

## Symposium K : High-Entropy Materials and Amorphous Materials

November 20 (Mon.), 2023

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Session Title : High-Entropy Materials and Amorphous Materials 1

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

Room # : Samda Hall B, 3F

Session Chair : En MA, Xi'an Jiaotong University

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**10:50 – 11:20**    **Keynote** K-K0493

**Favourable strengthening mechanism in CrCoNi medium entropy alloy: an in situ neutron diffraction study**

Wan Chuck WOO, Korea Atomic Energy Research Institute, Korea

**11:20 – 11:40**    **Invited** I-K0780

**A new approach to quantify short-range ordering (SRO) using atom probe tomography (APT) in CoCrNi alloys**

Mengwei He, The University of Sydney, Australia

**11:40 – 12:00**    **Invited** I-K1027

**Long-Tail Effect Combined High-Throughput Design of Cu-based High-entropy Alloys**

Yong ZHANG, University of Science and Technology Beijing, China

**12:00 – 12:15** O-K0866

**Bulk and grain boundary tracer diffusion in multiphase AlCoCrFeNiTi0.2 compositionally complex alloy**

Ruixuan Li, University of Science and Technology Beijing, China

**12:15 – 12:30** O-K0738

**A novel methodology to estimate hydrogen diffusivity and its applications in revealing hydrogen effects in CoCrNi medium-entropy alloy versus 316L stainless steel**

Dong-Hyun Lee, Chungnam National University, Korea

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Session Title : High-Entropy Materials and Amorphous Materials 2

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

Room # : Samda Hall B, 3F

Session Chair : Wan Chuck WOO, Korea Atomic Energy Research Institute

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**14:00 – 14:30**    **Keynote** K-K0452

**Opportunities for FCC High/Medium-Entropy Alloys**

Koichi Tsuchiya, NIMS, Japan

14:30 – 14:50      **Invited**      I-K0698

**Cost-Effective High-Entropy Alloys with Superior Properties**

Yin Yu, University of Queensland, Australia

14:50 – 15:10      **Invited**      I-K1035

**Nanostructure engineering toward high-performance multiple principle alloys**

Xianghai An, The University of Sydney, Australia

15:10 – 15:25      **Invited**      I-K0999

**Advancements of eutectic high-entropy alloys**

Yiping Lu, Dalian University of Technology, China

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Session Title : High-Entropy Materials and Amorphous Materials 3

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

Room # : Samda Hall B, 3F

Session Chair : Koichi Tsuchiya, National Institute for Materials Science

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16:00 – 16:30      **Keynote**      K-K0852

**Strength-ductility synergy via unusual deformation mechanism in HEAs**

En MA, Xi'an Jiaotong University, China

16:30 – 16:50      **Invited**      I-K1053

**Enhancing mechanical properties of multi-principal element alloys through phase engineering**

Yujie Chen, University of Adelaide, Australia

16:50 – 17:10      **Invited**      I-K0704

**Mechanical behavior of hetero-structured ferrous medium-entropy alloy**

Jae Wung Bae, Pukyong National University, Korea

17:10 – 17:30      **Invited**      I-K0822

**A strong and ductile NiCoCr-based medium-entropy alloy strengthened by coherent nanoparticles with superb thermal-stability**

Jinyu ZHANG, Xi'an Jiaotong University, China

17:30 – 17:45      O-K0429

**Formation of ultra-fine-grained microstructure in CoCrFeMnNiAl high-entropy alloy by high-speed shear deformation followed by heat treatment**

Shunsuke Nakamura, Kobe University, Japan

17:45 – 18:00      O-K0695

**Low-cycle fatigue response of an equiatomic CrFeNi multi-principal element alloy**

Ankur Chauhan, Indian Institute Of Science, Bengaluru, India

**November 21 (Tue.), 2023**

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Session Title : High-Entropy Materials and Amorphous Materials 4

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

Room # : Samda Hall B, 3F

Session Chair : Yong ZHANG, University of Science and Technology Beijing

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**10:50 – 11:20**     **Keynote** **K-K0163**

**Welding of high entropy alloys and its use for welding fillers**

Nam Hyun Kang, Pusan National University, Kora

**11:20 – 11:35** **O-K0105**

**High-Temperature Oxidation Behavior of Novel High Entropy Alloys Fabricated via Additive Manufacturing**

Lee Jhuo Lun, National Tsing Hua University, Taiwan

**11:35 – 11:50** **O-K0985**

**Comparative study on various non-equiatomic High Entropy Steel processed by Mechanical Alloying and Spark Plasma Sintering**

Harsh Jain, IIT BHU, Varanasi-India, India

**11:50 – 12:05** **O-K0198**

**Solidification of undercooled FeCoNiSn<sub>0.95</sub> eutectic high entropy alloy**

Fan Zhang, Northwestern Polytechnical University, China

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Session Title : High-Entropy Materials and Amorphous Materials 5

Time : 14:00 - 15:40, Nov. 21

Room # : Samda Hall B, 3F

Session Chair : Nam Hyun Kang, Pusan National University

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**14:00 – 14:20**     **Invited** **I-K0777**

**Design and Development of Refractory High-entropy Alloys via An Experimentally Driven High-throughput Approach**

Saryu Fensin, Los Alamos National Laboratory, USA

**14:20 – 14:40**     **Invited** **I-K0633**

**Systematic investigation regarding solid-solution strengthening in Refractory High Entropy Alloys**

Gi An Song, Kongju National University, Korea

**14:40 – 15:00**     **Invited** **I-K0268**

**Mechanical properties of a high entropy bcc TiZrNbHfTa refractory alloy**

Masaki Tanaka, Kyushu University, Japan

15:00 – 15:20 Invited

I-K0978

**Overcoming oxygen embrittlement of refractory high-entropy alloy via grain boundary engineering**

Yuan WU, University of Science and Technology Beijing, China

15:20 – 15:40 Invited

I-K0111

**First-principles study on mechanical properties and dislocation core in BCC refractory high-entropy alloys**

Tomohito Tsuru, JAEA, Japan

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Session Title : High-Entropy Materials and Amorphous Materials 6

Time : 16:00 -17:55, Nov. 21

Room # : Samda Hall B, 3F

Session Chair : Saryu Fensin, Los Alamos National Laboratory

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16:00 – 16:20 Invited

I-K0523

**Development of aluminum matrix composites containing high-entropy phases**

Hyun Joo Choi, Kookmin University, Korea

16:20 – 16:40 Invited

I-K0856

**Dislocation plasticity in a multi-principle element alloy with hexagonal closed-packed crystal structure**

Jie KUANG, Xi'an Jiaotong University, China

16:40 – 16:55

O-K0355

**Discussion on High Entropy Effect on Ligament Growth in Nanoporous TVNbMoTa Alloy**

Hidemi Kato, Insitute For Materials Research, Japan

16:55 – 17:10

O-K0059

**A new process suitable for L12-strengthened high-entropy alloys**

Jae Heung Lee, Pohang University Of Science And Technology, Korea

17:10 – 17:25

O-K0853

**Microstructure and properties of high entropy alloy fibers**

Lin Deng, University Of Science And Technology Beijing, China

17:25 – 17:40

O-K0479

**Determination of the existence composition range of CrMnFeCoNi high-entropy alloys using multiple diffusion method**

Ryuta Yurishima, Ibaraki University, Japan

17:40 – 17:55

O-K0113

**Study of the influence of alloying elements on W-containing refractory high-entropy alloy prepared by mechanical alloying**

CHUN-LIANG CHEN, National Dong Hwa University, Taiwan

17:55 – 18:10

O-K1149

**Design high entropy alloys for additive manufacturing**

Zhijun Wang, Northwestern Polytechnical University, China

**November 22 (Wed.), 2023**

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Session Title : High-Entropy Materials and Amorphous Materials 7

Time : 10:50 - 12:25, Nov. 22

Room # : Samda Hall B, 3F

Session Chair : Karam Lim, Korea Institute of Materials Science

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10:50 – 11:20    **Keynote**

K-K0576

**Strategy for tailoring thermoplastic forming process in bulk metallic glasses**

Eun Soo Park, Seoul National University, Korea

11:20 – 11:40    **Invited**

I-K0188

**Effect of quenched strain on the rejuvenation of ferromagnetic amorphous ribbons**

Masato Ohnuma, Hokkaido University, Japan

11:40 – 11:55

O-K1101

**Phase-selective recrystallization makes eutectic high-entropy alloys ultra-ductile**

Qingfeng Wu, Pohang University of Science and Technology, Korea

11:55 – 12:10

O-K0321

**Amorphization of Si in Al<sub>88</sub>Si<sub>12</sub> eutectic alloy with liquid quenching**

Rui Yamada, Tohoku University, Japan

12:10 – 12:25

O-K0376

**Cluster-model-based composition genes for high-entropy alloys and metallic glasses**

Shuang ZHANG, Dalian Jiaotong University, China

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Session Title : High-Entropy Materials and Amorphous Materials 8

Time : 14:00 - 15:35, Nov. 22

Room # : Samda Hall B, 3F

Session Chair : Eun Soo Park, Seoul National University

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14:00 – 14:30    **Keynote**

K-K1029

**Linking of static heterogeneity to dynamic heterogeneity in fragile metallic glassformer**

Tetsu Ichitsubo, Tohoku University, Japan

**14:30 – 15:00**      **Keynote**      **I-K0846**

**Definition of high-entropy materials via cluster-plus-glue-atom model**

Chuang Dong, Dalian Jiaotong University, China

**15:00 – 15:20**      **Invited**      **I-K0060**

**A research on the glass-to-glass transition in a high-entropy metallic glass**

Kefu YAO, Tsinghua University, China

**15:20 – 15:35**      **O-K0470**

**Abnormal tension-compression asymmetry in terms of anelasticity and yield strength of amorphous Si**

Yuecun Wang, Xi'an Jiaotong University, China

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**Session Title : High-Entropy Materials and Amorphous Materials 9**

**Time : 16:00 -18:10, Nov. 22**

**Room # : Samda Hall B, 3F**

**Session Chair : Tetsu Ichitsubo, Tohoku University**

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**16:00 – 16:20**      **Invited**      **I-K0693**

**Surface modification of metallic glasses for functional applications**

Karam Lim, Korea Institute of Materials Science, Korea

**16:20 – 16:40**      **Invited**      **I-K0181**

**Changes in atomic and electronic structures in a Gd<sub>65</sub>Co<sub>35</sub> metallic glass by cryogenic rejuvenation**

Shinya Hosokawa, Kumamoto University, Japan

**16:40 – 16:55**      **O-K1034**

**Research and application of high-entropy alloys hard coatings**

Bing Yang, Wuhan University, China

**16:55 – 17:10**      **O-K1009**

**Combustion behavior of Cu<sub>46</sub>Zr<sub>46</sub>Al<sub>8</sub> bulk metallic glass in oxygen-enriched environments**

Hui Wang, University of Science and Technology Beijing, China

**17:10 – 17:25**      **O-K1144**

**Discontinuous coarsening stabilizes excellent ductility in high-entropy alloys with different recrystallization volume fractions**

Yang Zhongsheng, Northwestern Polytechnical University, China

17:25 – 17:40

O-K1172

**TiZrHfNb refractory high-entropy alloys with twinning-induced plasticity**

Shubin Wang, Shanghai Jiao Tong University, China

**November 23 (Thurs.), 2023**

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Session Title : High-Entropy Materials and Amorphous Materials 10

Time : 09:00 - 10:15, Nov. 23

Room # : Samda Hall B, 3F

Session Chair : Masato Ohnuma, Hokkaido University

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09:00 – 09:15

O-K0977

**High-entropy alloy catalysts with hierarchical porous structures for efficient water electrolysis**

Xiong Jun Liu, University Of Science And Technology Beijing, China

09:15 – 09:30

O-K0108

**Shape memory behavior of high-temperature high entropy shape memory alloys (HT-HESMAs) designed by DFT**

Yu Nien Shen, The University of Tokyo, Japan

09:30 – 09:45

O-K0127

**Elemental segregation and magnetic properties of the equimolar GdTbDyHoEr rare earth high entropy alloy**

Binbin Liu, University of Science and Technology Beijing, China

09:45 – 10:00

O-K0153

**Influence of Supporting Electrolyte LiClO<sub>4</sub> on Synthesis of Film Containing CrMnFeCoNi by Electroplating in Organic Solvent**

Tian Xiao, Hiroshima Institute of Technology, Japan

10:00 – 10:15

O-K0892

**Fuzz evolution of Ti<sub>2</sub>ZrHfV<sub>0.5</sub>Mo<sub>0.2</sub> refractory high entropy alloy under high-flux He ion irradiation**

Peng Zhang, Dalian University Of Technology, China

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Session Title : High-Entropy Materials and Amorphous Materials 11

Time : 10:50 - 12:35, Nov. 23

Room # : Samda Hall B, 3F

Session Chair : Kefu YAO, Tsinghua University

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10:50 – 11:05

O-K0148

**Cryogenic mechanical properties and deformation-induced FCC-HCP phase transformation of the precipitation-hardened metastable high-entropy alloys**

Jinseob Kim, Hanyang University, Korea

11:05 – 11:20

O-K0161

**Alloying Effect on the High Temperature Mechanical Property in Single Phase L12-ordered Intermetallic Alloys**

Chenyuan Wang, The University of Tokyo, Japan

11:20 – 11:35

O-K0151

**Co-precipitation of coherent and incoherent L12 particles to tailor the mechanical properties of a multico**

Guanghai Yang, Hanyang University, Korea

11:35 – 11:50

O-K0993

**Effect of hydrogen on mechanical behavior of as-cast and single crystal CoCrFeMnNi High-entropy alloy**

Hong Zhong, Northwestern Polytechnical University, China

11:50 – 12:05

O-K0607

**Development of novel Co-Ni-Fe eutectic high entropy alloy for a wide temperature application**

Kannan Ravi Ramkumar, Pohang University of Science and Technology, Korea

12:05 – 12:20

O-K0106

**Microstructure evolution and high-temperature mechanical properties of HCP-TiZrHf-high entropy alloys (HEAs)**

Shaoji Liang, The University of Tokyo, Japan

12:20 – 12:35

O-K0299

**Improvement in Mechanical Property of CoCuNi Medium Entropy Alloy by High-Pressure Torsion**

Sangmin Lee, National Institute for Materials Science, Japan

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Session Title : High-Entropy Materials and Amorphous Materials 12

Time : 14:00 -15:45, Nov. 23

Room # : Samda Hall B, 3F

Session Chair : Chuang Dong, Dalian Jiaotong University

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14:00 – 14:15

O-K0599

**Tailoring microstructure and corrosion behavior of CoNiVAlx medium entropy alloys via Al addition**

Zhimin Pan, University of Science and Technology Beijing, China

**14:15 – 14:30**

**O-K0140**

**Wear-resistant CoCrNi multi-principal element alloy at cryogenic temperature**

Qing Zhou, Northwestern Polytechnical University, China

**14:30 – 14:45**

**O-K0210**

**Mechanical Properties, Oxidation Resistance, and Tribological Performance of AlCrNbTaTi Refractory High-Entropy Alloys**

Xiaolin Li, Northwestern Polytechnical University, China

**14:45 – 15:00**

**O-K0134**

**Enhancing magnetic properties of the Co<sub>66</sub>Fe<sub>6</sub>Si<sub>13</sub>B<sub>15</sub> metallic glass through DC current annealing**

Caiyun Liu, University of Science and Technology Beijing, China

**15:00 – 15:15**

**O-K0350**

**A new strong pearlitic multi-principal element alloy to withstand wear at elevated temperatures**

Wenwen Sun, Southeast University, China

**15:15 – 15:30**

**O-K0682**

**Strong yet strain-hardenable equiatomic CoCrFeMnNi high-entropy alloys by dynamic heterostructuring**

Jungwan Lee, Pohang University of Science and Technology, Korea