Latuner, Julien Favre, Aurelien Helstroffer, Gregory Inacio Da Rosa, Emeric Plancher,  
Pierre Joly, Guillaume Kermouche, Christophe Desrayaud

*Framatom, France*

D9 July-04 12:10

\* Improved Indexing of Electron Backscatter Diffraction Patterns using Forward Modelling

Stuart Wright, William Lenthe, Matthew Nowell, Rene De Kloe

*EDAX/Gatan, United States*

D9 July-04 12:30

Focused Ion Beam sample preparation for Atom Probe Tomography

Limei Yang

*University of Technology Sydney, Australia*

# SESSION- E

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**Session: E1, Venue: Villandry**

**Mg Alloys (Prof. Yoshihito Kawamura Symposium) 1**

**Session Chairs: Karl Ulrich Kainer, Jonghyun Kim**

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**10:30-10:40 Opening remarks from Karl Kainer**

**E1 June-30 10:40 Keynote**

**\* Development of Advanced Magnesium Alloys**

Yoshihito Kawamura

*Kumamoto University, Japan*

E1 June-30 11:10

**\* Electropulsing Treatment for Mg alloys: Acceleration and Anisotropy**

Taekyung Lee

*Pusan National University, South Korea*

E1 June-30 11:30

**\* Ignition characteristics and mechanical properties of Mg-Al-Ca-X alloys for electric vehicle applications**

Jonghyun Kim, Yu Cao, Shuai Zhou, Bin Jiang, Fusheng Pan

*Chongqing University, China*

E1 June-30 11:50

**\* Development of Mg-Zn-Y Alloys with High Thermal-Conductivity and Mechanical Strength**

Yunsheng Wang, Shinichi Inoue, Yoshihito Kawamura

*Kumamoto University, Japan*

E1 June-30 12:10

**Development of corrosion resistance Mg alloy for Die casting component**

Jun Ho Bae, Bong Sun You, Jae Yeon Kim, Young-Min Kim

*Korea Institute of Materials Science, South Korea*

E1 June-30 12:30

**Effects of strain states induced by different wrought processes on microstructure evolution of AZ31 magnesium alloy**

Hiromasa Yoshizumi, Satoru Maeda, Motohiro Yuasa, Hiroyuki Miyamoto, Hidetoshi Somekawa

*Doshisha University, Japan*

**Lunch break 12:50 - Sessions restart at 14:30**



# SESSION- E

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**Session: E2, Venue: Villandry**

**Mg Alloys (Prof. Yoshihito Kawamura Symposium) 2**

**Session Chairs: Taekyung Lee, Te-Cheng Su**

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**E2 June-30 14:30 - Keynote**

**\* Towards Green Magnesium - Environmental Aspects of Magnesium Materials for the Transportation Industry**

Karl Ulrich Kainer

*Germany*

E2 June-30 15:00

\* Asymmetric rolling to improve sheet formability of AM30 Mg alloy

Vamsi Krishna Pakki, Subodh Kumar, Satyam Suwas

*Indian Institute of Science Bangalore, India*

E2 June-30 15:20

Atomistic Insights into Grain Boundary-Solute Interactions and Texture Formation in Mg Alloys

Talal Al-Samman

*RWTH Aachen University, Germany*

E2 June-30 15:40

Synergistic effects of Rolling and Mixed rare earth (Er+Yb) additions on mechanical, corrosion and biocompatibility properties of Mg-Zn-Ca alloys for orthopedic applications

Divyanshu Aggarwal, Vamsi Krishna Pakki, Sachin Latiyan, Satyam Suwas, Kaushik Chatterjee, Rajashekhara Shabadi

*University of Lille, France*

**Session E2: Mg Alloys (Prof. Yoshihito Kawamura Symposium) 2**

Coffee / Tea break 16:00 to 16:30

E2 June-30 16:30 - *Student*

Microstructure changes due to additional elements and processability at room temperature in Mg-In alloy systems

Ryota Nagata, Ryuta Murakami, Yoshiki Tomura, Ryosuke Yamagata, Takaomi Itoi

*Chiba University, Japan*

# SESSION- E

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**Session: E3, Venue: Villandry**

**Mg Alloys (Prof. Yoshihito Kawamura Symposium) 3**

**Session Chairs: Yoshihito Kawamura, Yuehlien Lee**

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**E3 July-01 10:30 Keynote**

**\* Combined 3DATP and HADDF studies of the microstructures of new generation magnesium alloys developed at Magnesium Research Centre, Kumamoto**

Kamano Chattopadhyay, Sureandra Kumar Makineni, Dipanjan Kumar, Hemant Kumar  
*Indian Institute of Science Bangalore, India*

E3 July-01 11:00

**\* Research on the microstructural evolution of injection molded AZ91 and ultralight LAZ561Ca magnesium alloys during solidification and heat treatment: multiscale characterizations and multiphase field modeling**

Te-Cheng Su, Si-Yuan Hu, Ming-Hung Wu, I-An Chen, Lee-Han Wu, Hao-Chuan Huang, Kai-Yu Liang  
*National Taiwan University, Taiwan*

E3 July-01 11:20

**Plastic deformation of fine-grained pure magnesium and AZ series Mg alloys between 298K and 4K**

Anna Kula, Michal Walag, Tomasz Tokarski, Piotr Noga, Marek Niewczas  
*AGH University of Science and Technology Krakow, Poland*

E3 July-01 11:40

**\* Processing Strategies for Tailoring Strength and Ductility in Mg-Y-Zn Alloy**

Drahomir Dvorsky, Shin-Ichi Inoue, Soya Nishimoto, Ayami Yoshida, J. Kubisek, L. Heller, Esther De Prado, Jan Duchov, Miroslav Ceavojsky, Dalibor Vojtech, Yoshihito Kawamura  
*Institute of Physics, Czech Republic*

E3 July-01 12:00 - *Student*

**Enhancing Energy-Based Fatigue Life Model for Wrought Mg Alloys through Machine Learning Integration**

Jinyeong Yu, Seho Cheon, Seong Ho Lee, Sung Hyuk Park, Taekyung Lee  
*Pusan National University, South Korea*

E3 July-01 12:20

**\* Extruded magnesium sodium chloride anodes for use in metal-air batteries**

Soeren Mueller, Klara Otto, Janne Heydrich-Bodensieck  
*TU Berlin, Germany*

<b>Lunch break 12:40 - Sessions restart at 14:30</b>
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# SESSION- E

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**Session: E4, Venue: Villandry**

**Mg Alloys (Prof. Yoshihito Kawamura Symposium) 4**

**Session Chairs: Kamanio Chattopadhyay**

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**E4 July-01 14:30 - Keynote**

**\* Development of biodegradable magnesium implants from an engineer's perspective**

Norbert Hort, Bjoern Wiese, Petra Maier, Dmytro Orlov, Domonkos Tolnai  
*Helmholtz- Zentrum Hereon, Germany*

E4 July-01 15:00

Microstructure evolution of twin-roll cast and hot-rolled WZ73 alloy during the finishing heat-treatment

Franziska Ueberschaer, Madlen Ullmann, Ulrich Prahll  
*TU Bergakademie Freiberg, Germany*

E4 July-01 15:20

Specific resistance measurements for the development of Mg based alloys

Bjoern Wiese, Norbert Hort  
*Helmholtz- Zentrum Hereon, Germany*

E4 July-01 15:40

\* Orientation dependence of deformation behavior in tensile test of pure magnesium single crystals

Shinji Ando, Hiromoto Kitahara  
*Kumamoto University, Japan*

**Session E4: Mg Alloys (Prof. Yoshihito Kawamura Symposium) 4**

Coffee / Tea break 16:00 to 16:30

E4 July-01 16:30 - *Student*

Anisotropy in Microstructural Evolution in Pre-deformed AZ31 under directional EPT: A quasi in situ EBSD Analysis

Seho Cheon, Jinyeong Yu, Seong Ho Lee, Sung Hyuk Park, Taekyung Lee  
*Pusan National University, South Korea*

**16:50-17:00 Closing remarks from Yoshihito Kawamura**

# SESSION- E

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**Session: E5, Venue: Villandry**

## **LPSO/MFS Materials / Microstructure & Kink Strengthening 1**

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**Session Chairs: Daisuke Egusa, Koji Hagihara**

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### **E5 July-02 8:30 - Keynote**

**\* Kink Boundary Migrations in LPSO-structured Mg Alloys**

Eiji Abe

*University of Tokyo, Japan*

E5 July-02 9:00

**\* Numerical Evaluation of Kink Band Formation in Anisotropic Solids**

Tsuyoshi Mayama

*Kumamoto University, Japan*

E5 July-02 9:20

**\* Anisotropic mechanical property-induced ductilization (AMID) - A new mechanism to simultaneously improve the strength and ductility of multiphase alloys**

Koji Hagihara, Tokunaga Toko

*Nagoya Institute of Technology, Japan*

E5 July-02 9:40

**\* Face-centered cubic lattice in Titanium synthesized by high-temperature and high-pressure treatment**

Masafumi Matsushita, Tomoki Iio, Atsuki Yokota, Reina Utsumi, Yuki Nakahira, Hiroyuki Saito

*Ehime University, Japan*

### **Session E5: LPSO 1**

Coffee / Tea break 10:00 to 10:30

E5 July-02 10:30

**\* Kink deformed microstructure in mille-feuille structured materials**

Daisuke Egusa, Eiji Abe

*Institute of Science Tokyo, Japan*

E5 July-02 10:50

**\* Effects of microstructural factors on high temperature deformation behavior of Ti-based MAX phase ceramics**

Ken-Ichi Ikeda, Eiichi Sei, Johtaro Muraoka, Seiji Miura, Koji Morita, Tohru S. Suzuki, Yoshio Sakka

*Hokkaido University, Japan*

E5 July-02 11:10

**\* Effects of strain components on effective kink band formation in Mg-Y-Zn alloys**

Motohiro Yuasa, Hiromasa Yoshizumi, Hiroyuki Miyamoto, Hidetoshi Somekawa

*Doshisha University, Japan*

E5 July-02 11:30

**Disclination and cooperative deformation at intersection of kink interface and slip deformation**

Ryutaro Matsumura, Tomonari Inamura

*Institute of Science Tokyo, Japan*

# SESSION- E

E5 July-02 11:50

\* A Comparative Investigation of the Formation Mechanism and Corrosion Behavior of Micro-Arc Oxidation-Treated AZ31 and AC84 Kumadai Magnesium Alloys

Chi-Hua Chiu, Shih-Yen Huang, Yu-Ren Chu, Yuehlien Lee

*National Taiwan University, Taiwan*

E5 July-02 12:10

Strength-ductility balanced by bimodal microstructures composed of kink-strengthening grains in a mille-feuille structured Mg-Al-Y Alloy

Han Chen, Kakeru Kubota, Daisuke Egusa, Michiaki Yamasaki, Eiji Abe

*The University of Tokyo, Japan*

E5 July-02 12:30

\* Geometrical modeling of bent kinks: energy reduction and shape transition mechanisms

Xueyu Zhang, Ryutaro Matsumura, Yuri Shinohra, Tomonari Inamura

*Institute of Science Tokyo, Japan*

E5 July-02 12:50

Mathematical analysis of dislocations and disclinations in crystalline materials

Ryuichi Tarumi, Shunsuke Kobayashi

*Osaka University, Japan*

<b>Lunch break 13:10 - Sessions restart at 14:30</b>
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# SESSION- E

**Session: E6, Venue: Villandry**

## **Smart/Intelligent Materials & Processes 1**

**Session Chairs: Raj Vaidyanathan, Hideki Hosoda**

### **E6 July-02 14:30 Keynote**

#### **\* Smart Materials - Piezoelectric Polyvinylidene fluoride (PVDF) Composites for Biomedical Applications**

Fatima Zivic, Strahinja Milenkovic, Katarina Virijevec, Nenad Grujovic  
*University of Kragujevac, Serbia*

### **E6 July-02 15:00**

#### **\* Influence of thermo-mechanical processing conditions on phase transformation temperatures of Nitinol annuloplasty rings**

Maria Beatrice Abrami, Marialaura Tocci, Carlo Guala, Annalisa Pola  
*Universita degli Studi di Brescia, Italy*

### **E6 July-02 15:20**

#### **\* Mechanical Properties of Au-Cu-Al Dual Phase Alloys for Biomedical Applications**

Hideki Hosoda, Kang Wei Goo, Naoki Nohira, Wang-Ting Chiu, Masaki Tahara  
*Institute of Science Tokyo, Japan*

### **E6 July-02 15:40**

#### **\* Formulation of chitosan-based resists for an optimized eco-efficient photolithography process: focus on the ToF-SIMS characterization**

Dipti Rani, Corinne Gablin, Magin Benedict Ferrer, Kylian Virieux, Isabelle Servin, Angeliki Sofia Foscolos, Stephane Trombotto, Olivier Soppera, Anastasia Soultati, Veroniki P. Vidali, Panagiotis Argitis, Yann Chevolot, Jean-Louis Leclercq, Didier Leonard  
*University of Lyon, France*

### **Session E6: Smart/Intelligent Materials & Processes 1**

Coffee / Tea break 16:00 to 16:30

### **E6 July-02 16:30**

#### **\* Relationship between deformability and crystalline system of martensite phase in Au-Cu-Al**

Yuki Matsuoka, Wakana Yamamoto, Kyoko Kubo, Dong-Keun Han, Naoki Nohira, Hideki Hosoda  
*Nara Women's University, Japan*

### **E6 July-02 16:50**

#### **\* Thermal, Mechanical, and Materials Aspects of a Shape Memory Alloy Stirling Heat Engine**

Maria Chikhareva, Raj Vaidyanathan  
*University of Central Florida, United States*

### **E6 July-02 17:10**

#### **Microstructures and Properties of Diffusion Layer Formed at Laminated Interface of Alumina-Particle Dispersed Magnesium Laminated Compacts Fabricated by MM/SPS Method**

Shigehiro Kawamori, Yoshinori Nagai, Hiroshi Fujiwara  
*Tamagawa University, Japan*

# SESSION- E

E6 July-02 17:30

Temperature un-uniformity caused by property of graphite die on SPS Process

Tatsuya Misawa, Yuji Kawakami, Masakazu Kawahara

*Saga University, Japan*

E6 July-02 17:50 - *Student*

Effect of grain size on shape memory properties of Cr<sub>20</sub>Mn<sub>20</sub>Fe<sub>20</sub>Co<sub>35</sub>Ni<sub>5</sub> high-entropy alloy

Hwiyun Jeong, Je In Lee

*Pusan National University, South Korea*

E6 July-02 18:10 - *Student*

Machine learning multi-objective optimization design multi performances of Zn alloys and Mg alloys

Wei Gou, Zhang-Zhi Shi, Lu-Ning Wang

*University of Science and Technology Beijing, China*

E6 July-02 18:30

Dilatometric simulations of Al-based+Sn-based composite Phase Change Materials

Matteo Molteni, Elisabetta Gariboldi, Konstantin Naumenko

*Politecnico Milano, Italy*

# SESSION E

**Session: E7, Venue: Villandry**

**Composites (MMC, CMC) / Nanocomposites / Syntactic & Foams 1**

**Session Chairs: Veronique Gauthier-Brunet, Prosenjit Das**

**E7 July-03 8:00 - Keynote**

**\* Effect of Al<sub>2</sub>O<sub>3</sub> Particle Size of Al<sub>2</sub>O<sub>3</sub>/Al Composites Fabricated by ARB Process on Microstructure and Mechanical Properties**

Gen Sasaki

*Hiroshima University, Japan*

**E7 July-03 8:30 Keynote**

**\* Thermal Conductivity of Functionally Graded Aluminum-Alumina Composites: Experimental Study and Micro-XCT-based Numerical Simulations**

Michal Basista, Anil Sequeira, Witold Weglewski, Kamil Bochenek, Amrita Jain, Thomas Hutsch, Thomas Weissgaerber

*Institute of Fundamental Technological Research, Poland*

**E7 July-03 9:00**

**\* Development of high-performance laser devices using room-temperature bonding**

Ichiro Shoji

*Chuo University, Japan*

**E7 July-03 9:20**

**\* Femtosecond laser polishing of pure copper and copper/diamond composites surfaces**

Amelie Veillere, Jean-Francois Silvain, Yongfeng Lu, Emmanuel Loubre

*Institut de Chimie de la Matière Condensée de Bordeaux, France*

**E7 July-03 9:40**

**\* Hierarchical Structure Optimization of High-Strength Heat-resistant Titanium Matrix Composites and its Strength-ductility Synergistic Mechanism**

Weijie Lyu

*Shanghai Jiao Tong University, China*

**Session E7: Composites (MMC, CMC) / Nanocomposites / Syntactic & Foams 1**

Coffee / Tea break 10:00 to 10:30

**E7 July-03 10:30**

**Effect of the interface between coarse and fine grains on strength-ductility balance in dispersion-strengthened bimodal Al-Y<sub>2</sub>O<sub>3</sub> nanocomposite fabricated via powder metallurgical route**

Tatsuaki Sakamoto, Taichi Yamasaki, Yusuke Jinno, Shinya Shiga, Hiromichi Takebe

*Ehime University, Japan*

**E7 July-03 10:50**

**Synthesis of zirconium carbide and zirconium diboride particles and fibers as building blocks for ultra-high Temperature ceramic matrix composites**

Mathieu Maillard, Manon Juvin, Sovannara Prum, Zineb El Bouzidi, Jerome Andrieux, Pascal Reynaud

*University of Lyon, France*



# SESSION E

E7 July-03 11:10

Nanoscale engineering of low-misfit TiB<sub>2</sub>/Al<sub>3</sub>(Sc,Zr)/ $\alpha$ -Al multi-interface to improve strength-ductility synergy for direct energy deposited aluminum alloy

Yang Li, Gang Ji, Chen Zhe

*Shanghai Jiao Tong University, China*

E7 July-03 11:30

Study on the design and preparation of high strength and toughness of Be-Al material and the regulation of interface structure

Wenshu Yang, Gaohui Wu, Kuang Zeyang

*Harbin Institute of Technology, China*

E7 July-03 11:50

\* Microstructural characterization and analysis of the mechanical properties of composite materials based on epoxy resin and glass fiber for their application in blades manufacturing

Erika O. Avila-Davila, Jorge A. Castillo-Hernandez, Yuri S. Hernandez-Demesa, Edgar E. Vera-Cardenas, Armando I. Martinez-Perez, Victor M. Lopez-Hirata, Hector J. Dorantes-Rosales

*Tecnológico Nacional de México, Pachuca, Mexico*

E7 July-03 12:10

Interface structure control and strengthening-toughening mechanism of graphene/Al composites

Boyu Ju, Jinpeng Sun, Pengfei Xi

*Harbin Institute of Technology, China*

E7 July-03 12:30

Global Reactive Synthesis and Additive Manufacturing: in-situ synthesis of near net-shape Aluminium Matrix Composites

Jerome Andrieux, Baptiste Forget, Bruno Gardiola, Camille Flament, Mathieu Soulier, Laurent Chaffron, Thierry Baffie, Olivier Dezellus

*University of Lyon, France*

E7 July-03 12:50 - *Student*

In-situ synthesis of AlN-reinforced hypereutectic Al-Si matrix composites by arc plasma melting for thermal management applications

Jeongwon Choi, Je In Lee

*Pusan National University, South Korea*

**Lunch break 13:10 - Sessions restart at 14:30**

# SESSION E

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**Session: E8, Venue: Villandry**

**Composites (MMC, CMC) / Nanocomposites / Syntactic & Foams 2**

**Session Chairs: Amelie Veillere, Ichiro Shoji**

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**E8 July-03 14:30 - Keynote**

**\* Fabrication, architecture design, and characterization of a new Al/graphite flakes-carbon fibre composite used for thermal management**

Jean-Francois Silvain

*Institut de Chimie de la Matière Condensée de Bordeaux, France*

E8 July-03 15:00

**\* Thermal properties of carbon-reinforced copper matrix composites produced by powder metallurgy route**

Veronique Gauthier-Brunet, Melanie Charteau, Jean-Francois Silvain, Valerie Audurier, Anne Joulain

*University of Poitiers, France*

E8 July-03 15:20

**\* Sintering process analysis of aluminum matrix composites using machine learning**

Kenjiro Sugio, Yuuki Shinohara, Yoshikazu Hayashi, Gen Sasaki

*Hiroshima University, Japan*

E8 July-03 15:40

**\* High-Frequency Electrical Transport and Electronic Properties of Graphene/Copper Composites**

Yue Liu, Jiamiao Ni, Tongxiang Fan

*Shanghai Jiao Tong University, China*

**Session E8: Composites (MMC, CMC) / Nanocomposites / Syntactic & Foams 2**

Coffee / Tea break 16:00 to 16:30

E8 July-03 16:30

**\* Microstructural and Morphological Evolution of Novel In-Situ Al-15%Mg<sub>2</sub>Si-4.5%Si Composite with Strontium Addition**

Mohammed Kedir, Prosenjit Das

*Indian Institute of Science, India*

E8 July-03 16:50

**Design, fabrication, and understanding the heat transfer behaviors of the high-thermal conductive copper-matrix composite materials**

Fei Yang

*University of Waikato, New Zealand*

E8 July-03 17:10

**Influence of diamond intrinsic thermal conductivity and particle size on the thermal conductivity of diamond/Al composites**

Guoqin Chen, Pingping Wang

*Harbin Institute of Technology, China*

# SESSION E

E8 July-03 17:30

Coordinated deformation and strengthening-toughening mechanisms of multilayer graphene/Al composites

Ziyang Xiu, Gaohui Wu, Boyu Ju

*Harbin Institute of Technology, China*

E8 July-03 17:50

Preparation of nano-TiB<sub>2</sub> particle reinforcement Al composite through mechanically activated self-propagating high temperature synthesis

Zhilei Xiang, Wenchao Sun, Zian Yang, Yang Han, Xinshuo Gu, Ziyong Chen

*Beijing University of Technology, China*

E8 July-03 18:10

Investigation of microstructure and mechanical behaviour in functionally graded in-situ Al<sub>3</sub>BC/Al composite fabricated via solid-solid reaction

Debdas Roy

*National Institute of Advanced Manufacturing Technology, India*

# SESSION- F

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**Session: F1, Venue: Blois**

**High & Ultra High Temperature Materials (Prof. Haruyuki Inui Symposium) 1**

**Session Chairs: Kiyosuke Kishida, Alexandre Maitre**

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**F1 June-30 10:30 Keynote**

**\* Microstructures and Mechanical Properties of Directionally Solidified TMSi<sub>2</sub>/TM<sub>5</sub>Si<sub>3</sub>(TM = Mo, Nb)-Based Eutectic Composites**

Kiyosuke Kishida, Haruyuki Inui  
*Kyoto University, Japan*

F1 June-30 11:00

\* Improvement of high temperature strength of Cr-Co-Ni medium entropy alloy by precipitation of gamma-prime particles

Katsushi Tanaka, Keiki Yoshioka, Takeshi Teramoto  
*Kobe University, Japan*

F1 June-30 11:20

\* Grain boundary engineering in the cast & wrought Ni-based superalloy Ren<sup>Å</sup> 41 with microalloying additions

Sophie Primig, Felix Theska, Steven Street, Michael Lison-Pick  
*University of NSW Sydney, Australia*

F1 June-30 11:40

\* Thermodynamic assessment and calculations of Mo-Si-B-Ti-C system for ultra-high temperature materials

Katsunari Oikawa, Nobufumi Ueshima  
*Tohoku University, Japan*

F1 June-30 12:00

Synthesis, characterization and physical properties of a Ti<sub>2</sub>NbAlC<sub>1.82</sub> ternary nanolaminated carbide

Sylvain Dubois, Mohammed Berrabah, Thierry Cabioch, Veronique Brunet, Patrick Chartier  
*University of Poitiers (Pprime), France*

F1 June-30 12:20

Finite Element Analysis of the nanoindentation tests for evaluating Al<sub>2</sub>O<sub>3</sub>/Ni-base substrate interfacial failure stress

Chihiro Tabata, Taiyo Maeda, Toshio Osada, Shingo Ozaki, Kyoko Kawagishi, Shinsuke Suzuki  
*National Institute for Materials Science Tsukuba, Japan*

F1 June-30 12:40

The effect of different C contents on the microstructure evolution and mechanical properties of Ti<sub>45</sub>Al<sub>6</sub>Nb alloy

Hongze Fang  
*Harbin Institute of Technology, China*

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**Lunch break 13:00 - Sessions restart at 14:30**

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# SESSION- F

**Session: F2, Venue: Blois**

## **High & Ultra High Temperature Materials (Prof. Haruyuki Inui Symposium) 2**

**Session Chairs: Sophie Primig, Gabriel A. Lopez**

F2 June-30 14:30

\* Approach of the Spark Plasma Sintering mechanisms for boron phosphides-based ceramics  
Alexandre Maitre, Yves Tahan, Nicolas Pradeilles, Olivier Rapaud, Yann Le Godec, Hicham Moutaabbid, Oscar Rojas, Cecile Genevois, Mathieu Allix  
*Institute of Research for Ceramics, France*

F2 June-30 14:50

\* Exploring Nb-based alloys for high-temperature structural applications  
Ki-Seong Park, Krishnamohan Thekkepat, Du-Hyun Kim, Jae-Hyeok Shim, Seung-Cheol Lee, Seok Su Sohn, Jin-Yoo Suh, Shi-Hoon Choi, Geun Woo Lee  
*Korea Institute of Science and Technology, South Korea*

F2 June-30 15:10

High-speed dry cutting performances of Ti(C, N)-(Ti, W, Re)(C, N)-(W-Re) cermet tools with core-rim microstructure against super stainless steel bars  
Takashi Murakami, Jonny Herwan, Ichiro Ogura  
*National Institute of Advanced Industrial Science and Technology Tsukuba, Japan*

F2 June-30 15:30

Synergistic enhancement of strength and toughness of  $\hat{\text{P}}^2$ -Ti alloy with a fine grain: Effect of deformation temperature  
Ruirun Chen  
*Harbin Institute of Technology, China*

### **Session F2: High & Ultra High Temperature Materials 2**

Coffee / Tea break 15:50 to 16:30

F2 June-30 16:30 - *Student*

Influence of grain boundary serration on creep properties in Nickel based superalloy Nimonic 80A  
Ka Yeong Kim, Je In Lee  
*Pusan National University, South Korea*

F2 June-30 16:50 - *Student*

Age-hardening behavior of Ni rich high entropy conventional alloy after cold rolling and flash annealing  
Pooja Jangra, Akshit Dutta, Saurabh Nene  
*Indian Institute of Technology Jodhpur, India*

# SESSION- F

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**Session: F3, Venue: Blois**

## **High & Ultra High Temperature Materials (Prof. Haruyuki Inui Symposium) 3**

**Session Chairs: Jin-Yoo Suh, Katsushi Tanaka**

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F3 July-01 10:30

\* TLP Bonding of dissimilar materials

Inaki Lopez-Ferreiro, Laura Sanchez-Del Rao, Gonzalo Cofre, Melisa Saugo, Silvana Sommadossi, Boris Straumal, Cecilia Poletti, Gabriel A. Lopez

*University of the Basque Country UPV/EHU, Spain*

F3 July-01 10:50

\* Removal and Immobilization of Impurities in Direct and Complete Recycling Method for Advanced Ni-base Single Crystal Superalloys

Kyoko Kawagishi, Chihiro Tabata, Satoshi Utada, Tadaharu Yokokawa, Shinsuke Suzuki, Hiroshi Harada

*National Institute for Materials Science Tsukuba, Japan*

F3 July-01 11:10

\* Harnessing Nanostructure Control: Strategies for Enhanced Performance in Ni-based Superalloys

Vitor Rielli

*University of NSW Sydney, Australia*

F3 July-01 11:30

Plastic deformation property of  $\text{Ni-Fe}_{70}\text{Ta}_{30}$  topologically close-packed intermetallic compound

Zhenghao Chen, Kyosuke Kishida, Haruyuki Inui

*Kyoto University, Japan*

F3 July-01 11:50

Comparison of practical properties of various practical TiAl alloys for jet engine blades

Toshimitsu Tetsui, Kazuhiro Mizuta

*National Institute for Materials Science, Japan*

F3 July-01 12:10 - *Student*

Hot deformation capability and processing window of powder-HIPed Ti-6Al-4V alloy with full lamellar microstructure

Xiaoxuan Xu, Yonghao Yu, Zilong Zhang, Yarong Wang, Guodong Wang, Hongchao Kou

*Northwestern Polytechnical University, China*

F3 July-01 12:30

High-temperature creep behavior of a Ni-20wt.%Cr Alloy: influence of specimen size and microstructure on deformation behavior

Jade Papin, Cendrine Folton, Yanick Ateba Betanda, Xavier Sauvage, Eric Hug

*Laboratoire de Cristallographie et Sciences des Matériaux, France*

**Lunch break 12:50 - Sessions restart at 14:30**

# SESSION- F

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**Session: F4, Venue: Blois**

## **Ultra Fine Grained Materials 1**

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**Session Chairs: Yi Huang, Hiroyuki Toda**

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### **F4 July-01 14:00 Keynote**

**\* Advancing High-Entropy Alloys Through Nanostructuring: Enhancing Mechanical Properties and Thermomechanical Behavior**

Megumi Kawasaki, Klaus-Dieter Liss

*Oregon State University, United States*

F4 July-01 14:30

Suppressing diffusion with the Schwarz crystal structure in Al alloys

Xiuyan Li

*Institute of Metal Research Shenyang, China*

F4 July-01 14:50

\* Prevention of hydrogen embrittlement of HPT-processed ultra-high strength aluminium alloys by hydrogen-absorbing nanoparticles

Hiroyuki Toda, Yafei Wang, Hiro Fujihara, Nozomu Adachi, Yoshitaka Todaka

*Kyushu University, Japan*

F4 July-01 15:10

\* Metastable Schwarz crystal structure in polycrystalline metals with extremely fine grains

Ke Lu, Xiuyan Li, Z.H. Jin

*Institute of Metal Research Shenyang, China*

F4 July-01 15:30

\* Applying ultra-high shear strains to aluminium-graphene composites to achieve an exceptional strength-ductility combination

Yi Huang, Piotr Bazarnik, Malgorzata Lewandowska, Terence G. Langdon

*Bournemouth University, United Kingdom*

F4 July-01 15:50

\* Dynamic Recovery as a Strengthening Mechanism

Amanda Carvalho, Roberto Figueiredo

*Universidade Federal de Minas Gerais, Brazil*

### **Session F4: Ultra Fine Grained Materials 1**

Coffee / Tea break 16:10 to 16:40

F4 July-01 16:40

Strengthening Mechanisms of Heterogeneous Nano-Structured Stainless Steels and Copper Alloys

Hiromi Miura, Masakazu Kobayashi, Yoshiteru Aoyagi, Chihiro Watanabe

*Toyohashi University of Technology, Japan*

F4 July-01 17:00

Effect of Subgrain Boundary Distributions on Extra-Hardening of SPD-processed Al-3%Mg alloy

Taiki Morishige, Atsushi Kozaki, Tsutomu Tanaka

*Kansai University, Japan*

# SESSION- F

F4 July-01 17:20

Microstructure and mechanical properties of Mg and Mg / Nb alloys after severe plastic deformation by accumulative fold-forging

Farzad Khodabakhshi, Gerhard Wilde

*University of Tehran, Iran*

F4 July-01 17:40

Hot deformation behavior study of coarse grained and ultrafine grained QE22 magnesium alloy through development of Constitutive analysis and Johnson-Cook model

Biranchi Sahoo, Sonika Rajoria

*Sardar Vallabhbhai National Institute of Technology Surat, India*

F4 July-01 18:00

Microstructural Refinement and Mechanical Enhancement of Superduplex Stainless Steel Through High-Pressure Sliding

Alisiya Biserova-Tahchieva, Zenji Horita, Nuria Llorca-Isern, Jose Maria Cabrera

*Universitat de Barcelona, Spain*



# SESSION- F

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**Session: F5, Venue: Blois**

## **Materials Performance / Functional & Structural Properties 1**

**Session Chairs: Lihe Qian**

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### **F5 July-02 9:00 - Keynote**

#### **\* Dynamic Embrittlement - Time-Dependent Intergranular Cracking of Ni-Base Superalloys at Elevated Temperatures**

Ulrich Krupp, Lars Baehren, Charleen Baumann, Thomas Seifert, Hans-Juergen Christ, Daniel Urban, Ken Wackermann  
*RWTH Aachen University, Germany*

F5 July-02 9:30

#### **\* Micro-mechanical characterisation of resistances to hydrogen embrittlement and fatigue crack growth in type 304 stainless steel with nanotwin bundles**

Yoji Mine, Kurumi Kawaguchi, Shohei Ueki, Kazuki Takashima  
*Kumamoto University, Japan*

F5 July-02 9:50

#### **\* Prior Microstructure effects on Retained Austenite Phase Fraction and Stability in Advanced High Strength Steels**

Melissa Thrun, Virginia Euser, Amy Clarke, Kester Clarke  
*Los Alamos National Laboratory, United States*

**Session F5: Materials Performance / Functional & Structural Properties 1**

Coffee / Tea break 10:10 to 10:40

F5 July-02 10:40

#### **Evolution of dislocation microstructure in cyclically deformed [001], [011], and [111] oriented copper single crystals**

Toshiyuki Fujii, Tomotaka Miyazawa, Xiao-Wen Lei  
*Institute of Science Tokyo, Japan*

F5 July-02 11:00

#### **Synchrotron X-ray characterization of gradient microstructure and residual stress anisotropy in high-pressure torsion processed Inconel 718**

Laxman Bhatta, Isshu Lee, Klaus-Dieter Liss, Megumi Kawasaki  
*Oregon State University, United States*

F5 July-02 11:20

#### **Tailoring Biodegradable Zinc Alloys: A Powder Metallurgy Approach**

J. Kubasek, Anna Boukalova, David Necas, Peter Minarik, Drahomir Dvorsky, Eva Jablonsky  
*University of Chemistry and Technology, Czech Republic*

F5 July-02 11:40

#### **Numerical investigation of fatigue crack propagation in additively manufactured AA5087 sheets**

Dominik Poeltl, Nikolai Kashaev, Benjamin Klusemann  
*Leuphana University of Lüneburg, Germany*

# SESSION- F

F5 July-02 12:00

Creep behaviour of laser powder bed fusion processed Hastelloy X

Shavi Agrawal, Chandan Kumar, Martin Heilmaier, S. Avadhanig, Satyam Suwas

*Indian Institute of Science Bangalore, India*

F5 July-02 12:20

The impact of surface properties on strain distribution in air-bending

Antti Kaijalainen, Aki-Petteri Pokka, Matias Jaskari, Juha Huuki

*University of Oulu, Finland*

F5 July-02 12:40 - *Student*

Mechanical and Thermal Properties of Harmonic Structure Composites with Ti-Ni Alloy and Copper

Kentaro Miyauchi, Mie Kawabata, Tomoko Kuno, Kei Ameyama, Hiroshi Fujiwara

*Ritsumeikan University, Japan*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- F

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**Session: F6, Venue: Blois**

## **Materials Performance / Functional & Structural Properties 2**

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**Session Chairs: Yoji Mine**

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F6 July-02 14:30

\* Superior tensile and impact properties of a novel high-Mn austenitic steel at extremely low temperatures

Lihe Qian, Chaozhang We

*Yanshan University, China*

F6 July-02 14:50

The stress field dependency of martensitic transformation in metastable austenitic stainless steel

Ritsuki Morohoshi, Tomoya Kawabata, Masaharu Hatano

*The University of Tokyo, Japan*

F6 July-05 15:10

Crystal orientation change during simple shear deformation of Fe-3%Si

Naoki Wada, Genki Tsukamoto, Ken Kimura, Natsuko Sugiura

*Nippon Steel Corporation, Japan*

F6 July-02 15:30

Investigating the Influence of Trace Tantalum on the Microstructure and Mechanical Properties of Niobium Microalloyed Steels

Felipe Moreno Siqueira Borges De Carvalho, Ronaldo M. Lasmar, Livia L. O. Goulart, Marcelo S. Carvalho, Ana Paola V. Braga

*Instituto de Pesquisas Tecnológicas, Brazil*

F6 July-02 15:50

Microstructure and mechanical properties of high nitrogen austenitic stainless steels manufactured by PM-HIP Process and the effects of Nb addition

Byeongchan Lee, Joonoh Moon, Hyun-Uk Hong, Dongsoo Kim, Sehwan An

*Changwon National University, South Korea*

**Session F6: Materials Performance / Functional & Structural Properties 2**

Coffee / Tea break 16:10 to 16:40

F6 July-02 16:40

Effects of Prior Deformation at Cryogenic Temperature on Tensile Deformation Behavior of Heterogeneous Nano-Structured Austenitic Stainless Steel

Chihiro Watanabe, Norimitsu Koga, Hiromi Miura

*Kanazawa University, Japan*

F6 July-02 17:00 - *Student*

Production of Fe-6.5 % wtSi electrical steels sheets by conventional metallurgy for high-performance electric motors

Touria Badaoui, Anne-Laure Helbert, Vincent Ji, Emilie Berard, Yanick Ateba Betanda, Thierry Waeckerle

*Institut de Chimie Moléculaire et des Matériaux d'Orsay, France*

# SESSION- F

**Session: F7, Venue: Blois**

## **Materials Performance / Functional & Structural Properties 3**

**Session Chairs: Dongchan Jang**

F7 July-03 9:00

\* Corrosion-fatigue performance of friction-welded dissimilar joints

Stefano Rossi, Matteo Benedetti, Vigilio Fontanari

*University of Trento, Italy*

F7 July-03 9:20

Phase-field modelling of hydrogen embrittlement in metals

Antoine Ruffini, Gabriel Frank Bouobda Moladje, Alphonse Finel, Yann Le Bouar

*University of Paris-Saclay, France*

F7 July-03 9:40

Cyclic Hot Corrosion Behaviour of Single Crystal CMSX-4 in 60 Wt% Na<sub>2</sub>SO<sub>4</sub> + 40 Wt% NaCl  
Corrodent Atmosphere at 800 Â°C

M. Arivarasu, Santhosh Kumar Vaiyapuri, Andrzej Nowotnik, Gragnyna Mrywka-Nowotnik

*Vellore Institute of Technology, India*

### **Session F7: Materials Performance / Functional & Structural Properties 3**

Coffee / Tea break 10:00 to 10:30

F7 July-03 10:30

Microstructural refinement enhances hydrogen embrittlement resistance in high-strength  
martensitic steel

Xiaodong Lan, Kazuho Okada, Ivan Gutierrez-Urrutia, Akinobu Shibata

*National Institute for Materials Science, Japan*

F7 July-03 10:50

Environment-Assisted Cracking of Mg-Al-Zn Alloys in pH-Controlled Carbonate Buffer Solutions

Takumi Haruna

*Kansai University, Japan*

F7 July-03 11:10 - *Student*

Application of bi-modal milling process to fabricate harmonic structure materials

Seitaro Suzuki, Koki Yagi, Mie Kawabata, Hiroshi Fujiwara, Kei Ameyama

*Ritsumeikan University, Japan*

F7 July-03 11:30 - *Student*

Synthesis and characterization of an (Al-10Si-3Zn-2Cu)/Ti-6Al-4V interpenetrating phase  
composite with enhanced mechanical properties

Debashish Mohanta, Ravishankar Suman, Devesh Punera, Srikant Gollapudi

*Indian Institute of Technology Bhubaneswar, India*

F7 July-03 11:50 - *Student*

An Innovative Grain Refinement Strategy on Biomedical Ti-6Al-4V Alloy for Texture  
Annihilation

Ozgun Umut Tukac, David Browne, Mert Celikin

*University College Dublin, Ireland*

# SESSION- F

F7 July-03 12:10

Interfacial reactions in explosively welded AA1050/AZ31 multilayer plates during post-processing annealing

Henryk Paul, Sandra Puchlerska, Tomasz Tokarski

*Institute of Metallurgy and Materials Science, Poland*

**Lunch break 12:30 - Sessions restart at 14:30**

# SESSION- F

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**Session: F8, Venue: Blois**

**Materials Performance / Functional & Structural Properties 4**

**Session Chairs: Stefano Rossi**

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F8 July-03 14:30

\* Interfacial plasticity of proton-irradiated nanotwinned metals

Dongchan Jang

*Korea Advanced Institute of Science and Technology, South Korea*

F8 July-03 14:50

Evaluation method for Mode II crack growth rates under rolling contact conditions based on fracture mechanics in railway wheel steels

Ryuta Kurosaka, Takanori Kato

*Nippon Steel Corporation, Japan*

F8 July-03 15:10 - *Student*

Effect of heat treatment process on microstructure and toughness at cryogenic temperature for 9%Ni steel

Rikiya Madambashi, Norino Kawagoe, Osamu Umezawa, Yoshinori Ono, Masayuki Komatsu

*Yokohama National University, Japan*

F8 July-03 15:30

\* The effect of surface topography and stamping conditions on the frictional behavior of AA5182 aluminum automotive sheet

Li Li, Fu Lei, Kuanxin Liu, Pizhi Zhao

*Chinalco Materials Application Research Institute Co., Ltd., China*

**Session F8: Materials Performance / Functional & Structural Properties 4**

Coffee / Tea break 15:50 to 16:30

F8 July-03 16:30 - *Student*

Effects of Changes in Crystal Structure by Plastic Deformation on Corrosion Resistance of Magnesium Alloys

Ryo Hayasaka, Shoihiro Yoshihara, Riku Mitome, Yuki Honma, Takuma Kishimoto, Tsuyoshi Furushima

*Shibaura Institute of Technology, Japan*

F8 July-03 16:50 - *Student*

Lead-Free KNN-Based Piezoelectric Ceramics: Design and Mechanical Characterization

Jade Clement, Micka Bah, Isabelle Monot-Laffez, Caroline Richard

*GREMAN, France*

# SESSION- F

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**Session: F9, Venue: Blois**

**Materials Performance / Functional & Structural Properties 5**

**Session Chairs: Lina Yu**

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F9 July-04 9:00

\* Prediction of Hardness in the Heat-Affected Zone of Multilayer Welded Stainless Steel Based on Dislocation Density Change Behavior

Lina Yu, Hiroyuki Hirata, Kazuyoshi Saida

*Osaka University, Japan*

F9 July-04 9:20

Microstructure, texture and magnetic properties of warm thermomechanical processed carbon free Fe-1.5% Si (Wt.%) non-oriented electrical steels

Ram Jee Soni, Palguna Yasam, Rajesh Korla, Alexey Gervasyev, Leo A.i. Kestens, Jaiprakash Gautam

*University of Hyderabad, India*

F9 July-04 9:40 - *Student*

Influence of Process Parameters Variation on Microstructure and Mechanical Properties of SLM-Printed 316L Stainless Steel

Mike Thomas Hauschultz, Maria Helene Friedo, Alessandra Palombi, Alessandra Varone, Ute Geissler, Andrea Boehme, Maria Richetta, Rene Krenz-Baath

*Technical University of Applied Sciences Wildau, Germany*

F9 July-04 10:00

\* Electron Concept of Hydrogen Embrittlement and Hydrogen-Increased Plasticity of Metals

Valentin Gavriljuk, Vladyslav Shyvaniuk, Sergey Teus

*Institute of Metal Physics, Ukraine*

**Session F9: Materials Performance / Functional & Structural Properties 5**

Coffee / Tea break 10:20 to 10:50

F9 July-04 10:50 - *Student*

A unique high-temperature deformation mechanism in a CrMnFeCoNi alloy

Hibiki Kawano, Shuki Onoue, Mie Kawabata, Hiroshi Fujiwara, Kei Ameyama

*Ritsumeikan University, Japan*

F9 July-04 11:10 - *Student*

Evaluation of a Low-Cost System for Measuring Thermal Conductivity in 3D-Printed Metallic Structures

Maria Helene Friedo, Mike Thomas Hauschultz, Conrad Kallabis, Maria Richetta, Andrea Boehme, Rene Krenz-Baath

*Technical University of Applied Sciences Wildau, Germany*

F9 July-04 11:30

Performance Optimization of Epoxy-Based Nanocomposites with Hybrid Nanofillers and Rocca Oil: Mechanical, Tribological, and Analytical Insights

Husain Alfadhel

*Ministry of Public Works, Kuwait*

# SESSION- G

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**Session: G1, Venue: Loire**

## **Welding & Joining 1**

**Session Chairs: Namhyun Kang**

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### **G1 June-30 10:30 Keynote**

**\* Corrosion Fatigue Property of Steel/Aluminum Alloy Weld-Bonded Lap Joint in High Temperature and High Humidity**

Hisashi Serizawa

*The University of Osaka, Japan*

G1 June-30 11:00

**\* Synthesis Pathways for Joining Stainless Steel and Titanium Alloys**

John Carpenter, Cheryl Hawk, Bernard Gaskey, Rose Bloom, Joseph Goodrich, Alex Prada

*Los Alamos National Laboratory, United States*

G1 June-30 11:20

**\* Lap friction stir welding of a TRIP steel grade with a Ni filler**

Marie-Noelle Avettand-Fenoel, Toru Nagaoka, Roland Taillard

*University of Lille, France*

G1 June-30 11:40

**Development of Advanced Orbital TIG welding for Utility pipe in Semiconductor factory**

Hyosik Ham, Hunsung Yoon, Doojin Choi

*Samsung Heavy Industries, South Korea*

G1 June-30 12:00

**Ultrasonic Bonding of Aluminum alloys to carbon fiber reinforced thermoplastic**

Zheyuan Zhang, Tomohiro Sasaki, Takuya Yamada, Yuto Maeda, Hayao Hisamori

*Niigata University, Japan*

G1 June-30 12:20

**Effects of Factors on Deformation-Induced Martensitic Transformation of Metastable Austenitic Weld Metals at Cryogenic Temperature**

Shohei Uranaka, Eita Tochigi, Masaharu Hatano, Tomoya Kawabata

*The University of Tokyo, Japan*

G1 June-30 12:40

**Application of electron beam welding in the production of TEMPALLOY AA1 and T92 butt joints of pipes assigned for the energy industry**

Krzysztof Kwiecinski, Hanna Purzynska, Michal Urzynicok, Adam Zielinski

*Upper Silesian Institute of Technology, Poland*

**Lunch break 13:00 - Sessions restart at 14:30**



# SESSION- G

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**Session: G2, Venue: Loire**

## **Welding & Joining 2**

**Session Chairs: Hishahi Serizawa**

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### **G2 June-30 14:30 - Keynote**

#### **\* Friction Stir Technologies: Evolution of a Disruptive Process over 30 Years**

Rajiv Mishra

*University of North Texas, United States*

#### **\* TLP Bonding of dissimilar materials**

L. López-Ferreño, G. Sánchez-Del Río, M. CofreV, S. Saugo, B. Sommadossi, M. C. Straumal, G.A. Poletti, G.A. López

*University of the Basque Country UPV/EHU, Spain*

G2 June-30 15:00

G2 June-30 15:20

Effect of friction between bonding tool and workpiece on bond microstructure in ultrasonic bonding of Aluminum alloys

Masanori Kitahara, Takuya Yamada, Tomohiro Sasaki, Yuki Eguchi, Yuto Maeda

*Niigata University, Japan*

G2 June-30 15:40

Overlap-Bonding between Aluminium and Copper through Friction Stir Processing

Abdulrahman Aljabri

*Islamic University of Madinah, Saudi Arabia*

### **Session G2: Welding & Joining 2**

Coffee / Tea break 16:00 to 16:30

G2 June-30 16:30

Impact of post-weld heat treatment on microstructure, mechanical properties, and corrosion behavior of laser-welded Nb-microalloyed ferritic stainless steel

Mohamed Newishy, Ahmed W. Abdelghany, Mohammed Ali, Hanaa Soliman, Matias Jaskari, Antti Jarvenpaa, Atef Hamada

*University of Oulu, Finland*

G2 June-30 16:50

Friction Behaviour and Microstructure in Ultrasonic Bonding using Complex Vibrations

Tomohiro Sasaki, Shunri Yamagishi, Tomoaki Nakagawa, Shigeki Saito, Jun Mitsuyuki

*Niigata University, Japan*

G2 June-30 17:10

#### **\* Solidification of off-eutectic alloys**

Jinfu Li, Qingyuan Qin, Lin Yang

*Shanghai Jiao Tong University, China*

# SESSION- G

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**Session: G3, Venue: Loire**

## **Welding & Joining 3**

**Session Chairs: Rajiv Mishra**

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### **G3 July-01 10:30 Keynote**

**\* Thermodynamical and experimental verification on the enhancement of tensile and impact properties of high strength low alloys steels and their welds**

Namhyun Kang, Seonghoon Yoo, Yoona Lee, Byungrok Moon, Junghyun Choi, Hyunjoon Park,  
Dae-Geun Nam

*Pusan National University, South Korea*

G3 July-01 11:00

Reinforcing FSW joints with mechanical interlock utilizing stamping holes

Takahiro Ohashi, Hamed Mofidi Tabatabaei, Tadashi Nishihara

*Kokushikan University, Japan*

G3 July-01 11:20

Effect of atmospheric condition in Electron beam welding of advanced high strength steel

Magnus Areskoug, Sasan Dadbakhsh, Amir Rashid

*KTH Royal Institute of Technology, Sweden*

G3 July-01 11:40

Prediction and control of welding distortion in the aluminium basic element of vehicle structures

Jia Song, Xiaming Chen, Jiajie Zhang, Hiromi Nagaumi

*Soochow University, China*

G3 July-01 12:00

Microstructure and Mechanical Properties in Al-Cu Lap Joint by Dual Beam Laser Welding

Chaeun You, Seong Min Yun, Yong Kim, Je In Lee

*Pusan National University, South Korea*

G3 July-01 12:20

Effect of Magnesium and Silicon on the Temperature Evolution and Mechanical Properties in Refill Friction Stir Spot Welding of Aluminum to Titanium

Lasse Malaske, Uceu Suhuddin, Benjamin Klusemann

*Leuphana University Lüneburg, Germany*

G3 July-01 12:40

Porosity suppression Using a Combination of Quasi-continuous and Oscillating Lasers in HPDC Al-Si Alloy Welds

Xiaming Chen, Luzhong Zhang, Kunlun Qin, Jia Song, Hiromi Nagaumi

*Soochow University, China*

<b>Lunch break 13:00 - Sessions restart at 14:30</b>
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# SESSION- G

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**Session: G4, Venue: Loire**

## **Welding & Joining 4**

**Session Chairs: Marie-Noelle Avettand-Fenoel**

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G4 July-01 14:30

Improved mechanical properties of Al-Cu laser lap joints by optimization of laser beam wobbling

Min Yun Seong, Eun Yun Chae, Yong Kim, Je In Lee

*Pusan National University, South Korea*

G4 July-01 14:50

High temperature deformation behaviour of high melting point alloys with ultrafine grained microstructure and its microstructural evolution during deformation

Lihui Wu, Dingrui Ni, Ning Li, Zongyi Ma

*Institute of Metal Research, China*

G4 July-04 15:10

Finite Element Modelling and Microstructural Analysis of Laser-Welded AM Inconel 718 Joints

Ali Khosravi, Atef Hamada, Sumit Ghosh, Mahmoud Khedr

*University of Oulu, Finland*

G4 July-04 15:30

\* Reliable and strong overlap joining of copper and aluminium by using insert materials and lasers of two wavelengths

Yasuhiro Okamoto

*Okayama University, Japan*

<b>Session G4: Welding &amp; Joining 4</b>
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Coffee / Tea break 15:50 to 16:20
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G4 July-01 16:20

Eliminating heat-affected zone of nuclear heat-resistant steel joint via low-temperature friction stir welding

Zhiwei Wang, Peng Xue, Dingrui Ni, Zongyi Ma

*Institute of Metal Research, China*

G4 July-01 16:40

Microstructure and Property of Aluminum/Iron Non-Uniform Heat Input Laser Welded Joints

Shuncun Luo, Honglin Mu, Hiromi Nagaumi, Xiaonan Wang, Zengrong Hu

*Soochow University, China*

# SESSION- G

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**Session: G5, Venue: Loire**

## **Cold Spray 1**

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**Session Chairs: Chang-Jiu Li, Ozan Ozdemir**

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### **G5 July-02 9:00 - Keynote**

**\* Enhancing the thermal cycling lifetime of YSZ thermal barrier coatings with air plasma sprayed NiCrAlY bond coat**

Yong-Sheng Zhu, Xiao-Tao Luo, Chang-Jiu Li  
*Xi'an Jiaotong University, China*

G5 July-02 9:30

**\* Identification and Optimization of Geometric Features Significant for Nozzle Design in Cold Spray Additive Manufacturing using CFD and Artificial Neural Networks**

Ozan Ozdemir, Ege Cura  
*Northeastern University, United States*

G5 July-02 9:50

**\* Insights into the cold spray deposition of martensite materials for repair and coating applications**

Harpreet Singh, Vinay Gidla, Ravi Kant  
*Indian Institute of Technology Ropar, India*

### **Session G5: Coald Spray 1**

Coffee / Tea break 10:10 to 10:40

G5 July-02 10:40

**Sustainability Efforts in Cold Spray Processing**

Danielle Cote, Kyle Tsaknopoulos, Ashton Lyon  
*Worcester Polytechnic Institute, United States*

G5 July-02 11:00

**\* Microstructural and mechanical characterisation of additively manufactured S235 and 430L steel components by cold spraying**

Jiangnan Chen, Alexander List, Frank Gaertner, Thomas Klassen, Max Guendel  
*Helmut Schmidt University Hamburg, Germany*

G5 July-02 11:20

**Copper-nickel alloy coating on cast iron by cold spray: microstructure and thermal analysis**

Timothee Lauridant, Aya Rostom, Francois Brisset, Fazati Bourahima  
*CHPOLANSKY, France*

**Lunch break 11:40 - Sessions restart at 14:30**

# SESSION- G

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**Session: G6, Venue: Loire**

**Fuel Cells, Hydrogen Technologies, Batteries, Super capacitors 1**

**Session Chairs: Maria Luisa Di Vona, Jedeok Kim**

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**G6 July-02 14:30 - Keynote**

**\* Preparation and application in oxygen reduction reactions of covalently linked MOF-PSU**

Maria Luisa Di Vona

*University of Rome Tor Vergata, Italy*

**G6 July-02 15:00 - Keynote**

**\* Carbonaceous electrocatalytic materials for the oxygen reduction reaction**

Philippe Knauth

*Aix Marseille University, France*

G6 July-05 15:30

**\* Sulfonated Poly(phenylene sulfone)s Ionomers**

Jedeok Kim

*NIMS, Japan*

G6 July-02 15:50

**\* Hydrogen-rich bond (N-H and B-H) for Energy Storage and Transfer**

Zhenguo Huang

*University of Technology Sydney, Australia*

**Session G6: Fuel Cells, Hydrogen Technologies, Batteries, Super capacitors 1**

Coffee / Tea break 16:10 to 16:40

G6 July-02 16:40

**Composite Anion Exchange Membranes containing a long-side chain ionomer and exfoliated Lamellar Double Hydroxides**

Luca Pasquini, Riccardo Narducci

*Aix Marseille University, France*

G6 July-02 17:00

**Structural, Microstructural and Thermoelectric properties of Al-doped Si-rich Higher Manganese Silicide**

Dino R V Ashmi, Reeshma Rameshan, Bhuvanesh Srinivasan, Mythili Prakasam, Alain Largeteau, Suresh Perumal

*Indian Institute of Technology Hyderabad, India*

# SESSION- G

**Session: G7, Venue: Loire**

**Fuel Cells, Hydrogen Technologies, Batteries, Super capacitors 2**

**Session Chairs: Bun Tsuchiya, Hiroki Miyaoka**

## **G7 July-03 8:30 - Keynote**

\* Hydrogen absorption characteristics of lithium-cobalt oxide ceramics soaked in water at room temperature

Bun Tsuchiya, Keisuke Kataoka, Ryosuke Terasawa, Kohtaku Suzuki, Tomoko Sasaki

*Meijo University, Japan*

## **G7 July-03 9:00 - Keynote**

\* **Shaping and co-sintering of electrochemical devices by tape casting process and recent developments**

Pierre-Marie Geffroy, Jean-Marc Bassat

*CNRS, France*

G7 July-03 9:30

\* Research on Ammonia Synthesis by Alkali Metal compounds

Hiroki Miyaoka, Koki Tsunematsu, Takayuki Ichikawa

*Hiroshima University, Japan*

G7 July-03 9:50

Investigating the Thermoelectric properties of Ga Substituted Higher Manganese Silicide

Reeshma Rameshan, Dino Ashmi R V, Bhuvanesh Srinivasan, Mythili Prakasam, Alain Largeteau, Suresh Perumal

*Indian Institute of Technology Hyderabad, India*

## **Session G7: Fuel Cells, Hydrogen Technologies, Batteries, Super capacitors 2**

Coffee / Tea break 10:10 to 10:40

G7 July-03 10:40

Electrochemical Synthesis of Ni-Co-W-Zr(P) Quinary Medium Entropy Alloy for Enhanced Hydrogen Evolution Reaction

Megha Unni, Nageena P, S. Dasaradha Ramarao, Muneeswaran Muniyandi, Wei Sha, Sudagar Jothi

*Vellore Institute of Technology-Andhra Pradesh, India*

G7 July-03 11:00

Enhancing the Electrochemical Stability of Aluminum Current Collectors for High-Voltage Lithium-Ion Batteries

Leo Mahe, Caroline Richard, Francois Tran Van

*GREMAN, France*

G7 July-03 11:20

A new high-entropy perovskite (LaNdSmSrBa)Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-δ</sub> oxygen electrodes for reversible solid oxide cells

Cecile Autret-Lambert, Khawla Salmam, Antoine Thepin, Micka Bah, Jean-Marc Bassat, Jean Paul Salvétat, Julien Vulliet, Julie Pepin

*GREMAN, France*

# SESSION- G

G7 July-03 11:40

Thermoelectric Properties of Zn-Sb Thin Films Deposited by High-Power Impulse Magnetron Sputtering

Min-Chen Chuang, Cheng-Lung Chen, Ludwig Enzlberger, Silke Baler-Paschen, Paul Heinz Mayrhofer, Sheng-Chi Chen

*Ming Chi University of Technology, Taiwan*

G7 July-03 12:00

Self-healing electrolytes for stretchable Li-ion micro batteries

Sebastien Maria, Clement Chambrial, Marion Rollet, Marc Ramuz, Thierry Djenizian, Didier Gimes

*Institut de Chimie Radicalaire UMR, France*

G7 July-03 12:20

Two-step hybridization of polypyrrole (PPy) with poly(3,4-ethylenedioxythiophene)(PEDOT) toward excellent thermoelectric performances

Djelloul Bekkar, Zakaria Sayah, Ahmed Mekki, Linda Nedjar, Cherif Younes Bourenane

*Ecole Militaire Polytechnique, Algeria*

G7 July-03 12:40

Investigation of the thermoelectric behavior of the ternary composite: Polypyrrole – Ionic liquid – Graphene

Djelloul Bekkar, Zakaria Sayah, Ahmed Mekki, Mohamed Ali Mokrani, Linda Nedjar, Housseem Chabane, Cherif Younes Bourenane

*Ecole Militaire Polytechnique, Algeria*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- G

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**Session: G8, Venue: Loire**

## **Materials under Extreme Environments & Characterization 1**

**Session Chairs: Masashi Hasegawa, Sven Vogel**

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### **G8 July-03 14:30 - Keynote**

**\* High Pressure Synthesis and Compression Behaviour of Multicomponent Transition metal Nitrides and Phosphides**

Masashi Hasegawa

*Nagoya University, Japan*

### **G8 July-03 15:00 - Keynote**

**\* High temperature crystal structure of beta-uranium from neutron diffraction**

Sven Vogel, Yi Xie, Michael T. Benson, Jason M. Harp, Sven P. Rudin

*Los Alamos National Laboratory, United States*

G8 July-03 15:30

Application of Digital Image Correlation (DIC) at Cryogenic temperature: Deformation and Fracture Behavior of Metallic Materials (Al, Welding)

Jongwon Lee, Heeju Han, Seongjun Heo, Unhae Lee, Eunjin Lee, Hyomin Kim, Nokeun Park

*Yeungnam University, South Korea*

G8 July-03 15:50

**\* Exploring 2D graphene as atomic armor to protect uranium from ambient corrosion**

Yongqiang Wang, Nolan Regis, Matt Chancey, Michael Pettes, Hisato Yamaguchi

*Los Alamos National Laboratory, United States*

### **Session G8: Materials under Extreme Environments & Characterization 1**

Coffee / Tea break 16:00 to 16:30

G8 July-03 16:30

Development of a New Mn and N Alloyed Austenitic Stainless Steel and Its Weldability Evaluation for Cryogenic Applications

Geunsu Jung, Jongho Shin, Dojin Cha, Seungkook Bang, Younghwa Ma

*Doosan Enerbility, South Korea*

G8 July-03 16:40

**\* Enhancement of High-Temperature Oxidation Resistance of Fe-Cr-Al alloys Through Nanocrystalline Structure**

Rajiv Kumar

*Indian Institute of Technology Ropar, India*



# SESSION- G

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**Session: G9, Venue: Loire**

**Materials under Extreme Environments & Characterization 2**

**Session Chairs: Shi-Hoon Choi, Alexandre Courac**

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**G9 July-04 9:00 - Keynote**

**\* Effect of Rolling Reduction and Cryogenic Temperature on the Deformation and Recrystallization Behavior of Ta-10W Alloy**

Shi-Hoon Choi, Ki-Seong Park

*Sunchon National University, South Korea*

G9 July-04 9:30

**\* CALPHAD methodology for high-pressure synthesis: Phase diagram of Mg-C system by in-situ X-ray diffraction and phenomenological thermodynamics**

Alexandre Courac, Vladimir Turkevich, Fabio Pietrucci, Masashi Hasegawa, Wilson Crichton, Yann Le Godec

*University of Paris Sorbonne, France*

G9 July-04 9:50

**High pressure Spark Plasma Sintering of boron based nano-structured hard boron phosphide (BP, B12P2) for ballistic applications**

Hicham Moutaabbid, Yann Le Godec, Alexandre Maitre, Yves Tahan, Nicolas Pradeilles, Olivier Rapaud, Pascal Fortrin

*University of Paris Sorbonne, France*

**Session G9: Materials under Extreme Environments & Characterization 2**

Coffee / Tea break 10:30 to 11:00

G9 July-04 11:00

**Effects of alloying elements on marine corrosion resistance of structural steel**

Borja Pena Quintero, Maribel Arribas, Inaki Perez, Mikel Merchan, Jose Carlos Garcia, Roberto Elvira, Jose Tomas San Jose

*Tecnalia R&I, Spain*

G9 July-04 11:20

**Damage evolution in nanostructured ferritic alloys produced via various methods under high dose ion irradiations**

Eda Aydogan, Jen Darsell, Wei-Ying Chen, Kayla Yano, Xiao Li, Caleb Massey, Lin Shao, Curt Lavender, Mark Rhodes, Justin Olson, Dalong Zhang, Iver Anderson, Stuart Maloy

*Pacific Northwest National Laboratory, United States*

G9 July-04 11:40

**Can accelerated neutron irradiations replicate historical microstructural characteristics in U-Zr fuels?**

Maria Okuniewski, Nicole Rodriguez Perez, Morgan Smith

*Purdue University, United States*

# SESSION- G

G9 July-04 12:00

\* Development of skutterudite-type thermoelectric materials using pressure induced self-insertion reaction

Chihiro Sekine, Sora Ozaki, Amran Hossain, Hirotada Gotou

*Muroran Institute of Technology, Japan*

# SESSION- H

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**Session: H1, Venue: Berry**

**Ti Alloys/Aerospace Structural Metallic Materials 1**

**Session Chairs: Sergey Prikhodko**

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**H1 June-30 10:30 Keynote**

**\* Texture dependence of fatigue in near-alpha titanium alloys**

Satyam Suwas, S. Tejanath Reddy

*Indian Institute of Science Bangalore, India*

H1 June-30 11:00

**\* In situ assessment of the influence of omega on the properties of metastable beta Ti alloys**

Nick Jones, N. L. Church, C. E. P. Talbot, O. G. Reed

*University of Cambridge, United Kingdom*

H1 June-30 11:20

**Fretting damage mechanisms mediated by  $\alpha$  precipitates and  $\beta$  crystallographic textures in a metastable  $\beta$  titanium alloy**

Ke Hua, Yanlin Tong, Yue Cao, Haifeng Wang

*Northwestern Polytechnical University, China*

H1 June-30 11:40

**Effects of heat treatments on the microstructure, phase development and mechanical properties of PMD additively manufactured ternary and quaternary Ti-Cu-based alloys with Fe and Cr additions**

Christian Edtmaier, Ella Staufer

*TU Wien, Austria*

H1 June-30 12:00

**High temperature oxidation behavior of lightweight and formable high entropy alloys**

Aditya Balpande, Sanika Deshmukh, Saurabh Nene

*Indian Institute of Technology Jodhpur, India*

<b>Lunch break 12:20 - Sessions restart at 14:30</b>
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# SESSION- H

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**Session: H2, Venue: Berry**

## **Ti Alloys/Aerospace Structural Metallic Materials 2**

**Session Chairs: Satyam Suwas, Nick Jones**

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H2 June-30 14:30

\* Fabrication and Thermomechanical Processing of Titanium-Based Laminates for Enhanced Performance under High Dynamic Impact

Sergey Prikhodko, Victor Samarov, Eric Eyerman, Chris Melnyk, Evander Ramos, Dmytro Savvakín, Pavlo Markovsky

*University of California Los Angeles, United States*

H2 June-30 14:50

\* High fatigue limit / tensile strength ratio of beta-type Ti-Cr alloy for biomedical applications

Masaaki Nakai, Kosuke Ueki, Takahisa Shiraishi, Takanori Kiguchi

*Kindai University, Japan*

H2 June-30 15:10

Electropulsing effects on microstructural evolution in cold-rolled Grade 2 titanium sheet

Seong Ho Lee, Jinyeong Yu, Seho Cheon, Jong Woo Won, Jong Un Lee, Taekyung Lee

*Pusan National University, South Korea*

H2 June-30 15:30

Heterogeneous Beta structure significantly improves work hardening properties of metastable Beta titanium alloy

Guodong Wang, Hao Yang, Mingxiang Zhu, Xiaoxuan Xu, Xiangyi Xue, Hongchao Kou

*Northwestern Polytechnical University, China*

**Session H2: Ti Alloys/Aerospace Structural Metallic Materials 2**

Coffee / Tea break 15:50 to 16:20

H2 June-30 16:20

Influence of Extrusion and Annealing on the Microstructure and Strength of an  $\alpha$ -Titanium Alloy

Vaibhav Kumar, Shreshtha Ranjan, Vishal Kumar, S. Banumathy, Nitish Bibhanshu

*Indian Institute of Technology Ropar, India*

# SESSION- H

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**Session: H3, Venue: Berry**

**Metallic Glasses/Bulk Metallic Amorphous Materials (Prof. Lindsay Greer Symposium) 1**

**Session Chairs: Junji Saida, Michael Zehetbauer**

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**H3 July-01 10:30 Keynote**

**\* Nearly Fifty Years of Metallic Glasses**

Lindsay A. Greer

*University of Cambridge, United Kingdom*

H3 July-01 11:00

**\* Atomic cooperativity at deformation of metallic glasses**

Takeshi Egami

*University of Tennessee and Oak Ridge National Laboratory, United States*

H3 July-01 11:20

**\* Influence of Strain Rate on the Deformation Behavior of Pt-Cu-Ni-P Bulk Metallic Glass**

Shuhan Zhang, Jenny Hay, Kurt Johanns, Aaron Stein, Amit Datye, Udo Schwarz

*Yale University, United States*

H3 July-01 11:40

**\* Cryogenic Thermal Cycling of Metallic Glasses: From Concept to Applications**

Yonghao Sun

*Institute of Physics, Chinese Academy of Sciences, China*

H3 July-01 12:00

**\* Relevance of the Structure and Dynamics of High Temperature Metallic Liquids to Glass Formation**

Ken Kelton

*Washington University in St. Louis, United States*

H3 July-01 12:20

**\* Rapidly Annealed High-Bs Soft Magnetic FeCo-Based Amorphous and Nanocrystalline Ribbons for High Temperature Applications**

Ivan Skorvanek, Branislav Kunca, Jozef Marcin, Peter Svec

*Institute of Experimental Physics, Slovak Academy of Sciences, Slovakia*

H3 July-01 12:40 - *Student*

**Processing of a Zr-based bulk metallic glass**

Manon Bornand

*University of Grenoble Alpes, France*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- H

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**Session: H4, Venue: Berry**

**Metallic Glasses/Bulk Metallic Amorphous Materials (Prof. Lindsay Greer Symposium) 2**

**Session Chairs: Frans Spaepen, Udo Schwarz**

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**H4 July-01 14:30 - Keynote**

**\* Formation of gradient rejuvenation structure in Zr-based bulk metallic glass and its effect on ductility improvement**

Junji Saida, Wookha Ryu, Masaki Sugisawa, Keisuke Tabaru, Rui Yamada

*Tohoku University, Japan*

**H4 July-01 15:00 - Keynote**

**\* Development and Industrialization of Soft Magnetic Fe-based Bulk Glassy Alloy Group**

Akihisa Inoue, Fanli Kong, He Men

*Josai International University, Japan*

H4 July-01 15:30

**\* Undercooling Governing Chemical Heterogeneity and Glass-forming Ability of Bulk Metallic Glasses**

Jurgen Eckert

*Montanuniversitat Leoben, Austria*

H4 July-01 15:50

**\* SPD as a tool to improve the plasticity of Bulk Metallic Glasses**

Christian Ebner, Benjamin Escher, Simon Pauly, Christoph Gammer, Pierre Denis, Caroline Meylan, Christian Rentenberger, Jurgen Eckert, Hans Fecht, A. Lindsay Greer, Michael Zehetbauer

*University of Vienna, Austria*

**Session H4: Metallic Glasses (Prof. Lindsay Greer Symposium) 2**

Coffee / Tea break 16:10 to 16:40

H4 July-01 16:40

**Identification of Deformation Elements in Metallic Glasses through Frozen Atom Analysis**

Yoshinori Shiihara, Takuya Iwashita

*Toyota Technological Institute, Japan*

H4 July-01 17:00

**From nano-patterned Pt-based metallic glass to copper oxide foam formation**

Florian Spieckermann, Fei-Fan Cai, Baran Sarac, Adnan Akman, Selin Gümrukçü, Lukas Schweiger, Martin Hantusch, Jan Schroers, Andreas Blatter, Annett Gebert, Jurgen Eckert

*Montanuniversitat Leoben, Austria*

# SESSION- H

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**Session: H5, Venue: Berry**

**Metallic Glasses/Bulk Metallic Amorphous Materials (Prof. Lindsay Greer Symposium) 3**

**Session Chairs: Annett Gebert, Yonghao Sun**

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**H5 July-02 9:00 - Keynote**

**\* The Crystal-Melt Interface in the Hard Sphere System**

Frans Spaepen

*Harvard University, United States*

H5 July-02 9:30

**\* Metallic glasses as prospective biomaterials for miniaturized implants**

Mariana Calin, Jurgén Eckert, Annett Gebert

*Leibniz Institute for Solid State and Materials Research, Germany*

H5 July-02 9:50

**\* Impact of porosity on the mechanical properties of Zr-based Metallic Glasses fabricated by Laser Powder Bed Fusion (L-PBF)**

Jean-Jacques Blandin, Camille Pauzon, Muhammad Fakhry Hatta, Merlin Kempf, Remi Daudin

*Grenoble INP, CNRS, SIMAP, France*

**Session H5: Metallic Glasses (Prof. Lindsay Greer Symposium) 3**

Coffee / Tea break 10:10 to 10:40

H5 July-02 10:40

**\* Surface designs to improve the biocompatibility of Ti-based bulk metallic glasses**

Annett Gebert, Nora Fernandez Navas, Viktoriia Shtefan, Ute Hempel, Mariana Calin

*Leibniz Institute for Solid State and Materials Research, Germany*

H5 July-02 11:00

**\* On the design of biocompatible  $\beta$ -Ti-based alloys for bone implants by ab initio and cellular potts model**

Christina Lekka, Annett Gebert, Mariana Calin

*University of Ioannina, Greece*

H5 July-02 11:20

**\* Amorphous Materials Examined with a Multifaceted Approach**

Hirokazu Masai

*National Institute of Advanced Industrial Science and Technology (AIST), Japan*

H5 July-02 11:40

**Development of Biocompatible, Toxic-Free Zr-Based Metallic Glass Alloys for Long-Term Biomedical Applications**

Fereshteh Sourani, Parthiban Ramasamy, Elham Sharifikolouei, Jurgén Eckert

*Erich Schmid Institute of Materials Science, Austria*

# SESSION- H

H5 July-02 12:00

Porosity control in Additively Manufactured metallic glass by laser rescanning studied with synchrotron X-ray Computed Tomography

Camille Pauzon, Remi Daudin, Pierre Lhuissier, Xavier Bataillon, Pierre Lapouge, Pierre Hubrard, Patrice Peyre, Frederic Coste, Lucas Varoto, Elodie Boller, Muhammad Fakhry Hatta, Jean-Jacques Blandin

*SIMaP laboratory, France*

H5 July-02 12:20 - *Student*

Insights on the heterogeneous to homogenous flow transition in a Zr-based metallic glass

Merlin Kempf, Remi Daudin, Marc Fivel, Gerhard Wilde, Lukas Musiol, Jean-Jacques Blandin

*University of Grenoble Alpes, France*

H5 July-02 12:40

Dynamic relaxation processes of amorphous alloys: Theoretical view and experimental validation

Jichao Qiao

*Northwestern Polytechnical University, China*

**Lunch break 13:00 - Sessions restart at 14:30**



# SESSION- H

**Session: H6, Venue: Berry**

## **Modelling & Simulation 1**

**Session Chairs: Yoshiteru Aoyagi, Jorg Neugebauer**

### **H6 July-02 14:30 - Keynote**

**\* Deep Generative Model to extract process-structure-property linkage in low-carbon steel**

Junya Inoue

*The University of Tokyo, Japan*

H6 July-02 15:00

**\* Dissecting physics of carbon ordering in bcc iron**

Osamu Waseda, Tilmann Hickel, Patrice Chantrenne, Julien Morthomas, Michel Perez, Jorg Neugebauer

*Max-Planck-Institute for Sustainable Materials, Germany*

H6 July-05 15:20

**\* Representing texture in surrogate models of crystal plasticity to predict material behaviour and quantify uncertainty**

Matthew Peel, Hugh Dorward, Sina Safari, Mahmoud Mostafavi

*University of Bristol, United Kingdom*

H6 July-02 15:40

**\* Influence of impurity atoms on the diffusivity and spatial evolution of vacancy in aluminum alloys**

Xuezhou Wang, Chunan Li, Yijiang Xu, YanJun Li

*Norwegian University of Science and Technology (NTNU), Norway*

### **Session H6: Modelling & Simulation 1**

Coffee / Tea break 16:00 to 16:30

H6 July-02 16:30

**\* Pairwise comparison algorithms in alloy design: machine learning tools for the mining of non-standard, human expert or textual data**

Franck Tancr t, Lisa Rateau, Rafael Herschberg, Kornelia Jamiolkowska, Maciej Zawistowski, Gerard Ramstein, Edern Menou, Anna Fraczekiewicz

*Institut des Mat riaux de Nantes Jean Rouxel, France*

H6 July-02 16:50

**\* Phase field model of modification of microstructure of Novel Al-15Mg2Si-4.5Si composite by addition of Strontium during semi-solid processing**

Indrani Mukherjee, Prosenjit Das

*Indian Institute of Science, India*

H6 July-02 17:10 - Student

**Finite element simulation strategies for cold pilgering process**

Anes Marir, Katia Mocellin, Pierre Montmitonnet, Florian Lyonnet, Jean-Luc Doudoux

*Centre de Mise en Forme des Mat riaux, France*

H6 July-02 17:30

**Research of hot deformation behavior of 7B75 aluminum alloy and the material constitutive model**

Fu Lei, Li Li

*Chinalco Materials Application Research Institute Co., Ltd., China*

# SESSION- H

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**Session: H7, Venue: Berry**

## **Modelling & Simulation 2**

**Session Chairs: Yoon Suk Choi, Ernst Kozeschnik**

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### **H7 July-03 8:30 - Keynote**

#### **\* Testing Theories and Simulations on Phase Coarsening by Experiments**

Kegang Wang

*Florida Institute of Technology, United States*

H7 July-03 9:00

#### **\* Multiscale Finite Element Simulation on Effect of Groove Shape on Strain Distribution in Caliber Rolling**

Yoshiteru Aoyagi, Haruki Ohashi, Chihiro Watanabe, Hiromi Miura

*Tohoku University, Japan*

H7 July-03 9:20

#### **\* A meso-scale model to predict flow stress and microstructure during hot deformation of IN718WP**

Nilesh Kumar, Franz Miller Branco Ferraz, Ricardo Buzolin, Esmaeil Shahryari Shahryari, Maria Cecilia Poletti, Surya Yadav

*Indian Institute of Technology Varanasi, India*

H7 July-03 9:40

#### **\* Mechanical stability analysis of edge dislocations near nanometal surface**

Hiroyuki Shima, Yoshitaka Umeno, Takashi Sumigawa

*University of Yamanashi, Japan*

### **Session H7: Modelling & Simulation 2**

Coffee / Tea break 10:00 to 10:30

H7 July-03 10:30

#### **The effect of precipitate chemistry on hydrogen-enhanced decohesion in Ni-based alloys: An ab initio study**

Nina Damm, Daniel Scheiber, Lorenz Romaner, Vsevolod Razumovskiy

*Materials Center Leoben Forschung GmbH, Austria*

H7 July-03 10:50

#### **Modelling combined hardening mechanisms in alloys through the analysis of dislocation percolation**

Rafael Schouwenaars

*Universidad Nacional Autonoma de Mexico, Mexico*

H7 July-03 11:10

#### **Identification of the stochastic hot forming model based on the inverse analysis for the four types of compression tests**

Danuta Szeliga, Natalia Jazdzewska, Jan Kusiak, Piotr Oprocha, Maciej Pietrzyk, Pawe Potorski, Pawe Przybylowicz

*AGH University of Krakow, Poland*

# SESSION- H

H7 July-03 11:30

Numerical modelling of precipitation kinetics in Al alloys during solid-state processing

Rupesh Chafle, Susanne Henninger, Peter Staron, Benjamin Klusemann

*Helmholtz-Zentrum Hereon, Germany*

H7 July-03 11:50

A computational framework for modeling and predicting the mechanical behavior of materials applied to martensitic steels

Ake Jansson, Bartek Kaplan, Thomas Barkar, Armin Salmasi

*Thermo-Calc Software AB, Sweden*

H7 July-03 12:10

Finite Element Analysis of a Nickel-Titanium Lattice Structure: Mechanical Performance and Deformation Behaviour

Mehran Bahranyan, Suzanne Little, Dermot Brabazon

*Dublin City University, Ireland*

H7 July-03 12:30 - *Student*

Application of an Activation-function modified Norton law to predict the two-step minima creep deformation observed in Incoloy 800H

Carlos Rojas-Ulloa, Fan Chen, Victor Tuninetti, Amedeo Di Giovanni, Olivier Pensis, Alexandre Vendramini, Laurent Duchene, Anne Habraken

*University of Liege, Belgium*

H7 July-03 12:50

Phase-field modelling of oxide growth on chromium-rich alloys

Valentin Bellaich, Antoine Ruffini, Alphonse Finel, Yann Le Bouar, Guillaume Parry

*University of Paris-Saclay, France*

**Lunch break 13:10 - Sessions restart at 14:30**

# SESSION- H

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**Session: H8, Venue: Berry**

## **Modelling & Simulation 3**

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**Session Chairs: Kegang Wang, Matthew Peel**

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### **H8 July-03 14:30 - Keynote**

\* Microstructure-Based Fatigue Life Prediction Approaches for Hypo-Eutectoid Steels: Uniaxial and Non-Uniaxial Fatigues Lives, and Their Variabilities

Yoon Suk Choi, Jonghoon Shin, Dae-Geun Nam

*Pusan National University, South Korea*

H8 July-03 15:00

\* Simple flow rules for three-phase viscoplastic materials

Frank Montheillet, David Piot

*Mines Saint-Etienne, France*

H8 July-03 15:20

Finite element modelling of electromagnetic heating

Katariina Lehtola, Joonas Ilmola, Jari Larkiola

*University of Oulu, Finland*

H8 July-03 15:40

\* An Implicit Approach to Phase Field Modeling of Alloy Solidification

Chris Newman

*Los Alamos National Laboratory, United States*

**Session H8: Modelling & Simulation 3**

Coffee / Tea break 16:00 to 16:30

H8 July-03 16:30

A deep-learning based surrogate model for the numerical simulation of casting process

Jinwu Kang, Qichao Zhao, Jiwu Wang, Yahui Yang

*Tsinghua University, China*

H8 July-03 16:50

\* Predicting Thermodynamic and Thermophysical Properties Using Machine Learning

Hai-Lin Chen, Qing Chen

*Thermo-Calc, Sweden*

H8 July-03 17:10 - *Student*

Application of Thermodynamic Extremal Principle to the Sintering of Irregular Powder Particles

Max Weiner, Matthias Schmidtchen, Ulrich Prahl

*Technische Universitat Bergakademie Freiberg, Germany*

H8 July-03 17:30

\* Effect of Interstitial Elements (B, C, N, O) on Tetragonality of L10 FeNi: A first-Principles Study

Jae-Hoon Jang, Hary K. D. H. Bhadeshia

*Korea Institute of Materials Science, South Korea*

# SESSION- H

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**Session: H9, Venue: Berry**

## **Modelling & Simulation 4**

**Session Chairs: Junya Inoue, Osamu Waseda**

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### **H9 July-04 8:30 - Keynote**

#### **\* Utilizing Automated Workflows and Thermodynamic Models to Compute Ab Initio Bulk and Defect Phase Diagrams**

Jorg Neugebauer, Marvin Poul, Ali Tehrani, Jing Yang, Mira Todorova, Jan Janssen, Tilmann Hickel

*Max-Planck-Institut for Sustainable Materials, Germany*

H9 July-04 9:00

Stochastic scaling of time step in a full-scale Monte Carlo Potts model

Sang-Ho Oh, Chan Lim, Byeong-Joo Lee

*Pohang University of Science and Technology (POSTECH), South Korea*

H9 July-04 9:20

Multiscale Modeling and Simulation of Manufacturing Process for Ni-Based Single-Crystal Superalloys

Qingyan Xu, Yeyuan Hu

*Tsinghua University, China*

H9 July-04 9:40

\* Strengthening and softening mechanisms of a dual-heterostructured steel: A coupled crystal plasticity and damage phase field study

Xu Zhang, Shaorong Liu

*Southwest Jiaotong University, China*

### **Session H9: Modelling & Simulation 4**

Coffee / Tea break 10:00 to 10:30

H9 July-04 10:30

Experimental Studies and Simulation of TRIP-TWIP Roll Bonding

Jennifer Mantel, Matthias Schmidtchen, Mikhail Seleznev, Anja Weidner, Horst Biermann, Ulrich Prah

*TU Bergakademie Freiberg, Germany*

H9 July-04 10:50

Data-driven estimation of tensile properties of alloys using instrumented indentation method

Ta-Te Chen, Ikumu Watanabe, Yoshitaka Adachi

*Nagoya University, Japan*

H9 July-04 11:10

Thermodynamics properties of Ti<sub>2</sub>Al-M-ternary V-VIB groups O-phase alloys from first-principles calculations

Zeinab Heidaripebdani, Rebecca Janisch, Florian Pyzcek

*Helmholtz-Zentrum Hereon, Germany*

# SESSION- H

H9 July-04 11:30

Generalized stacking fault energy in multi-component Co-based L12 precipitates

Yingchun Tang, Song Lu, Levente Vitos, Florian Pyczak

*Helmholtz-Zentrum Hereon, Germany*

H9 July-04 11:50

Modelling of precipitation processes in multicomponent alloys

Sylvain Ducottet, Charles-Andre Gandin, Michel Bellet, Gildas Guillemot, Yancheng Zhang

*Centre de Mise en Forme des Materiaux, France*

# SESSION- I

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**Session: I1, Venue: Cher**

## **Nanomaterials for Structural & Energy Applications 1**

**Session Chairs: Takahiro Maruyama, Hiroki Kondo**

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### **I1 June-30 10:30 Keynote**

#### **\* Plasma Synthesis of 3D Graphene-Based Materials and their Applications**

Mineo Hiramatsu, Keigo Takeda

*Meijo University, Japan*

I1 June-30 11:00

#### **\* Amorphous Gallium Oxide Memristor for High-temperature Electronics**

Akira Sakai

*Osaka University, Japan*

I1 June-30 11:20

#### **\* Engineering of ceramic oxides microstructures using low temperature sintering processes**

Claude Estournes, Julien De Landtsheer, Nicolas Albar, Melanie Rousselle, Geoffroy Chevallier, Alicia Weibel, Florence Ansart, Guillaume Fradet, Catherine Elissalde, Thomas Herisson De Beauvoir

*CIRIMAT, Universite de Toulouse, France*

I1 June-30 11:40

#### **\* Nanocomposites of reduced graphene oxide for 2D symmetric micro-supercapacitor with high energy storage performances**

Catherine Debiemme-Chouvy, Adnane Bouzina, Nada Marzouq, Ozlem Sel, Hubert Perrot

*Laboratoire Interfaces et Systemes Electrochimiques, France*

I1 June-30 12:00

#### **\* Precision metal patterning via femtosecond laser-induced thermochemical reaction without excessive precipitation from glyoxylic acid metal complex solution**

Mizue Mizoshiri

*Nagaoka University of Technology, Japan*

I1 June-30 12:20

#### **Employing Shear Punch Testing to Investigate Thermomechanical Properties of Nanocrystalline Brass**

Oliver Petry, Karsten Durst, Sebastian Bruns, Naeimeh Fakhar

*Technical University of Darmstadt, Germany*

I1 June-30 12:40

#### **Self-Assembled Growth of 3D Nanostructures for High Electrochemical Performance by RF Magnetron Sputtering**

Ki-Chul Kim

*Mokwon University, South Korea*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- I

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**Session: I2, Venue: Cher**

## **Nanomaterials for Structural & Energy Applications 2**

**Session Chairs: Mineo Hiramatsu, Hideki Sato**

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I2 June-30 14:30

\* In situ XAFS study on chemical states of transition-metal catalyst during single-walled carbon nanotube growth under conventional CVD conditions with ethanol and C<sub>2</sub>H<sub>2</sub> feedstock  
Takahiro Maruyama, Jumpei Horiuchi, Shinya Mizuno, Kamal Sharma, Takahiro Saida  
*Meijo University, Japan*

I2 June-30 14:50

\* Some Issues Related to the Formation of GaN-based Nanopillar LEDs on Multicrystalline Si Substrates  
Yuichi Sato  
*Akita University, Japan*

I2 June-30 15:10

\* Data-driven analysis and control of plasma-enhanced deposition of functional carbon materials  
Hiroki Kondo, Takayoshi Tsutsumi, Kenji Ishikawa, Makoto Sekine, Masaru Hori  
*Kyushu University, Japan*

I2 June-30 15:30

\* Surface Chemical Modification of BaTiO<sub>3</sub> Nanocubes for Controlling Physical-Chemical Functions  
Tohru Sekino, Yonghyun Cho, Yoshifumi Kondo, Yeongjun Seo, Sunghun Cho, Tomoyo Goto  
*Osaka University, Japan* I2 June-30 15:40

### **Session I2: Nanomaterials for Structural & Energy Applications 2**

Coffee / Tea break 15:50 to 16:30

I2 June-30 16:30

A Novel Understanding for Plastic Deformation and Mechanical Amorphization of Amorphous and Crystalline Silica under Electron-Beam Irradiation  
In-Suk Choi  
*Seoul National University, South Korea*

I2 June-30 16:50

\* Low-dimensional Nanocomposites for Proton Exchange Membrane Fuel Cell and Other Energy Applications  
Daniel H.C. Chua  
*National University of Singapore, Singapore*

I2 June-30 17:10

\* Novel Gas Sensing Selectivity Defined by Response Behavior  
Shu Yin  
*Tohoku University, Japan*



# SESSION- I

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**Session: I3, Venue: Cher**

## **Nanomaterials for Structural & Energy Applications 3**

**Session Chairs: Catherine Debiemme-Chouvy, Tohru Sekino**

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I3 July-01 10:30

\* Growth and Magnetic Characteristics of Iron-filled Carbon Nanotubes

Hideki Sato, Yuji Fujiwara

*Mie University, Japan*

I3 July-01 10:50

\* Robust high-capacity all-solid-state Lithium-ion batteries enabled with nanoparticulate anodes produced by plasma spraying

Makoto Kambara, Sora Kyutoku, Tsubasa Hagiwara, Toshimi Tanaka, Masashi Dougakiuchi

*Osaka University, Japan*

I3 July-01 11:10

\* Superatom-Like  $\beta$ -FeSi<sub>2</sub> Core/Si Shell Quantum Dots via Self-Assembly and Self-Alignment Processes

Katsunori Makihara

*Nagoya University, Japan*

I3 July-01 11:30

\* Monolithic Integration of Eu-doped GaN/InGaN Quantum Wells for Full-color Micro-LEDs with Enhanced Red Emission

Yasufumi Fujiwara

*Ritsumeikan University, Japan*

I3 July-01 11:50

\* Hydrogen desorption from GeH nanosheets under ultrahigh vacuum ambient towards germanene synthesizing

Masashi Kurosawa, Kazuho Matsumoto, Masaaki Araidai, Shigehisa Shibayama, Mitsuo

Sakashita, Osamu Nakatsuka

*Nagoya University, Japan*

I3 July-01 12:10

\* Low-temperature synthesis of graphene usable in the harsh environment of liquids for energy applications

Masaki Tanemura, Muzzammil Bin Ngatiman, Nur Sahiera Binti Abd Rohim, Naoko Yoshida,

Jiaxin Yan, Daniel Chua, Wei Ming Lin, Toru Asaka, Yazid Yaakob, Yong Yang, Mohd Zamri

Mohd Yusop

*Nagoya Institute of Technology, Japan*

I3 July-01 12:30 - *Student*

Optimization of Hydrogen Alarm Sensor on Semiconductor Basis

Ronald Werner, Paolo Proposito, Andrea Boehme, Rene Krenz-Baath

*Technical University of Applied Sciences Wildau, Germany*

**Lunch break 12:50 - Sessions restart at 14:30**

# SESSION- I

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**Session: I4, Venue: Cher**

**Advanced Materials for Bioengineering Applications & Nano Materials for Medicine**

**Applications 1**

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**Session Chairs: Monica Rendon Echeverry, Guangyin Yuan**

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**I4 July-01 14:30 - Keynote**

**\* Functional Coatings by Low Vacuum Plasma for the Innovation in Regenerative and Reparative Medicine**

Pascale Chevallier, Carlo Paternoster, Francesco Copes, Andranik Sarkissian, Diego Mantovani  
*Laval University, Canada*

**I4 July-01 15:00**

\* Elastomer patterning and stacking process for stretchable multilayer electronic circuit based on laser-induced photo-thermal effect

Hojeong Jeon

*Korea Institute of Science and Technology, South Korea*

**I4 July-01 15:20**

\* Widening the scope for non-noble metal initiation of electroless copper deposition

Andrew Cobley

*Coventry University, United Kingdom*

**I4 July-01 15:40**

The Total Stress Approach to Martensitic Transformations in Superelastic Ti-Nb Alloys

Nicole Church, Nicholas Jones

*University of Cambridge, United Kingdom*

**Session I4: Advanced Materials for Bioengineering Applications 1**

Coffee / Tea break 16:00 to 16:30

**I4 July-01 16:30**

Deposition of nanoparticles in lattice structures: example of antibacterial ZnO nanowires

Laurent Weiss, Malobi Seth, Samantha Soule

*University of Lorraine, France*

**I4 July-01 16:50 - Student**

Investigation of Microstructure Evolution and Cytocompatibilities of ODS Modified Ti64 Alloy:  
A Comparative Study of Y-Zr-O and Y-Hf-O Oxides

Merve Yesim Yalcin, Merve Nur Dogu, Betul Govercin, Dermot Brabazon, Mert Celikin

*University College Dublin, Ireland*

# SESSION- I

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**Session: I5, Venue: Cher**

**Advanced Materials for Bioengineering Applications & Nano Materials for Medicine**

**Applications 2**

**Session Chairs: Diego Mantovani, Yuncang Li**

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**I5 July-02 9:00 - Keynote**

**\* Breakthrough of strength and ductility trade-off in biodegradable Mg alloys by drawing at elevated temperatures for bone implants**

Guangyin Yuan

*Shanghai Jiao Tong University, China*

**I5 July-02 9:30**

**\* Effect of Surface Modifications on the Biological Response of Additively Manufactured Metallic Implants**

Monica Rendon Echeverry, Jesus Ordone, Oscar Contreras-Almengor, Nafiseh Mollaei, Javier Llorca, Federico Sket, Jon Molina-Aldareguia

*Institute IMDEA Materials Madrid, Spain*

**I5 July-02 9:50**

**\* Advanced methods of engineering materials surface properties modification towards functional and biomedical application**

Marcin Adamiak, Anna Wozniak, Oktawian Bialas, Augustine Appiah, Hana Mamo

*Silesian University of Technology, Poland*

**Session I5: Advanced Materials for Bioengineering Applications 2**

Coffee / Tea break 10:10 to 10:40

**I5 July-02 10:40**

**Microstructure development of a Zn-based biodegradable alloy during laser shock peening**

Jaroslav Capek, Jan Pinc, Jan Kaufman, Jan Brajer, Toms Studecky, Jiri Kubasek

*Institute of Physics of the Czech Academy of Sciences, Czech Republic*

**I5 July-02 11:00**

**High plasticity Zn-Mn alloy and effects of further alloying**

Zhang-Zhi Shi, Meng Li, Xiang-Min Li, Lu-Ning Wang

*University of Science and Technology Beijing, China*

**I5 July-02 11:20**

**Gelation, Vitrification and Shrinkage of Thermoset Polymers – Methods for Investigation and Modelling**

Paul Ludwig Geiss, Melanie Schumann

*Technische Universitat Kaiserslautern Landau, Germany*

**I5 July-02 11:40**

**Bioresorbable ultrafine-grained Zn stabilized with nanometric ZnO dispersoids**

Martin Balog, Peter Krzik, Moara Marques De Castro, Andrea Skolakova, Jan Pinc, Jiri Kubasek, Francisca M. Seabra, Yujie Zhao, Roberto Figueiredo

*Institute of Materials and Machine Mechanics, Slovakia*

*\* Invited Presentation*

# SESSION- I

I5 July-02 12:00

Influence of Si and process parameters on the microstructure and properties of continuously annealed low C-Nb-Ti strip steel

Kevin Banks, Dannis Maubane, Muthoiwa Netshilema

*University of Pretoria, South Africa*

I5 July-02 12:20 - *Student*

Hot deformation behaviour and microstructure evolution of degradable Zn-0.8Mn alloy

Meng Li, Zhang-Zhi Shi, Lu-Ning Wang

*University of Science and Technology Beijing, China*

I5 July-02 12:40

Semi-solid Extrusion for Small Tube Manufactured of Magnesium Alloys

Zouwei Liang, Hisaki Watari, Hotaka Tozuka, Toshio Haga, Toru Shimizu

*Tokyo Denki University, Japan*

**Lunch break 13:00 - Sessions restart at 14:30**

# SESSION- I

**Session: I6, Venue: Cher**

**Advanced Materials for Bioengineering Applications & Nano Materials for Medicine**

## **Applications 3**

**Session Chairs: Hojeong Jeon, Andrew Cobley**

I6 July-02 14:30

\* Biodegradable zinc matrix composites for bone implant materials

Yuncang Li

*RMIT University Melbourne, Australia*

I6 July-02 14:50

\* Enhancing Antibacterial Efficacy: Leveraging Stimuli-Responsive Mechanisms to Modulate Reactive Oxygen Species in Nanoparticle Design

Kelvin Yeung

*The University of Hong-Kong, China*

I6 July-05 15:10

\* Nanotopographical Surface Engineering and Corrosion Resistance Enhancement of Ti-based Bulk Metallic Glass through Alkaline Chemical Treatment

Yohan Douest, Kirti Tiwari, Benoit Ter-Ovanessian, Paola Rizzi, Damien Fabregue, Jerome Chevalier, Nicolas Courtois

*University of Lyon, France*

I6 July-02 15:30

\* Effect of Zr on the microstructure, corrosion behavior and cytotoxicity of ZnZr and MgZr binary alloys as biodegradable materials

Fatiha Challali, Diego Mantovani, Frederic Chaubet, Teresa Simon-Yarza, Philippe Djemia, Cristiano Poltronieri

*University of Paris Sorbonne, France*

### **Session I6: Advanced Materials for Bioengineering Applications 3**

Coffee / Tea break 15:50 to 16:20

I6 July-02 16:20

The Influence of Au on the Transformation Behaviour of Metastable  $\beta$  Titanium Alloys for Biomedical Applications

Nicole Church, Ayush Prasad, Nicholas Jones

*University of Cambridge, United Kingdom*

I6 July-02 16:50 - *Student*

In vitro response of bioabsorbable zinc-based composites for implantology

Francisca M. Seabra, Moara Marques De Castro, Martin Balog, Peter Krizik, Martina Takacova, Jana Lapinova, Eliska Svastova, Vojtech Hybasek, Jiri Kubasek

*Institute of Materials and Machine Mechanics, Slovakia*

I6 July-02 17:10

Design and Mechanical Evaluation of Ti-6Al-4V Lattice Structures for Biomedical Implants

Maria Najera, Miguel Araya, Timo Rautio, Teodolito Guillen, Antti Jarvenpaa

*Instituto Tecnológico de Costa Rica, Costa Rica*

\* *Invited Presentation*

Thermec'2025 Conference Programme

Intl' Conf. on Processing & Manufacturing of Advanced Materials, June 30-July 04, 2025, Tours, France

# SESSION- I

I6 July-02 17:30

Severe Plastically Deformed Microstructure Engineered Mg-Zn-Zr-RE Alloy Developed as Biodegradable Implant Material

Vasanth Shunmugasamy, Bilal Mansoor

*Texas A&M University, United States*

# SESSION- I

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**Session: I7, Venue: Cher**

**Biomimetic Materials, Nanostructured Biomaterials, Medical Devices, Materials for Health  
& Regenerative Medicine 1**

**Session Chairs: Giuseppina Raffaini, Naofumi Ohtsu**

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**I7 July-03 9:00 - Keynote**

**\* Biodegradable zinc alloys with potent osteogenicity, antibacterial ability, and antitumor efficacy for bone-implant applications**

Cuie Wen

*RMIT University Melbourne, Australia*

**I7 July-03 9:30**

**\* Enhancing Non-Viral Gene Delivery: Strategies for Improved Efficiency and Performance**

Gabriele Candiani

*Politecnico di Milano, Italy*

**I7 July-03 9:50**

**\* Contact-free Micro- and Nano-Deformation in inorganic and organic systems via Electronic Speckle Pattern Interferometry**

Andreas Foitzik, Kai-Henning Lietzau, Carsten Stollfuss, Josefine Gottschalk, Erik Krumnow, Thomas Vogt, Willi Sixt, Serguei Arkhipov

*University of Applied Sciences Wildau, Germany*

**I7 July-03 10:10**

**Control of Bone Microstructure Formation: Role of Soluble Proteins Secreted by Osteocytes**

Tadaaki Matsuzaka, Aira Matsugaki, Takayoshi Nakano

*The University of Osaka, Japan*

**Session I7: Biomimetic Materials 1**

Coffee / Tea break 10:30 to 11:00

**I7 July-03 11:00**

**\* Synthesis of Inorganic Semiconductor Films with Narrow Bandgap Responsive to Visible LEDs and Their Photo-Response**

Masato Ueda, Jinsoo Lee

*Kansai University, Japan*

**I7 July-03 11:20**

**\* Electrochemical Bio-Interface Devices for Advanced Medical Applications via Ion Transport**

Seung-Kyun Kang

*Seoul National University, South Korea*

**I7 July-03 11:40**

**Structure and dissolution behavior of ZnO-containing phosphate invert glasses prepared by liquid phase method**

Sungho Lee, Akiko Obata

*National Institute of Advanced Industrial Science and Technology, Japan*

*\* Invited Presentation*

# SESSION- I

17 July-03 12:00

\* Novel prospective in design of Mg alloys for implantology: in vitro and in vivo assessment of degradation of Mg-Zn-Ca-Y-Mn alloys

Anna Dobkowska, Diana Martinez, Shinichi Inoue, Yoshihito Kawamura, Wojciech Swieszkowski  
*Warsaw University of Technology, Poland*

17 July-03 12:20

Fabrication of Co-Cr-W-Ni alloys with a unique heterogeneous microstructure utilizing carbide precipitation

Kosuke Ueki, Tomoki Nakajima, Kyosuke Ueda, Masaaki Nakai, Takayuki Narushima  
*Kindai University, Japan*

17 July-03 12:40 - *Student*

Structure of Ta<sub>2</sub>O<sub>5</sub> containing phosphate invert glasses prepared by liquid phase method

Hayato Asano, Minori Takahashi, Akiko Obata, Makoto Sakurai, Fukue Nagata, Sungho Lee  
*National Institute of Advanced Industrial Science and Technology, Japan*

**Lunch break 13:00 - Sessions restart at 14:30**



# SESSION- I

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**Session: I8, Venue: Cher**

**Biomimetic Materials, Nanostructured Biomaterials, Medical Devices, Materials for Health  
& Regenerative Medicine 2**

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**Session Chairs: Gabriele Candiani, Anna Dobkowska**

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18 July-03 14:30

\* Hybrid organic/inorganic materials for drug release systems as new generation of biomaterials: a molecular dynamics study

Giuseppina Raffaini

*Politecnico di Milano, Italy*

18 July-03 14:50

\* Pulsed anodization process to form a biocompatible layer on superelastic NiTi alloy surface

Naofumi Ohtsu, Ryota Kawakami, Mitsuhiro Hirano

*Kitami Institute of Technology, Japan*

18 July-03 15:10

\* Filtration Media-Assisted Centrifugal Fabrication of Multilayer Biodegradable Polymer Microneedles

Ha Young Choi, Sang Ihn Han, Honggu Chun, Myoung-Ryul Ok

*Korea Institute of Science and Technology, South Korea*

18 July-03 15:30

Experimental and computational studies on delamination-induced loosening behavior of acetabular cup by cyclic load

Yuichi Otsuka

*Nagaoka University of Technology, Japan*

**Session I8: Biomimetic Materials 2**

Coffee / Tea break 15:50 to 16:20

18 July-03 16:20

Enhancing wear resistance and biological performance of the biomedical Ti-6Al-4V alloy through PEO Treatment in TMO-rich electrolyte

Diego Correa, Karine Coan, Carlos Roberto Grandini, Katia Barbaro, Marco Fosca, Julietta Rau, Sophia Tsiapas

*Sao Paulo State University (UNESP), Brazil*

18 July-03 16:40 - *Student*

Desalination Membrane Strategy Using Ion-Exchange Membranes for Marine Farms

Myung-Kyun Choi, Jieun Han, Seung-Kyun Kang

*Seoul National University, South Korea*

# SESSION- J

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**Session: J1, Venue: Sologne**

**Solid State Processing of Materials / Innovative Manufacturing Process 1**

**Session Chairs: Jean-Marc Heintz**

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J1 June-30 10:30

\* Processing of Amorphous Oxide Semiconductors and Future Prospects

Keisuke Ide

*Institute of Science Tokyo, Japan*

J1 June-30 10:50

Forming of Multifunctional Corrugated Cup using Roller Ball Die

Yasunori Harada, Shota Okada

*University of Hyogo, Japan*

J1 June-30 11:10

Eliminating the Need for Post-Forming Annealing: Advancements in NSF Technology for Austenitic Stainless Steels

Alberto Murillo, John Damilola-Sunday, Phillip Krawec, Eduardo Garcia, Carl Slater

*University of Deusto, Spain*

J1 June-30 11:30

Evaluation of Strain Distribution of Perforated Sheet in Circular Cup Deep Drawing

Shoichiro Yoshihara, Tomoki Nakagawa, Osamu Hasegawa, Hisashi Nishimura

*Shibaura Institute of Technology, Japan*

J1 June-30 11:50 - *Student*

Enhancing Mechanical Properties of Mg-Zn-Ca Alloys via Texture Modification in Multi-Pass Constrained Friction Processing

Ting Chen, Banglong Fu, Uceu Suhuddin, Jorge Dos Santos, Jean Pierre Bergmann, Benjamin Klusemann

*Helmholtz-Zentrum Hereon, Germany*

J1 June-30 12:10 - *Student*

In-situ observation and quantitative evaluation of dendritic silver precipitates growth inside borosilicate glass substrate

Miyuka Kono, Hirofumi Kawamura, Souta Matsusaka, Sho Itoh, Hirofumi Hidai

*Chiba University, Japan*

J1 June-30 12:30

\* Deformation Effects on Microstructure and Mechanical Properties of a High-Entropy Alloy, CuCoFeMnNi: Impact of Rolling Path and Temperature

Nitish Bibhanshu, Satyam Suwas

*Indian Institute of Technology Ropar, India*

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**Lunch break 13:10 - Sessions restart at 14:30**

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# SESSION- J

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**Session: J2, Venue: Sologne**

**Solid State Processing of Materials / Innovative Manufacturing Process 2**

**Session Chairs: Keisuke Ide**

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J2 June-30 14:30

\* Improving sintering ability of alumina through gel casting process

Jean-Marc Heintz, Laurie Gauzere, Clemence Besnard-Pontoreau, Samuel Couillaud  
*Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), France*

J2 June-30 14:50

Application of electron beam welding in the production of TEMPALLOY AA1 and T92 butt joints of pipes assigned for the energy industry

Krzysztof Kwiecinski, Hanna Purzyska, Michał Urzysnik, Adam Zieliński  
*Lukasiewicz Upper Silesian Institute of Technology, Poland*

J2 June-30 15:10

Development of advanced tool pin geometries for Friction Stir Spot Welding (FSSW) by means of Selective Laser Melting (SLM)

Eduardo Garcia, I. Varas, Alberto Murillo-Marrodan, Beatriz Achiaga  
*University of Deusto, Spain*

J2 June-30 15:30

\* Effect of friction stir welding on the microstructure and precipitation behaviour of new generation cast (Al-Zn-Mg)-Fe alloys

Ranjit Bauri, Manish N. Borse  
*Indian Institute of Technology Madras, India*

**Session J2: Solid State Processing of Materials 2**

Coffee / Tea break 15:50 to 16:20

J2 June-30 16:20 - *Student*

Low temperature sintering of ink-spray BST layers for fabrication of an electromagnetic shutter

Hugo Labarrere, Nicolas Penin, Philippe Pouliguen, Jean-Marc Heintz  
*Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), France*

J2 June-30 16:40 - *Student*

Microstructure evolution in two-step friction extrusion of aluminium alloys

Yin-Cheng Chan Chang, Uceu Suhuddin, Harikrishnasinh Rana, Benjamin Klusemann  
*Helmholtz-Zentrum Hereon, Germany*

J2 June-30 17:00

Development of a large shear induced severe plastic deformation process

Govind Kumar, Satyam Suwas, Satish V. Kailas, Laszlo Toth  
*Indian Institute of Science Bangalore, India*

J2 June-30 17:20

\* Growth of nanometric amorphous Ni silicide upon rapid thermal anneal: nonlinear reactive diffusion

Dominique Mangelinck, Clara Delwail, Frederic Mazen, Sylvain Joblot  
*Institut Matériaux, Microélectronique Nanosciences de Provence (IM2NP), France*

\* *Invited Presentation*

Thermec'2025 Conference Programme

Intl' Conf. on Processing & Manufacturing of Advanced Materials, June 30-July 04, 2025, Tours, France

# SESSION- J

J2 June-30 17:40

Development of Hot Forging Process for Turbine Disk using an Open-Die Forging Press

Dojin Cha

*Doosan University, South Korea*

# SESSION- J

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**Session: J3, Venue: Sologne**

## **Neutron Scattering & X-Ray Studies of Advanced Materials 1**

**Session Chairs: Yohei Onodera, David Collins**

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### **J3 July-01 10:30 Keynote**

**\* Structure and dynamics in densified silica glasses**

Shinji Kohara

*National Institute for Materials Science, Japan*

J3 July-01 11:00

**\* Quantitative Analysis of Complex Defect Structures created by Advanced Manufacturing using X-Ray Diffraction**

Levente Balogh, Lucas Ravkov, Donald Brown, Ondrej Muransky

*Queen's University, Canada*

J3 July-01 11:20

**\* In-Operando Analysis of Carbide Formation and Stress Generation during Low Pressure Carburizing by High-Energy Synchrotron X-ray Diffraction**

Jeremy Epp, Ogan Baris Tapar, Michael Zuern, Jens Gibmeier, Antonio Carlos De F. Silveira, Matthias Steinbacher, Norbert Schell

*Leibniz Institute for Materials Engineering, Germany*

J3 July-01 11:40

**Accuracy Study on X-ray Stress Measurement using Fourier Analysis of Debye-Scherrer Ring**

Shouichi Ejiri, Hiroaki Ohba, Toshihiko Sasaki

*Iwate Medical University, Japan*

J3 July-01 12:00

**Observation of Impact Fracture on Heterogeneous Nanostructured Stainless Steel and Titanium by Using Synchrotron Radiation**

Masakazu Kobayashi, Yojiro Oba, Hiromi Miura, Chihiro Watanabe, Shogo Furuta

*Toyohashi University of Technology, Japan*

J3 July-01 12:20

**Grains ain't misbehaving or going wild? A spontaneous activation of grain boundaries initiating abnormal grain growth!**

Klaus-Dieter Liss, Pingguang Xu, Ayumi Shiro, Shuoyuan Zhang, Eitaro Yukutake, Takahisa Shobu, Koichi Akita

*University of Tennessee, United States*

J3 July-01 12:40

**\* Navigating the X-ray Computed Tomography Landscape: Tools and Techniques for 3D and 4D Imaging**

Nikolaus Cordes

*Los Alamos National Laboratory, United States*

**Lunch break 13:00 - Sessions restart at 14:30**

*\* Invited Presentation*

# SESSION- J

**Session: J4, Venue: Sologne**

## **Neutron Scattering & X-Ray Studies of Advanced Materials 2**

**Session Chairs: Levente Balogh, Jeremy Epp**

J4 July-01 14:30

\* Per-Grain behaviour in polycrystalline alloys during stress induced phase transformations

David Collins, James Ball

*Cambridge University, United Kingdom*

J4 July-01 14:50

\* Observation of a zirconium oxide crystal nucleus in the initial nucleation stage in aluminosilicate glass by X-ray multiscale analysis

Yohei Onodera, Yasuyuki Takimoto, Hiroyuki Hijiya, Qing Li, Hiroo Tajiri, Toshiaki Ina, Shinji Kohara

*National Institute for Materials Science, Japan*

J4 July-01 15:10

\* Transient phenomena in additive manufacturing of Ni-base alloys investigated by synchrotron X-ray scattering

Benjamin Wahlmann

*Friedrich Alexander University Erlangen, Germany*

J4 July-01 15:30

How rapid quenching and reheating influences phase transformations in advanced gamma-TiAl alloys

Andreas Stark

*Helmholtz-Zentrum Hereon, Germany*

J4 July-01 15:50

\* Real-time Neutron Diffraction to Support Interpretation of DSC Results on Zr-2.5Nb for Reactor Pressure Tubes

Sven Vogel, Amy I. Fluke, Daniel J. Savage, Toshiro Tomida

*Los Alamos National Laboratory, United States*

### **Session J4: Neutron Scattering 2**

Coffee / Tea break 16:10 to 16:40

J4 July-01 16:40

X-ray fluorescence Holography Study on Ferroelectric Materials under an Electric Field

Koji Kimura, Hiroshi Toyama, Seiji Nakashima, Hiroo Tajiri, Makoto Iwata, Halubai Sekhar, Naohisa Happo, Koichi Hayashi

*Nagoya Institute of Technology, Japan*

J4 July-01 17:00 - *Student*

Stress-induced orthorhombic O phase in TiAl alloys

Xu Liu, Lin Song, Florian Pyczak, Andreas Stark, Li Wang, Xiang Guo, Tiebang Zhang

*Northwestern Polytechnical University, China*

# SESSION- J

J4 July-01 17:20

Probing deformation behavior of a refractory high-entropy alloy using in situ neutron diffraction

Wenli Song, Yuanbo Zhou, Yanchun Zhao, Dong Ma

*Lanzhou University of Technology, China*

J4 July-01 17:40

Long-range magnetic order in icosahedral quasicrystals

Ryuji Tamura

*Tokyo University of Science, Japan*

# SESSION- J

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**Session: J5, Venue: Sologne**

## **Advanced Protective Coatings 1**

**Session Chairs: Dongyi Seo, Hiroaki Nishikawa**

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J5 July-02 9:00

\* Compositionally complex refractory metal nitride coatings: the effects of V, Nb and Ta on their structure and mechanical properties

Frantisek Lofaj, Lenka Kvetkova, Petra Hviscova, Marian Mikula, Tomas Fiantok, Tomas Roch, Dmitry Albov

*Institute of Materials Research, Slovakia*

J5 July-02 9:20

Revealing fretting wear resistance mechanism under liquid lead-bismuth eutectic of Cr-Al-C composite coatings fabricated by laser cladding

Yue Cao, Hua Ke, Haifeng Wang

*Northwestern Polytechnical University, China*

J5 July-02 9:40

Development of an intumescent inorganic coating on steel substrates

Wilfried Cyrille N'cho, Ameni Gharzouni, Sylvie Rossignol

*IRCER, France*

**Session J5: Advanced Protective Coatings 1**

Coffee / Tea break 10:00 to 10:30

J5 July-02 10:30

Electropolishing to Surface Treatment of Hastelloy X Manufactured by Laser Powder Bed Fusion

Hyunbin Jo, Taejin Kwon, Jinsung Bae, Hyunsik Kim, Donghyun Kim, Junghoon Lee

*Pukyong National University, South Korea*

J5 July-02 10:50

Optimized Potential Distribution Enhancing Corrosion Resistance of C/Metal Coated Bipolar Plates Used in Proton Exchange Membrane Fuel Cells

Qian Hu, Xian-Zong Wang

*Northwestern Polytechnical University, China*

J5 July-02 11:10

\* Anti-oxidation UHTC coatings obtained by plasma spraying.

Arthur Charrue, Marianne Balat-Pichelin, Aurélie Quet, Charlotte Gregis, Jean-Louis Longuet, Vincent Génissel

*CEA, DAM, France*

J5 July-02 11:30

\* Multi-Physics, multi-scale modeling of a plasma jet facility with DSMC technique: methods for continuous to transitional regimes and evaluation results

Lionel Jaouen, Aurélie Quet, Arthur Charrue, Vincent Génissel, Benjamin Bernard

*CEA, DAM, France*



# SESSION- J

J5 July-02 11:50

A robust solid-liquid composite superlubricity strategy toward high temperatures

Yixuan Zhang, Hongxing Wu, Hang Li, Lin Wang, Junqin Shi, Ke Hua, Haifeng Wang

*Northwestern Polytechnical University, China*

J5 July-02 12:10

Laser surface hardening of AISI 431 martensitic stainless steel by using different laser sources

Oumaima Aroubi, Fazati Bourahima, Christophe Lafarge, Renaud Ardid, Francois Brisset

*CHPOLANSKY, France*

**Lunch break 12:30 - Sessions restart at 14:30**

# SESSION- J

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**Session: J6, Venue: Sologne**

## **Advanced Protective Coatings 2**

**Session Chairs: Frantisek Lofaj**

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J6 July-02 14:30

\* Electrical properties of large-area perovskite-type oxide epitaxial thin films transferred onto polymer sheets

Hiroaki Nishikawa

*Kindai University, Japan*

J6 July-02 14:50

\* Modification of Microstructures and Cyclic Oxidation Behavior of Electron Beam Physical Vapor Deposition Processed Thermal Barrier Coatings

Dongyi Seo, Ihho Park, Vladimir Pankov, Sunghun Lee, Wonjon Yang

*Aerospace Research Centre, National Research Council of Canada (NRC), Canada*

J6 July-05 15:10

Experimental and computational investigation on the anisotropy of BCC and HCP metals by distortional evolution of yield surfaces

Baodong Shi, Xuejian Yang

*Chongqing University, China*

J6 July-02 15:30

New Physics Informed Machine Learning Prediction of SiO<sub>2</sub> Film Property from Optical Emission Spectroscopy in TEOS /O<sub>2</sub>/Ar Plasma Enhanced CVD

Kunihiro Kamataki, Sukma Fitrianni, Yushi Sato, Yuma Yamamoto, Yosei Kurosaki, Daisuke Yamashita, Takamasa Okumura, Naho Itagaki, Kazunori Koga, Masaharu Shiratani

*Kyushu University, Japan*

**Session I6: Advanced Protective Coatings 2**

Coffee / Tea break 15:50 to 16:20

J6 July-02 16:20

Long-Term Corrosion Resistant Thin Films Prepared by Plasma Enhanced Chemical Vapor Deposition

Meng-Jiy Wang

*National Taiwan University of Science and Technology, Taiwan*

J6 July-02 16:40

\* Electropulse-induced Materials Microstructural Evolution

Rongshan Qin

*The Open University Milton Keynes, United Kingdom*

# Poster Presentations

# SESSION-POSTERS

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**Session K: POSTERS, 01 July, 17:00-19:30**

**Venue: Sports Hall**

**Session Chairs: Mariana Calin, Gang Ji**

**Session Monitoring : Ben Ter Ovanessian, Surya Adav**

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**P101**

Enhancement of Mechanical Properties and Hydrogen Embrittlement Resistance of SUS 316L Fabricated by DED through Laser Shock Peening

Jeonghong Ha

*Korea Institute of Industrial Technology, South Korea*

**P102**

Microstructure Evolution and Mechanical Characterization of SUS 316L-VCr Tool Steel Fabricated by DED

Jeonghong Ha

*Korea Institute of Industrial Technology, South Korea*

**P103**

Tribological Properties of STS316L Sintered Body and Cu/STS316L Composite Using Binder Jetting Process

Kyung Il Kim

*Korea Institute of Industrial Technology, South Korea*

**P104**

Development of Material-Based Process Simulation Technology for BAAM and Composite AM

Jong Wan Ko

*Korea Institute of Industrial Technology, South Korea*

**P105**

Graphitic Carbon Nitride (g-C<sub>3</sub>N<sub>4</sub>) as a Filler in the Photocuring 3D Printing Process for Enhanced Mechanical Properties

Jong Wan Ko, Jeonghong Ha, Jungsoo Nam, Daegeun Park, Jiyong Park, Kyung Il Kim, Seungmin Lee

*Korea Institute of Industrial Technology, South Korea*

**P106**

A Study on Monitoring of Large-Scale Composite Material Additive Manufacturing Processes Using Sensor Fusion

Jungsoo Nam, Hangeol Ru, Song Hyeon Ju, Jiwon Jung

*Korea Institute of Industrial Technology, South Korea*

**P107**

Advanced Laser Scanning Strategies for Minimizing Thermal Residual Stress in Additively Manufactured Topologically Optimized Automotive Parts

Jiyong Park

*Korea Institute of Industrial Technology, South Korea*

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## P108

Advancing Energy Absorption Through Hybrid Lattice Structures Fabricated via Powder Bed Fusion

Jiyong Park

*Korea Institute of Industrial Technology, South Korea*

## P109

In-Situ Synthesis and Ex-Situ Addition Reinforced 3D Printing Aluminum Matrix Composites

Che-Nan Kuo

*National Sun Yat-sen University, Taiwan*

## P110

Multi-phase Flow System Study for Mixed N<sub>2</sub>+CO<sub>2</sub> Gas Separation and Pipeline Transport

Seungmin Lee, Jiyu Park

*Korea Institute of Industrial Technology, South Korea*

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LPBF Processing of a Metastable Ti-42Nb Alloy for Bone Implant Applications

Annett Gebert, Stefan Pilz, Fabian Guenther, Adnan Akman, Benoit Ter-Ovanesian, Mariana Calin, Matthias Bonisch, Martina Zimmermann

*Leibniz Institute for Solid State and Materials Research (IFW) Dresden, Germany*

## P112

Overview of Advanced Materials for the FCC-ee Vacuum System

Cedric Garion

*European Organization for Nuclear Research, Switzerland*

## P113

Coated Biodegradable Zn-0.8Mg-0.2Sr Alloy

Andrea Skolakova, Jan Pinc, Eva Jablonska, Tereza Skolakova, Petr Vertat, Barbora Janebova, Anna Kutova, Jaroslav Capek, Klara Hosova, Dalibor Vojtech, Jiri Kubasek

*Institute of Physics of the Czech Academy of Sciences, Czech Republic*

## P114

Surface Modification of Zn-0.8Mg-0.2Sr: Insights into Nitrogen Ion Implantation and Microstructural Evolution

Jan Pinc, Petr Vlcak, Miroslav Lebeda, Jaroslav Fojt, M. Bartunev, Vojtech Smola, Marek Vronka, Jan Drahokoupil, Zdenek Weiss, Jiri Kubasek, Jaroslav Capek, Andrea Skolakova

*Institute of Physics of the Czech Academy of Sciences, Czech Republic*

## P115

Impact of Rare Gas Addition on Fabrication of a-C:H Films via C<sub>2</sub>H<sub>2</sub>/Ar/Ne/He Plasma-Enhanced Chemical Vapor Deposition

Kazuki Nagamine, Kizuku Ikada, Daichi Wakita, Kunihiro Kamataki, Masaharu Shiratani

*Kyushu University, Japan*

## P116

Masking Effect of Phosphate Pretreatment on Surface Defects of Auto Steel Sheets

Baiyou Fang

*Baosteel, Shanghai, China*

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What Can Be Gained and What Is Lost from the Perspective of Properties, When Modifying the Structural Design of Thin Films

Daniel Munteanu, Claudia Lopes, Marco Rodrigues, Armando Ferreira, Francisco Macedo, Camelia Gabor, Eduardo Alves, Nuno Barradas, Filipe Vaz

*Transilvania University of Brasov, Romania*

## P118

Effect of Cr Content on Oxidation Layer of Hot-Dip Galvanized High-Strength Steel: Molecular Dynamics Simulation

Shaoshuang Zhang, Renbo Song

*University of Science and Technology Beijing, China*

## P119

Constructing High-Density Dislocations by Primary (Nb,Ti)(C,N) to Induce Massive Secondary Precipitations in Austenitic Heat-Resistant Cast Steel

Rong Mu, Yongjin Wang, Renbo Song

*University of Science and Technology Beijing, China*

## P120

Effect of Wire Electrical Discharge Machining on Hole Expansion Ratio of 1 GPa Low Carbon Low Alloyed Steel

Olli Nousiainen, Jaakko Hannula, Antti Kaijalainen, Jukka Komi

*University of Oulu, Finland*

## P121

Special Steels for the Hydrogen Society

Dong Nguyen, Henri Tervo, Jussi Paavola, Jukka Komi

*University of Oulu, Finland*

## P122

Evolution of Microstructure and Mechanical Properties in Cold-Rolled 7050 Aluminum Alloy During Annealing

He Jie, Guangjie Huang, Shuaibo Zhang

*Chongqing University, China*

## P123

The Relationship Between Precipitates and Mechanical Properties in Al-Zn-Mg Alloy with High and Low Zn/Mg

Wanlalak Sanphiboon, Kenji Matsuda

*University of Toyama, Japan*

## P124

The Effect of Transition Metals on the Time-Curing Behaviour of Al-Mg-Si Alloys

Yuto Nakagawa, Taiki Tsuchiya, Seungwon Lee, Norio Nunomura, Toshiya Shibayanagi, Susumu Ikeno, Kenji Matsuda

*University of Toyama, Japan*

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## P125

Linking 3D Grain and Elastic Strain Mapping with the Development of Damage in 2050 Al Alloys During High-Temperature Loading by Synchrotron Diffraction and Tomography

Gisele Fernandes Chaves Macieira, Pierre Lhuissier, Jonathan Wright, Haixing Fang, Julie Villanova, Luc Salvo

*European Synchrotron Radiation Facility Grenoble, France*

## P126

High Strength and High Elongation of Die-Casting Aluminium Alloys

Jiwook Park, Miyoung Lee, Jaehwang Kim

*Korea Institute of Industrial Technology, South Korea*

## P127

Development of a Realistic Brain Phantom for Medical Training: An Ethical and Technical Alternative to Animal Testing

Sandy Speck, Verona Claudio, Andrea Boehme, Andreas Foitzik

*Technische Hochschule Wildau, Germany*

## P128

New Aspects of Production Mg-Zn-Ca Alloys via Laser Powder Bed Fusion

Anna Dobkowska, Jakub Ciftci, Lukasz Zrodowski, Wojciech Swieszkowski

*Warsaw University of Technology, Poland*

## P129

Application of the Thermal Spraying Technology in Hot-Dip Galvanizing Line Zinc Pot Roll

Wang Lu

*Baosteel LTD, Shanghai, China*

## P130

Improving the Thermoelectric Performance of Bi<sub>2</sub>Te<sub>3</sub> via Cobalt Doping

Min-Chen Chuang, Cheng-Lung Chen, Sheng-Chi Chen, Shang-Wei Chou, Hui Sun

*Ming Chi University of Technology, Taiwan*

## P131

Lithium Concentration Dependence on Water Absorption Characteristics of Lithium-Rich Zirconates

Bun Tsuchiya, Keisuke Kataoka, Ryosuke Terasawa, Chumphol Busabok

*Meijo University, Japan*

## P132

Fabrication and Bonding Properties of Joints Formed by Transient Liquid Phase Diffusion Bonding Using Electroplated Films

Shunsuke Totsuka

*Gunma University, Japan*

## P133

In-Vivo Bone Implantation Study of TiZrNbTaFe High Entropy Alloy Thin Films

Bih-Show Lou, Jyh-Wei Lee, Sen-You Hou, Po-Yu Chen

*Chang Gung University, Taiwan*

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## P134

Comparison of Pd-42Cu-10Ni and Pd-30Cu-29.5Ag-0.5Zn as Probe Material in Interfacial Reaction with Sn

Rin Hashizume, Tatsuya Kobayashi, Ikuo Shohji, Tomohisa Hoshino, Kenichi Sato, Shunsuke Kobayashi, Naohito Odani

*Gunma University, Japan*

## P135

Microstructural Characterization and Analyses of the Damage in a Ti-Based Alloy by X-Ray Computed Microtomography

Erika O. Avila-Davila, Ixchel Monroy-Sanchez, Jesus D. Moreno-Martinez, Marisa Moreno-Rios, Nicolas Cayetano-Castro, Victor M. Lopez-Hirata, Jose E. Resendiz-Hernandez

*Tecnologico Nacional de Mexico-Pachuca, Mexico*

## P136

Assessment of Adhesion Degradation in A1050/Epoxy Resin Interface Under High-Humidity and High-Temperature Aging Conditions

Ryota Nakagawa, Ikuo Shohji, Fumiya Funatomi, Kyohei Ohashi, Ryuki Sakai, Tatsuya Kobayashi

*Gunma University, Japan*

## P137

Degradation Behaviour of Sn-Ag-Cu Lead-Free Solder Joint with Electrolytic Ni Plated Electrode Due to Electromigration

Kenta Kawaguchi, Marina Oyama, Tatsuya Kobayashi, Ikuo Shohji, Keishi Nakamura, Koichi Hirasawa, Hitoshi Amemiya

*Gunma University, Japan*

## P138

Evaluation of Joining Properties Between Potential-Controlled Ni-Cu Alloy Plating Film and Pb-Free Solder

Sota Mori, Ikuo Shohji, Tatsuya Kobayashi

*Gunma University, Japan*

## P139

Effect of Thermal Cycle Profile on Thermal Fatigue Life of Sn-3.0Ag-0.5Cu Solder Joints for Wafer-Level Chip Scale Package

Shun Sakagami, Kenta Kawaguchi, Tatsuya Kobayashi, Ikuo Shohji, Fumiya Funatomi, Kyohei Ohashi, Ryuki Sakai

*Gunma University, Japan*

## P140

Investigation of Degradation Behavior of Adhesion Between Sealing Resin and Copper by Aging Treatment

Anzu Tozaki, Tatsuya Kobayashi, Ikuo Shohji, Hiroto Takenaka, Hirose Suzuki, Minoru Ueshima

*Gunma University, Japan*

## P141

Anisotropy in High Temperature Deformation and Oxidation Behavior in Textured Ti<sub>3</sub>SiC<sub>2</sub> MAX Phase Ceramics

Eiichi Sei, Ken-Ichi Ikeda, Seiji Miura, Koji Morita, Tohru Suzuki, Yoshio Sakka

*Hokkaido University, Japan*



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## P142

Microstructural Observation of High Mechanical Strengthened Nb<sub>3</sub>Sn Superconducting Wires via the Internal Matrix Reinforcements

Hayato Yokoyama, Seungwon Lee, Taiki Tsuchiya, Yoshimitsu Hishinuma, Tetsuo Aida, Susumu Ikeno, Kenji Matsuda

*University of Toyama, Japan*

## P143

Effect of Precipitation Phase on High Cycle Fatigue Behavior of Ti-2Al-9.2Mo-2Fe Alloy

Su-Hong Shin, Dong-Geun Lee

*Sunchon National University, South Korea*

## P144

Wear Behavior Analysis of Nitrided Ti-12.1Mo-1Fe Alloy After Shot Peening Pre-Treatment

Seung-Woo Lee, Dong-Geun Lee

*Sunchon National University, South Korea*

## P145

Analysis of Generation and Propagation of Fatigue Crack in Oxygen-Free Copper Using Electron Backscattered Diffraction Method

Hiroki Yonekura, Tatsuya Kobayashi, Ikuo Shohji

*Gunma University, Japan*

## P146

Analysis of Wear Properties and Mechanism Changes According to Fe Content in Metastable  $\beta$  Titanium Alloys

Yeonghun Jung, Dong-Geun Lee

*Sunchon National University, South Korea*

## P147

Study of Adhesion Strength Degradation and Fracture Behaviour of Copper/Epoxy Resin Joints Under Hygrothermal Conditions

Xinya Zhao, Tatsuya Kobayashi, Ikuo Shohji

*Gunma University, Japan*

## P148

The Effect of Zinc Content on the Acoustic Properties of Brass Percussion

Ryusei Naganuma, Taro Kato, Mitsuaki Furui

*Tokyo University of Technology, Japan*

## P149

Creep Properties of P92 Pipe Weld After Annealing at 600 and 650°C

Karol Sowka, Hanna Purzynska, Adam Zielinski, Marek Sroka

*Upper Silesian Institute of Technology, Poland*

## P150

Peltier-Induced Thermal Fatigue Testing for Reliability Evaluation of Thermoelectric Devices

Seungwoo Han, Seungik Shin, Seong-Jae Jeon, Jung Yup Kim

*Korea Institute of Machinery and Materials, South Korea*

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## P151

Relationship Between Maximum Bending Stress and Surface Roughness of AZ31 Magnesium Alloy Fully Corroded in Salt-Water Environment

Keishi Iizuka, Taro Kato, Kentaro Yamada, Mitsuaki Furui

*Tokyo University of Technology, Japan*

## P152

Sintering Characteristics of Mo-Ta Alloys via Spark Plasma Sintering Process

Geon Kim, Byungheon Oh, Dongju Lee

*Chungbuk National University, South Korea*

## P153

Fabrication of Zr-Based Bulk Metallic Glasses Lattice Structures by L-PBF Process

Muhammad Fakhry Hatta, Camille Pauzon, Jean-Jacques Blandin, Remi Daudin

*SIMaP Laboratory, France*

## P154

Neutralization of Impurity Elements of Cu and Ni in Mg-Zn Alloy by Dissolution into MgZn<sub>2</sub> Phase

Kaito Uruchida, Naoki Kadota, Taiki Morishige

*Kansai University, Japan*

## P155

Effect of Grain Size on the Behavior of Exfoliation Corrosion in Cold-Rolled Mg-14mass%Li-3mass%Al Alloy

Yuta Kawahara, Taiki Morishige

*Kansai University, Japan*

## P156

Verification of a Novel Mathematical Model for Determination of the Biomass Specific Growth Rate in Bioprocesses

Mirjam Kraus, Gianluca Verona-Rinati, Andrea Boehme

*Technical University of Applied Sciences Wildau, Germany*

## P157

Concept of a Module for Water Treatment with Plasmonically Active Nanoparticles, to Extend a Multivalent Modular Prototype System for Adaptable Water Treatment and Analysis

Moritz Heinrich, Ilko Bald, Andrea Boehme, Rene Krenz-Baath

*Technical University of Applied Sciences Wildau, Germany*

## P158

Development of Acoustic Device Using Giant Magnetostrictive Material: Consideration on Acoustic Characteristics of Sound Generated by Wall Surface Vibration

Taro Kato, Mitsuki Narita, Keishi Iizuka, Saneyuki Abe, Ryusei Naganuma, Koki Bando, Mitsuaki Furui

*Graduate School of Engineering, Japan*

## P159

Experimental Study on the Behavior and Emissions of Methane/Hydrogen Diffusion Flames Under DC Electric Field

Daegeun Park

*Korea Institute of Industrial Technology, South Korea*

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## P160

N<sub>2</sub>O and NF<sub>3</sub> Reduction and NO<sub>x</sub> Emission Characteristics in Methane/Hydrogen Diffusion Flames

Daegeun Park

*Korea Institute of Industrial Technology, South Korea*

## P161

Thermal Deformation Analysis and Flashback Prevention in Aluminum Body Portable Butane Gas Burners

Daegeun Park

*Korea Institute of Industrial Technology, South Korea*

## P162

Fabrication and Characterization of Insulation-Type Thermal Interface Materials Using Conformal SiO<sub>2</sub>-Coated Copper Dendritic Particles

Jong-Hyun Lee, Sang-Hoon Jung

*Seoul National University of Science and Technology, South Korea*

## P163

Taguchi Analysis for Optimizing Mechanical Properties of Additive Manufactured Alloys by Quantifying Intermetallic Phases

Dongyong Park, Hyeon Jeong Park, Yun Sun Lee

*Korea Institute of Industrial Technology, South Korea*

## P164

Enhancing Mechanical Properties in Repaired Components Through Directed Energy Deposition of Similar and Distinct Alloys

Hyejin Song, Hojin Lee, Dongyong Park, Jinseok Jang

*Korea Institute of Industrial Technology, South Korea*

## P165

Application and Practice of WC Cermet Sprayed Composite Coating Technology in the Hot-Dip Galvanizing Line

Lu Wang

*Baosteel, Shanghai, China*

## P166

Thermal Resistant of Geopolymer up to 1600°C

Lila Ouamara, Sylvie Rossignol, Ameni Gharzouni, Sabah Ben Lagha, Alain Denoirjean, Geoffroy Rivaud

*IRCER, France*

## P167

Comparative Study on the Corrosion Resistance of Cold-Rolled Weathering Steel

Wenqiang Zhou, Tao Pang, Jun Gao, Yinglei Wei, Jun Luo, Xianjie Li

*Central Research Institute of Baosteel, China*

## P168

Apprehending the Flow Behavior at Different Strain Rates for Different Extent of Recrystallized Microstructure in Al-Mg Alloy: Constitutive Modelling Approach

Surajit Samanta, Jyoti Sahoo, Sumeet Mishra

*Indian Institute of Technology Roorkee, India*

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## **P169**

Recyclability and Mechanical Properties of As-Cast Al-Si-Cu-Mg Alloys

Nam-Seok Kim, Seong-Ho Ha, Bong-Hwan Kim, Hyun-Kyu Lim, Shae K. Kim, Young-Ok Yoon  
*Korea Institute of Industrial Technology, South Korea*

## **P170**

Production and Characterization of Aluminium-Based Syntactic Foam

Dilermundo Nagle Travessa, Maynara Faula Avela, Carlos Eduardo Molento De Moraes, Daniel Caldato Dalan  
*Universidade Federal de Sao Paulo, Brazil*

## **P171**

Assessing the Catalytic Properties of Pd<sub>3</sub>Pb Nanocubes for the Oxygen Reduction Reaction: The Role of Shape and Strain

Kihyun Shin  
*Hanbat National University, South Korea*

## **P172**

Microstructure and Mechanical Properties of High-Entropy Intermetallics with Dual-Phase Core-Shell Structure

Fantao Kong  
*Harbin Institute of Technology, China*

## **P173**

Microstructure and Property Variations in High-Performance H-Shaped Steel: Effects of Alloy and Processing

Chansun Shin, Jinwoo Park, Jun-Ho Chung, Chang-Hoon Lee  
*Myongji University, South Korea*

## **P174**

Thermoelectric Properties of CeFe<sub>4</sub>P<sub>12</sub> and ThFe<sub>4</sub>P<sub>12</sub>

Abdelkader Alleg  
*Laboratory Physico-Chemistry of Materials, Algeria*

## **P175**

Formation of Amorphous Ti-Sn Alloy Powder by Mechanical Alloying of Intermetallic Powder Mixtures and Mixtures of Tin with Intermetallics

Pee-Yew Lee  
*National Taiwan Ocean University, Taiwan*

## **P176**

Dynamic Patterns on Vehicles Using Magnetic Nanoparticles

Hyo-Soo Lee  
*KITECH, South Korea*

## **P177**

Effect of Sn Addition and Pre-Straining on Age Hardening Response and Microstructure of Mg-Al-Zn Alloys

Hotaka Tozuka, Hisaki Watari, Toshio Haga, Mayumi Suzuki  
*Tokyo Denki University, Japan*

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## **P178**

Comparison of different methods to determine the recrystallization of austenite during hot working through double hit compression test

Paul Gawes, Christian Hoflehner, Schneider Reinhold, Christof Sommitsch, Maria Cecilia Poletti  
*University of Applied Sciences Upper Austria, Austria*

## **P179-Student**

Microstructural Control of Unstable Beta-Type Titanium Alloy Through Powder Bed Fusion Using a Laser-Beam of Metals

Keitaro Miyasawa, Ryosuke Ozasa, Daisuke Egusa, Eiji Abe, Masakazu Tane, Takayoshi Nakano  
*The University of Osaka, Japan*

## **P180-Student**

Spinodal Decomposition and Magnetic Properties of Single-Crystal-Like Fe-Cr-Co Alloy Fabricated by Laser-Powder Bed Fusion Type Additive Manufacturing

Takato Saito, Yuheng Liu, Masayuki Okugawa, Kazuhisa Sato, Takayoshi Nakano, Yuichiro Koizumi  
*The University of Osaka, Japan*

## **P181-Student**

A Layer-by-Layer FEM Curing Model for Binder Jetting of 316L

Leon Desgagnés, Reza Tangestani, Hongyan Miao, Srinivas Pendurti, Arunkumar Natarajan, Etienne Martin  
*Polytechnique Montreal, Canada*

## **P182-Student**

Enhanced Polyp Adhesion on Chemically Modified Titanium Nonwoven Fabric

Minami Inoue, Masato Ueda  
*Kansai University, Japan*

## **P183-Student**

Evaluation of Dislocation Morphology in Nitrogen-Bearing Austenitic Stainless Steel

Shotaro Kubo, Tianze Ma, Takuro Masumura, Toshihiro Tsuchiyama  
*Kyushu University, Japan*

## **P184-Student**

Nano-Sandwich Microstructure

Mun Sik Jeong, Geon Ho Song, Jeongho Han  
*Hanyang University, South Korea*

## **P185-Student**

Enhancing the Hydrogen Embrittlement Resistance in Warm-Rolled Medium-Mn Steels Through Influence of Intermittent Friction Cycles on Tribocorrosion Behavior of 316L Stainless Steel in 5% NaHCO<sub>3</sub>

Kaouthar Bouguerra, Caroline Richard, Yan-Ming Chen, Nadege Ducommun, Alexandre Romaine, Pierre Francois Cardey  
*GREMAN, France*

## **P186-Student**

Influence of Tempering on the Microstructure of Martensitic Stainless Steel AISI420

Alice Dautezac, Maria Santofimia Navarro  
*Delft University of Technology, Netherlands*

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## **P187-Student**

Synthesis and Characterization of an (Al-10Si-3Zn-2Cu)/Ti-6Al-4V Interpenetrating Phase Composite with Enhanced Mechanical Properties

Debashish Mohanta, Ravisankar Suman, Devesh Punera, Srikant Gollapudi

*Indian Institute of Technology Bhubaneswar, India*

## **P188-Student**

CALPHAD-Based Modelling of Microstructural Evolution During D.C. Casting and Homogenization of AA3003 Aluminium Alloy

Fotios Tsiolis, Spyros Papaefthymiou

*National Technical University of Athens, Greece*

## **P189-Student**

A Novel Low-Cost Multicomponent Biocompatible Alloy for Potential Application as Bone Fixation Devices

Jhulienne Torrento, Conrado Afonso, Carlos Grandini, Diego Correa

*Sao Paulo State University, Brazil*

## **P190-Student**

Temperature Dependent Thermoelectric Transport in PEDOT-PSS Conducting Polymer: The Effect of Additives

Anthony Rohmer, Patrice Limelette

*GREMAN, France*

## **P191-Student**

Novel Spray-Pyrolysis-Based Synthetic Strategy for Uniformly Distributed Oxide Nanoparticles-Dispersion-Strengthened Refractory Alloy

Hyun Kim Jeong, Yeon Jeon Hee, Jongmin Byun, Young-In Lee

*Seoul National University of Science and Technology, South Korea*

## **P192-Student**

Elevated Temperature Mechanical Properties of Harmonic Structure Designed AlCoCrFeNi High Entropy Alloy by MM/SPS Process

Ryohna Hori, Ryota Honda, Mie Kawabata, Tomoko Kuno, Lei He, Kei Ameyama, Takamoto Itoh, Hiroshi Fujiwara

*Ritsumeikan University, Japan*

## **P193-Student**

In-Situ Hydrogen Embrittlement of CrCoNi Medium-Entropy Alloy

Yoonmoon Chung, Geon Ho Song, Jeongho Han

*Hanyang University, South Korea*

## **P194-Student**

Interfacial Mechanisms of Iron-Oxide Reduction: From Direct Microstructural Observations to Atomistic Simulations

Vikram Chavan, Namit Pai, Debarna Bhattacharjee, S. Girish, Samik Nag, Saurabh Kundu, Somanth Basu, Ajay Panwar, Indradev Samajdar

*IIT Bombay, India*

## **P195-Student**

Micro-Mechanical Characterisation of Hydrogen-Enhanced Fatigue Crack Growth in 100Cr6 Bearing Steel Under Mixed-Mode Loading

Kurumi Kawaguchi, Yoji Mine, Martin Dienwiebel

*Kumamoto University, Japan*

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## **P196-Student**

The Effect of Cu and Sn Contents on the Microstructure and Mechanical Properties of Eutectoid Steel

Chae Young Kim, Mun Sik Jeong, Kenhee Ryou, Pyuck-Pa Choi, Minwoo Kang, Jeongho Han  
*Hanyang University, South Korea*

## **P197-Student**

Effect of Ni on Low Temperature Impact Toughness of V-Nb Microalloying Non-Quenched and Tempered Forged Steel

Ren Shuhao, Renbo Song, Lican Sun, Shuai Zhao  
*University of Science and Technology Beijing, China*

## **P198-Student**

Waterproof Polyelectrolyte for Implantable Medical Devices

Myung-Kyun Choi, Yi-Jeong Choi, Seung-Kyun Kang  
*Seoul National University, South Korea*

## **P199-Student**

Correlation Between Microstrain and Hydrogen Embrittlement in High Strength Quenching and Partitioning (QP) Steel

Hyogeon Kim, Mun Sik Jeong, Jeongho Han  
*Hanyang University, South Korea*

## **P200-Student**

Generation of Morphology-Controlled Three-Dimensional Microstructures in Dual-Phase Steels Using SliceGAN-AdaIN

Toshiki Sakakibara, Ta-Te Chen, Fei Sun, Yoshitaka Adachi  
*Nagoya University, Japan*

## **P201-Student**

Stability and Segregation Study of Alphagenic and Betagenic Addition Elements in Pure Titanium by Atomistic Approach

Ahcene Amitouche, Djafar Iabbaden, Jean-Sebastien Lecomte, Yudong Zhang, Jean-Marc Raulot  
*Laboratoire d'Etude des Microstructures et de Mecanique des Materiaux, France*

## **P202-Student**

Revealing the Mechanism Behind the Strength-Plasticity Dependence on Lamellar Orientation in Polycrystalline TiAl Alloys

Mengyu Jia, Hongchao Kou, Yarong Wang  
*Northwestern Polytechnical University, China*

## **P203-Student**

Unique Hierarchical Structural Features Introduced by Laser Powder Bed Fusion and Their Contribution to Mechanical Function in IN718

Taichi Kikukawa, Takuya Ishimoto, Tsuyoshi Mayama, Ryosuke Ozasa, Takayoshi Nakano  
*The University of Osaka, Japan*

## **P204-Student**

Role of In-Situ Orientation Imaging on Deformation Mechanism Identification in Additively Manufactured Austenitic Stainless Steels

Babita Singh, Shrestha Ranjan, Devesh Anand, Perapaka Jhansi, Satyam Suwas, Nitish Bibhanshu  
*Indian Institute of Technology ROPAR, India*

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## **P205-Student**

Controlled Crystallographic Texture Orientation in Selective Laser Melting of IN625

Oumayma Elmaalouf

*ENSAM, France*

## **P206-Student**

Microstructure Observation by Changing the Amount of Zn + Mg in Al-Zn-Mg Alloy with Zn/Mg = 1

Souta Shinozaki, Wanlalak Sanphiboon, Taiki Tsuchiya, Seungwon Lee, Satoshi Murakami, Susumu Ikeno, Karin Shibata, Hiroaki Matsui, Tomoo Yoshida, Kenji Matsuda

*University of Toyama, Japan*

## **P207-Student**

Effect of Initial Texture on Microstructure and Texture in Mg-Ag Magnesium Alloy

Jinseok Yeom, Jimin Yun, Kwonhoo Kim

*Pukyong National University, South Korea*

## **P208-Student**

Texture Evolution and Microstructural Behavior of Mg-Ag Alloys During High-Temperature Plane Strain Deformation

Jimin Yun, Jinseok Yeom, Kwonhoo Kim

*Pukyong National University, South Korea*

## **P209-Student**

Deviations in the Hall-Petch Relation for Magnesium Alloys

Amanda Carvalho, Roberto Figueiredo

*Federal University of Minas Gerais, Brazil*

## **P210-Student**

Characteristics of Room Temperature Bendability of Laminated Material of Magnesium Alloy and Polymers

Aoki Yamada, Hisaki Watari, Hotaka Tozuka, Takanori Yamazaki, Toshio Haga, Mayumi Suzuki

*Tokyo Denki University, Japan*