

Symposium M : Nano Materials and Nano Severe Plastic Deformation

November 20 (Mon.), 2023

Session Title : Nano Materials and Nano Severe Plastic Deformation 1

Time : 10:50 - 12:30, Nov. 20

Room # : 402A, 4F

Session Chair : Yoon Suk Choi, Pusan National University

10:50 – 11:20 Keynote **K-M1085**

Heterostructured Materials: A Fast-Developing New Materials Field

Yuntian Zhu, City University of Hong Kong, China

11:20 – 11:40 Invited **I-M0781**

Ligament size effect in creep of nanoporous gold

Ju-Young Kim, Ulsan National Institute of Science and Technology, Korea

11:40 – 12:00 Invited **I-M1073**

Novel properties of plasmonic metal nanostructures for sensing and cancer therapy: a case study of hollow gold nanospheres

Jin Zhang, University Of California Santa Cruz, USA

12:00 – 12:15 **O-M0565**

Ultra-high strength and ductility of a multiple component alloy with heterogeneous grains and precipitates

Yong Zhang, Nanjing University of Science And Technology, China

12:15 – 12:30 **O-M1155**

Polymer Alloying by Severe Plastic Deformation (SPD) - New Potential of Producing Materials with Exceptional Properties

Yajun ZHAO, Dalian Jiaotong University, China

Session Title : Nano Materials and Nano Severe Plastic Deformation 2

Time : 14:00 - 15:30, Nov. 20

Room # : 402A, 4F

Session Chair : Dong-Hyun Lee, Chungnam National University

14:00 – 14:30 Keynote **K-M0849**

Augmenting Metal Properties via Cohesive Interfaces between Metallic and Nonmetallic Phases

Seung Zeon Han, Korea Institute of Materials Science, Korea

- 14:30 – 14:50** **Invited** **I-M0342**
Effect of Surface-nanostructure Layer Formed by Heavy Plastic Deformation Process on Rolling Contact Fatigue of Steels
Yoshikazu Todaka, Toyohashi University of Technology, Japan
- 14:50 – 15:05** **O-M0110**
Optimization of Strength-ductility synergy of gradient-structured Cu-Al-Zn via low temperature annealing
Xinkun Zhu, Kunming University of Science and Technology, China
- 15:05 – 15:20** **O-M0336**
Analysis of microstructure effects on strength and electrical conductivity of Cu/Nb nanolaminates
Takayuki Shiraiwa, The University of Tokyo, Japan

Session Title : Nano Materials and Nano Severe Plastic Deformation 3

Time : 16:00 -18:00, Nov. 20

Room # : 402A, 4F

Session Chair : Yuntian Zhu, City University Of Hong Kong

Ju-Young Kim, Ulsan National Institute of Science and Technology

- 16:00 – 16:30** **Keynote** **K-M0696**
On nanoindentation of severe plastic deformation processed structural alloys
Jae-il Jang, Hanyang University, Korea
- 16:30 – 16:50** **Invited** **I-M0559**
Ultra-sensitive thin film metal crack sensor for reliability assessment
Seung-Kyun Kang, Seoul National University, Korea
- 16:50 – 17:10** **Invited** **I-M0354**
Characteristic Lengths of Nanostructured Metals observed in Atomic Simulations
Tomotsugu Shimokawa, Kanazawa University, Japan
- 17:10 – 17:25** **O-M1022**
Ultrafine-grained AZ61 alloy produced by high-pressure sliding
Intan Fadhlina Mohamed, Universiti Kebangsaan Malaysia, Malaysia
- 17:25 – 17:40** **O-M1117**
Recent Advancements in Constrained Groove Pressing Process
Sunil Kumar, S. V. National Institute of Technology Surat, Indian
- 17:40 – 17:55** **O-M1110**

Fabrication and characterization of ultrathin copper foils by accumulative pack rolling process
Ning Nie, University of Wollongong, Australia

November 21 (Tue.), 2023

Session Title : Nano Materials and Nano Severe Plastic Deformation 4

Time : 10:50 - 12:30, Nov. 21

Room # : 402A, 4F

Session Chair : Seung-Kyun Kang, Seoul National University

Tomotsugu Shimokawa, Kanazawa University

10:50 – 11:20 Keynote **K-M1103**

An Integrated Experimental and Molecular Modelling Approach to Investigate Tribological Mechanics in Hot Metal Forming

Kiet Tieu, University of Wollongong, Australia

11:20 – 11:40 Invited **I-M0848**

Vacancy-enhanced Twinnability of Cu-In Alloys

Eun Ae Choi, Korea Institute of Materials Science, Korea

11:40 – 11:55 **O-M0218**

Anisotropy in Interfacial Sliding Phenomenon in Cu/Nb ARB (Accumulated Rolling Bonding) Nanolaminates as Revealed by In Situ Synchrotron Microdiffraction – Enabling Atomic Reconfigurations in Interfaces for Stretchable Metallic Conductors

Arief BUDIMAN, Oregon Institute of Technology, USA

11:55 – 12:10 **O-M0319**

Multiscale modelling of the fatigue behavior of accumulative roll bonded Cu/Nb laminates

Fabien Briffod, The University of Tokyo, Japan

12:10 – 12:25 **O-M1007**

Aluminum-Magnesium alloys synthesized by high-pressure torsion for application as anodes in Al-air batteries

Jorge M. Cubero-Sesin, Costa Rica Institute of Technology, Costa Rica

Session Title : Nano Materials and Nano Severe Plastic Deformation 5

Time : 14:00 - 15:35, Nov. 21

Room # : 402A, 4F

Session Chair : Kiet Tieu, University of Wollongong

Eun Ae Choi, Korea Institute of Materials Science

14:00 – 14:30 **Keynote** **K-M1100**

In situ TEM for nanomaterial deformation analysis

Dmitry Golberg, Queensland University of Technology, Australia

14:30 – 14:50 **Invited** **I-M1175**

Evaluation of Mechanical Properties of Irregularly Structured Nanomaterials - Utilization of Nanoindentation Techniques

Dongyun Lee, Pusan National University, Korea

14:50 – 15:05 **O-M1096**

Biomolecule-initiated interior hotspots for rapid SERS recognition of infectious diseases

Yi Ding, State Grid Smart Grid Research Institute Co. Ltd., China

15:05 – 15:20 **O-M0692**

Exploring the Influences of Combined Pre-straining and Hydrogenation on the Nanomechanical Behavior of Selectively Laser Melted High-Entropy Alloy

Zhe Gao, Hanyang University, Korea

15:20 – 15:35 **O-M0067**

Antiferromagnetic nanosheet VSxO2-x for microwave absorption in high and low band by adjusting

Zihan Jiang, Northeastern University-shenyang, China

Session Title : Nano Materials and Nano Severe Plastic Deformation 6

Time : 16:00 -18:00, Nov. 21

Room # : 402A, 4F

Session Chair : Dmitry Golberg, Queensland University of Technology

Dongyun Lee, Pusan National University

16:00 – 16:30 **Keynote** **K-M1095**

Gradient cell structured alloys with superior mechanical behaviour

Lei Lu, Institute of Metal Research, Chinese Academy of Sciences, China

16:30 – 16:50 **Invited** **I-M1151**

Hydrogen effects on the nanomechanical behavior of nanostructured high-entropy alloys

Yakai Zhao, Agency For Science, Technology And Research (A*STAR), Singapore

- 16:50 – 17:05** **O-M0348**
Effect of layer thickness on the fatigue properties of accumulative roll bonded Cu/Nb laminates
 Koki Yasuda, The University of Tokyo, Japan
- 17:05 – 17:20** **O-M0823**
Grain Boundary Distributions of Extra-Hardened Al-3mass%Mg alloy by ECAE
 Taiki Morishige, Kansai University, Japan
- 17:20 – 17:35** **O-M0825**
Mechanical Characterization of Thin Films via Constant Strain Rate Membrane Deflection Experiments
 Gi-Dong Sim, Korea Advanced Institute of Science and Technology, Korea
- 17:35 – 17:50** **O-M0964**
High-throughput bulk nanostructured metal and alloys fabrication via ultrasonic shot peening and electrical pulsing treatment
 Fei Yin, Wuhan University of Technology, China

November 22 (Wed.), 2023

Session Title : Nano Materials and Nano Severe Plastic Deformation 7

Time : 10:50 - 12:30, Nov. 22

Room # : 402A, 4F

Session Chair : Lei Lu, CAS

Yakai Zhao, A*STAR

- 10:50 – 11:20** **Keynote** **K-M0165**
Strengthening of pure Ti by severe plastic deformation: use of grain refinement and allotropic transformation
 Zenji Horita, Saga University, Japan
- 11:20 – 11:40** **Invited** **I-M1090**
Alkaline carbonate as high temperature lubricant for hot metal forming
 Long Wang, Northwestern Polytechnical University, China
- 11:40 – 12:00** **Invited** **I-M1106**
An ultrafine-grained cost-effective medium entropy alloy with promising mechanical and tribological properties: Development and potential applications
 Guanyu Deng, The University of Queensland, Australia
- 12:00 – 12:15** **O-M0318**
Impact of high-pressure torsion on crystal structural and functional properties of Si and Ge

Yoshifumi Ikoma, Kyushu University, Japan

12:15 – 12:30

O-M0320

Fabrication of Rocksalt Structure of ZnO using Severe Plastic Deformation under High Pressure

Yongpeng Tang, Kyushu University, Japan

Session Title : Nano Materials and Nano Severe Plastic Deformation 8

Time : 14:00 - 15:05, Nov. 22

Room # : 402A, 4F

Session Chair : Zenji Horita, Saga University

Guanyu Deng, The University of Queensland

14:00 – 14:20

Invited

I-M1089

Grain boundary induced deformation mechanisms in nanocrystalline metals by molecular dynamics simulation

Liang Zhang, Chongqing University, China

14:20 – 14:35

O-M0813

Biomolecule-initiated interior hotspots for rapid SERS recognition of infectious diseases

Soo Hyun Lee, Korea Institute of Materials Science, Korea

14:35 – 14:50

O-M0934

Residual stress and mechanical properties of H beam with pile up by instrumented indentation test

So-hyeon Lee, Ulsan National Institute of Science and Technology, Korea

14:50 – 15:05

O-M0981

Correlation analysis between low temperature impact toughness and microstructure depending on heat treatment of 9% Ni steel

Younghoon Kim, Ulsan National Institute of Science and Technology, Korea

15:05 – 15:20

O-M1074

The Design and Mechanism Study of new zero dimensional carbon/nitride quantum dots with high antioxidant activity

Yan Li, University Of Science And Technology Beijing, China