



## The 10<sup>th</sup> Pacific Rim International Conference on Advanced Materials and Processing

August 18-22, 2019 Xi'an, P. R. CHINA

## Keynote and Invited Speakers

(Updated on: June 14, 2019)

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The Chinese Society for Metals (CSM)

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## **In-Country Technical Representatives**

### **CSM**

Prof. Chengjia Shang, University of Science & Technology Beijing

Email: [cjshang@ustb.edu.cn](mailto:cjshang@ustb.edu.cn)

### **JIM**

Prof. Haruyuki Inui, Kyoto University

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### **KIM**

Prof. Sung-Joon Kim, POSTECH

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### **MA**

Prof. Jian-Feng Nie, Monash University

Email: [jianfeng.nie@monash.edu](mailto:jianfeng.nie@monash.edu)

### **TMS**

Dr. George T. Gray III, Los Alamos National Lab

Email: [rusty@lanl.gov](mailto:rusty@lanl.gov)

# Symposium A: Advanced Steels and Processing

## Organizers

### CSM

Han DONG  
Professor of Shanghai University  
Zhigang YANG  
Professor of Tsinghua University

### JIM

Yoshitaka ADACHI  
Professor of Nagoya University

### KIM

Dong-Woo SUH  
Professor of Pohang University of Science and Technology (POSTCEH)

### MA

Christopher HUTCHINSON  
Professor of Monash University

### TMS

Amy CLARKE  
Colorado School of Mines

## Keynote Speakers

### CSM

**Prof. Matthias MILITZER (The University of British Columbia)**

Paper Title: Modelling of Heat Affected Zone Microstructures in Advanced Line Pipe Steels

**Prof. Zhaoping LV (University of Science and Technology Beijing)**

**Prof. Wenzheng ZHANG (Tsinghua University)**

Paper Title: Preferred Morphologies of Phases in Steels—An Integrated Approach

### JIM

**Prof. Tadashi FURUHARA (Tohoku University)**

Paper Title: Carbon Partitioning during Ferrite and Bainite Transformations in Low-Alloy Steels

### KIM

**Prof. Young Kook LEE (Yonsei University)**

Paper Title: Serrations in the tensile curve of C-bearing TWIP steel

## Invited Speakers

### CSM

**Dr. Wenquan CAO (Central Iron & Steel Research Institute)**

**Prof. Xuejun JIN (Shanghai Jiao Tong University)**

Paper Title: Effect of intermediate temperature annealing on the stability of retained austenite and mechanical properties of medium Mn-TRIP steel

**Prof. Mingxin HUANG (The University of Hong Kong)**

**Dr. Wei LI (Shanghai Jiao Tong University)**

Paper Title: A self-decarburized layer on nanostructured bainitic with excellent resistance to hydrogen embrittlement

**Prof. Feng LIU (Northwestern Polytechnical University)**

Paper Title: Concurring Kinetics of Phase Transition and Grain Growth in Nanostructured Alloy

**Dr. Qingdong LIU (Shanghai Jiao Tong University)**

Paper Title: Development of Nanoprecipitate-Strengthened high-toughness Steels via Multistage Heat treatment

**Prof. Haiwen LUO (University of Science and Technology Beijing)**

Paper Title: Simulation on the evolution of inhibitors during high temperature annealing of grain-oriented silicon steel

**Prof. Xishan XIE (University of Science and Technology Beijing)**

Paper Title: A New Advanced Austenitic Heat-Resisting Steel with Nano-size Phase (MX, Cu-rich phase, Nb CrN) Precipitation Strengthening for 630-650°C USC Boiler Superheater / Reheater Application

**Prof. Wei XU (Northeastern University)**

**Prof. Mei ZHANG (Shanghai University)**

**Dr. Xukai Zhang (University of Groningen )**

Paper Title: Precipitate evolution within grain-oriented electrical steel during high temperature coil annealing

**JIM**

**Prof. Shiro TORIZUKA (Hyogo Prefecture University)**

Paper Title: Formation of ultrafine martensite from ultrafine ferrite structure with fine dispersed cementite particle including high Mn content

**Dr. ZhiLei WANG (Nagoya University)**

Paper Title: Data-driven properties-to-microstructure-to-processing inverse analysis for steels via machine learning

**KIM**

**Prof. Jeongho HAN (Chungnam National University)**

Paper Title: Unraveling the critical microstructures to determine the impact toughness of medium Mn steel

**Prof. Yoon-Uk HEO (Pohang University of Science and Technology)**

Paper Title: Design of microstructure for achieving high strength in an Fe-10Mn-3Al-0.2C based alloy

**Dr. Joonoh MOON (Korea Institute of Materials Science)**

Paper Title: Microstructure and mechanical properties of austenitic FeMnAlC lightweight steels and the effects of alloying elements

**MA**

**Dr. Hao CHEN (Tsinghua University)**

Paper Title: Fast-heating enables heterogeneous microstructure and upgraded mechanical properties of Q&P steels

**Prof. Mingxin HUANG (University of Hong Kong)**

Paper Title: Dislocation engineering for designing high strength steel with improved ductility

**Dr. Nicole STANFORD (University of South Australia)**

Paper Title: Precipitation and phase transformation of strip cast steel

**TMS**

**Dr. B.Cem TASAN (Massachusetts Institute of Technology)**

Paper Title: In-situ SEM characterization of wear and fracture in martensitic blades



# Symposium B: High Temperature Structural Materials

## Organizers

### CSM

Qiang FENG

Professor of University of Science and Technology Beijing

Shengkai GONG

Professor of Beihang University

Jun ZHANG

Professor of Northwestern Polytechnical University

### JIM

Hiroyuki YASUDA

Professor of Osaka University

### KIM

Hyun Uk HONG

Professor of Changwon National University

### MA

Damon KENT

Senior Lecturer of University of Sunshine Coast

### TMS

Sammy TIN

Illinois Institute of Technology

Eric TALEFF

The University of Texas at Austin

## Keynote Speakers

### CSM

**Prof. Xishan XIE (University of Science and Technology Beijing)**

Paper Title: A New Ni-base Superalloy GH750 for 700°C Advanced Ultra-Supercritical Power Plant application

### JIM

**Prof. Masao TAKEYAMA (Tokyo Institute of Technology)**

Paper Title: Design Approaches and Properties of Novel Wrought TiAl Alloys for Jet Engine Applications

### KIM

**Prof. Young-Soo YOO (Korea Institute of Materials Science)**

Paper Title: Development of Ni Base Superalloys for Future Energy Plant Application

### MA

**Prof. Yinong LIU (University of Western Australia)**

Paper Title: Microstructural evolutions of Ni-based superalloys during high temperature straining

### TMS

**Prof. Michael MILLS (Ohio State University)**

Paper Title: New Insights Into Rate Limiting Deformation Processes in Ni-Base Superalloys

### EUROPE

**Prof. Catherine RAE (University of Cambridge)**

Paper Title: The Effects of thermal cycling on the creep performance of a single crystal alloy

## Invited Speakers

### CSM

**Prof. Zhongnan BI (Central Iron and Steel Research Institute)**

Paper Title: Residual stress in precipitation hardening superalloys forgings

**Prof. Lin LIU (Northwestern Polytechnical University)**

Paper Title: Research statues and progress of solidification structure and grain defects in nickel-based single crystal supealloys

**Prof. Chengbo XIAO (Beijing Institute of Aeronautical Materials)**

Paper Title: Materials Genome Initiative: Accelerated Ni-based single crystal superalloy design

**Prof. Jian ZHANG (Institute of Metal Reserach)**

Paper Title: Formation and evolution of casting defects in single crystal nickel based superalloys

**Prof. Hongbo GUO(Beihang University)**

Paper Title:  $\beta$ -NiAl based protective coatings for advanced single crystal superalloys

### JIM

**Dr. Hideyuki MURAKAMI (National Institute for Materials Science)**

Paper Title: Application of Pt-Ir Paste Coating for Ni-based superalloys

**Prof. Kyosuke YOSHIMI (Tohoku University)**

Paper Title: Good Compatibility of Ultrahigh-Temperature Strength and Room-Temperature Fracture Toughness for MoSiBTiC Alloy

#### **KIM**

**Prof. Pyuck-Pa CHOI (Korea Advanced Institute of Science and Technology)**

Paper Title: Design of  $\gamma'$ -strengthened Co-base alloys based on multi-scale characterization

#### **MA**

**Dr. Sophie PRIMIG (University of New South Wales)**

Paper Title: Designing the microstructure of alloy 718

#### **TMS**

**Prof. Rajarshi BANERJEE (University of North Texas)**

Paper Title: Gamma - Gamma Prime based Precipitation Strengthenable High Entropy Alloys

**Prof. Hamish L. FRASER (Ohio State University)**

Paper Title: Hot Isostatic Pressing of Dual Ni-base Superalloys

**Prof. Yunzhi WANG (OSU)**

Paper Title: Precipitate-Mediated Dislocation Transformation in Superalloys

#### **EUROPE**

**Prof. Jonathan CORMIER (Institut pprime-UPR CNRS 3346 - ISAE ENSMA)**

Paper Title: Crack initiation mechanisms during VHCF of Ni-based single crystal superalloys

**Prof. Hongbiao DONG (University of Leicester)**

Paper Title: A Phenomenological Analyses of Freckling in Directional Solidification of Ni-base Alloys

**Prof. Paraskevas KONTIS (Max-Planck-Institut für Eisenforschung GmbH)**

Paper Title: The effect of segregation of solutes at crystal defects on the mechanical performance of superalloys

**Prof. Jiehua LI (Montan Universität Leoben)**

Paper Title: Microstructural evolution of Ni-based K403 alloy during thermal exposure



## Symposium C: Light Metals and Alloys

### Organizers

#### CSM

Baiqing XIONG

Professor of GRINM Group Co. Ltd.

Xianhua CHEN

Professor of Chongqing University

Yongqing ZHAO

Professor of Northwest Institute for Nonferrous Metal Research

#### JIM

Yoshihito KAWAMURA

Professor of Kumamoto University

#### KIM

Young Min KIM

Principal Researcher of Korea Institute of Materials Science (KIMS)

#### MA

Jian-Feng NIE

Professor of Monash University

#### TMS

Diran APELIAN

Worcester Polytechnic Institute

# Symposium C1: Light Metals and Alloys-Al

## Keynote Speakers

### CSM

**Prof. Jianghua CHEN (Hunan University)**

Paper Title: Electron microscopy for aluminum alloys as light-weight industry materials

**Prof. Peidong WU (McMaster University)**

Paper Title: Forming and Formability of Aluminium Sheet Alloys

### JIM

**Prof. Hirofumi INOUE (Osaka Prefectural University)**

Paper Title: Prediction of Bendability and Deep Drawability Based on Orientation Distribution Function for Polycrystalline Aluminum Alloy Sheets

## Invited Speakers

### CSM

**Dr. Yong JIANG (Central South University)**

Paper Title: Formation thermodynamics and thermal stabilities of coherent L12 nano-precipitates in Al-RE alloys

**Dr. Cheng LIU (Chinalco Materials Application Research Institute Co.,LTD)**

**Dr. Shuangqing SUN (China University of Petroleum (East China))**

Paper Title: Effects of aging treatment and peripheral coarse grain on the exfoliation corrosion behavior and its mechanism of 2024 aluminium alloy using SR-CT

**Dr. Hai ZHANG (Soochow University)**

### JIM

**Prof. Kenji MATSUDA (Toyama University)**

Paper Title: Existence of two phases in Al-Zn-Mg alloys containing Cu

**Prof. Shinji MURAISHI (Tokyo Institute of Technology)**

Paper Title: Micromechanics based precipitation hardening analysis in aluminum alloys

### KIM

**Dr. Jae Hwang KIM (Korea Institute of Industrial Technology)**

Paper Title: Role of nanoclusters in two-step and multi-step aging behavior in Al-Mg-Si alloys

### MA

**Dr. Malcolm COUPER (Monash University)**

Paper Title: The relationship of solid solubility to the precipitation sequence in aluminium alloys

**Dr. Timothy LANGAN (CleanTeQ)**

Paper Title: Precipitation of Stable Sc-Containing Dispersoids in High Strength Aluminum Alloys

**Dr. Sri LATHABAI (CSIRO)**

Paper Title: Corrosion behaviour of Additively Manufactured AlSi10Mg Aluminium Alloy

**TMS**

**Dr. Brajendra MISHRA (WPI-MPI)**

Paper Title: In-Situ Processes for Production of Aluminum-Matrix Nanocomposites

# Symposium C2: Light Metals and Alloys-Mg

## Keynote Speakers

### CSM

**Prof. Alan Luo (The Ohio State University)**

Paper Title: Advanced Light Metals and Processing: Alloy Development and Process Innovations

**Prof. Andrej ATRENS (The University of Queensland)**

Paper Title: Review of recent research on Mg alloys with low corrosion rates

**Prof. Yuanding Huang (Helmholtz-Zentrum Geesthacht)**

Paper Title: Casting and solidification of magnesium alloys

**Prof. Kwang Seon Shin (Seoul National University)**

Paper Title: Plastic Deformation Behavior of Magnesium Single Crystals

**Prof. Nack J. Kim (Postech|KIMS)**

Paper Title: Texture evolution of Ca-containing Mg-Zn alloys during annealing

**Prof. Xiaoqin Zeng (Shanghai Jiao Tong University)**

Paper Title: Study of the alloying effect on Mg's ductility by in situ synchrotron X-ray and electron microscopy experiments

**Prof. Liming Peng (Shanghai Jiao Tong University)**

Paper Title: Research on Hydrogen-Chromic Magnesium-Based Thin Films

**Prof. Bin JIANG (Chongqing University)**

Paper Title: High performance magnesium alloy plate and its novel process

**Prof. Jing ZHANG (Chongqing University)**

Paper Title: Solute effects of rare earth elements on deformation behaviors and mechanical properties of Mg

### JIM

**Prof. Eiji ABE (University of Tokyo)**

Paper Title: Kink Strengthening of LPSO and Mille-feuille Structures in Mg Alloys

### KIM

**Prof. Bong Sun YOU (Korea Institute of Materials Science)**

Paper Title: Development of Corrosion Resistant Magnesium Alloys

## Invited Speakers

### CSM

**Prof. Wenbo DU (Beijing University of Technology)**

Paper Title: Significantly enhanced Mechanical Properties of Mg-9Al alloy by using multi-walled carbon nanotubes

**Prof. Xiaobo CHEN (RMIT University)**

Paper Title: Advanced Protective Coating Strategy for Mg Alloys

**Prof. Xianhua CHEN (Chongqing University)**

Paper Title: Research on high performance magnesium-based functional materials

**Prof. Qiuming PENG (State Key Laboratory of Metastable Materials Science and Technology)**

Paper Title: Achieving high strength and high ductility of ultrahigh pressure Mg alloys

**Prof. Li JIN (Shanghai Jiao Tong University)**

Paper Title: Effects of microstructure on fracture toughness of wrought Mg-8Gd-3Y-0.5Zr magnesium alloy

**Dr. Spartak Makovskyi (MOTOR SICH JSC|Zaporozhye National Technical University)**

Paper Title: Development of high performance magnesium base metal matrix nano composites for aerospace applications using powder metallurgy technology

**Dr. Xiaojun WANG (Harbin Institute of Technology)**

Paper Title: Carbon nanomaterials reinforced Mg matrix composites

#### **JIM**

**Prof. Daisuke ANDO (Tohoku University)**

Paper Title: Age hardening effect and Superelasticity of Martensitic transformable Mg-Sc based alloys

**Prof. Koji HAGIHARA (Osaka University)**

Paper Title: Strengthening of Mg-based long-period stacking ordered (LPSO) phase alloys induced by the formation of deformation kink band

#### **KIM**

**Dr. Jung Shin KANG (Korea Institute of Geoscience and Mineral Resources)**

Paper Title: Development of a Magnesium Metal Production Process Using North Korean Magnesite

**Dr. Joung Sik SUH (Korea Institute of Materials Science)**

Paper Title: Improvement in room-temperature yield asymmetry of extruded AZXW9100 alloy by precipitation hardening

#### **MA**

**Prof. Mark EASTON (RMIT)**

Paper Title: Improved understanding of the microstructure and mechanical behaviour of Mg-Al-RE alloys

**Prof. Yunchang XIN (Chongqing University)**

Paper Title: Quantitative prediction of texture effect on Hall - Petch slope for magnesium alloys

**Dr. Shiwei XU (China Baowu Steel Group Corporation Limited)**

Paper Title: Development of room temperature reciprocally bendable magnesium sheets in china Baowu

**Dr. Yang GUO (General Motors)**

Paper Title: Searching for Stainless Magnesium Alloy - a First Principal Based Approach

# Symposium C3: Light Metals and Alloys-Ti and Others

## Keynote Speakers

### CSM

**Prof. Yongqing ZHAO (Northwest Institute for Nonferrous Metal Research)**

### JIM

**Prof. Kenichi MORI (Nippon Steel & Sumitomo Metal Corporation)**

Paper Title: The effect of texture anisotropy on the dwell fatigue properties of Ti-6Al-4V forged bar

### MA

**Prof. Elena PERELOMA (University of Wollongong)**

Paper Title: Uncovering deformation mechanisms in metastable beta titanium alloys.

**Prof. Robert WILSON (CSIRO)**

Paper Title: Titanium particulates to titanium products

## Invited Speakers

### CSM

**Dr. Zhanli GUO (Sente Software Ltd.)**

Paper Title: Modelling of Materials Flow at Elevated Temperatures

**Dr. Qiaoyan SUN (Xi'an Jiaotong University)**

Paper Title: From brittle to ductile fracture due to primary alpha phase in tensile deformation of Ti55531 alloy

**Dr. Bin TANG (Northwestern Polytechnical University)**

Paper Title: Hot forging design for TiAl alloys based on dynamic and metadynamic recrystallization investigations

**Prof. Renlong XIN (Chongqing University)**

Paper Title: Deformation compatibility in dual phase Ti alloys under compression

### JIM

**Dr. Satoshi EMURA (NIMS)**

Paper Title: Heterogeneous microstructure in beta Type Ti-Mo alloy through thermomechanical treatment

**Dr. Yoko YAMABE-MITARAI (NIMS)**

Paper Title: Creep deformation of near-alpha Ti alloys

### KIM

**Dr. Tea-Sung (Terry) JUN (Incheon National University)**

Paper Title: Understanding local deformation behaviour of titanium and its alloys using experimental micromechanics

### MA

**Prof. Mingxing ZHANG (The University of Queensland)**

Paper Title: Novel approaches to surface engineering of Ti alloys



# Symposium D: Advanced Processing of Materials

## Organizers

### CSM

Wanqi JIE

Professor of Northwestern Polytechnical University

Jianguo LI

Professor of Shanghai Jiaotong University

### JIM

Hideyuki YASUDA

Professor of Kyoto University

### KIM

Myoung-Gyu LEE

Professor of Seoul National University

### MA

Huijun LI

Professor of University of Wollongong

### TMS

Dan THOMA

University of Wisconsin- Madison

## Keynote Speakers

### KIM

**Prof. Youngsuk KIM (Kyungpook National University)**

Paper Title: Study of single point incremental forming and its formability

### MA

**Prof. John NORRISH (University of Wollongong)**

Paper Title: Robotic Additive Manufacture using Wire Arc Welding Processes

**Prof. Anna PARADOWSKA (ANSTO)**

Paper Title: Neutron Scattering - Novel Non-destructive Tool for Characterization of Advanced Processing and Manufacturing

### TMS

**Prof. Glenn DAEHN (OSU)**

Paper Title: Metamorphic Manufacturing – Forming High Quality Components on Demand

## Invited Speakers

### CSM

**Prof. Hongbiao DONG (University of Leicester)**

Paper Title: Using deep neural network with small dataset to predict solidification defects

**Prof. Feng LIU (Northwestern Polytechnical University)**

### KIM

**Prof. Tae-Wan KU (Pusan National University)**

Paper Title: A Combined Extrusion for a Drive Shaft with Spur Gear and Internal Spline : Process Design and Application

**Prof. Eun-Ho LEE (Handong University)**

Paper Title: Principle and Application of infrared local heating in sheet metal forming process

**Prof. Myoung-Gyu LEE (Seoul National University)**

Paper Title: ALE based finite element simulation of friction stir welding and its application to the prediction of joint strength

**Dr. Jung-Han SONG (Korea Institute of Industrial Technology)**

Paper Title: Dynamic Failure of Spot Welds under Combined Axial and Shear Loading Conditions

### MA

**Dr. Andrew ANG (Swinburne University)**

Paper Title: Advanced surface coatings solutions for marine hydraulic components

**Dr. Andrew KOSTRYZHEV (University of Wollongong)**

Paper Title: Superior mechanical properties of microalloyed bainitic steels subjected to warm Deformation

**Dr. Sophie PRIMIG (UNSW)**

Paper Title: Advanced thermo-mechanical processing of HSLA steels with hierarchical Microstructures

**Dr. Hongtao ZHU (University of Wollongong)**

Paper Title: Novel surface functioning technology during hot strip rolling to improve corrosion-resistance of the steels

**TMS**

**Dr. Nidal ABU-ZAHRA (University of Wisconsin-Milwaukee)**

Paper Title: Value and Challenges in Industry/University Collaboration on Advanced Materials and Processing Technologies

## Symposium E: Thin Films and Surface Engineering

### Organizers

#### CSM

Chuang DONG

Professor of Dalian University of Technology

Hongbo GUO

Professor of Beihang University

#### JIM

Hiroshi MASUMOTO

Professor of Tohoku University

#### KIM

Ho Won JANG

Professor of Seoul National University

#### MA

Mingxing ZHANG

Professor of University of Queensland

## Keynote Speakers

### CSM

**Prof. Jean-Marie DUBOIS (Institut Jean Lamour / Institut Jean Lamour)**

Paper Title: Engineered surface properties of quasicrystalline materials

**Prof. Prof. Robert VASSEN (Forschungszentrum Jülich)**

Paper Title: Advanced ceramic coatings for high temperature use made by thermal spray techniques

### KIM

**Prof. Hyunjung SHIN (Sungkyunkwan University)**

Paper Title: Atomic Layer Deposition Techniques: Electrocatalysts and Charge Transporting Layers

### MA

**Prof. Chris BERNDT (Swinburne University of Technology)**

Paper Title: Thermal Spray Coatings: Relating Processing Conditions to Microstructural Evolution

**Prof. Yue ZHAO (University of Wollongong)**

Paper Title: Corrosion, wettability, and cytocompatibility of Ta and Ta-N films deposited on Ti6Al4V by cathodic arc deposition

## Invited Speakers

### CSM

**Dr. Thierry GROSDIDIER (Université de Lorraine)**

Paper Title: Surface severe plastic deformation for improved mechanical properties and optimum reactivity

**Prof. Xueqiang CAO (Wuhan University of Technology)**

Paper Title: New TBC materials and structures

**Prof. Jinn CHU (National Taiwan University of Science and Technology)**

Paper Title: Metallic Glass Coatings with Beneficial Properties for a Wide Range of Applications

### JIM

**Dr. Yang CAO (Tohoku University)**

Paper Title: Tunneling Magneto-Dielectric (TMD) effect: Recent advances and future perspectives

### KIM

**Prof. Soo Young KIM (Chung Ang University)**

Paper Title: Application of transition metal sulfides synthesized by  $(\text{NH}_4)_2\text{MeS}_4$  precursors (Me: Metal)

**Prof. Se Hun Kwon (Pusan University)**

Paper Title: ALD enabled synthesis of nanostructured materials and its applications

**Prof. Kibum KANG (KAIST)**

Paper Title: Wafer-scale growth and assembly of 2D semiconductors

### MA

**Dr. Avi BENDAVID (CSIRO Manufacturing)**

Paper Title: Plasma Deposition of Advanced Thin Films and Nanostructured Materials

**Prof. Daniel FABIJANIC (Deakin University)**

Paper Title: The thermal stability, oxidation behaviour and elevated temperature wear resistance of high entropy alloy claddings

**Dr. Yingang LIU (The University of Queensland)**

Paper Title: Morphology, structure and mechanical properties of titanium alloy processed via surface severe plastic deformation

**Dr. Vladimir LUZIN (ANSTO)**

Paper Title: Neutron Residual Stress Analysis of Single- and Two-Phase Cold-Sprayed Coatings

**Dr. Qiyang TAN (The University of Queensland)**

Paper Title: The oxide reinforcement effect of Be on the oxidation resistant Be-containing Mg Alloys

**TMS**

**Prof. Wenjin Meng (Louisiana State University)**

Paper Title: Understanding mechanical failure of metal/ceramic interfacial regions through microscale mechanical testing and multiscale simulations



## Symposium F: Biomaterials

### Organizers

#### CSM

Yufeng ZHENG

Professor of Peking University

Luning WANG

Professor of University of Science and Technology Beijing

#### JIM

Takayoshi NAKANO

Distinguished Professor of Osaka University

#### KIM

Seung-Kyun KANG

Professor of Korea Advanced Institute of Science and Technology (KAIST)

#### MA

Cuie WEN

Professor of RMIT University

#### TMS

Marc MEYERS

University of California, San Diego

## Keynote Speakers

### CSM

**Prof. Yufeng ZHENG (Peking University)**

Paper Title: Fundamentals of the theory of biodegradable metals

**Prof. Luning WANG (University of Science and Technology Beijing)**

### JIM

**Prof. Takao HANAWA (Tokyo Medical and Dental University)**

Paper Title: Biofunctionalization of metals with development of new alloy, manufacturing process and surface modification

**Prof. Takayuki NARUSHIMA (Tohoku University)**

Paper Title: Preparation of bioceramic coatings on Ti and its alloys by dry processes and their antibacterial activity

### KIM

**Prof. Hyun Kwang SEOK (Korea Institute of Science and Technology (KIST))**

Paper Title: Outlook on the Clinical Translation and Commercialization of Biodegradable Metals

### MA

**Prof. Nicolas VOELCKER (Monash University)**

Paper Title: Ordered Silicon Nanowire Arrays: Opportunities for Biointerface Control

**Prof. Yin XIAO (Queensland University of Technology)**

Paper Title: Targeting early inflammatory response for the design of functional bone biomaterials

## Invited Speakers

### CSM

**Dr. Xiaobo CHEN (RMIT University)**

Paper Title: Osteoanabolic Implant Materials for Orthopedic Treatment

**Prof. Yan LI (Beihang University)**

Paper Title: Recent development of biomedical Ti-Zr-Nb shape memory alloys

**Prof. Fuzeng REN (Southern University of Science and Technology)**

Paper Title: Biofunctionalization of Metallic Implants by Synergistic Effects of Micro/Nano-Patterning and Surface Coating

**Prof. Shuilin WU (Tianjin University)**

Paper Title: Photo-inspired antibacterial biomaterials

**Prof. Zhentao YU (Northwest Institute for Nonferrous Metal Research)**

Paper Title: Surface Modification and Biomechanical Compatibility of Biomedical Titanium Alloy

**Prof. Cuie WEN (RMIT University)**

Paper Title: CP-Ti gyroid scaffolds manufactured by selective laser melting for bone implant Applications

**Prof. Donghui ZHU (University of North Texas)**

Paper Title: Engineering a Bioactive Coating on Zinc Metallics for Enhanced Biocompatibility and Antibacterial Property

### JIM

**Dr. Sachiko HIROMOTO (NIMS)**

Paper Title: In vivo degradation behavior of hydroxyapatite-coated magnesium alloys for bone implant application

**Prof. Takayoshi NAKANO (Osaka University)**

Paper Title: Preferential orientation of collagen/apatite as a bone quality parameter and biomedical Implant design based on the bone tissue anisotropy

**Prof. Naoyuki NOMURA (Tohoku University)**

Paper Title: Microstructure and mechanical properties of low magnetic Zr-1Mo alloy for biomedical applications

**Prof. Masato UEDA (Kansai University)**

Paper Title: 2D Patterning of Cells on Titanium Dioxide by Light Irradiation

**Prof. Pan WANG (Singapore Institute of Manufacturing Technology (SIMTech))**

Paper Title: Dynamic precipitation softening in beta-titanium: phase stability and Al addition effects

**Prof. Masaya YAMAMOTO (Tohoku University)**

Paper Title: 3D tissue processing using stimuli-responsive biomaterials

**KIM**

**Prof. Pil-Ryung CHA (Kookmin University)**

Paper Title: Computational Design of Mg alloys with Minimal Galvanic Corrosion

**Prof. Suk-Won HWANG (Korea University)**

Paper Title: Transient Electronics

**Dr. Myoung-Ryul OK (Korea Institute of Science and Technology (KIST))**

Paper Title: Electrochemical Functionalization of Biomaterials: Realization of Tissue-regenerative and Cell-selective Fully Metallic Devices

**MA**

**Prof. Andrej ATRENS (The University of Queensland)**

Paper Title: Understanding Mg corrosion in vivo

**Prof. Cyrille BOYER (UNSW)**

Paper Title: Oxygen Tolerant RAFT Polymerisation: Application in the Design of Anti-Microbial Polymers

**Prof. Yuncang LI (RMIT)**

Paper Title: Mechanical properties and biocompatibility of  $\beta$  Ti35Zr28Nb alloy scaffolds manufactured using selective laser melting

**Dr. Cynthia S. WONG (Queensland University of Technology)**

Paper Title: The interplay between cells and multiscale 3D printed scaffolds

**Prof. Lihai ZHANG (University of Melbourne)**

Paper Title: Modelling bone fracture healing under the locking compression plate system

**TMS**

**Dr. Po Yu CHEN (Tsing Hu University Taiwan)**

Paper Title: Lightweight yet Tough Bio-inspired Cellular Materials: Multi-scale Modeling, Characterization, Mechanical Testing, and Optimization

**Dr. David KISAILUS (University of California at Riverside)**

Paper Title: Biologically Inspired Multi-Functional Composites

# Symposium G: Smart and Magnetic Materials

## Organizers

### CSM

Shaoxiong ZHOU

Professor of Center Iron & Steel Research Institute

Chengbao JIANG

Professor of Beihang University

### JIM

Satoshi SUGIMOTO

Professor of Tohoku University

### KIM

Haein YIM

Professor of Sookmyung Women's University

### MA

Sean LI

Professor of New South Wales

### TMS

Bob SHULL

National Institute of Standards and Technology

## Keynote Speakers

### CSM

**Prof. Yanglong HOU (Peking University)**

Paper Title: Fabrication and Potential Applications of Magnetic Nanomaterials

**Prof. Yang SUN (Institute of Physics, CAS)**

### JIM

**Prof. Asaya FUJITA (AIST)**

Paper Title: Toward realization of reliable high-performance magnetic refrigerants based on  $\text{La(Fe,Si)}_{13}$  -variants

**Prof. Yu SHIRATSUCHI (Osaka University)**

Paper Title: Antiferromagnetic domain control by magnetoelectric effect

### KIM

**Prof. Hae-Woong Kwon (Pukyong National University)**

Paper Title: Suppression of eddy current generation in Nd-Fe-B-type magnet under alternating magnetic field by enhancing electrical resistivity

**Prof. Sang-Im YOO (Seoul National University)**

Paper Title: Current status and prospect of ceramic permanent magnets

### MA

**Prof. Kiyonori SUZUKI (Monash University)**

Paper Title: Formation of nano-meter scale microstructures from binary amorphous precursors

**Prof. Tom WU (UNSW)**

Paper Title: Smart "Binary Materials" for Photodetection from Mid-Infrared, Visible, to X-ray

## Invited Speakers

### CSM

**Prof. Yong JIANG (University of Science and Technology Beijing)**

Paper Title: Spin-orbit-torque engineering in multiferroic heterostructure

**Prof. Xiangyi ZHANG (Yanshan University)**

Paper Title: Designing Hybrid Nanostructures Towards High Energy Density

**Prof. Jinbo YANG (Peking University)**

Paper Title: Novel soft magnetic properties of rare earth-transitional metal compounds at high frequency

**Prof. Ping JIN (Shanghai Institute of Ceramics, Chinese Academy of Sciences)**

Paper Title: Smart windows: state-of-art and outlook

**Prof. Zhiqi LIU (Beihang University)**

Paper Title: Electric-field control of magnetic materials

**Prof. Tianyu MA (Xi'an Jiaotong University)**

Paper Title: Diffusional phase transition in Fe-Ga alloys and the resultant novel properties

**Prof. Dunhui WANG (Nanjing University)**

Paper Title: Broadening refrigeration temperature regions in ferromagnetic shape memory alloys

**Prof. Sen YANG (Xi'an Jiaotong University)**

Paper Title: Recent progress of large magnetostriction induced by magnetic MPB and strain glass

**Prof. Yongsheng YU (Harbin Institute of Technology)**

Paper Title: Halide Ion-mediated Synthesis of L10-FePt Nanoparticles with Tunable Magnetic Properties

**Prof. Zhenchen ZHONG (Jiangxi University of Science And Technology)**

Paper Title: Special microstructure evolution and enhanced magnetic properties of Ce-Fe-B-based spark plasma sintered magnets with core-shell structure by NdCu Addition

**Prof. Yandong WANG (University of Science and Technology)**

**Prof. Fengxia HU (Institute of Physics, CAS)**

**Asso. Prof. Enke LIU (Institute of Physics, CAS)**

**JIM**

**Dr. Masashi MATSUURA (Tohoku University)**

Paper Title: Magnetic properties and microstructure of high coercivity Zn-bonded Sm-Fe-N magnets

**Dr. Hiroaki SUKEGAWA (NIMS)**

Paper Title: Lattice-matched magnetic tunnel junctions using a spinel barrier for advanced spintronics devices

**Prof. Tadao TANABE (Tohoku University)**

Paper Title: 2D Layered Semiconducting Materials and Terahertz Non-Destructive Inspection

**Dr. Kentaro TOYOKI (JASRI)**

Paper Title: Local demagnetization processes in the fractured surface of a Nd-Fe-B sintered magnet: A soft X-ray magnetic circular dichroism spectromicroscopy study

**KIM**

**Dr. Chul-Jin CHOI (Korea Institute of Materials Science)**

Paper Title: Fabrication of rare earth free new Mn based permanent magnetic materials

**MA**

**Prof. Hong YANG (UWA)**

Paper Title: Generating large elastic strains in functional metallic thin films by a phase transforming substrate

**TMS**

**Dr. Jiayan LAW (Sevilla University)**

Paper Title: Magnetocaloric studies to identify first-order phase transitions

**Prof. Ichiro TAKEUCHI (University of Maryland at College Park)**

Paper Title: Compression-based elastocaloric cooling: recent advances in materials and systems



# Symposium H: Materials Characterisation and Evaluation

## Organizers

### CSM

Zhiwei SHAN  
Professor of Xi'an Jiaotong University  
Xiaodong HAN  
Professor of Beijing University of Technology

### JIM

Satoshi HATA  
Professor of Kyushu University  
Email: hata.satoshi.207@m.kyushu-u.ac.jp

### KIM

Ju-Young KIM  
Professor of Ulsan Institute of Science and Technology (UNIST)

### MA

Jin ZOU  
Professor of University of Queensland

### TMS

Jennifer Carter  
Case Western Reserve University

## Keynote Speakers

### CSM

**Prof. Jianghua CHEN (Hunan University)**

Paper Title: Atomic-resolution electron microscopy for aluminum alloys as high-performance industry materials

**Prof. Xiuliang MA (Institute of Metal Research)**

Paper Title: Unmasking chloride attack on the passive film of metals

### JIM

**Prof. Shunsuke MUTO (Nagoya University)**

Paper Title: Mining physical/chemical properties from nano-scale areas using STEM spectroscopic methods and informatics techniques

**Prof. Akira TANIYAMA (Nippon Steel & Sumitomo Metal Corporation)**

Paper Title: Advanced material characterization techniques in development of steel products  
-Current topics and future anticipation in industrial application-

### KIM

**Prof. Shi-Hoon CHOI (Sunchon National University)**

Paper Title: Heterogeneous deformation behaviors and microstructure evolution of Mg alloys during mini-V-bending, Erichsen and in-situ tension tests

**Prof. Heung Nam HAN (Seoul National University)**

Paper Title: Analysis on Mechanical Softening of Nano-Ceramics induced by Electron-Beam Irradiation

### MA

**Prof. Dmitri GOLBERG (The Queensland University of Technology)**

Paper Title: In situ Nanomaterial Property Studies in a High-Resolution Transmission Electron Microscope

**Prof. Ian GENTLE (The University of Queensland)**

Paper Title: Diffusion and stability in organic optoelectronic devices

## Invited Speakers

### CSM

**Dr. Renchao CHE (Fudan University)**

Paper Title: Phase transition of magnetic domain and microwave absorption

**Dr. Lin GU (Institute of Physics CAS)**

Paper Title: Picometer scale fine structure of materials and emergent properties in Noether's vision

**Dr. Yong WANG (Zhejiang University)**

Paper Title: In-situ TEM studies of nanocatalysts under gas environment

**Dr. Degang XIE (Xi'an Jiaotong University)**

Paper Title: Environmental attack in metals revealed by in situ ETEM

**Dr. Qian YU (Zhejiang University)**

Paper Title: Mechanical properties Characterization of Materials at Multiple Scale

**Dr. Xiaoyan ZHONG (Qinghua University)**

Paper Title: Atomic scale magnetic and structural imaging by achromatic electron microscopy

**Dr. Satoshi HATA (Kyushu University)**

Paper Title: New functions on electron tomography: magnetic-field-free diffraction contrast imaging and in-situ specimen straining

**JIM**

**Dr. Ryo ISHIKAWA (The University of Tokyo)**

Paper Title: Complex point defect analysis by atomic-resolution STEM

**Dr. Takanori KIGUCHI (Tohoku University)**

Paper Title: Nanostructure Analyses of Hafnia-Based Ferroelectric Thin Films by Aberration-Corrected Electron Microscopy

**Dr. Goro MIYAMOTO (Tohoku University)**

Paper Title: 3DAP analysis of solute segregation at ferrite or bainite / austenite interface

**Dr. Kazuhisa SATO (Osaka University)**

Paper Title: Synthesis of platinum silicide at platinum/silicon oxide interface by photon irradiation

**Dr. Kosuke SUZUKI (Gunma University)**

Paper Title: Quantum characterization for functional materials using high-energy X-ray Compton Scattering

**Prof. Hiroyuki TODA (Kyushu University)**

Paper Title: Recent Progress in High Resolution X-ray Tomography at High X-ray Energies

**KIM**

**Prof. Jung Gu LEE (University of Ulsan)**

Paper Title: Interpretation of stretch-flangeability using nanoindentation and in-situ fracture observation in dual-phase steels

**Dr. Jun-Yun KANG (Korea Institute of Materials Science)**

Paper Title: Application of EBSD on the Classification of Microconstituents in Advanced High-Strength Steels

**MA**

**Prof. Xiaoxu HUANG (Technical University of Denmark)**

Paper Title: 3D TEM characterization of heterogeneous precipitation at dislocations in an age-hardened Al-Cu-Mg alloy

**Dr. Natasha WRIGHT (CSIRO)**

Paper Title: Holistic Characterisation of Biomedical materials Produced by CSIRO's Additive Manufacturing Centre

# Symposium I: Composite Materials

## Organizers

### CSM

Lin GENG

Professor of Harbin Institute of Technology

Boming ZHANG

Professor of Beihang University

### JIM

Junya INOUE

Associate Professor of Tokyo University

### KIM

Sang Bok LEE

Principal Researcher of Korea Institute of Materials Science (KIMS)

### MA

Hao WANG

Professor of University of Southern Queensland

### TMS

Rusty Gray III

Los Alamos National Lab

## Keynote Speakers

### CSM

**Prof. Lujun HUANG (Harbin Institute of Technology)**

Paper Title: Improvement of high temperature performance of titanium matrix composites by constructing hierarchical microstructure

**Prof. Bo-Lv XIAO (Institute of Metal Research Chinese Academy of Sciences)**

Paper Title: Effect of Cu/Mg ratio on mechanical properties and fracture behavior of SiCp/Al-Cu-Mg composites

**Prof. Qiang GUO (Shanghai Jiao Tong University)**

Paper Title: Interface-Dominated Mechanical Behavior in Graphene-Reinforced Metal Matrix Composites

### KIM

**Prof. Seungchan CHO (Korea Institute of Materials Science)**

Paper Title: Characteristics of boron carbide reinforced aluminum matrix composites fabricated by casting process

**Prof. HanSang KWON (Pukyung Univiersity)**

Paper Title: Carbon nanotubes reinforced superprofile

## Invited Speakers

### CSM

**Prof. En-Zuo LIU (Tianjin University)**

Paper Title: The Modulation Mechanism of the Electron Distribution at Al<sub>2</sub>O<sub>3</sub>/Al Interface on the Interface Interaction and its Tensile Properties

**Prof. Ping SHEN (Jilin University)**

Paper Title: Wettability and reactivity between molten aluminum and carbon nanotubes

**Prof. Xuexi ZHANG (Harbin Institute of Technology)**

Paper Title: Graphene reinforced aluminum composite prepared by cold drawing

**Prof. Tapas Laha (Indian Institute of Technology (IIT) Kharagpur)**

Paper Title: Mechanical properties of spark plasma sintered graphene nanoplatelet reinforced aluminum based nanocomposites: Synergistic strengthening effect of nano-grained aluminum and GNPs

# Symposium J: Amorphous Alloy and High Entropy Alloys

## Organizers

### CSM

Weihua WANG

Academician, Professor of The Institute of Physics, Chinese Academy of Sciences

Zhaoping LV

Professor of University of Science and Technology Beijing

### JIM

Hidemi KATO

Professor of Tohoku University

### KIM

Hojin RYU

Professor of Korea Advanced Institute of Science and Technology (KAIST)

### MA

Michael FERRY

Professor of New South Wales

### TMS

Evan MA

Johns Hopkins University



## Keynote Speakers

### CSM

**Prof. Weihua WANG(Institute of Physics CAS)**

Paper Title: Liquid-like behaviours of low-dimensional metallic glassy nanoparticles at room Temperature

**Prof. Evan MA (Johns Hopkins University )**

Paper Title: Making glassy solids ductile at room temperature by imparting flexibility into their amorphous structure

### JIM

**Prof. Koichi TSUCHIYA (NIMS)**

Paper Title: Microstructure Control in fcc high entropy alloys - SPD and Phase Transformation

**Prof. Tohru YAMASAKI (University of Hyogo)**

Paper Title: Plastic Deformation of Ni-based and Zr-based Alloys Having Amorphous and Nanocrystalline Dual Phase Structures

### KIM

**Prof. Byeong-Joo LEE (POSTECH)**

Paper Title: Computational Design of High Entropy Alloys

### MA

**Prof. Irina BELOVA (University of Newcastle)**

Paper Title: Self and Interdiffusion in High Entropy Alloys: What We Now Know

**Prof. Xiaopeng LI (UNSW)**

Paper Title: Additive manufacturing of metallic glasses and high entropy alloys: challenges and opportunities

## Invited Speakers

### CSM

**Prof. Jinwoo HWANG (Ohio State University)**

Paper Title: Correlating Structural Heterogeneity to Deformation in Metallic Glasses

**Prof. Xidong HUI (University of Science And Technology Beijing)**

Paper Title: Study on the correlation of the plasticity/toughness with the physical properties and structural heterogeneity for Zr-based bulk metallic glasses

**Prof. Haibo KE (China Academy of Engineering Physics)**

Paper Title: Structural heterogeneity in U-based metallic glasses

**Prof. Lin LIU (Huazhong University of Science and Technology)**

Paper Title: Manufacturing of Metallic Glasses

**Prof. Scott Xingyuan MAO (University of Pittsburgh)**

Paper Title: Single-element Metallic Glasses

**Prof. Ye PAN (Southeast University)**

Paper Title: Controlled microstructures and high photocatalytic efficiency of metal oxides synthesized by amorphous alloys

**Prof. Baolong SHEN (Southeast University)**

Paper Title: Preparation and Mechanical Properties of FeNiMoPCBSi Ferromagnetic Bulk Metallic Glasses

**Prof. Shaolou WEI (Massachusetts Institute of Technology)**

Paper Title: Reverse austenitic transformation in metastable high-entropy alloys

**Prof. Yong YANG (City University of Hong Kong)**

Paper Title: Large-area synthesis of freestanding ultra-thin films of complex alloys: from amorphous to high entropy alloys

**Prof. Evan MA (Johns Hopkins University )**

Paper Title: Ten surprises confronting dislocations in high entropy alloys

**Prof. Zhaoping LV (University of Science and Technology Beijing)**

#### **JIM**

**Prof. Kenji AMIYA (Tohoku University)**

Paper Title: Consolidation of the Ni-Cr-Nb-P-B metallic glass powder

**Prof. Hiroshi OHTANI (Tohoku University)**

Paper Title: Study on thermodynamic properties of high entropy alloys

**Prof. Kazumasa SUGIYAMA (Tohoku University)**

Paper Title: Middle Range Ordering of Zr-based Amorphous Alloys

**Prof. Tomohito TSURU (Japan Atomic Energy Agency)**

Paper Title: First-principles predictions of dislocation motion in high-entropy alloys

**Prof. Takeshi WADA (Tohoku University)**

Paper Title: Preparation high entropy bulk metallic glass with high glass forming ability

**Prof. Kenta YAMANAKA (Tohoku University)**

Paper Title: Additive manufacturing of an equiatomic AlCoCrFeNi high-entropy alloy with electron beam melting

#### **KIM**

**Prof. Rajarshi BANERJEE (University of North Texas)**

Paper Title: Competition Between L12 and B2/L21 Precipitation in FCC Based High Entropy Alloys: Multi-scale Microstructures and Tuning Mechanical Properties

**Prof. Young-Sang NA (Korea Institute of Materials Science)**

Paper Title: Effect of Co content on the mechanical properties of A2 and B2 phases in AlCo<sub>x</sub>CrFeNi high-entropy alloys

**Prof. Ho Jin RYU (KAIST)**

Paper Title: A Combinatorial Study of BCC High Entropy Alloys for Heat Resistant Applications

#### **MA**

**Prof. Nima HAGHDADI (UNSW)**

Paper Title: Material wear map for high entropy alloys

**Prof. Amelia LIU (Monash University)**

Paper Title: Order and structural variability in metallic glasses studied by electron nanodiffraction

**Prof. Paul MUNROE (UNSW)**

Paper Title: Effect of nitrogen content on the microstructure and mechanical and tribological properties of magnetron sputtered FeMnNiCoCr nitride coatings

**Prof. Karl SHAMLAYE (Deakin University)**

Paper Title: Mapping solid-solution space of the Co – Cr – Fe – Ni system via rapid alloy selection and synthesis methods

**Prof. Guoqiang XIE (Harbin Institute Of Technology (Shenzhen))**

Paper Title: Biocompatible Ti-based bulk metallic glasses and the composites

**Prof. Jianqiang WANG (Institute of Metal Research, CAS)**

Paper Title: Impact damage mode in Fe-based amorphous coatings

# Symposium K: Nanocrystalline and Ultrafine-Grained Materials

## Organizers

### CSM

Yue ZHANG

Professor of University of Science and Technology Beijing

Zhiyong TANG

Professor of National Center for Nanoscience and Technology

### JIM

Nobuhiro TSUJI

Professor of Kyoto University

Email: nobuhiro-tsuji@mtl.kyoto-u.ac.jp

### KIM

Jae-il JANG

Professor of Hanyang University

### MA

Kenong XIA

Professor of University of Melbourne

### TMS

Nathan Mara

University of Minnesota

## Keynote Speakers

### CSM

**Prof. Hua ZHANG (City University of Hong Kong)**

Paper Title: Phase Engineering of Novel Nanomaterials

**Prof. Lianzhou WANG (The University of Queensland)**

Paper Title: Nanostructured Semiconductor Photoelectrodes for Solar Energy Conversion

**Prof. Pingheng TAN (Institute of Semiconductors, Chinese Academy of Sciences)**

Paper Title: Peculiar electron phonon coupling in van der Waals two-dimensional heterostructures

**Prof. Ning WANG (Hong Kong University of Science and Technology)**

Paper Title: Probing electron transport in atomically thin semiconducting transition metal dichalcogenides

### JIM

**Prof. Kei AMEYAMA (Ritsumeikan University)**

Paper Title: Harmonic Structure Design: Creation of Innovative High Performance Metallic Materials

**Prof. Kenji HIGASHIDA (Sasebo College)**

Paper Title: Effect of grain refinement due to severe plastic deformation on the brittle-to-ductile transition in a low carbon steel

### KIM

**Prof. Kyung-Tae PARK (Hanbat National University)**

Paper Title: Dynamic Tensile Extrusion Behavior of OFHC Cu having Ultrafine Grains and Fine Grains

### MA

**Prof. Enrique LAVERNIA (University of California, Irvine)**

Paper Title: Fabrication and Mechanical Behavior of Porous Cu via Chemical De-Alloying Method

**Prof. Ruslan VALIEV (Ufa State Aviation Technical University)**

Paper Title: Nanostructural design of metallic materials for superior properties

### TMS

**Prof. Irene BEYERLEIN (UCSB)**

Paper Title: Understanding interface-driven mechanisms in biphasic nanolaminates

## Invited Speakers

### CSM

**Dr. Esko KAUPPINEN (Aalto University School of Science)**

Paper Title: Colorful and Conductive Single-Walled Carbon Nanotube Thin Films for Flexible

## Electronics Applications

### **Dr. Zhiyong FAN (Hong Kong University of Science and Technology)**

Paper Title: Increasing photoluminescence quantum yield by nanophotonic design of quantum-confined halide perovskite nanowire arrays

### **Dr. Xidong DUAN (Hunan University)**

Paper Title: Two Dimensional Lateral Complicated Struture

### **Dr.Zengfeng DI (Shanghai Institute of Microsystem and Information Technology)**

Paper Title: Direct Growth of Single Crystalline Graphene Film on Germanium Substrate

### **JIM**

### **Dr. Yoshiteru AOYAGI (Tohoku University)**

Paper Title: Multiscale Simulation Based on Macroscopic Deformation Model Predicted by Microstructure Information of Ultrafine-grained Metals

### **Dr. Seiichiro II (National Institute for Materials Science (NIMS))**

Paper Title: Direct observation of the dislocation interaction with grain boundary in Ultrafine-Grained IF steels by in-situ TEM technique

### **Dr. Yoshifumi IKOMA (Kyushu University)**

Paper Title: Structural and functional properties of ultrafine-grained Si produced by high-pressure torsion

### **Dr. Daisuke TERADA (Chiba Institute of Technology)**

Paper Title: Effect of severe plastic deformation and subsequent aging on strength-ductility balance of ultra-fine grained Al-Si-Mg alloy

### **Prof. Yoshikazu TODAKA (Toyohashi University of Science and Technology)**

Paper Title: Phase transformation of Ti-Mg alloys by heavy plastic deformation

### **KIM**

### **Prof. In-Chul CHOI (Kumoh National Institute of Technology)**

Paper Title: Analysis on temperature- and rate-dependent nanomechanical behavior of nanocrystalline high-entropy alloys through high-temperature nanoindentation

### **Prof. Nokeun PARK (Yeungnam University)**

Paper Title: Strength-ductility balance in an ultrafine-grained non-equiatomic Fe<sub>50</sub>(CoCrMnNi)<sub>50</sub> medium-entropy alloy with a fully recrystallized microstructure

### **Dr. Jin-Yoo SUH (Korea Institute of Science and Technology (KIST))**

Paper Title: Accumulated roll bonding of high Cr steel at elevated temperatures

### **MA**

### **Dr. Yan HUANG (Brunel University)**

Paper Title: The effect of solutes and second-phase particles on grain refinement during ECAP in Al alloys

### **Dr. Zakaria QUADIR (Curtain University)**

Paper Title: Utilizing solute solution drag of Nb in Ni for fabricating multilayered structures in a sheet metal

**Dr. Glenn SNEDDON (University of Sydney)**

Paper Title: Investigating deformation in nanocrystalline materials using in-situ transmission Kikuchi diffraction

**Dr. Ahmad ZAFARI (University of Melbourne)**

Paper Title: Grain refinement in a metastable beta Ti alloy deformed to large strains at high strain rates

**TMS**

**Dr. Eric HINTSALA (Bruker Nano Surfaces)**

Paper Title: Evaluating microstructures and interfaces by high speed nanoindentation mapping

**Dr. Jessica KROGSTAD (University Of Illinois, Urbana-Champaign)**

Paper Title: Interplay between thermal stability and environmental tolerance in nanocrystalline alloys

# Symposium L: Computational Design and Simulation of Materials

## Organizers

### CSM

Tongyi ZHANG  
Academician, Professor of Shanghai University  
Zhimei SUN  
Professor of Beihang University

### JIM

Shigenobu OGATA  
Professor of Osaka University

### KIM

Byeong-Joo LEE  
Professor of Pohang University of Science and Technology (POSTECH)

### MA

Salvy RUSSO  
Professor of RMIT

### TMS

Saryu FENSIN  
Los Alamos National Lab  
Michele MANUEL  
University of Florida



## Keynote Speakers

### CSM

**Prof. Jeffrey REIMERS (Shanghai University)**

Paper Title: Van Der Waals Forces Control Both The Internal Chemical Structure Within Abp2X6 Monolayers And Ferroelectric/Antiferroelectric Interlayer Stacking

**Prof. Tongyi ZHANG (Shanghai University)**

Paper Title: Surface induced size-dependent thermodynamic properties of nanomaterials

### KIM

**Prof. Kwang-Ryeol LEE (Korea Institute of Science and Technology)**

Paper Title: Materials Design by Computation

### MA

**Prof. Jared COLE (RMIT Univeristy)**

Paper Title: The materials science of Josephson junctions: modelling their formation and electrical response from an atomistic point of view

**Prof. Tiffany WALSH (Deakin University)**

Paper Title: Molecular Modelling of Bio/Nano Interfaces: Materials for Bio-sensing, Energy, and Catalysis

## Invited Speakers

### CSM

**Dr. Koushik BISWAS (Indian Institute Of Technology Kharagpur)**

Paper Title: Density functional study on Energy Materials: Possibilities and Prediction

**Prof. Ying CHEN (Tohoku University)**

Paper Title: Fermi surface stability analysis in Fe-rich Si alloy

**Dr. Alan LUO (The Ohio State University)**

Paper Title: Integrated Computational Materials Engineering (ICME) for Lightweight Metallic Materials and Manufacturing

**Prof. Riccardo MAZZARELLO (RWTH Aachen University)**

Paper Title: First-principles investigation of ultrathin films of phase-change materials

**Prof. Zhimei SUN (Beihang University)**

Paper Title: Accelerating Phase-Change Materials Design by Integrating High-Throughput Ab Initio Calculations with Experiments

**Prof. Yunjiang WANG (Institute of Mechanics, Chinese Academy of Sciences)**

Paper Title: Understanding the collective diffusion of amorphous solids: an accelerated MD study

**Dr. Hui YU (Institute of Metal Research, Chinese Academy of Sciences)**

Paper Title: DFT calculations of generalized stacking fault energies and critical shear stresses of alpha-titanium alloys: On the plastic deformation anisotropy and dwell fatigue susceptibility

**Prof. Wei ZHANG (Xi'an Jiaotong University)**

Paper Title: Designing crystallization in phase-change materials for universal memory

**Dr. Yoshitaka ADACHI (Nagoya University)**

Paper Title: Machine learning/advanced mathematics-assisted microstructure quantification

**KIM**

**Prof. Seungwu HAN (Seoul National University)**

Paper Title: Data-driven material research based on first-principles calculations

**Prof. Hyuck Mo LEE (Korea Advanced Institute of Science and Technology)**

Paper Title: High Throughput Screening of Alloy Catalysts for PEMFC and Machine Learning Prediction of Chemisorption

**Prof. Donghwa LEE (Pohang University of Science and Technology)**

Paper Title: First-Principles-based Novel Materials Design for Pb-free hybrid Perovskite

**MA**

**Prof. Mike FORD (University of Technology Sydney)**

Paper Title: High Throughput Materials Discovery Using a Combination of Density Functional Theory and Artificial Intelligence

**Dr. Marlies HANKEL (University of Queensland)**

Paper Title: Layered two-dimensional materials as anode and cathode in metal ion batteries

**Prof. Zhe LIU (University of Melbourne)**

Paper Title: Computational Design of Two-Dimensional Smart Energy Conversion and Energy Storage Materials

**Prof. Nikhil MEDHEKAR (Monash University)**

Paper Title: In-Silico Investigation of Electrode Materials for Rechargeable Magnesium Batteries

**Dr. Asaph WIDMER-COOPER (University of Sydney)**

Paper Title: Colloidal Stability of Apolar Nanoparticles

**TMS**

**Dr. Fadi ABDELJAWAD (Clemson)**

Paper Title: Atomistic and Mesoscale Modeling of Sintering Kinetics: Application to Additive Manufacturing

**Dr. Darby LUSCHER (LANL)**

Paper Title: Continuum dislocation-density based models for the dynamic shock response of single-crystal and polycrystalline materials

**Dr. Dallas TRINKLE (UIUC)**

Paper Title: Computational approaches for mass transport calculations

# Symposium M: Renewable Energy Materials and Nuclear Materials

## Organizers

### CSM

Min ZHU

Professor of South China University of Technology

Yuan DENG

Professor of Beihang University

Guanghong LU

Professor of Beihang University

### JIM

Tetsuya UDA

Professor of Kyoto University

### KIM

Taek-Soo KIM

Principal Researcher of Korea Institute of Industrial Technology (KITECH)

### MA

Dmitri GOLBERG

Professor of Queensland University of Technology

### TMS

Assel AITKALIYEVA

University of Florida

## Keynote Speakers

### CSM

**Prof. Tiejun ZHU (Zhejiang University)**

Paper Title: Defective Half-Heusler Thermoelectric Compounds

**Prof. Etsuo AKIBA (Kyushu University )**

Paper Title: TiFe and related alloys for energy storage

### KIM

**Prof. Jong-Hyeon LEE (Chungnam National University)**

Paper Title: Alternative ways of producing group IV metals through a liquid copper-aided direct reduction process of oxide feedstocks

### MA

**Prof. Ying CHEN (Deakin University)**

Paper Title: Solving Major Challenges in Lithium-Sulfur Batteries

**Prof. Sasaki TAKAYOSHI (NIMS)**

Paper Title: Construction of Superlattice-like Sandwich Structures from 2D Oxide and Hydroxide Nanosheets towards Superior Energy Storage and Conversion

## Invited Speakers

### CSM

**Prof. Zhigang CHEN (University of Southern Queensland)**

Paper Title: High-Performance Thermoelectric Materials: Progress and Applications

**Prof. Shaojun GUO (Peking University)**

Paper Title: Stain-Controlled Energy Electrocatalysis on Multimetallic Nanomaterials

**Dr. Renzong HU (South China University of Technology)**

Paper Title: Advanced Sn-based anode materials for Li storage

**Dr. Chenyang LU (Xi'an Jiaotong University)**

Paper Title: Enhancing irradiation tolerance in single-phase concentrated solid solution alloys by tuning chemical complexity

**Prof. James STUBBINS (University Of Illinois At Urbana-Champaign)**

Paper Title: Neutron Irradiation Behavior of Fe-Cr Alloys, from Model to Engineering Alloy Compositions

**Prof. Xiaoqiu YE (China Academy of Engineering Physics)**

Paper Title: In-situ investigation of hydrogen induced corrosion of titanium

**Dr. Hongbo ZHOU (Beihang University)**

Paper Title: Towards understanding the influence of Re on H dissolution and retention in W by

investigating the interaction between dispersed/aggregated-Re and H

**KIM**

**Dr. Young-Joo EO (Korea Institute of Energy Research)**

Paper Title: Development of commercialization technology of CIGS thin film solar cell at KIER

**MA**

**Prof. Ajayan VINU (University of New Castle)**

Paper Title: Advanced Nanoporous Nitrides for Energy and Environmental Applications

**Prof. Xi WANG (Beijing Jiaotong University)**

Paper Title: Atom-realm effects of 2D hereroatomic nanosheets: atomic mechanisms and application

**Dr. Jing TANG (University of Queensland)**

Paper Title: Novel Porous Carbon Produced by Elaborately Design of Metal-Organic Frameworks

**TMS**

**Dr. Jie LIAN (Rensselaer Polytechnic Institute)**

Paper Title: High-Density Uranium Silicide Fuels – Radiation Response and Oxidation Resistance

**Dr. James STUBBINS (University of Illinois at Urbana-Champaign)**

Paper Title: Development of Austenitic Oxide Dispersion Strengthened Alloys for Nuclear Applications

**Dr. Mitra TAHERI (Drexel U.)**

**Dr. Janelle WHARRY (Purdue U.)**

Paper Title: Role of Irradiation and Weld-Induced Post-Irradiation Annealing on Deformation Mechanisms in 304L Stainless Steel

# Symposium N: Additive Manufacturing and Powder Metallurgy

## Organizers

### CSM

Huiping TANG

Professor of Northwest Institute for Nonferrous Metal Research

Yong LIU

Professor of Central South University

### JIM

Yuichiro KOIZUMI

Professor of Osaka University

### KIM

Kee-Ahn LEE

Professor of Inha University

### MA

Qian MA

Professor of RMIT

### TMS

Ed HERDERICK

Ohio State University

## Keynote Speakers

### CSM

**Prof. Xiang XIONG (Central South University)**

Paper Title: PM materials and new technologies in automotive industry

**Prof. Guoqing ZHANG (AVIC Beijing Institute of Aeronautical Materials (BIAM))**

Paper Title: Development and applications of gas atomisation and spray forming for high performance alloys

### JIM

**Prof. Akihiko CHIBA (Tohoku University)**

Paper Title: Effects of powder quality on fatigue strength of Ti-6Al-4V alloy fabricated by electron beam additive manufacturing

### KIM

**Prof. Jai-Sung LEE (Hanyang University)**

Paper Title: Progress in Bimodal Metal Nanopowder Processing

### MA

**Prof. Ma QIAN (RMIT University)**

Paper Title: The needs for 3D-printed bone replacement and repair in Australia and technical challenges

**Prof. Tim SERCOMBE (The University of Western Australia)**

Paper Title: Selective laser melting of titanium for biomedical applications

## Invited Speakers

### CSM

**Prof. Yunping LI (Central South University)**

Paper Title: Ultrahigh Oxidation Resistance and High Electrical Conductivity in Copper Silver Powder

**Prof. Yong LIU (Central South University)**

Paper Title: Manufacturing complex-component alloys by using powder metallurgy

**Prof. Xuanhui QU (University of Science & Technology Beijing)**

Paper Title: Net-shape Forming and Microstructure Controlling of Tungsten Products

**Prof. Huiping TANG (Northwest Institute for Nonferrous Metal Research)**

Paper Title: Refractory metals fabricated by selective electron beam melting

**Dr. Changshu XIANG (Xi'an Sailong Metal Materials Co., Ltd.)**

Paper Title: Research and Development Progress in Production of Refractory Metal Powders by Plasma Rotating Electrode Process

**Dr. Lijuan ZHANG (National Innovation Institute of Additive Manufacturing)**

Paper Title: Properties and Heat-treatment of High Entropy Alloy CoCrFeMnNi Manufactured in SLM Process

**Prof. Ming YAN (Southern University of Science and Technology)**

Paper Title: Ultra low cost powders for additive manufacturing of Ti and Ti alloys

### JIM

**Dr. Koji KAKEHI (Tokyo Metropolitan University)**

Paper Title: Microstructure and high-temperature properties of Ni-base superalloys fabricated by selective laser melting

**Prof. Takeshi FUJITA (Kochi University of Technology)**

Paper Title: Hierarchical Nanoporous Copper by 3D Printing Technique for Highly Efficient Catalysts

**Prof. Naoyuki NOMURA (Tohoku University)**

Paper Title: Microstructure and mechanical properties of Cu-Cr-Zr alloy builds fabricated by powder bed fusion process using fiber laser

**Prof. Yoshimi WATANABE (Nagoya Institute of Technology)**

Paper Title: Selective Laser Melting of Ti-6Al-4V and Al with Heterogeneous Nucleation Site Particles

**Prof. Makoto WATANABE (National Institute For Materials Science)**

Paper Title: Image analysis for microstructure and property evaluations on SLM Ti-6Al-4V alloy

**Prof. Shi-Hai SUN (Osaka University)**

Paper Title: Development of crystallographic texture with scanning strategy in selective laser melting

**KIM**

**Dr. Kee-Ahn LEE (Inha University)**

Paper Title: Microstructure and high temperature mechanical properties of particle reinforced 316L stainless steel composites manufactured by selective laser melting process

**Prof. Shi-Hoon CHOI (Suncheon National University)**

Paper Title: Deformation and fracture behaviors of 316L stainless steels fabricated by SPS and SLM techniques under uniaxial tension

**Prof. Yoon Suk CHOI (Pusan National University)**

Paper Title: Numerical and experimental studies on melt-pool scale behaviors of metal layers processed by Direct Energy Deposition (DED) and Powder Bed Fusion (PBF) techniques

**Prof. Pan WANG (Singapore Institute of Manufacturing Technology (SIMTech))**

Paper Title: Additively manufactured CoCrFeNiMn-xTi high-entropy alloy via electron beam melting

**MA**

**Prof. Kate FOX (RMIT University)**

Paper Title: Recent advances at the implant bio interface

**Dr. Stefan GULIZIA (CSIRO)**

Paper Title: Development of a Titanium Manufacturing Industry in Australia

**Prof. Huijun LI (University of Wollongong)**

Paper Title: In-situ alloying with twin wire arc based additive manufacturing

**Prof. Andrey MOLOTNIKOV (Monash University)**

Paper Title: Additive Manufactured TiTa Alloys for Biomedical Applications

**Dr. Dong QIU (RMIT University)**

Paper Title: Developing low-cost, high-strength Ti-Cu alloys through laser metal deposition

**Prof. Dong RUAN (Swinburne University of Technology)**

Paper Title: Mechanical Properties of Auxetic Structures

**Prof. Wei XU (Deakin University)**

Paper Title: Controlling microstructure in situ in additively manufactured Ti-6Al-4V by selective laser melting

**TMS**

**Dr. Thoma DAN (University of Wisconsin)**

Paper Title: Design Innovations with Metal Additive Manufacturing



# Symposium O: Electronic and Spin Electron Materials

## Organizers

### CSM

Hongda CHEN

Professor of Institute of Semiconductors, Chinese Academy of Sciences

Feng PAN

Professor of Tsinghua University

### JIM

Rie Y. UMETSU (Ms.)

Associate Professor of Tohoku University

### KIM

Joonyeon CHANG

Director-General of Korea Institute of Science and Technology (KIST)

### MA

Lianzhou WANG

Professor of University of Queensland

## Keynote Speakers

### CSM

**Prof. Xiufeng HAN (Institute of Physics, Chinese Academy of Sciences)**

Paper Title: Magnon Valve and Magnon Junction Effects

**Prof. Chih-Huang LAI (National Tsing Hua University)**

Paper Title: Manipulating exchange bias by spin-orbit torque

**Prof. Lane W. MARTIN (University of California, Berkeley)**

Paper Title: Emergent Skyrmion and Topological Phases in Ferroic Superlattices

**Prof. Junsaku NITTA (Tohoku University)**

Paper Title: Spin-orbit torque in epitaxial Pt/Co bilayer systems

**Prof. Dieter WEISS (University of Regensburg)**

Paper Title: Spin-Orbit Interaction at Epitaxial Fe/GaAs Interfaces & Spin Injection and Detection in 2DES

**Prof. Hyunsoo YANG (National University Of Singapore)**

Paper Title: Spin-Orbit Technologies: From Magnetic Memory To Terahertz Generation

### KIM

**Prof. Young Keun KIM (Korea University)**

Paper Title: Spin-orbit torque switching in heavy metal-ferromagnet junctions for memory devices

### MA

**Prof. Rachel CARUSO (RMIT)**

Paper Title: Fabricating inorganic materials with structural control

**Prof. Chuan ZHAO (UNSW)**

Paper Title: Nickel-Iron Based Catalysts for Water Electrolysis

## Invited Speakers

### CSM

**Dr. Minori GOTO (Osaka University)**

Paper Title: Heat controlled magnetic anisotropy effect

**Dr. Wei HAN (Peking University)**

Paper Title: Spintronics in Quantum Materials

**Dr. Cheng SONG (Tsinghua University)**

Paper Title: Spin-orbit Torque Switching in Antiferromagnets

**Dr. Xiuzhen YU (University of Tokyo)**

Paper Title: Imaging topological electron-spin textures by using atomic-resolution Lorentz TEM

**Dr. Ming LIU (Xi'an Jiaotong University)**

Paper Title: Voltage control of interfacial magnetism in multiferroic based spintronic devices

**Dr. Weisheng ZHAO (Beihang University)**

Paper Title: Microscopic studies of spin dynamics with combined effect of multidimensional magnetic field and electric current

**Dr. Tai MIN (Xi'an Jiaotong University)**

Paper Title: A Novel Electric-Field-Assisted-Switching STT-MRAM Design for Sub-Nanosecond Low Energy Writing

**Dr. Byong-Guk PARK (KAIST)**

Paper Title: Complementary logic operation based on spin-orbit torque

**KIM**

**Dr. Gyung-Min CHOI (Sungkyunkwan University)**

Paper Title: Spin generation from ultrafast perturbation of magnetization

**MA**

**Dr. Ziyuan LI (Australian National University)**

Paper Title: Optoelectronic characterisation of III-V semiconductor nanowire structures and devices

**Prof. Ziqi SUN (Queensland University of Technology)**

Paper Title: Two-dimensional metal oxide nanomaterials for energy applications

# **Symposium P: Dynamic Behaviour of Materials**

## **Organizers**

Marc Andre Meyers, Professor of University of California, San Diego

Na Yan, Professor of Northwestern Polytechnical University

## Keynote Speakers

### CSM

**Prof. Lanhong DAI (Institute of Mechanics, Chinese Academy of Sciences)**

Paper Title: Dynamic fracture of metallic glasses under shock loadings

**Prof. Lei LU (National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences)**

Paper Title: Strengthening and Work Hardening in Gradient Nanotwinned Metals

### TMS

**Prof. Marc Andre MEYERS (University of California, San Diego)**

Paper Title: Superior Dynamic Response of CrCoNi-Based High-Entropy Alloys

## Invited Speakers

### CSM

**Dr. Chunhuan GUO (Harbin Engineering University)**

Paper Title: Investigation on the adiabatic shear behavior of heat-treated Ti-6Al-4V alloy under different strain rates

**Dr. Yazhou GUO (Northwestern Polytechnical University)**

Paper Title: Temperature Rise Associated with Adiabatic Shear Band: Causation or Consequence

**Prof. Tao SUO (Northwestern Polytechnical University)**

Paper Title: The effect of texture on the evolution of adiabatic shear band: experiment and simulation

**Dr. Bingfeng WANG (Central South University)**

Paper Title: Microstructure and mechanical properties of a FeCoNiCrMn high entropy alloy at high velocity loading

**Dr. Na YAN (Northwestern Polytechnical University)**

Paper Title: Shear Localization and Microstructural Evolution in Dynamic Deformation Process

**Dr. Pengfei WANG (University Of Science And Technology Of China)**

Paper title: Rate-dependent plastic instability mechanisms of aluminum alloy with the effect of interface behaviors

### MA

**Dr. Juan Pablo ESCOBEDO(UNSW Canberra at the Australian Defence Force Academy)**

Paper Title: Dynamic fracture mechanisms in multiphase materials

### TMS

**Dr. Zezhou LI (University of California, San Diego)**

Paper Title: Dynamic behavior of Ultrafine-grained and noncrystalline titanium at cryogenic temperature

**Dr. Joanna McKittrick (University of California, San Diego)**

Paper Title: Impact resistant natural polymer composites: Hooves and horns

**Dr. Shiteng ZHAO (University of California, Berkeley)**

Paper Title: Revealing the laser shock-induced amorphous silicon by advanced electron microscopy

**Others**

**Prof. Pedro MIRANDA (University of Extremadura, Spain)**

Paper Title: Bioinspired ceramic/polymer segmented armour