

Symposium B : Advanced Processing of Materials

November 20 (Mon.), 2023

Session Title : Advanced Processing of Materials 1

Time : 10:50 - 12:25, Nov. 20

Room # : 301, 3F

Session Chair : Eun Soo Park, Seoul National University

Yukinobu Natsume, Akita University

10:50 – 11:20 **Keynote** K-B0539

Predictive multiscale modelling and simulation based on processing-microstructure-properties relationship

Myoung-Gyu Lee, Seoul National University, Korea

11:20 – 11:40 **Invited** I-B0384

Application of data assimilation for heat-transfer parameter estimation and high-precision casting simulation

Yukinobu Natsume, Akita University, Japan

11:40 – 11:55 O-B0363

Extended Discrete Element Method (XDEM) as a Unified Simulation Platform for Highly Resolved Analysis of Steelmaking Furnaces

Bernhard Peters, University of Luxembourg, Luxembourg

11:55 – 12:10 O-B0498

Enhancing formability of FeSi6.5 steel by anodic polarization

Feng Ye, University of Science and Technology Beijing, China

12:10 – 12:25 O-B0598

Low-temperature toughness of advanced high-strength steels under plane-strain deformation

Zeran Hou, Tongji University, China

Session Title : Advanced Processing of Materials 2

Time : 14:00 - 15:05, Nov. 20

Room # : 301, 3F

Session Chair : Wei Xu, Northeastern University

Muhammad Fazin, CSIRO Manufacturing

14:00 – 14:20 **Invited** I-B0491

Benefits of in situ electro-plastic treatment for rapid reduction of porosity and brittleness in

cold sprayed CP Ti and Ti-6Al-4V structures

Muhammad Fazin, CSIRO Manufacturing, Australia

14:20 – 14:35

O-B0118

Direct Observation of Solidification in TiAl Alloys

Tomohiro Nishimura, Kobe Steel, Ltd., Japan

14:35 – 14:50

O-B0173

Solidification sequence of practical TiAl-based casting alloys

Ryoji Katsube, Kyoto University, Japan

14:50 – 15:05

O-B0040

Study on gas-based reduction behavior of low grade vanadiferous titanomagnetite with high titanium

Jinsheng Liu, Northeastern University, China

Session Title : Advanced Processing of Materials 3

Time : 16:00 -17:20, Nov. 20

Room # : 301, 3F

Session Chair : Kenta Yamanaka, Tohoku University

Myoung-Gyu Lee, Seoul National University

16:00 – 16:20 **Invited**

I-B0437

Thermomechanical processing of interstitial high-entropy alloys

Kenta Yamanaka, Tohoku University, Japan

16:20 – 16:35

O-B0135

Real-time Flow Control of Liquid Steel based on Copper Plate Temperature by Fiber Optics

Technology

Hyun-Jin Cho, POSCO Technical Research Lab, Korea

16:35 – 16:50

O-B0729

Development of sliding bearing using clad casting technology and improvement of mechanical properties of lining layers

Soo-Yeon Lee, , Pohang University of Science and Technology, Korea

16:50 – 17:05

O-B0518

Preparation and simulation of high strength non-oriented silicon steel based on NiAl strengthening by strip casting

Feng Fang, Northeastern University, China

November 21 (Tue.), 2023

Session Title : Advanced Processing of Materials 4

Time : 10:50 - 12:25, Nov. 21

Room # : 301, 3F

Session Chair : Tomohiro Takaki, Kyoto Institute of Technology

Kwang Seok Lee, Korea Institute of Materials Science

- 10:50 – 11:20** **Keynote** **K-B0436**
High-performance phase-field lattice Boltzmann simulation of dendrite fragmentation and semisolid deformation during alloy solidification
Tomohiro Takaki, Kyoto Institute of Technology, Japan
- 11:20 – 11:40** **Invited** **I-B0668**
Effect of electric current on microstructural change of pure aluminum according to cavity shape
Moon Jo Kim, Korea Institute of Industrial Technology, Korea
- 11:40 – 11:55** **O-B0344**
Electropulsing treatment induced ultrafast precipitation and grain boundary migration
Yuanshen Qi, Guangdong Technion-Israel Institute of Technology, China
- 11:55 – 12:10** **O-B0338**
Fabrication of an anisotropic magnet by solidifying a semisolid slurry with electromagnetic vibration processing
Mingjun Li, National Institute of Advanced Industrial Science and Technology (AIST), Japan
- 12:10 – 12:25** **O-B0131**
In-situ Observation of Crack Formation in Semi-solid Copper Alloys
Kohei Komori, Kobe Steel, Ltd., Japan
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Session Title : Advanced Processing of Materials 5

Time : 14:00 - 15:20, Nov. 21

Room # : 301, 3F

Session Chair : Hideyuki YASUDA, Kyoto University

Moon Jo Kim, Korea Institute of Industrial Technology

- 14:00 – 14:20** **Invited** **I-B0583**
High-Temperature Deformation of the Several Quaternary La-based Alloys and their Magnetocaloric Properties after Heat Treatment
Kwang Seok LEE, Korea Institute of Materials Science, Korea
- 14:20 – 14:35** **O-B0359**

Flow Stress Modelling of Alloy720Li during Hot Forging Using Internal State Variables Model

Jo Nakamura, Tohoku University, Japan

14:35 – 14:50

O-B0256

Heterogeneous Nanostructure and Mechanical Properties of Cu-Zn system Alloy Bars Produced by Groove Rolling

Hailun Zhou, Kanazawa University, Japan

14:50 – 15:05

O-B0138

Investigation of Deformation Temperature Effect on Grain Size of Hypereutectoid Steel

Dayong Guo, Ansteel Group Corporation, China

15:05 – 15:20

O-B0228

Study on the optimum thickness of fine grain layer on the surface of continuous casting slab based on hot charging pretreatment process

Yang Liu, Shougang Group Co., Ltd., China

Session Title : Advanced Processing of Materials 6

Time : 16:00 -17:50, Nov. 21

Room # : 301, 3F

Session Chair : Tomoya Nagira, National Institute for Materials Science

Kwang Seok Lee, Korea Institute of Materials Science

16:00 – 16:20

Invited

I-B0226

In situ observation of solidification behaviors of Fe-Mn-Si alloy during TIG welding

Tomoya Nagira, National Institute for Materials Science, Japan

16:20 – 16:35

O-B0243

Time-resolved and in-situ observation of solidification in Fe–22mass%Mn–0.7mass%C alloy using X-ray imaging techniques

Taka Narumi, Kyoto University, Japan

16:35 – 16:50

O-B0508

FEM estimation of interfacial strength of dissimilar Al/Fe arc weld through fracture analysis by X-ray tomography

Yutaka Sato, Tohoku University, Japan

16:50 – 17:05

O-B0351

Coupled numerical-experimental approach to access interfacial temperature during aluminum-steel dissimilar arc welding

Benjamin Leflon, INSA Lyon, France

17:05 – 17:20

O-B0417

Effect of citric acid coating treatment of zinc insert sheet on the liquid-phase diffusion bonding strength of A5052 aluminum alloy

HUY NGUYEN QUANG, Gunma University, Japan

17:20 – 17:35

O-B1011

Investigation of dissimilar laser beam welding between VCoNi-medium entropy alloy and 17-4 PH stainless steel

Hadis Esmailpoor, Hanbat National University, Korea

17:35 – 17:50

O-B0903

Complex Vibration Assisted Ultrasonic Metal Welding Used for Manufacturing Cylindrical Cell Lithium-ion Batteries

Mounarik Mondal, Dong-Eui University, Korea

November 22 (Wed.), 2023

Session Title : Advanced Processing of Materials 7

Time : 10:50 - 11:35, Nov. 22

Room # : 301, 3F

Session Chair

10:50 – 11:20

Keynote

K-B0436

Powders Aren't Powders: Power engineering to wires, composite powders and powder shape control

Robert Wilson, CSIRO Manufacturing, Australia

11:20 – 11:35

O-B0742

Effect of cooling rate on the thermoelectric performances of water atomized BiSbTe alloys

Eun-Ha Go, Kongju National University, Center For Advanced Materials and Parts of Powders (CAMP2), Korea

Session Title : Advanced Processing of Materials 8

Time : 14:00 - 15:20, Nov. 22

Room # : 301, 3F

Session Chair : Robert Wilson, CSIRO Manufacturing

Hwijun Kim, Korea Institute of Industrial Technology

14:00 – 14:20 **Invited** **I-B0740**

Stress corrosion cracking behavior of the high strength steels

Hyokyung Sung, Kookmin University, Korea

14:20 – 14:35 **O-B0021**

Synopsis of an auto-leveling-control system of tandem HSM base on predictive theoretic model with stainless steel strip rolling practice

Li Huifeng, Baowu Iron & Steel Group Taiyuan Iron & Steel Company, China

14:35 – 14:50 **O-B0039**

Research on Collaborative Control Technology of Color Difference and Flat Coil Defects of Advanced High Strength Steel

Lin Wang, Research Institute of Technology, Shougang Group Co., Ltd., China

14:50 – 15:05 **O-B0095**

Control of MnS Morphology during Billet Casting and Hot Rolling of Ultra-High Sulfur Medium Carbon Steel

Lyu Naibing, Research Institute of Technology, Shougang Group Co., Ltd., China

15:05 – 15:20 **O-B0146**

Effect of initial grain size on microstructure, texture, and magnetic properties of non-oriented electrical steel

Zhen Wang, University of Science and Technology Beijing, China

Session Title : Advanced Processing of Materials 9

Time : 16:00 -17:40, Nov. 21

Room # : 301, 3F

Session Chair : Antonella Sola, Commonwealth Scientific and Industrial Research Organisation

Dejana Pejak, CSIRO Manufacturing

16:00 – 16:20 **Invited** **I-B0480**

Processing-related challenges in fused filament fabrication of composite materials

Antonella Sola, Commonwealth Scientific and Industrial Research Organisation, Australia

16:20 – 16:40 **Invited** **I-B0568**

Increasing electrical anisotropy and current waveform response of soft, flexible 3D printed sensors through material formulation

Dejana Pejak Simunec, CSIRO Manufacturing, Australia

16:40 – 16:55 **O-B0467**

A Fundamental Study on Laser-patterned Surface of Metals for Improving Metal-composite Bonding Force

Junyeong Jeong, Hyundai Motor Company, Korea

16:55 – 17:10

O-B0087

Research and development of coating thickness uniformity control technology for hot dip galvanizing coating plate

Jing Fei, Anshan Iron And Steel Co., Ltd. China

17:10 – 17:25

O-B0450

Investigation of In-situ Cutting Temperature in Machining Bone Substitute Material with Steel and Ceramic Tools

Saiful Anwar Che Ghani, Universiti Malaysia Pahang, Malaysia

17:25 – 17:40

O-B1108

Achieving simultaneous high strength and ductility via accumulative skin pass rolling

Rui Wang, University of Wollongong, Australia

November 23 (Thu.), 2023

Session Title : Advanced Processing of Materials 10

Time : 9:00 - 10:00, Nov. 23

Room # : 301, 3F

Session Chair

09:00 – 09:30 **Keynote**

K-B

Matthias Weiss, Deakin University, Australia

09:30 – 10:00 **Keynote**

K-B1174

Development of high-performance materials through advanced powder manufacturing processes

Soon Jik Hong, Kongju National University, Korea