



# The 6<sup>th</sup> International Conference on ThermoMechanical Processing

September 6-8, 2022 Shenyang, China

## Technical Program

### Organized by

The Chinese Society for Metals (CSM)

Northeastern University (NEU)

### Co-organized by

The State Key Laboratory of Rolling and Automation (RAL)

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Steel Institute VDEh, Germany

The Austrian Society for Metallurgy and Materials (ASMET), Austria

The Indian Institute of Metals (IIM), India

The Iron and Steel Institute of Japan (ISIJ), Japan

The Korean Institute of Metals and Materials (KIM), Korea

The Nonferrous Metals Society of China (Nfsoc), China

Conference Website: [www.tmp2020.com](http://www.tmp2020.com)

## Technical Program Timetable

TUESDAY, 6 SEPTEMBER 2022, GMT+8 (Beijing)

Room A, Zoom Link: TBD				
13:40-18:30 <b>Plenary Lectures I</b>				
Room: B, Zoom Link: TBD	Room: C, Zoom Link: TBD	Room: D, Zoom Link: TBD	Room: E, Zoom Link: TBD	Room: F, Zoom Link: TBD
B1 (19:30-21:10) <b>Flat Product and Processing - Silicon Steel</b> <i>Chair: TBD</i>	C1 (19:30-22:05) <b>Microstructure and Properties of Steels - Microalloyed Steel</b> <i>Chair: TBD</i>	D1 (19:30-21:55) <b>Service Performance of Metallic Materials - Service Behavior</b> <i>Chair: Fuhui Wang</i>	E1 (19:30-22:00) <b>Non-ferrous Alloys and Processing - Magnesium alloys, Titanium Alloys and Nickel Alloys I</b> <i>Chair: TBD</i>	F1 (19:30-21:35) <b>Digitalization and Intelligent Manufacturing - Process Optimization</b> <i>Chair: TBD</i>
B2 (21:10-22:00) <b>Flat Product and Processing - Processing Technology I</b> <i>Chair: TBD</i>				

WEDNESDAY, 7 SEPTEMBER 2022, GMT+8 (Beijing)

Room A, Zoom Link: TBD				
14:00-18:00 <b>Plenary Lectures II</b>				
Room: B, Zoom Link: TBD	Room: C, Zoom Link: TBD	Room: D, Zoom Link: TBD	Room: E, Zoom Link: TBD	Room: F, Zoom Link: TBD
B3 (19:00-20:30) <b>Long Product and Processing - Microstructure and Properties of High Speed Wire</b> <i>Chair: TBD</i>	C2 (19:00-22:35) <b>Microstructure and Properties of Steels - High-alloy Steel</b> <i>Chair: TBD</i>	D2 (19:00-21:10) <b>Service Performance of Metallic Materials - Corrosion Behavior</b> <i>Chair: Linlin Li</i>	E2 (19:00-20:20) <b>Non-ferrous Alloys and Processing - Magnesium Alloys, Titanium Alloys and Nickel Alloys II</b> <i>Chair: Xiu Song</i>	F2 (19:00-21:55) <b>Digitalization and Intelligent Manufacturing - Machine Learning</b> <i>Chair: TBD</i>
B4 (20:45-22:15) <b>Long Product and Processing - Section Steel Rolling</b> <i>Chair: TBD</i>		D3 (21:10-22:00) <b>Service Performance of Metallic Materials - Mechanical Behavior and Fatigue Performance I</b> <i>Chair: Linlin Li</i>		

THURSDAY, 8 SEPTEMBER 2022, GMT+8 (Beijing)

Room: B, Zoom Link: TBD	Room: C, Zoom Link: TBD	Room: D, Zoom Link: TBD	Room: E, Zoom Link: TBD	Room: F, Zoom Link: TBD
B5 (14:00-15:30) <b>Flat Product and Processing - Pipeline Steel and Marine Steel</b> <i>Chair: TBD</i>	C3 (13:30-18:15) <b>Microstructure and Properties of Steels - Automobile Steel</b> <i>Chair: TBD</i>	D4 (14:00-17:10) <b>Service Performance of Metallic Materials - Oxidation Behavior</b> <i>Chair: Tao Zhang</i>	E4 (14:00-17:55) <b>Non-ferrous Alloys and Processing - Aluminum Alloys</b> <i>Chair: TBD</i>	F3 (14:00-15:55) <b>Digitalization and Intelligent Manufacturing - Intelligent Manufacturing</b> <i>Chair: TBD</i>
B6 (15:35-17:25) <b>Flat Product and Processing &amp; Long Product and Processing - Processing Technology II</b> <i>Chair: TBD</i>		D5 (17:10-18:00) <b>Service Performance of Metallic Materials - Mechanical Behavior and Fatigue Performance II</b> <i>Chair: Tao Zhang</i>		F4 (16:15-18:15) <b>Modelling and Simulation of Metallic Materials - High Temperature Process and Texture</b> <i>Chair: TBD</i>
B7 (19:00-21:50) <b>Long Product and Processing - Microstructure and Properties of Tube and Pipes</b> <i>Chair: TBD</i>	C4 (19:00-22:20) <b>Microstructure and Properties of Steels - Special Steel</b> <i>Chair: TBD</i>	D6 (19:00-22:20) <b>Service Performance of Metallic Materials - Mechanical Behavior and Fatigue Performance III</b> <i>Chair: Guangming Cao</i>	E5 (19:00-20:20) <b>Non-ferrous Alloys and Processing - Aluminum Alloys, Zirconium Alloys and Other Alloys</b> <i>Chair: TBD</i>	F5 (19:00-22:15) <b>Modelling and Simulation of Metallic Materials - Segregation and Precipitation</b> <i>Chair: TBD</i>

# TECHNICAL PROGRAM

**TUESDAY, 6 SEPTEMBER 2022, GMT+8 (Beijing)**

**Room A, Zoom link: TBD**

**Session: Plenary Session**

**13:40-14:30 Opening Ceremony and Group Photo**

**14:30-15:15 Plenary**

**High Plasticity Magnesium Alloy and Its Processing Technology**

*Fusheng Pan<sup>1</sup>; <sup>1</sup>Chongqing University, China*

**15:15-16:00 Plenary**

**Thermomechanical Processing for Fabricating Ultrafine Grained Steels**

*Nobuhiro Tsuji<sup>1</sup>; <sup>1</sup>Kyoto University, Japan*

**16:00-16:45 Plenary**

**Construction of Iron and Steel Innovation Infrastructure and Acceleration of Digital Transformation of Steel Industry**

*Guodong Wang<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**16:45-17:00 Coffee Break**

**17:00-17:45 Plenary**

**Strength of Undeformed Pearlite**

*H.K.D.H. Bhadeshia<sup>1</sup>; <sup>1</sup>Cambridge University, United Kingdom*

**17:45-18:30 Plenary**

**The Evolution of the Hot Deformed Microstructure in Austenitic and Duplex Steels**

*Peter Hodgson<sup>1</sup>; <sup>1</sup>Deakin University, Australia*

## **Room B, Zoom link: TBD**

### **Session: Flat Product and Processing**

#### **Silicon Steel (Chair: TBD)**

##### **19:30-20:00 Keynote**

##### **Recent Development of Grain-Oriented Silicon steel in Shougang**

*Jian Gong<sup>1</sup>; Maolin Sun<sup>1</sup>; Jiaji Ma<sup>1</sup>; <sup>1</sup> Beijing Shougang Co., Ltd., China*

##### **20:00-20:30 Keynote**

##### **Microstructure evolution and strengthening mechanism in non-oriented silicon steel with high strength**

*Feng Fang<sup>1</sup>; Shangfeng Che<sup>1</sup>; Yuanxiang Zhang<sup>1</sup>; Yang Wang<sup>1</sup>; Xiaoming Zhang<sup>1</sup>; Guo Yuan<sup>1</sup>; <sup>1</sup> Northeastern University, China*

##### **20:30-20:45 Coffee break**

##### **20:45-21:10 Invited**

##### **Effect of rolling process on recrystallization microstructure and texture of ultra-thin grain-oriented silicon steels**

*Shengdong Hu<sup>1</sup>; Xianwei Zhang<sup>2</sup>; Song Zhang<sup>1</sup>; Jinlong Liu<sup>1</sup>; Yuhui Sha<sup>1</sup>; Liang Zuo<sup>1</sup>; <sup>1</sup> Northeastern University, China; <sup>2</sup> Liaoning Wuhuan Special Materials and Intelligent Equipment Industry Technology Research Institute Co., Ltd., China*

#### **Processing Technology I (Chair: TBD)**

##### **21:10-21:40 Keynote**

##### **Modelling evolution of microstructure and flow stress during hot rolling of microalloyed steels**

*Zhanli Guo<sup>1</sup>; <sup>1</sup> Sente Software Ltd, United Kingdom*

##### **21:40-22:00 Contributed**

##### **The mechanical parameters modeling of heavy steel plate snake/gradient temperature rolling with the same roll diameters**

*Lianyun Jiang<sup>1</sup>; <sup>1</sup> Taiyuan University of Science and Technology, China*

**Room C, Zoom link: TBD**

**Session: Microstructure and Properties of Steels**

**Microalloyed Steel (Chair: TBD)**

**19:30-20:00 Keynote**

**Interphase Precipitation and Resultant Strengthening in V-Ti and V-Nb Multiple Microalloyed Low-Carbon Steels**

*Yongjie Zhang<sup>1</sup>; Goro Miyamoto<sup>1</sup>; Tadashi Furuhashi<sup>1</sup>; <sup>1</sup>Tohoku University, Japan*

**20:00-20:30 Keynote**

**The non-recrystallization temperature in Nb-based steels: from the laboratory to industrial conditions**

*Jose M. Rodriguez-Ibabe<sup>1</sup>; Beatriz Pereda<sup>1</sup>; Beatriz Lopez<sup>1</sup>; Pello Uranga<sup>1</sup>; <sup>1</sup>Ceit-BRTA, Spain*

**20:30-20:55 Invited**

**New Research Progress of Titanium Micro-alloyed High Strength Steel**

*Xiangdong Huo<sup>1</sup>; <sup>1</sup>Jiangsu University, China*

**20:55-21:10 Coffee break**

**21:10-21:40 Keynote**

**Effect of reheating temperature on TMP in Nb based microalloyed steels**

*Jose M. Rodriguez-Ibabe<sup>1</sup>; Pello Uranga<sup>1</sup>; Beatriz Pereda<sup>1</sup>; Beatriz Lopez<sup>1</sup>; <sup>1</sup>Ceit-BRTA, Spain*

**21:40-22:05 Invited**

**Warm Forming of Medium Mn Steel: Role Mechanism of Nb-Mo Multi-Microalloying**

*Minghui Cai<sup>1</sup>; Chaoqun Zhao<sup>1</sup>; Yuan Liu<sup>1</sup>; Xin Zhong<sup>1</sup>; Litao Ma<sup>1</sup>; Yu Zhang<sup>1</sup>; Hua Ding<sup>1</sup>; <sup>1</sup>Northeastern University, China*

## **Room D, Zoom link: TBD**

### **Session: Service Performance of Metallic Materials**

#### **Service Behavior (Chair: Fuhui Wang)**

##### **19:30-20:00 Keynote**

**Stability and regulation of TGO interface of thermal barrier coating for Aeroengine single crystal blade**

*Zebin Bao<sup>1</sup>; <sup>1</sup> Institute of Metal Research, Chinese Academy of Sciences, China*

##### **20:00-20:30 Keynote**

**Effective use of high strength S690 steel in construction and associated welding technology**

*Kwok Fai Chung<sup>1</sup>; <sup>1</sup> The Hong Kong Polytechnic University, China*

##### **20:30-20:45 Coffee break**

##### **20:45-21:15 Keynote**

**On the development of 3-D printed Mg-based interpenetrating-phase composites with bioinspired structures**

*Zengqian Liu<sup>1</sup>; Mingyang Zhang<sup>1</sup>; Zhefeng Zhang<sup>1</sup>; <sup>1</sup> Institute of Metal Research, Chinese Academy of Sciences, China*

##### **21:15-21:35 Contributed**

**Towards understanding the origin of grain refined tribolayer in metals**

*Wenzhen Xia<sup>1,2</sup>; Zhenyi Huang<sup>1</sup>; Gerhard Dehm<sup>2</sup>; Steffen Brinckmann<sup>3</sup>; <sup>1</sup> Anhui University of Technology, China; <sup>2</sup> Max-Planck-Institut für Eisenforschung GmbH, Germany; <sup>3</sup> Microstructure and Properties of Materials, Forschungszentrum Jülich, Germany*

##### **21:35-21:55 Contributed**

**Predicting the temperature-dependent forming limit diagrams (FLD) for sheet metal alloys**

*Jianan Hu<sup>1</sup>; Zhanli Guo<sup>1</sup>; Nigel Saunders<sup>2</sup>; Jean-Philippe Schille<sup>1</sup>; <sup>1</sup> Sente Software Ltd, United Kingdom; <sup>2</sup> Thermotech Ltd*

**Room E, Zoom link: TBD**

**Session: Non-ferrous Alloys and Processing**

**Magnesium alloys, Titanium Alloys and Nickel Alloys I (chair: TBD)**

**19:30-20:00 Keynote**

**R&D of New High Titanium Alloys in China**

*Yongqing Zhao<sup>1</sup>; <sup>1</sup>Northwest Institute for Nonferrous Metal Research, China*

**20:00-20:30 Keynote**

**Grain boundary segregation engineering of wrought magnesium alloys**

*Gaowu Qin<sup>1</sup>; <sup>1</sup>Northeastern University, China*

20:30-20:45 Coffee break

**20:45-21:15 Keynote**

**Microstructure control and strengthening mechanism of GH4720Li nickel-based superalloy during thermo-mechanical processing**

*Hongkai Zhang<sup>1</sup>; Ke Huang<sup>1</sup>; <sup>1</sup>Xi'an Jiaotong University*

**21:15-21:40 Invited**

**Improvement in microstructure and mechanical properties of pure titanium by thermo-mechanical processing**

*Xiu Song<sup>1</sup>; Jiaxin Jin<sup>1</sup>; Lei Wang<sup>1</sup>; Yang Liu<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**21:40-22:00 Contributed**

**Comparison of hot deformation behaviour and microstructural evolution for Ti-5Al-5V-5Mo-3Cr alloys prepared by powder metallurgy and ingot metallurgy approaches**

*Qinyang Zhao<sup>1</sup>; <sup>1</sup>Chang'an University, China*



**Room F, Zoom link: TBD**

**Session: Digitalization and Intelligent Manufacturing**

**Process Optimization (Chair: TBD)**

**19:30-20:00 Keynote**

**PIDAS-A Practice on Digital Transformation of Process Manufacturing**

*Sihai Jiao<sup>1</sup>, Bo Yan<sup>1</sup>, Jianhua Ding<sup>1</sup>, Ye Liu<sup>1</sup>; <sup>1</sup>Central Research Institute, Baoshan Iron & Steel Co., Ltd., China*

**20:00-20:30 Keynote**

**Methodology for alloy design of steel using prediction model and optimization**

*Jin You Kim<sup>1</sup>, Ju-Seok Kang<sup>1</sup>, Jae-Hwa Lee<sup>1</sup>; <sup>1</sup>POSCO, Korea*

**20:30-20:45 Coffee break**

**20:45-21:15 Keynote**

**Data driven-based prediction and analysis of effective length of steel plates**

*Zishuo Dong<sup>1</sup>, Xu Li<sup>1</sup>, Dianhua Zhang<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**21:15-21:35 Contributed**

**Development and simulation analysis on the double-stands rolling model for double cold reduction of thin plate**

*Wei Guo<sup>1</sup>; <sup>1</sup>Shougang Research Institute of Technology, China*

WEDNESDAY, 7 SEPTEMBER 2022, GMT+8 (Beijing)

**Room A, Zoom link: TBD**

**Session: Plenary Session**

**14:00-14:45 Plenary**

**Computational Design of High Performance Steels**

*Ayush Suhane<sup>1</sup>, Matthias Militzer<sup>1</sup>; <sup>1</sup>The University of British Columbia, Canada*

**14:45-15:30 Plenary**

**Innovative Steelworks with Smart Factory**

*Sedon Choo<sup>1</sup>; <sup>1</sup>POSCO, Korea*

**15:30-16:15 Plenary**

**Reform and Challenge of AI Hot Working Under Emission Peak and Carbon Neutrality**

*Zuo Xu<sup>1, 2</sup>; <sup>1</sup>CITIC Group, China; <sup>2</sup>CITIC Dicastal Co., Ltd. China*

**16:15-16:30 Coffee Break**

**16:30-17:15 Plenary**

**Advanced Thermomechanical Process Simulations under Consideration of Microstructure, Texture and Damage using DAMASK**

*D. Raabe<sup>1</sup>, M. Diehl<sup>1, 2</sup>, V. Shah<sup>1</sup>, K. Traka<sup>1, 3</sup>, K. Sedighiani<sup>1, 3</sup>, S. Vakili<sup>1</sup>, P. Shanthraj<sup>4</sup>, J. R. Mianroodi<sup>1</sup>, F. Roters<sup>1</sup>; <sup>1</sup>Max-Planck-Institut für Eisenforschung, Germany; <sup>2</sup>KU Leuven, Belgium; <sup>3</sup>Delft University of Technology, The Netherlands; <sup>4</sup>The University of Manchester, UK*

**17:15-18:00 Plenary**

**Different Roles of Nb in TMP of Steels: from Classic Austenite Pancake to More Complex Interactions with the Microstructure**

*Jose M. Rodriguez-Ibabe<sup>1, 2</sup>; <sup>1</sup>Ceit-Basque Research and Technology Alliance (BRTA), Spain; <sup>2</sup>Universidad de Navarra-Tecnun, Spain*

## **Room B, Zoom link: TBD**

### **Session: Long Product and Processing**

#### **Microstructure and Properties of High Speed Wire (Chair: TBD)**

##### **19:00-19:30 Keynote**

**Investigation of the Factors of Quenched and Tempered 55SiCr Steel Wire Tensile Area Reduction Ratio and Industrial Optimization Trial**

*Jianjun Qi<sup>1</sup>; <sup>1</sup>Hesteel Group Company Limited, Chia*

##### **19:30-20:00 Keynote**

**Effect of TMP on Precipitation of Grain Boundary Cementite of Wire Rod for Super and Ultra High Strength Steel Cords**

*Dayong Guo<sup>1</sup>; Yang Pan<sup>1</sup>; Hang Gao<sup>1</sup>; Bingxi Wang<sup>1</sup>; Bo Zhang<sup>1</sup>; Liguo Ma<sup>1</sup>; <sup>1</sup>Anshan Iron and Steel Group Corporation, China*

##### **20:00-20:30 Keynote**

**Towards revealing indentation-induced plastic flow in FCC metals**

*Wenzhen Xia<sup>1</sup>; <sup>1</sup>Anhui University of Technology, China*

##### **20:30-20:45 Coffee break**

#### **Section Steel Rolling (Chair: TBD)**

##### **20:45-21:15 Keynote**

**Improvement of the rolling contact fatigue behavior on high-speed railway steel by using laminar plasma quenching technology**

*Isaac Toda-Caraballo<sup>1</sup>; Qingsong Zhang<sup>1,2</sup>; Guangze Dai<sup>2</sup>; Zongli Feng<sup>2</sup>; Shuang Li<sup>2</sup>; Qiuze Li<sup>3</sup>; Deping Yu<sup>4</sup>; <sup>1</sup>Materialia Group, National Centre for Metallurgical Research (CENIM-CSIC)); <sup>2</sup>School of Materials Science and Engineering, Southwest Jiaotong University; <sup>3</sup>National Engineering Research Center of Railway Vehicles; CRRC Changchun Railway Vehicles Co., Ltd. ; <sup>4</sup>School of Manufacturing Science and Engineering, Sichuan University*

##### **21:45-21:35 Invited**

**Corrosion Performance of Corrosion Resistant Rail Steel in the Simulated subsea tunnel environment**

*Min Zhu<sup>1</sup>; <sup>1</sup>Baosteel Central Research Institute, China*

**21:35-21:55 Invited**

**Understanding the thermomechanical processing mechanism of the HRB400E rebars with Nb microalloyed**

*Yi Luo<sup>1</sup>; Yongqing Zhang<sup>1</sup>; <sup>1</sup>CITIC Metal Group Ltd., China*

**21:55-22:15 Contributed**

**Improving Rebar quality reducing alloy elements by DANIELI Ultra-Fine-Grain Technology**

*Simone Ferrarese<sup>1</sup>, Maicol Cimolino<sup>1</sup>; <sup>1</sup>Danieli & C. Officine Meccaniche S.p.A., Italy*

**Room C, Zoom link: TBD**

**Session: Microstructure and Properties of Steels**

**High-alloy Steel (Chair: TBD)**

**19:00-19:30 Keynote**

**Design of high-strength and ductile compositionally complex steels**

*Zhangwei Wang<sup>1</sup>; <sup>1</sup>Central South University, China*

**19:30-20:00 Keynote**

**Development of new lightweight stainless steels with excellent tensile property**

*Chang-Hoon Lee<sup>1</sup>; Kyeong-Won Kim<sup>1</sup>; Heon-Young Ha<sup>1</sup>; Seong-Jun Kim<sup>1</sup>; Sung-Dae Kim<sup>1</sup>; Jae Hoon Jang<sup>1</sup>; Tae-Ho Lee<sup>1</sup>; Joonoh Moon<sup>2</sup>; Hyun-Uk Hong<sup>2</sup>; <sup>1</sup>Korea Institute of Materials Science, Korea; <sup>2</sup>Changwon National University, Korea*

**20:00-20:25 Invited**

**Engineering the high-Mn TRIP steel via heavy ausforming**

*Qingquan Lai<sup>1</sup>; <sup>1</sup>Nanjing University of Science and Technology, China*

**20:25-20:45 Contributed**

**Study of grain boundary engineering of austenitic steels for nuclear reactors**

*Tingguang Liu<sup>1</sup>; <sup>1</sup>University of Science and Technology Beijing, China*

**20:45-21:00 Coffee break**

**21:00-21:30 Keynote**

**Improving the creep strength of 9Cr ferritic/martensitic steels via MX precipitation optimization**

*David San-Martin<sup>1</sup>; Javier Vivas<sup>1,6</sup>; Eberhard Altstadt<sup>2</sup>; Mario Houska<sup>2</sup>; Marta Serrano<sup>3</sup>; David De-Castro<sup>1</sup>;*

Jonathan D. Poplawsky<sup>4</sup>; Wei Xu<sup>5</sup>; Carlos Capdevila<sup>1</sup>; <sup>1</sup>CENIM-CSIC, Spain; <sup>2</sup>Helmholtz-Zentrum Dresden-Rossendorf, Germany; <sup>3</sup>CIEMAT, Spain; <sup>4</sup>Oak Ridge National Laboratory, USA; <sup>5</sup>Northeastern University, China; <sup>6</sup>Ordizia, Spain

**21:30-22:00 Keynote**

**Enhanced strength via nanoprecipitate in a maraging stainless steel**

*Junpeng Li<sup>1</sup>; Zhongwu Zhang<sup>1</sup>; Songsong Xu<sup>1</sup>; Hao Guo<sup>1</sup>; <sup>1</sup>Harbin Engineering University, China*

**22:00-22:20 Contributed**

**Multiple mechanisms in non-equiatomic FeMnCoCr high-entropy alloys under cryogenic deformation and dynamic loading**

*Zhufeng He<sup>1</sup>; Nan Jia<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**22:20-22:35 Contributed**

**Springback Reduction of 301L Stainless Steel Arc-bending under Impact Hydroforming**

*Hao Li<sup>1,2</sup>; Shi-Hong Zhang<sup>1</sup>; Yong Xu<sup>1</sup>; Shuai-Feng Chen<sup>1</sup>; Hong-Wu Song<sup>1</sup>; <sup>1</sup>Institute of Metal Research, Chinese Academy of Sciences; <sup>2</sup>University of Science and Technology of China*

**Room D, Zoom link: TBD**

**Session: Service Performance of Metallic Materials**

**Corrosion Behavior (Chair: Linlin Li)**

**19:00-19:30 Keynote**

**TBD**

*Fuhui Wang<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**19:30-20:00 Keynote**

**Environmental induced degradation behavior of multi-principal high-entropy alloys**

*Hong Luo<sup>1</sup>; Zhimin Pan<sup>1</sup>; Xiaogang Li<sup>1</sup>; <sup>1</sup> University of Science and Technology Beijing, China*

**20:00-20:30 Keynote**

**Prediction for the Corrosion Lifetime of HP-13Cr stainless steel in the ultradeep well environment**

*Tao Zhang<sup>1</sup>; <sup>1</sup> Northeastern University, China*

**20:30-20:45 Coffee break**

**20:45-21:10 Invited**

**A Comparative study of corrosion behavior of Martensitic and Duplex Stainless Steels in arduous environments containing CO<sub>2</sub>/H<sub>2</sub>S relevant to deep-geothermal energy production**

*Yong Hua<sup>1</sup>; <sup>1</sup> Zhejiang JIULI Hi-Tech Metals Co. Ltd, China*

### **Mechanical Behavior and Fatigue Performance I (Chair: Linlin Li)**

**21:10-21:40 Keynote**

**A novel nanotwinned high-entropy alloy fabricated by reverse transformation and nano-precipitation**

*Wenjun Lu<sup>1</sup>; <sup>1</sup> Southern University of Science and Technology, China*

**21:40-22:00 Contributed**

**Achieving low Young's modulus and high ductility in a compositionally complex alloy via metastable engineering**

*Bingnan Qian<sup>1</sup>; Jikui Liu<sup>1</sup>; Junhua Hou<sup>1</sup>; Tianming Sun<sup>1</sup>; Sihao Zou<sup>1</sup>; Fengchao An<sup>1</sup>; Wenjun Lu<sup>1</sup>; <sup>1</sup> Southern University of Science and Technology, China*

### **Room E, Zoom link: TBD**

### **Session: Non-ferrous Alloys and Processing**

#### **Magnesium Alloys, Titanium Alloys and Nickel Alloys II (Chair: Xiu Song)**

**19:00-19:30 Keynote**

**Mechanistic investigation of the novel low-cost Mg-Ca based extrusion alloy with high strength-ductility synergy**

*Hucheng Pan<sup>1</sup>; Hongbo Xie<sup>1</sup>; Yuping Ren<sup>1</sup>; Gaowu Qin<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**19:30-20:00 Keynote**

**Shear Band in AZ91 Magnesium Alloy Produced by Warm Compression**

*Dongxiao Wang<sup>1</sup>; Ben Yu<sup>1</sup>; Yi Jing<sup>1</sup>; Jianping Li<sup>1</sup>; <sup>1</sup>State Key Laboratory of Rolling Technology and Automation, Northeastern University, Shenyang, China*

**20:00-20:20 Contributed**

**Effect of Cold Rolling Reduction and Annealing Temperature on Twin Evolution in a Nickel Based Alloy**

*Xiangji Liu<sup>1</sup>; Xianwei Zhang<sup>3</sup>; Qiang Zhang<sup>3</sup>; Junfei Zhang<sup>3</sup>; unbin Yao<sup>2</sup>; Jinlong Liu<sup>\*2</sup>; Yuhui Sha<sup>2</sup>; Liang Zuo<sup>2</sup>;*

<sup>1</sup>Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education), School of Materials Science and Engineering, Northeastern University; <sup>2</sup>Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education), School of Materials Science and Engineering, Northeastern University; <sup>3</sup>Liaoning Wuhuan Special Materials and Intelligent Equipment Industry Technology Research Institute Co., Ltd.

**20:20-20:45 Coffee break**

### **Aluminum Alloys (Chair: TBD)**

**20:45-21:15 Keynote**

**Quantitative relationship between microstructure and tensile properties of Al-Zn-Mg-Cu alloys with various alloying degrees**

Yanan Li<sup>1,2,3</sup>; Zhihui Li<sup>1,2,3,\*</sup>; Ruishuai Gao<sup>1,2,3</sup>; Xiwu Li<sup>1,2,3</sup>; Kai Wen<sup>1,2,3</sup>; Yongan Zhang<sup>1,2,3</sup>; Baiqing Xiong<sup>1,2,3</sup>;

<sup>1</sup>State Key Laboratory of Nonferrous Metals and Processes, GRINM Group Co., LTD., Beijing 100088, China;

<sup>2</sup>GRIMAT Engineering Institute Co., LTD., Beijing 101407, China; <sup>3</sup>General Research Institute for Nonferrous Metals, Beijing 100088, China

**21:15-21:45 Keynote**

**Role of Mn-dispersoids on the tensile properties and recrystallization resistance in an Al3Mg0.8Mn rolled alloy**

Kun Liu<sup>1</sup>; <sup>1</sup>University of Quebec at Chicoutimi, Canada

**21:45-22:15 Keynote**

**Numerical Modeling of Unmixed Zone and Macrosegregation Distribution during MIG Welding of an AA6063 Alloy with an ER5183 Filler Metal**

Xiaonan Wang<sup>1</sup>; <sup>1</sup>Soochow University, China

**Room F, Zoom link: TBD**

## **Session: Digitalization and Intelligent Manufacturing**

**Machine Learning (Chair: TBD)**

**19:00-19:30 Keynote**

**TBD**

Shujin Jia<sup>1</sup>; <sup>1</sup>Baosteel Central Research institutes, China

**19:30-20:00 Keynote**

**Machine learning modelling for thermomechanical control of advanced steels: a case study to predict deformation induced martensite formation**

*Wangzhong Mu<sup>1</sup>, Joakim Odqvist<sup>1,2</sup>, Peter Hedström<sup>1,2</sup>; <sup>1</sup>KTH Royal Institute of Technology, Sweden; <sup>2</sup>Ferritico AB, Sweden*

**20:00-20:30 Keynote**

**AIM: Collaborative analysis of laboratory small sample data and industrial big data**

*Huwei Li<sup>1</sup>, Wei Xu<sup>1</sup>, Chenchong Wang<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**20:30-20:45 Coffee break**

**20:45-21:15 Keynote**

**Research and development of a new generation mathematical model and intelligent analysis system for process control of hot Strip Rolling**

*Weigang Li<sup>1</sup>; <sup>1</sup>Wuhan University of Science and Technology, China*

**21:15-21:35 Contributed**

**Research and application of heavy plate optimization shearing technology using planar contour online perception-based**

*Shaowen Huang<sup>1</sup>; <sup>1</sup>Research Institute of Shangang Group, China*

**21:35-21:55 Contributed**

**Research on quality management of steel product via high resolution time series**

*Fei He<sup>1</sup>; <sup>1</sup>University of Science and Technology Beijing, China*



THURSDAY, 8 SEPTEMBER 2022, GMT+8 (Beijing)

**Room B, Zoom link: TBD**

**Session: Flat Product and Processing**

**Pipeline Steel and Marine Steel (Chair: TBD)**

**14:00-14:30 Keynote**

**Understanding and Use of TMP Concept for Successful X80 Steels in China**

*Yongqing Zhang<sup>1,2</sup>; Jose Bacalhau<sup>3</sup>; Aimin Guo<sup>2</sup>; Marcos Stuart<sup>3</sup>; Rafael Mesquita<sup>3</sup>; <sup>1</sup> China Iron & Steel Research Institute Group, China; <sup>2</sup> CITIC Metal Co., Ltd., China; <sup>3</sup> Companhia Brasileiro de Metalurgia e Mineracao*

**14:30-15:00 Keynote**

**Microstructural features of X100 plate and pipe production with increased impact toughness and cold resistance**

*Dmitrii Ringinen<sup>1</sup>; Leonid Efron<sup>1</sup>; Andrei Chastukhin<sup>1</sup>; Sergey Golovin<sup>1</sup>; <sup>1</sup> OMK Vyksa Steel Works, Russia*

**15:00-15:20 Contributed**

**Effect of austenite grain refinement on microstructure and properties of polar marine steel**

*Jiuxin Zhang<sup>1</sup>; Hongtao Wang<sup>1</sup>; Yong Tian<sup>1</sup>; <sup>1</sup> Northeastern University, China*

**15:20-15:35 Coffee break**

**Processing Technology II (Chair: TBD)**

**15:35-16:05 Keynote**

**Development and practice of new generation TMCP technology for medium and heavy plate**

*Yong Tian<sup>1</sup>; <sup>1</sup> Northeastern University, China*

**16:05-16:35 Keynote**

**Investigations on the hot ductility behavior of a continuously cast low alloyed steel**

*Marina Gontijo<sup>1,2</sup>; Christian Hoflehner<sup>3</sup>; Sergiu Ilie<sup>3</sup>; Jakob Six<sup>3</sup>; Christof Sommitsch<sup>2</sup>; <sup>1</sup> K1-MET GmbH, Austria; <sup>2</sup> Graz University of Technology, Austria; <sup>3</sup> Voestalpine Stahl GmbH, Austria*

**16:35-17:00 Invited**

## **Behavior of inclusions in different rolling processes for heavy plate**

*Rensheng Chu<sup>1</sup>; Zhanjun Li<sup>1</sup>; Jingang Liu<sup>1</sup>; Ning Hao<sup>1</sup>; Shaopo Li<sup>1</sup>; Haibo Li<sup>1</sup>; Rensheng Chu<sup>1</sup>; <sup>1</sup> Shougang Group Co., Ltd., China*

**17:00-17:25 Invited**

## **Online prediction of mechanical properties of hot rolled steel plate using time series deep neural network**

*Qian Xie<sup>1</sup>; <sup>1</sup> Anhui University of Technology, China*

## **Session: Long Product and Processing**

### **Microstructure and Properties of Tube and Pipes (Chair: TBD)**

**19:00-19:30 Keynote**

## **Hot rolling deformation manufacturing processes of large diameter 9Cr heat resistant seamless steel pipes**

*Jin Li<sup>1, 2</sup>; Li Xiong<sup>2</sup>; Guang Chen<sup>1</sup>; <sup>1</sup>MIT Key Laboratory of Advanced Metallic and Intermetallic Materials Technology, Engineering Research Center of Materials Behavior and Design, Ministry of Education, Nanjing University of Science and Technology, Nanjing 210094, China; <sup>2</sup> Yangzhou Chengde Steel Pipe Co., Ltd., Yangzhou 225200, P. R. China*

**19:30-19:55 Invited**

## **Optimized API X70 Mechanical Property Performance with Optimized Nb Processing**

*Douglas Stalheim<sup>1</sup>; Xiangjiang Xiong<sup>2</sup>; Chunyong Hou<sup>3</sup>; David Han<sup>4</sup>; Yongqing Zhang<sup>7</sup>; Jose Bacalhau<sup>5</sup>; Aaron Litschewski<sup>6</sup>; <sup>1</sup>DGS Metallurgical Solutions, Inc.; <sup>2</sup>Xiangtan Steel; <sup>3</sup>Tubular Goods Research Institute; <sup>4</sup>International Welding Technology Center; <sup>5</sup>CBMM Brazil; <sup>6</sup>CBMM North America; <sup>7</sup>CITIC Metal Co. Ltd*

**19:55-20:20 Invited**

**TBD**

*Guo Yuan<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**20:20-20:45 Coffee break**

### **Process and Control of Wire and Rod (Chair: TBD)**

**20:45-21:10 Invited**

## **Understanding the thermomechanical processing mechanism of the HRB400E rebars with Nb microalloyed**

*Yi Luo<sup>1</sup>; Yongqing Zhang<sup>1</sup>; <sup>1</sup>CITIC Metal Group Ltd., China*

**21:10-21:30 Contributed**

**Control of Interlamellar Spacing of High Carbon Steel Wire Rod through ThermoMechanical Processing**

*Dayong Guo<sup>1</sup>; Bingxi Wang<sup>1</sup>; An Che<sup>2</sup>; Hang Gao<sup>1</sup>; Leigang Liu<sup>2</sup>; Haoxing Zhang<sup>2</sup>; Yang Pan<sup>1</sup>; <sup>1</sup>Ansteel Iron and Steel Research Institute; <sup>2</sup>Wire rod plant, Angang Steel Company, China*

**21:30-21:50 Contributed**

**Research on Temperature Adaptive Control Method of Bar Cooling Process**

*Chunyu He<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**Room C, Zoom link: TBD**

**Session: Microstructure and Properties of Steels**

**Automobile Steel (Chair: TBD)**

**13:30-14:00 Keynote**

**Carbon enrichment at coating/substrate interface and its effect on bendability of Al-Si coated press hardening steel**

*Linlin Zeng<sup>1</sup>, Dapeng Yang<sup>1</sup>; Shu Zhou<sup>2</sup>; Hongliang Yi<sup>1,2</sup>; <sup>1</sup>Northeastern University, China; <sup>2</sup>Easyforming Materials Technology Co., Ltd., China*

**14:00-14:30 Keynote**

**Application of chemical heterogeneity for microstructure control in advanced high strength steels**

*Suh Dong-Woo<sup>1</sup>; <sup>1</sup>Pohang University of Science and Technology, Korea*

**14:30-15:00 Keynote**

**Engineering segregations at phase boundaries through thermomechanical processing**

*Binhan Sun<sup>1</sup>; Yan Ma<sup>2</sup>; Xian-cheng Zhang<sup>1</sup>; Shan-Tung Tu<sup>1</sup>; <sup>1</sup>East China University of Science and Technology, China; <sup>2</sup>Max-Planck-Institut für Eisenforschung, Germany*

**15:00-15:25 Invited**

**Effect of rolling schedule on mechanical properties and deformation behavior of medium Mn steels**

*Yuming Zou<sup>1</sup>; Hua Ding<sup>1</sup>; Zhengyou Tang<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**15:25-15:50 Invited**

**Microstructure and mechanical properties of dual phase steels produced by laboratory simulated strip**

**casting**

*Zhiping Xiong<sup>1</sup>; <sup>1</sup>Beijing Institute of Technology, China*

**15:50-16:00 Coffee break**

**16:00-16:30 Keynote**

**Development of ultra-strong hot stamping steel for continuous casting and rolling line**

*Haiwei Xu<sup>1</sup>; Jiangtao liang<sup>2</sup>; Baoliang Xiao<sup>2</sup>; Kun Liu<sup>2</sup>; Xun Zhou<sup>1</sup>; Xiaolin Li<sup>2</sup>; Bo Lv<sup>2</sup>; Meng Yu<sup>2</sup>; Chengliang Miao<sup>1</sup>; Haoyu Wang<sup>1</sup>; Jixin Li<sup>1</sup>; Shaofeng Lin<sup>1</sup>; Chunzheng Yang<sup>1</sup>; <sup>1</sup>Shougang Jingtang Iron and Steel United Co., Ltd, China; <sup>2</sup>Technology Research Institute of Shougang Group Co., Ltd, China*

**16:30-17:00 Keynote**

**Ultra grain refinement of steels with superior properties**

*Lijia Zhao<sup>1</sup>; Nobuhiro Tsuji<sup>2</sup>; John Speer<sup>3</sup>; Qiang Wang<sup>1</sup>; <sup>1</sup>Northeastern University, China; <sup>2</sup>Kyoto University, Japan; <sup>3</sup>Colorado School of Mines, USA*

**17:00-17:30 Keynote**

**Excellent mechanical properties of a medium-manganese steel with aluminum added after a short intercritical-annealing time period**

*Wei Ding<sup>1</sup>; Guangying Zhang<sup>1</sup>; Yan Li<sup>1</sup>; <sup>1</sup>Inner Mongolia University of Science and Technology, China*

**17:30-17:55 Invited**

**Joint investigation of strain partitioning and chemical partitioning in ferrite-containing TRIP-assisted steels**

*Xiaodong Tan<sup>1</sup>; <sup>1</sup>Southwest University, China*

**17:55-18:15 Contributed**

**In-situ EBSD study of intercritical annealing quenching and partitioning steels with equiaxed and lamellar microstructure**

*Pengfei Gao<sup>1</sup>; Zhengzhi Zhao<sup>1</sup>; Feng Li<sup>1</sup>; Weijian Chen<sup>1</sup>; Beijia Ning<sup>1</sup>; <sup>1</sup>University of Science and Technology Beijing, China*

**Special Steel (Chair: TBD)**

**19:00-19:30 Keynote**

**Making composite steel with higher strength and higher ductility**

*Zhinan Yang<sup>1</sup>; Feng Jiang<sup>1</sup>; Fucheng Zhang<sup>1</sup>; <sup>1</sup>Yanshan University, China*

**19:30-20:00 Keynote**

**Determination of static CCT curve and Two-step Heat Treatment process of Spring Clip for High-speed Railway**

*Yao Lu<sup>1</sup>; Haibo Xie<sup>1</sup>; Hui Wu<sup>1</sup>; Jingtao Han<sup>2</sup>; Zhengyi Jiang<sup>1</sup>; <sup>1</sup>University of Wollongong, Australia; <sup>2</sup>University of Science and Technology Beijing, China*

**20:00-20:30 Keynote**

**Electric Current Induced Enhancement of Recrystallization Kinetics in Steel**

*Heung Nam Han<sup>1</sup>; Kyeongjae Jeong<sup>1</sup>; Sung-Tae Hong<sup>2</sup>; Moon-Jo Kim<sup>3</sup>; Sung-Woo Jin<sup>1</sup>; <sup>1</sup>Seoul National University, Korea; <sup>2</sup>University of Ulsan, Korea; <sup>3</sup>Korea Institute of Industrial Technology, Korea*

**20:30-20:50 Contributed**

**Understanding the role of residual element Cu on hot shortness behaviour of the free cutting steels**

*Mo Ji<sup>1</sup>; Ishwar Kapoor<sup>1</sup>; Zushu Li<sup>1</sup>; Claire Davis<sup>1</sup>; <sup>1</sup>University of Warwick, United Kingdom*

**20:50-21:00 Coffee break**

**21:00-21:30 Keynote**

**The challenges of ausforming medium C bainitic steels**

*Carlos Garcia-Mateo<sup>1</sup>; Adriana Eres-Castellanos<sup>1</sup>; Pentti Kaikkonen<sup>2</sup>; Mahesh Somani<sup>2</sup>; David A. Porter<sup>2</sup>; Andreas Latz<sup>3</sup>; Arunim Ray<sup>4</sup>; Francisca G. Caballero<sup>1</sup>; <sup>1</sup>Spanish National Center for Metallurgical Research, Spain; <sup>2</sup>University of Oulu, Finland; <sup>3</sup>Thyssenkrupp Steel Europe AG, Germany; <sup>4</sup>ArcelorMittal Global R&D Ghent*

**21:30-22:00 Keynote**

**Cleavage Fracture in Heavy Steel Plates with Brittle Crack Arrestability**

*Dongsheng Liu<sup>1</sup>; Binggui Cheng<sup>1</sup>; Mi Luo<sup>1</sup>; Jinbo Qu<sup>1</sup>; <sup>1</sup>Institute of Research of Iron and Steel, Jiangsu Shagang Group Co., Ltd, China*

**22:00-22:20 Contributed**

**Microstructural variations and mechanical properties of AISI M35 high-speed steel via deep cryogenic treatment and low-high-high temperature tempering**

*Guili Xu<sup>1</sup>; <sup>1</sup>Northeastern University, China*

## **Room D, Zoom link: TBD**

### **Session: Service Performance of Metallic Materials**

#### **Oxidation Behavior (Chair: Tao Zhang)**

##### **14:00-14:30 Keynote**

###### **Combination Effect of Si and P on Oxidation Characteristics of Steel**

*Lin Wang<sup>1</sup>; Yang Yu<sup>1</sup>; Chang Wang<sup>1</sup>; Xiaoli Gao<sup>1</sup>; Jiaqi Zhang<sup>2</sup>; Jin Chen<sup>2</sup>; <sup>1</sup> Shougang Research Institute of Technology, China; <sup>2</sup> Qian'an Iron and Steel Company of Shougang Co., Ltd.*

##### **14:30-15:00 Keynote**

###### **Water Vapor Effect on Oxidation of Fe and Fe-Cr Alloys**

*Jiarui Chen<sup>1</sup>; Zhao Shen<sup>2</sup>; Jianqiang Zhang<sup>1</sup>; <sup>1</sup> The University of New South Wales, Australia; <sup>2</sup> Shanghai Jiao Tong University, China*

##### **15:00-15:30 Keynote**

###### **TBD**

*Zhenyu Liu<sup>1</sup>; <sup>1</sup> Northeastern University, China*

##### **15:30-16:00 Keynote**

###### **New Insights into High-Temperature Oxidation of Steels by Atomic Scale Investigation**

*Gang Sha<sup>1</sup>; Yi Zhang<sup>1</sup>; Shenbao Jin<sup>1</sup>; <sup>1</sup> Nanjing University of Science and Technology, China*

##### **16:00-16:15 Coffee break**

##### **16:15-16:45 Keynote**

###### **Chemo-mechanical coupling in oxidation of metals: a micromechanical approach**

*Xufei Fang<sup>1</sup>; <sup>1</sup> Technical University of Darmstadt, Germany*

##### **16:45-17:10 Invited**

###### **Effect Water Vapor of Ferritic Stainless Steel on Oxidation Behavior at 1100 °C**

*Bin Sun<sup>1</sup>; Shenglun Gao<sup>1</sup>; Lei Cheng<sup>1</sup>; <sup>1</sup> Shenyang University, China*

## Mechanical Behavior and Fatigue Performance II (Chair: Tao Zhang)

**17:10-17:40 Keynote**

**Quantitative prediction and optimization of tensile properties of single-phase metal materials**

*Zhenjun Zhang<sup>1</sup>; Zhan Qu<sup>1,2</sup>; Zhefeng Zhang<sup>1,2</sup>; <sup>1</sup> Institute of Metal Research, Chinese Academy of Sciences, China; <sup>2</sup> University of Science and Technology of China, China*

**17:40-18:00 Contributed**

**Developing a CPFEM modelling frame work that considers the TRIP effects and Intergranular failures for Medium Mn Steels**

*Jingsi Jiao<sup>1</sup>; <sup>1</sup> Deakin University, Australia*

## Mechanical Behavior and Fatigue Performance III (Chair: Guangming Cao)

**19:00-19:25 Invited**

**Strengthening mechanisms and nano-sized precipitations of hot rolled Ti-V-Mo microalloyed ferritic high strength steel**

*Ke Zhang<sup>1</sup>; <sup>1</sup> Anhui University of Technology, China*

**19:25-19:50 Invited**

**Superior strength-ductility balance in a novel texture gradient steel with dual-phase lamella structure**

*Qibin Ye<sup>1</sup>; <sup>1</sup> Institute of Research of Iron & Steel, Sha-Steel Co., Ltd., China*

**19:50-20:15 Invited**

**The effect of carbon on mechanical performance of a non-equiatomic high-entropy steel and the comprehensive strengthening mechanism**

*Xiaolin Li<sup>1</sup>; Qian Li<sup>1</sup>; Xiaoxiao Hao<sup>1</sup>; Xiangtao Deng<sup>2</sup>; Zhaodong Wang<sup>2</sup>; <sup>1</sup> Northwestern Polytechnical University, China; <sup>2</sup> Northeastern University, China*

**20:15-20:30 Coffee break**

**20:30-20:55 Invited**

**Effects of microstructure inhomogeneity and cast pores on the tensile and fatigue properties of A356-T6 aluminum alloy**

*Hongwu Song<sup>1</sup>; Baocheng Yang<sup>1,2</sup>; Shihong Zhang<sup>1</sup>; Haiping Chang<sup>3</sup>; Changhai Li<sup>3</sup>; <sup>1</sup> Institute of Metal Research, Chinese Academy of Sciences, China; <sup>2</sup> University of Science and Technology of China, China; <sup>3</sup> CITIC Dicastal*

Co., Ltd., China

**20:55-21:15 Contributed**

**Brittle precipitates induced nanotwins breakthrough the strength-ductility trade-off in a CoNiV compositionally complex alloy**

*Fengchao An<sup>1</sup>; Jikui Liu<sup>1</sup>; Junhua Hou<sup>1</sup>; Bingnan Qian<sup>1</sup>; Wenjun Lu<sup>1</sup>; <sup>1</sup> Southern University of Science and Technology, China*

**21:15-21:35 Contributed**

**In-situ prepared M<sub>2</sub>B intergranular precipitation strengthening in a compositionally complex composites via selective laser melting**

*Junhua Hou<sup>1</sup>; Sihao Zou<sup>1</sup>; Wenjun Lu<sup>1</sup>; <sup>1</sup> Southern University of Science and Technology, China*

**21:35-21:55 Contributed**

**Eutectoid Transformation Behavior in Oxide Scale of 960MPa High Strength Steel**

*Hao Wang<sup>1</sup>; Guangming Cao<sup>1</sup>; Yingjian Chen<sup>1</sup>; Chenyang Wang<sup>1</sup>; Zhenyu Liu<sup>1</sup>; <sup>1</sup> Northeastern University, China*

**Room E, Zoom link: TBD**

**Session: Non-ferrous Alloys and Processing**

**Aluminum Alloys (Chair: TBD)**

**14:00-14:30 Keynote**

**Investigations on Superplastic Deformation Mechanisms in a Al-Zn-Mg-Cu Alloy**

*Hua Ding<sup>1</sup>; <sup>1</sup> Northeastern University, China*

**14:30-15:00 Keynote**

**Research progress on horizontal continuous casting of aluminum alloy**

*Zhihao Zhao<sup>1</sup>; <sup>1</sup> Northeastern University, China*

**15:00-15:30 Keynote**

**An idea of improving properties of Aluminum Alloy combining controllable Electromagnetic energy (CEME) with aging process**

*Yonglin Ma<sup>1</sup>; Chunlei Yan<sup>1</sup>; Xinyu Bao<sup>1</sup>; Shuqing Xing<sup>1</sup>; Qiao Cheng<sup>1</sup>; <sup>1</sup> Inner Mongolia University of Science and Technology, China*



**15:30-15:55 Invited**

**Fabrication of Al Matrix Composites Reinforced with TiC and GNPs by Spark Plasma Sintering at Different Temperatures**

*Fei Lin<sup>1</sup>; Mengyuan Ren<sup>1</sup>; Ming Yang<sup>2</sup>; Zhixin Chen<sup>1</sup>; Zhengyi Jiang<sup>1</sup>; <sup>1</sup>University of Wollongong; <sup>2</sup>Graduate School of System Design, Tokyo Metropolitan University, Hino-shi, Tokyo, 191-0065, Japan*

**15:55-16:15 Coffee break**

**16:15-16:45 Keynote**

**Study on thermomechanical treatment process of 2050 aluminum alloy extruded bar**

*Qingfeng Zhu<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**16:45-17:10 Invited**

**Effect of Pre-tensile on the Fatigue Fracture of different heat treatment 7005 Aluminum Alloy Plates**

*Ni Tian<sup>1,2</sup>; Xu Jiang<sup>1</sup>; Yaozhong Zhang<sup>1</sup>; Tianshi Wang<sup>1</sup>; Zijie Zeng<sup>1</sup>; Gang Zhao<sup>1,2</sup>; Gaowu Qin<sup>1,2</sup>; <sup>1</sup>School of Materials Science & Engineering, Northeastern University, No. 3-11, Wenhua road, Heping district, Shenyang 110819, China; <sup>2</sup>Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education), Northeastern University, China*

**17:10-17:35 Invited**

**The research and application of sophisticated heat treatment process for Al-Cu alloys**

*Yong Li<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**17:35-17:55 Contributed**

**Study on Microstructure and Properties of Al-Cu-Li/TiC Alloy**

*Haiyao Wang<sup>1</sup>; Yong Li<sup>1</sup>; Bing Lu<sup>1</sup>; Wei Yu<sup>1</sup>; Yin Wang<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**Aluminum Alloys, Zirconium Alloys and Other Alloys (Chair: TBD)**

**19:00-19:20 Contributed**

**Effect of the pulsed magnetic field melt treatment on microstructure and property of casting Al-Si-Mg-Cu-Ni alloy**

*Xinyu Bao<sup>1</sup>; Yonglin Ma<sup>1</sup>; Chunlei Yan<sup>1</sup>; Qiao Cheng<sup>1</sup>; Yihui Su<sup>1</sup>; <sup>1</sup>Inner Mongolia University of Science and Technology, China*

**19:20-19:40 Contributed**

**Effect of intermediate thermal-mechanical treatment (ITMT) on microstructure and properties of 7185 aluminum alloy**

*Yin Wang<sup>1</sup>; Yong Li<sup>1</sup>; Bing Lu<sup>1</sup>; Wei Yu<sup>1</sup>; Haiyao Wang<sup>1</sup>; Guangming Xu<sup>1</sup>; Zhaodong Wang<sup>1</sup>; <sup>1</sup>Northeastern University, China*

**19:40-20:00 Contributed**

**Microstructure and mechanical properties of a medium manganese steel with different aluminum addition after a short intercritical annealing time**

*Yan Li<sup>1</sup>; Nan Zhang<sup>1</sup>; Wei Ding<sup>1</sup>; <sup>1</sup>Inner Mongolia University of Science and Technology, China*

**20:00-20:20 Contributed**

**Effect of Initial Texture on the Formability of Zircaloy-4 Sheet in Stamping with FEM-VPSC Modeling**

*Siyang Deng<sup>1</sup>; Hongwu Song<sup>1</sup>; Shihong Zhang<sup>1</sup>; Huan Liu<sup>1,2</sup>; <sup>1</sup>Institute of Metal Research, Chinese Academy of Sciences; <sup>2</sup>School of Materials Science and Engineering, University of Science and Technology of China, China*

**Room F, Zoom link: TBD**

**Session: Digitalization and Intelligent Manufacturing**

**Intelligent Manufacturing (Chair: TBD)**

**14:00-14:30 Keynote**

**Studies on the Hot Rolling Plant: Lean and Intelligent Manufacturing**

*Jiaojian Ai<sup>1</sup>; <sup>1</sup>Shougang Jingtang Iron and Steel United Co., Ltd., China*

**14:30-15:00 Keynote**

**The basic supporting of advanced data communication system to intelligent steel**

*Lixun Li<sup>1</sup>, Shuguang Kang<sup>1</sup>, Xiaojiang Yang<sup>1</sup>, Xin Wang<sup>1</sup>; <sup>1</sup>HBIS Laoting Steel Co., Ltd., China*

**15:00-15:30 Keynote**

**Steel of the Future: A New Look at Digital-driven Manufacturing**

*Wenqi Gu<sup>1</sup>; <sup>1</sup>HBIS Group, China*

**15:30-15:55 Contributed**

**Exploration and practice of Digital Factory**

*Fucun Li<sup>1</sup>; <sup>1</sup>Jiangsu Jinheng Information Technology Co., Ltd., China*

**16:00-16:15 Coffee break**

## **Session: Modelling and Simulation of Metallic Materials**

### **High Temperature Process and Texture (Chair: TBD)**

**16:15-16:45 Keynote**

**Obtaining the Solubility Products of TiN & TiC in Austenite by Measuring the Grain Growth at Elevated Temperature**

*Wei Wang<sup>1</sup>, Mingxing Zhou<sup>2</sup>, Haijiang Hu<sup>2</sup>, Guang Xu<sup>2</sup>; <sup>1</sup>Baosteel Research Institute, China; <sup>2</sup>Wuhan University of Science and Technology;*

**16:45-17:15 Keynote**

**On the magnitude of solid-liquid interfacial energy**

*Lianwen Wang<sup>1</sup>; <sup>1</sup>Lanzhou University, China*

**17:15-17:45 Keynote**

**The role of texture on the grain boundary network in IF steels**

*Hossein Beladi<sup>1</sup>; <sup>1</sup>Deakin University, Australia*

**17:45-18:15 Keynote**

**Modeling the microstructure and texture evolution during annealing process of ferritic stainless steel using cellular automaton method**

*Chi Zhang<sup>1,2</sup>, Liwen Zhang<sup>1</sup>, Xiaole Tang<sup>1</sup>, Xiaoguang Zhou<sup>2</sup>; <sup>1</sup>Dalian University of Technology, China; <sup>2</sup>Northeastern University, China;*

### **Segregation and Precipitation (Chair: TBD)**

**19:00-19:30 Keynote**

**Alloy design and nano-engineering of medium-Mn steels**

*Wenwen Song<sup>1</sup>; <sup>1</sup>RWTH Aachen University, Germany*

**19:30-19:50 Contributed**

**Accelerating behaviour of high magnetic field on low temperature bainitic transformation**

*Baoqi Dong<sup>1</sup>, Tingping Hou<sup>1</sup>, Kaiming Wu<sup>1</sup>, Peter Hodgson<sup>1</sup>; Deakin University, Australia*

**19:00-20:20 Keynote**

**Mechanical properties prediction and reverse mechanism deepening based on multi-mode data analysis**

Wei Xu<sup>1</sup>, Da Ren<sup>1</sup>, Chenchong Wang<sup>1</sup>; <sup>1</sup>Northeastern University, China

**20:20-20:35 Coffee break**

**20:35-21:05 Keynote**

**Computational Grain Boundary Segregation Design**

Reza Kamachali<sup>1</sup>; <sup>1</sup>Federal Institute for Materials Research and Testing, Germany

**21:05-21:35 Keynote**

**TBD**

Peter Hedstrom<sup>1</sup>; <sup>1</sup>KTH Royal Institute of Technology, Sweden

**21:35-21:55 Contributed**

**Heterogeneous segregation behavior of Nb at the stepped migrating interface during phase transformation**

Haokai Dong<sup>1</sup>, Yongjie Zhang<sup>2</sup>, Goro Miyamoto<sup>2</sup>, Hao Chen<sup>3</sup>, Tadashi Furuhashi<sup>2</sup>; <sup>1</sup>South China University of Technology, China; <sup>2</sup>Tohoku University, Japan; <sup>3</sup>Tsinghua University, China;

**21:55-22:15 Contributed**

**Rapid analysis of precipitates in metal by automated Transmission Electron Microscope**

Roger Maddalena<sup>1</sup>, Harold Phelippeau<sup>1</sup>, Hiromi Sekiguchi<sup>1</sup>; <sup>1</sup>ThermoFisher, United States