G. Amorphous and High-entropy Alloys

Organizers: Ke-Fu Yao, Shian-Ching Jang, Zhao-Ping Lu, Xun-Li Wang, Eun Soo Park

Session G1: Friday Afternoon, Oct 21, 2016
Chairs: Ke-Fu Yao, Xun-Li Wang
Room: 5306

13:30-13:45    Open Ceremony

13:45-14:10    G-01 (Invited)
Cluster connectivity in metallic glass
Xiaoya Wei, Si Lan, and Xun-Li Wang
Department of Physics and Materials Science, City University of Hong Kong

14:10-14:35    G-02 (Invited)
The cyclic oxidation of FeCoNiCr-based quinary high-entropy alloys from 25 to 900oC
Wu Kai1, Chia-Chin Lee1, Fu-Ben Cheng1, Leu-Wen Tsay1, Rong-Tan Huang1, Ji-Jung Kai2,3
1. Institute of Materials Engineering, National Taiwan Ocean University, Keelung, 20224, Taiwan, Republic of China
2. Department of Mechanical and Biomedical Engineering, The City University of Hong Kong, Kowloon, Hong Kong
3. Department of Engineering and System Science, National Tsing Hua University, Hsinchu 30050, Taiwan, Republic of China

14:35-15:00    G-03 (Invited)
Towards dilation in deformation and fracture of metallic glasses
Lanhong Dai
State Key Laboratory of Nonlinear Mechanics, Institute of Mechanics, Chinese Academy of Sciences

15:00-15:25    G-04 (Invited)
MD simulation of the mechanical behaviour of BMGs under triaxial stress state
Yi Li
Institute of Metal Research, Chinese Academy of Sciences

15:25-15:40    Take Photos

15:40-16:00    Coffee Break

16:00-16:20    G-05 (Invited)
Strengthening mechanisms in high-entropy alloys with different solid-solution structures
Z. P. Lu
State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing

16:20-16:40    G-06 (Invited)
Fracture and strength of bulk metallic glasses
Z. F. Zhang, R. T. Qu and Z. Q. Liu;
Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

16:40-17:00    G-07 (Invited)
The Effect of Ni Addition on Soft-magnetic Properties of FeCoZrBCu Nanocrystalline Alloys
Baolong Shen
Southeast University

17:00-17:15    G-08
Designing nanogranular metallic glasses with tunable properties
Na Chen, Wenjian Liu, Kefu Yao
Tsinghua University

17:15-17:30    G-09
Development of a novel micro-torsion tester for testing the shear modulus of metallic glass fibers
Yong Huang1*, Jie Dong1, Meng Gao2, Yujing Dai1, Wei Liu1, Yaqi Shao1, Weihua Wang2*
1 State Key Laboratory of Nonlinear Mechanics (LNM), Institute of Mechanics, Chinese Academy of Sciences, Beijing 100190, China
2 Institute of Physics, Chinese Academy of Sciences,
Session G2: Saturday Morning, Oct 22, 2016
Chairs: Lanhong Dai, Wu Kai
Room: 5306

08:30-08:50    G-10 (Invited)
Improving the thermal stability, glass forming ability and ferromagnetism of bulk ferromagnetic metallic glasses by metalloids
Tongde Shen, Baoru Sun, Shengwei Xin
Yanshan University

08:50-09:10    G-11 (Invited)
Stress-induced relaxation and hardening in a Zr-based bulk metallic glass under elastostatic compression
Yi-Mei Wang, Meng Zhang, Lin Liu
School of Materials Science and Engineering and State Key Lab for Materials Processing and Die & Mold Technology, Huazhong University of Science and Technology

09:10-09:25    G-12
Fe-based Bulk Metallic Glasses: Brittle or Ductile
Shengfeng Guo
Southwest University

09:25-09:40    G-13
The multiple shear bands and plasticity in metallic glasses: an origin from stress inhomogeneity
Guannan Yang¹², yang Shao¹², kefu Yao¹²
1. School of Material Science and Engineering, Tsinghua University, Beijing 100084, P. R. China
2. Key Laboratory for Advanced Materials Processing Technology, Ministry of Education, P.R. China

09:40-09:55    G-14
Inverse notch effect in bulk metallic glasses
Jie Pan¹, Haofei Zhou², Yi Li¹, Huajian Gao²
1. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang 110016, China
2. School of Engineering, Brown University, Providence, Rhode Island 02912, USA

09:55-10:15    Coffee Break
Chairs: Yi Li, Tongde Shen

10:15-10:35    G-15 (Invited)
Casting of Zr-based bulk metallic glass
Mingzhen Ma, Xinyu Zhang, Riping Liu
Yanshan University

10:35-10:50    G-16
The Hardening Mechanism of BMGs upon Laser Shock Peening
Kun Zhang¹, G Y Xu¹, Y P Wei², K Zhang¹, B C Wei¹
1. Key Laboratory of Microgravity (National Microgravity Laboratory), Institute of Mechanics, Chinese Academy of Sciences, Beijing 100190, China
2. Key Laboratory for Mechanics in Fluid Solid Coupling Systems, Instituteof Mechanics, Chinese Academy of Sciences, Beijing 100190, China

10:50-11:05    G-17
Tensile plasticity in monolithic bulk metallic glass with sandwiched structure
Yangyang Cheng, Tao Zhang
Beihang University

11:05-11:20    G-18
Concentration Heterogeneity of Fe50Cu50 Melts and Plastic Deformation of Metallic Glass
Li Wang, Yun Cheng, Zhenting Zhang, Kaikai Song, Shengzhong Yuan
School of Mechanical & Electrical Information Engineering, Shandong University at Weihai

11:20-11:35    G-19
Toughening Fe-based Amorphous Coatings by amorphous carbon
Wei Wang, Cheng Zhang, Peng Xu, Yasir Mohammed, Lin Liu
Huazhong University of Science and Technology

11:35-11:50    G-20
Structure- and temperature-dependent mechanical properties of monolayer CuTa alloys and CuTa/Cu nanolaminates
Chao Gu¹, Fei Wang², Ping Huang¹, Kewei Xu¹, Tianjian Lu¹,²,³
1. State-Key Laboratory for Mechanical Behavior of Material, Xi’an Jiaotong University, Xi’an, 710049, China
2. State Key Laboratory for Strength and Vibration of Mechanical Structures Xi’an Jiaotong University, Xi’an, 710049, China
3. MOE Key Laboratory for Multifunctional Materials and Structures Xi’an Jiaotong University, Xi’an 710049, China

11:50-12:05 G-21
Tribological behaviors of Zr-based bulk metallic glass sliding on different counterparts under relatively heavy loads
Hua Zhong, Yun Yue, Mingzhen Ma, Xinyu Zhang, Riping Liu
State Key Laboratory of Metastable Materials Science and Technology, Yanshan University

08:30-08:50 G-22 (Invited)
Structural signatures evidenced in dynamic crossover phenomena in metallic glass-forming liquids
Maozhi Li
Department of Physics, Renmin University of China

08:50-09:10 G-23 (Invited)
A sliding cell technique for diffusion measurements in liquid metals and its first applications in Al- and Ce-based liquids
Bo Zhang
Hefei University of Technology

09:10-09:25 G-24
Unique thermal-driven glass-glass transitions in metallic glasses
Xiongjun Liu¹, Qing Du¹, Qiaoshi Zeng², Huiyang Fan¹, Hui Wang¹, Yuan Wu¹, Zhaoping Lu¹
1. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing 100083, China
2. Center for High Pressure Science and Technology Advanced Research, Shanghai 201203, China

09:25-09:40 G-25
Unraveling the Crystallization Kinetics of Supercooled Liquid GeTe by Ultrafast Calorimetry
Yimin Chen¹,², Junqiang Wang¹, Lijian Song¹, Xiang Shen², Tiefeng Xu²
1. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Science
2. Laboratory of Infrared Material and Devices, Advanced Technology Research Institute, Ningbo University

09:40-09:55 G-26
Effect of Cu doping on La0.7Sr0.3MnO3 perovskite materials using Non-destructive evaluation
Thamilmaran Pandian¹, Arunachalam Manikavasagam¹, Sundara Venkatesh Perumalsamy¹, Sankararajan S², Sakthipandi K³
1. Sri S. Ramasamy Naidu Memorial College
2. Department of Physics, Unnamalai Institute of Technology, Kovilpatti- 628 503, Tamil Nadu, India
3. Department of Physics, Sethu Institute of Technology, Kariapatti 626 115, Tamil Nadu, India

09:55-10:15 Coffee Break

10:15-10:35 G-27 (Invited)
Composition design procedures of Ti-based bulk metallic glasses using the cluster-plus-glue-atom model
Chuang Dong, Zengrui Wang
Key Laboratory of Materials Modification (Ministry of Education), Dalian University of Technology, China

10:35-10:50 G-28
Lightweight Ti-based bulk metallic glasses with superior thermoplastic formability
Alloying effects on the viscosity of ternary glass-forming Zr-(Co,Ni)-M melts
Chenchen Yuan, F. Yang, F. Kargl, D. Holland-Moritz, G. G. Simeoni, A. Meyer, B. L. Shen
1. School of Material Science & Engineering, Southeast University, Nanjing 211189, People’s Republic of China
2. Institut für Materialphysik im Weltraum, Deutsches Zentrum für Luft- und Raumfahrt (DLR), 51170 Köln, Germany
3. Heinz Maier-Leibnitz Zentrum (MLZ) and Physics Department, Technische Universität München, 85748 Garching, Germany

Die-imprinting of Metallic Glasses for Precise Optical Devices in Large-area
Xue Liu, Ke-Fu Yao
1. School of Materials Science and Engineering, Tsinghua University, Beijing 100084, People’s Republic of China
2. Institute of Materials, China Academy of Engineering Physics, Mianyang 621900, People’s Republic of China

Tune the mechanical properties of Ti-based metallic glass composites by additions of nitrogen
Liyuan Li, Jun Wang, Hongchao Kou, Jinshan Li State Key Laboratory of Solidification Processing, Northwestern Polytechnical University

Synthesis of TiZr-based amorphous brazing filler metals for high-strength joining of titanium alloy
Lulu Sun, Shujie Pang, Ying Liu, Tao Zhang
Key Laboratory of Aerospace Materials and Performance (Ministry of Education), School of Materials Science and Engineering, Beihang University

High specific strength Ti-based bulk metallic glass composite ductilized by Ti lamella
Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

Strengthening Mechanism of TiZrNbHfX High Entropy Alloys
Xidong Hui, Yidong Wu, Ziyuan Rao, Yandong Wang
University of Science and Technology Beijing

Design of Refractory High-Entropy Alloys
J.W. Qiao
Laboratory of Applied Physics and Mechanics of Advanced Materials, College of Materials Science and Engineering, Taiyuan University of Technology

Designing of BCC high-entropy alloys strengthened by cuboidal B2 nanoprecipitates via a cluster structural model
Qing Wang, Yue Ma, Xiaona Li, Chuang Dong, Peter K. Liaw
1. Dalian University of Technology
2. University Of Tennessee

Improving ductile properties of high entropy alloys by optimizing GB mechanical properties through element alloying
Zhidong Han, Kefu Yao  
Tsinghua University

14:40-14:55  G-38
Microstructure, mechanical properties and corrosion resistance of CuZrY/Al, Ti, Hf series high-entropy alloys  
Zitang Zhang, Yan Wang  
University of Jinan

14:55-15:10  G-39
Microstructure characterization and excellent properties of CoCrFiNiM(M= Cu, W, W0.5Mo0.5, WC) high-entropy alloy coatings prepared by mechanical alloying and vacuum hot consolidation  
Yan Wang, Caiyun Shang, Wenjuan Ge  
University of Jinan

15:10-15:25  G-40
Aging behavior of AlCrMoTiZr high-entropy alloy prepared by powder metallurgy  
Bo Ren1,2, Ruifeng Zhao1  
1. Henan Institute of Engineering  
2. Zhengzhou University

15:25-15:40  G-41
Effect of thermomechanical processing on microstructure and mechanical properties of CoCrFeNiMn high entropy alloy  
Jianxin Fu, Liangming Peng  
CAS Key Laboratory for Mechanical Behavior and Design of Materials, Department of Modern Mechanics, School of Engineering Science, University of Science and Technology of China

15:40-15:55  G-42
Strong grain-size effect on deformation twinning of an Al0.1CoCrFeNi high-entropy alloy  
S. W. Wu, G. Wang  
Shanghai University

15:55-16:10  G-43
Liquid-Phase Separation in Undercooled CoCrCuFeNi High Entropy Alloy  
Tong Guo, Jinshan Li, Jun Wang, Yi Wang, Hongchao Kou, Sizhe Niu  
State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi’an

16:10-16:25  G-44
Phase transform kinetics and the evolution of microstructure in Al0.5CoCrFeNi high entropy alloy  
Sizhe Niu  
Northwestern Polytechnical University

16:25-16:40  G-45
Development of High Entropy Alloys using CALPHAD approach  
Hai-Lin Chen, Huahai Mao, Shan Jin, Qing Chen, Johan Bratberg  
Thermo-Calc Software AB

Session G5: Saturday Afternoon, Oct 22, 2016  
Chairs: Baolong Shen, Zhankui Zhao  
Room: 5502

13:30-13:50  G-46 (Invited)
A research on the glass-forming ability of Fe-based bulk amorphous alloys with high-iron content  
Ke-Fu Yao, Shuang-Qin Chen, Jing-Feng Li, Yang Shao  
Tsinghua University

13:50-14:10  G-47 (Invited)
Novel Fe-based nanocrystalline alloy powder cores with excellent magnetic properties produced from gas-atomized powders by cold compacting  
Chuntao Chang1, Yaqiiang Dong1, Qiang Li2  
1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Science  
2. School of Physics Science and Technology, Xinjiang University

14:10-14:25  G-48
Synthesis and properties of new soft magnetic FeCoNi(P, C, B) high-entropy bulk metallic glasses  
Yanhui Li, Wei Zhang, Tianlong Qi
14:25-14:40    G-49
Linking structure and soft magnetic properties in Fe-Si-B metallic glasses: investigations of low-temperature annealing at atomic-scale
Jian Dai, Li Zhu, Yingang Wang, Liang Yang
Nanjing University Of Aeronautics And Astronautics

14:40-14:55    G-50
Composition design and manufacturability of high Bs nanocrystalline soft magnetic alloys
Anding Wang¹,², Chuntao Chang¹, Tao Liu¹, Xinmin Wang¹
1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences
2. Center for Advanced Structural Materials, Department of Mechanical and Biomedical Engineering, College of Science and Engineering, City University of Hong Kong

14:55-15:10    G-51
Tuning of Cu clusters and its effect on nanocrystallization of FeBCCu(Mo) metal glasses
Gongting Xia, Yang Li, Yingang Wang, Yaodong Dai
College of Materials Science and Technology, Nanjing University of Aeronautics and Astronautics

15:10-15:25    G-52
Fabrication of FePBSiNbCr amorphous powder cores with excellent soft magnetic properties by cold pressing
Yaqiang Dong, Min Liu, Chuntao Chang, Xin-Min Wang, Run-Wei Li
Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences

15:25-15:40    G-53
Effect of metalloid elements on magnetic properties of Fe-based bulk metallic glasses
Mingqing Zuo¹, Shangyong Meng¹, Qiang Li¹, Chuntao Chang², Hongxiang Li³, Yanfei Sun¹
1. School of Physics Science and Technology, Xinjiang University
2. Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences
3. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing

15:40-15:55    G-54
A novel method of fabrication Fe-based metallic glassy composite coatings with high wear and corrosion resistance
Zhenhua Chu, yong Yang, Xueguang Chen, Dianran Yan
School of Materials Science and Engineering, Hebei University of Technology

15:55-16:10    G-55
Fe-based multi-component amorphous alloys with excellent soft-magnetic properties
Ran Wei, Juan Tao, Shileii Liu, Guowen Sun, Leipeng Lu, Chen Chen, Fushan Li
School of Materials Science and Engineering, zhengzhou University

16:10-16:25    G-56
Effects of Mo and Cr additions on the glass-forming ability and corrosion resistance of Fe-based Fe-P-C-B metallic glasses
Siwen Wang, Xuewei Wang, Xingjie Jia, Yanhui Li, Wei Zhang
School of Materials Science and Engineering, Dalian University of Technology

16:25-16:40    G-57
Corrosion, wear and magnetic properties of novel Fe-based amorphous coatings
Jiawei Li¹, Haoran Ma¹,², Chuntao Chang¹, Jun Shen², Xinmin Wang¹, Runwei Li¹
1. Key Laboratory of Magnetic Materials and Devices,
08:30-08:50  G-58 (Invited)
Elastic evidence of Metal-Insulator phase transition in LCMO perovskites using Non-destructive evaluation
Arunachalam Manikavasagam\textsuperscript{1}, Thamilmaran Pandian\textsuperscript{1}, Sankarrajan S\textsuperscript{2}, Sakthipandi K\textsuperscript{3}
1. Department of Physics, Sri S. Ramasamy Naidu Memorial College, Sattur - 626 203, Tamilnadu, India.
2. Department of Physics, Unnamalai Institute of Technology, Kovilpatti- 628 503, Tamil Nadu, India
3. Department of Physics, Sethu Institute of Technology, Kariapatti 626 115, Tamil Nadu, India

08:50-09:10  G-59 (Invited)
On the microstructural evolution in FeCoNiAl\textsubscript{0.5}CrMox high entropy alloys
Yan Xin Zhuang, Xiu Lan Zhang, Zi Min Wang
Key Laboratory of Electromagnetic Processing of Materials, Ministry of Education, Northeastern University

09:10-09:25  G-60
Microstructure, mechanical and tribological properties of Al\textsubscript{0.5}CoCrFeNi high entropy alloy matrix self-lubricating composite fabricated by spark plasma sintering
Aijun Zhang\textsuperscript{1,2}, Junhu Meng\textsuperscript{1}
1. State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences
2. University of Chinese Academy of Sciences

09:25-09:40  G-61
Effect of homogenization on hot deformation behaviour of Al\textsubscript{0.5}CoCrFeNi high entropy alloy
Yu Zhang, Jinhua Lin, Jun Wang, HongChao Kou
State Key Laboratory of Solidification Processing, Northwestern Polytechnical University

09:40-09:55  G-62
High-throughput determination of interdiffusion coefficients for Co–Cr–Fe–Mn–Ni high-entropy alloys
Weimin Chen\textsuperscript{1,2}, Lijun Zhang\textsuperscript{2}
1. Institute of Advanced Wear & Corrosion Resistant and Functional Materials, Jinan University, Guangzhou, Guangdong 510632, P.R. China
2. State Key Laboratory of Powder Metallurgy, Central South University, Changsha, Hunan 410083, P.R. China

09:55-10:10  G-63
Refining Effect of the Macromolecular Diffusion Barrier on Formation of Nanoporous Copper
Zhenhua Dan\textsuperscript{1}, Fengxiang Qin\textsuperscript{2}, Nobuyoshi Hara\textsuperscript{3}
1. College of Materials Science and Engineering, Nanjing Tech University.
2. School of Materials Science and Engineering, Nanjing University of Science and Technology
3. Department of Materials Science, Tohoku University

10:10-10:25  Coffee Break

Chairs: Weimin Wang, Yuan Wu

10:25-10:45  G-64 (Invited)
Fabrication of rare-earth high-entropy alloys with giant magnetocaloric effect
Yuan Wu, Hui Wang, Xiongjun Liu, Zhaoping Lu
University of Science and Technology Beijing

10:45-11:00  G-65
Grain refinement of CrCoNi multi-principal-element alloy
Xinwang Liu\textsuperscript{1,2}, Guillaume Laplanche\textsuperscript{1}, Aleksander Kostka\textsuperscript{1}, Suzana Fries\textsuperscript{1}, Janine Pfetzing-Micklich\textsuperscript{1},
Gang Liu1, Zitian Fan2, Easo George1
1. Department of Materials Design, Ruhr-University 
   Bochum, Bochum 44801, Germany
2. State Key Laboratory of Materials Processing and 
   Die & Mould Technology, Huazhong University of 
   Science and Technology, Wuhan 430074, China

11:00-11:15    G-66
Microstructure and corrosion behaviour of a Laves 
phase strengthened eutectic high-entropy alloy
Wenyi Huo1, Hui Zhou1, Feng Fang1, Zonghan Xie2,3, 
Jianqing Jiang1,4
1. Jiangsu Key Laboratory of Advanced Metallic 
   Materials, Southeast University 
2. School of Mechanical Engineering, University of 
   Adelaide 
3. School of Engineering, Edith Cowan University 
4. Nanjing University of Information Science and 
   Technology

11:15-11:30    G-67
The magnetocaloric composite designed by multi 
Gd-Al-Co microwires with close performances
Hongxian Shen1,2, Dawei Xing1, Hillary Belliveau2, 
Sida Jiang1, Jingshun Liu1, Haichao Sun1, Shu Guo1, 
Yanfen Liu1, Jianfei Sun1, Manh-Houng Phan2
1. School of Materials Science and Engineering, 
   Harbin Institute of Technology, Harbin 150001, P. R. 
   China 
2. Department of Physics, University of South Florida, 
   Tampa, Florida 33620, USA 
3. School of Materials Science and Engineering, Inner 
   Mongolia University of Technology, No. 49 Aimin 
   Street, Hohhot 010051, P. R. China

11:30-11:45    G-68
Corrosion behavior of Ti-Ni shape memory bulk 
metallic glass composites in artificia seawater and 
PBS solution
Yanchun Zhao, Ruipeng Mao, Wenlong Ma, Congyu 
Xu, Shengzhong Kou
State Key Laboratory of Advanced Processing and 
Recycling of Non-ferrous Metals, Lanzhou University 
of Technology, Lanzhou 730050

11:45-12:00    G-69
Refining Effect of the Macromolecular Diffusion 
Barrier on Formation of Nanoporous Copper
Zhenhua Dan1, Fengxiang Qin2, Nobuyoshi Hara3
1. College of Materials Science and Engineering, 
   Nanjing Tech University 
2. School of Materials Science and Engineering, 
   Nanjing University of Science and Technology 
3. Department of Materials Science, Tohoku 
   University

Session G7: Sunday Morning, Oct 23, 2016
Chairs: Hui Xu, Fushan Li
Room: 5502

08:30-08:50    G-70 (Invited)
Spark plasma sintering kinetics of 
Fe76Si9B10P5/Zn0.5Ni0.5Fe2O4 amorphous soft 
magnetic composite
Zhankui Zhao
Key Laboratory of Advanced Structural Materials, 
Ministry of Education, Changchun University of 
Technology

08:50-09:10    G- 71 (Invited)
New Multicomponent Fe-based amorphous steels 
with excellent soft-magnetic properties developed 
from medium-alloy steel
Fushan Li, Ran Wei, Wenshuai Zhang, Jixiang Chen, 
Zichao Li, Chen Chen
School of Materials Science and Engineering, 
Zhengzhou University

09:10-09:25    G-72
Development of Fe-based bulk metallic glasses with 
both high saturation flux density and high glass 
forming ability
Shuangqin Chen, Kefu Yao
Tsinghua University

09:25-09:40    G-73
On the magnetic anisotropy in Fe78Si9B13 ingots 
and amorphous ribbons: orientation aligning of 
Fe-based phases/clusters
Xin Wang1, Haijian Ma1, Zhenhua Sheng1, Shifeng
Fe-based soft magnetic composites properties of Ni0.5Zn0.5Fe2O4/Fe76Si9B10P5 alloy after annealing treatment
Jihang Ren
ChangChun University Of Technology

A liquid-to-liquid transformation is demonstrated in the melts of Fe-based soft magnetic alloys
Bangshao Dong, Hui Gao, Zongzhen Li, Nairi Cui, Ying Li, Guangqiang Zhang, Shaoshiong Zhou
Advanced Technology & Materials Co., Ltd., Beijing Key Laboratory of Energy Nanomaterials, China Iron & Steel Research Institute Group

Crystallization behavior and magnetic properties in bulk Fe-Nd-B-Nb amorphous alloys
Hui Xu, Xiaohua Tan, Xiaoqian Huang
School of Materials Science and Engineering, Shanghai University, Shanghai, P. R. China

Magnetotransport properties of a ferromagnetic metallic glass
Wenjian Liu, Na Chen, Kefu Yao
School of Materials Science and Engineering, Tsinghua University

 Isothermal transition from β relaxation to α relaxation in metallic glass
Lijian Song, Juntao Huo, Junqiang Wang
Key Laboratory of Magnetic Materials and Devices & Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences

Magnetic properties of U-based amorphous alloy
Pei Zhang, Huogen Huang, Haibo Ke, Pengguo Zhang, Hongyang Xu, Tianwei Liu
Institute of Materials, China Academy of Engineering Physics

Mechanical and magnetic properties of new (Fe,Co,Ni)-B-Si-Ta bulk glassy alloys
Yaoxiang Geng, Jianbing Qiang, Yingmin Wang, Chuang Dong, Ojied Tegus
1. School of Materials Science and Engineering, Jiangsu University of Science and Technology, Zhenjiang 212003, China
2. Key Laboratory of Materials Modification (Ministry of Education), Dalian University of Technology, Dalian 116024, China
3. Inner Mongolia Key Laboratory for Physics and Chemistry of Functional Materials, Inner Mongolia Normal University, Hohhot 010022, China

Evolution of Nano-porous Structure on Fe-based Amorphous Alloys
Bgying Ni
Key Laboratory of Advanced Structural Materials, Ministry of Education, Changchun University of Technology

Evolution of Nano-porous Structure on Fe-based Amorphous Alloys
Bgying Ni
Key Laboratory of Advanced Structural Materials, Ministry of Education, Changchun University of Technology

Session G8: Sunday Afternoon, Oct 23, 2016
Chairs: WH Wang, SX Zhou, X F Bian, XM Wang, KF Yao,
Room: 5306

13:30-15:40 Group discussions
15:40-16:00 Coffee Break
16:00-18:30  Group discussions
Chairs: Lin Liu, Mingzhen Ma
Room: 5502

13:30-13:50  G-82
Detecting the slow beta relaxation by DSC compared with that by DMA
Chao Zhou1,2, Lina Hu1, Yuanzheng Yue2
1. Key Laboratory for Liquid-Solid Structural Evolution and Processing of Materials (Ministry of Education), Shandong University, Jinan 250061, China
2. Department of Chemistry and Bioscience, Aalborg University, DK-9220 Aalborg, Denmark

13:50-14:05  G-83
Correlation between structure and glass-forming ability in CuZr Alloys: a cavity perspective
Huaping Zang
Department of Physics, Renmin University of China

14:05-14:20  G-84
Correlation between liquid-liquid transition in CuZr melts and Glass forming ability of the alloys
Xi Zhao, Lina Hu, Chunzhen Wang, Haijiao Zheng, Qijing Sun, Xiufang Bian
Key Laboratory for Liquid-Solid Structural Evolution and Processing of Materials (Ministry of Education), Shandong University

14:20-14:35  G-85
Activation relaxation technique study on β-relaxations mechanism in metallic glasses
Haiyan Xu
Department of Physics, Renmin University

14:35-14:50  G-86
Formation of U-based metallic glasses
Huogen Huang1, Haibo Ke1, Yingmin Wang2, Pei Zhang1, Pengguo Zhang1, Tianwei Liu1
1. Institute of Materials, China Academy of Engineering Physics
2. Key Laboratory of Materials Modification (Ministry of Education), Dalian University of Technology

14:50-15:05  G-87
Effects of pressure on structural evolution in monatomic liquid and glass
J. Y Mo1, H. S Liu1, Q. L Liu1, W. M. Yang1,2
1. School of Sciences, China University of Mining and Technology, Xuzhou 221116, China
2. State Key Laboratory for Geomechanics and Deep Underground Engineering, School of Mechanics and Civil Engineering, China University of Mining and Technology, Xuzhou 221116, China

15:05-15:20  G-88
Analytical description for the crystallization kinetics of amorphous alloys
Yihui Jiang1, Feng Liu2, Shuhua Liang1
1. School of Materials Science and Engineering, Xi’an University of Technology, Xi’an, Shaanxi, 710048, China
2. State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi’an, Shaanxi, 710072, China

15:20-15:35  G-89
Characteristics of dynamic mechanical behaviors of a Ti-based metallic glass composite
Guojian Lv, Jichao Qiao, Yao Yao
Northwestern polytechnical University

15:35-16:00  Coffee Break

Chairs: Yanxin Zhang, Yan Wang

16:00-16:20  G-90
Nanoglass prepared by pulsed electrodeposition
Chunyu Guo, Yini Fang, Bin Wu, Si Lan, Guo Peng, Tao Feng
Nanjing University of Science & Technology

16:20-16:35  G-91
Atomistic Approach to Design Favored Compositions for the Ternary Al-Mg(Cu)-Ca Metallic Glass Formation
Shuai Zhao
Amorphous Ni-Co nano-alloy catalyzed highly efficient hydrogen generation from dehydrogenation of ammonia borane
Hongli Wang, Dawei Gao, Cong Wang, Zhankui Zhao
College of Materials Science and Engineering, Key Laboratory of Advanced Structural Materials, Ministry of Education, Changchun University of Technology, Changchun 130012, China

Study of the effects of metalloid elements (P, C, B) on Co-based amorphous alloys by ab initio molecular dynamics simulations
Jiawei Jiang, Qiang Li, Haiming Duan, Hongxiang Li
1. School of Physics Science and Technology, Xinjiang University
2. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing

Amorphous NiCoPt/CeOx nanoparticles as highly efficient catalyst for hydrogen generation from hydrous hydrazine
Cong Wang, Hong-li Wang, Zhan-kui Zhao
College of Material Science and Engineering, Key Laboratory of Advanced Structural Materials, Ministry of Education, Changchun University of Technology

Design of super-multicomponent Zr-based bulk metallic glasses with high glass forming ability and low impurity-sensitivity
Chen Chen, Xiaodong Jia, Zhikai Gao, Huan Sun, Ran Wei, Fushan Li, Tao Zhang
1. School of Material Science and Engineering, Zhengzhou University
2. Key Laboratory of Aerospace Materials and Performance (Ministry of Education), School of Materials Science and Engineering, Beihang University

Microstructural control via copious nucleation manipulated by in-situ formed nucleants: large-sized and ductile metallic glass composites
Wenli Song, Yuan Wu, Di Cao, Jie Zhou, Fei Zhang, Yao Zhang, Hui Wang, Xiongjun Liu, Houwen Chen, Zhenxi Guo, Zhaoping Lu
1. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing 100083, China
2. College of Materials Science and Engineering, Chongqing University, Chongqing 400044, China
3. Center for Biological Imaging, Institute of Biophysics, Chinese Academy of Sciences, Beijing 100101, China

The effects of impurities on glass-forming ability and mechanical properties of Fe-based bulk metallic glasses
Hongxiang Li, Changqiu Li, Di Cao, Qiang Li, Zhaoping Lu
1. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, 100083, China
2. School of Physics Science and Technology, Xinjiang University, Urumqi, Xinjiang, 830046, China

Viscoelasticity-induced Structural Anisotropy in Amorphous Materials
YANG TONG, Zhinan An, Wojciech Dmowski, Takeshi Egami, P.K. Liaw, J.J. Kai
1. City University of Hong Kong
2. University of Tennessee-Knoxville, USA

Ultra-stable Ni-P nanoglass with glass/glass
09:05-09:20    G-100
Cluster plus glue atom model and Fe-based multi-component transition metal metalloid bulk metallic glasses
Gul Jabeen Naz, Cuang Dong
Key Laboratory of Materials Modification (Ministry of Education), Dalian University of Technology

09:20-09:35    G-101
Study of Zr52Cu35Al8Co2Nb3 bulk metallic glass composites with peculiar B2 CuZr phases
Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

09:35-09:50    G-102
Bulk Metallic Glass: Microscopical Heterogeneity in Macroscopical Homogeneity of Structures and Mechanical Properties
Peng Xue1,2, Yongjiang Huang1,2,3, Shu Guo2, Hongbo Fan2, Zhiliang Ning2, Jianfei Sun2, Peter K. Liaw4
1. State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology, China
2. School of Materials Science and Engineering, Harbin Institute of Technology, China
3. Key Laboratory of Micro-Systems and Micro-Structures Manufacturing (Harbin Institute of Technology), Ministry of Education, China
4. Department of Materials Science and Engineering, University of Tennessee, Knoxville, USA

09:50-10:05    G-103
Martensitic transformation and superelastic behavior of Ni-Mn-Ga-Fe shape memory alloy microwires
Yanfen Liu1, Xiaohua Liu1, Xuexi Zhang2, Hongxian Shen2, Jianfei Sun2
1. Department of Physics, Qiqihar University
2. School of Materials Science and Engineering, Harbin Institute of Technology

10:05-10:20    Coffee Break

10:20-10:35    G-104
Dependence of mechanical properties on microstructure of Cu-Zr-Al bulk metallic glass composites
Songshan Jiang1,2, Fufa Wu2, Yongjiang Huang1, Jianfei Sun1
1. Harbin Institute of Technology
2. Liaoning University of Technology

10:35-10:50    G-105
Refinement of Nanoporous Copper by Introducing Low Surface Diffusive Elements
Fengxiang Qin1, Zhenhua Dan2, Nobuyoshi Hara3
1. School of Materials Science and Engineering, Nanjing University of Science and Technology
2. College of Materials Science and Engineering, Nanjing Tech University
3. Department of Materials Science, Tohoku University

10:50-11:05    G-106
Time-resolved pair distribution function study of structure origins of phase stability in ternary Zr-based bulk metallic glasses
Xiaoya Wei1, Si Lan1, Xuelian Wu1, Jie Zhou2, Zhaoping Lu3, Yang Ren3, Xunli Wang1
1. Department of Physics and Materials Science, City University of Hong Kong, Kowloon, Hong Kong
2. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing, China
3. X-Ray Science Division, Argonne National
Improved the magnetocaloric property of Fe-doped Gd-Al-Co microwires
Jingshun Liu\textsuperscript{1,2}, Qixiang Wang\textsuperscript{1}, Mengjun Wu\textsuperscript{1}, Yun Zhang\textsuperscript{1}, Ze Li\textsuperscript{1}, Hongxian Shen\textsuperscript{2}
1. Inner Mongolia University of Technology
2. Harbin Institute of Technology

Session G11: Monday Morning, Oct 24, 2016
Chairs: WH Wang, SX Zhou, X F Bian, XM Wang, KF Yao,
Room: 5306

08:30-10:00 Group discussions
10:00-10:20 Coffee Break
10:20-11:20 Group discussions.
11:20-12:00 Symposium G: Closing and Awards Ceremony.
Chairs: Ke-Fu Yao, Zhao-Ping Lu
Room: 5306

Posters

G-P1
Formation and mechanical properties of Zr\textsubscript{56.25}Al\textsubscript{18.75}(Co\textsubscript{10-x}/10Cu\textsubscript{x}10)25 bulk metallic glasses
Kaiming Han, Jianbing Qiang, Yingmin Wang, Chuang Dong
Key Laboratory of Materials Modification (Ministry of Education), Dalian University of Technology

G-P2
Magnetic and magnetic shielding properties of HVAF-sprayed FeSiBPNb coatings
Jijun Zhang\textsuperscript{1,2}, Jiawei Li\textsuperscript{1,2}, Chuntao Chang\textsuperscript{1,2}, Wuhong Xue\textsuperscript{1}, Haoran Ma\textsuperscript{1,2}, Xinmin Wang\textsuperscript{1,2}
1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Zhenhai District, Ningbo, Zhejiang 315201, China
2. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Zhenhai District, Ningbo, Zhejiang 315201, China

G-P3
Electrical resistance relaxation in La\textsubscript{55}Al\textsubscript{25}Ni\textsubscript{10}Cu\textsubscript{10} bulk metallic glass
Binbin Liu, Boyang Liu, Feng Ye
State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, 30 Xueyuan Road, 100083 Beijing, China

G-P4
Microstructures and tribological properties of laser cladded Ti-based metallic glass composite coatings
Xiaodong Lan\textsuperscript{1}, Hong Wu\textsuperscript{1}, Yong Liu\textsuperscript{1}, Ling Liu\textsuperscript{2}
1. State Key Laboratory of Powder Metallurgy, Central South University
2. Department of hepatobiliary and pancreatic surgery, Xiangya hospital, Central south university

G-P5
Correlation between structure and glass-forming ability for Al\textsubscript{86}Ni\textsubscript{14}-xLax(x=3,5,9): An Ab Initio Molecular Dynamics Study
fangru wang
Department of Physics, Renmin University of China, Beijing 100872, China

G-P6
Laser 3D printing of Zr-based bulk metallic glass
Yunzhuo Lu, Hao Zhang, Hongge Li, Zuoxiang Qin, Xing Lu
School of Materials Science and Engineering, Dalian Jiaotong University, Dalian 116028, People’s Republic of China

G-P7
Hydrogen-induced Amorphization of Zr-Cu-Ni-Al Alloys
G-P8  Microstructure and properties of laser cladded Zr-based amorphous coating on a steel
Ning Zhang, Shujie Pang, Ying Liu, Tao Zhang
School of Materials Science and Engineering, Beihang University, Beijing 100191, China

G-P9  Fabrication of self-organized nanotube coating on Zr56Al16Co28 bulk metallic glass surface
Xuejie Li, Hongjie Xu, Yu Jin, Tao Zhang
School of Materials Science and Engineering, Beihang University

G-P10  Effect of ball-milling on the structure and hydrogen absorption-desorption behavior of Zr50.7Cu28Al12.3Ni9 metallic glass powder
Xiao-Yang Lu1,2, Yu-Lei Du1, Wen-He Liao1
1. School of Mechanical Engineering, Nanjing University of Science and Technology, Nanjing 210094, China
2. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing 210094, China

G-P11  the effects of longitude magnetic field annealing on amorphous powder cores
Zichao Li1, Yaqing Dong2, Wenshuai Zhang1,1, Zhikai Gao1,2, Chuntao Chang1,1, Xinmin Wang1,2, Fushan Li1
1. Zhengzhou University
2. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

G-P12  B-rich bulk metallic glasses with extreme thermal, elastic, and mechanical properties
Xinquan Wei
Beihang University

G-P13  Ab initio molecular dynamics simulations of structure of Ca40Pt35Mg25 metallic alloys
Xuan Li, Tao Zhang
Beihang University

G-P14  Nanocarbon sol induced Biological interaction in human cell through immune mechanism and gene expression
Guoguo Xu1,1, Zhuoyang Li2,2, Qingping Cao2,2, Tao Zhang1,1
1. Beihang University
2. First Hospital, Peking University

G-P15  Fabrication of nanoporous Ag-Au by dealloying and electro-catalysis property
Cuiting Li, Tao Zhang
Beihang University

G-P16  Fabrication of Cu/Cu2O nanoporous composites by dealloying from (La,Ce)-based metallic glass and their degradation properties of azo dye
Na Wu, Ran Li
Beihang University

G-P17  Preparation Zr-based unlimited size bulk metallic glasses using laser cladding
Zhiguang Shi
Beihang University

G-P18  Pore-size-dependent mechanical behavior of bulk metallic glass: plasticity and deformation energy released
Xin Wang, Peng Chen, Lichen Zhao, Shuiqing Liu, Chunxiang Cui
Key Laboratory for New Type of Functional Materials in Hebei Province, School of Material Science and Engineering, Hebei University of Technology, Tianjin 300130, P.R. China

G-P19
Vacuum Brazing TC4 Titanium alloy and 304 Stainless Steel with Titanium-Based Amorphous Alloy Foil
Shilei Liu, Fushan Li
Zhengzhou University

G-P20
Development of high Bs Fe(Co)SiBPCu nanocrystalline alloys
Tao Liu, Anding Wang, Chuntao Chang, Aina He, Xinming Wang
Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang 315201, China

G-P21
Anti-oxidation behavior and magnetic properties of FeSiBPC amorphous alloys
Chengjuan Wang1,2, Keqiang Qiu1, Anding Wang2, Chuntao Chang2, Aina He2, Xinmin Wang2
1. College of material science and Engineering, Shenyang University of Technology, Shenyang, Liaoning 110870, China.
2. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang 315201, China

G-P22
Fabrication and soft magnetic properties of novel amorphous Fe76Si9B10P5 powder cores
Xiaolong Li
1. Institute of Materials Technology, CNITECH
2. Nano Science and Technology Institute, USTC

G-P23
Structural evaluation of a Fe-based bulk metallic glass system in laser 3D printing
Di Ouyang, Ning Li, Lvjie Liang, Shengyong Pang, Jianji zhang, Lin Liu
State key lab for materials processing and Die & Mold Technology and School of Materials Science and Engineering, Huazhong University of Science and Technology

G-P24
Preparation and properties of the FeZrB based amorphous/nanocrystalline alloy with high soft magnetic
Xiaotong Bao, Tao Zhang
Beihang University

G-P25
First results of chemical diffusion in Fe-based liquid alloys
Lang Xiang Zhong, Jin Liang Hu, Bo Zhang
Laboratory of Amorphous Materials, School of Materials Science and Engineering, Hefei University of Technology

G-P26
Effects of cooling rate on the microstructure and corrosion resistance of Fe-based bulk metallic glasses in NaOH solutions
Zongzhen Li, Shaoxiong Zhou, Guangqiang Zhang, Bangshao Dong, Hui Gao
China Iron & Steel Research Institute Group, Advanced Technology & Materials Co., Ltd., Beijing 100081, China

G-P27
Steady state flow behavior of the FeCoNiCr high entropy alloy hardened by massive nano-precipitates
Junyang He1, Hui Wang1, Yuan Wu1, Xiongjun Liu1, Taigang Nieh2, Zhaoping Lu1
1. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing, China
2. Department of Materials Science and Engineering, the University of Tennessee, Knoxville, TN, USA
G-P28
Modeling and Calculation of Magnetic High-Entropy alloys
Wenqiang Feng, Shaoqing Wang
Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, 110016, Liaoning Province, China

G-P29
Microstructure and properties of AlCrFeNi high-entropy alloy coating prepared by mechanical alloying and hot pressing sintering
Caiyun Shang, Yan Wang
University of Jinan

G-P30
In situ high-energy X-ray diffraction study of compressive deformation behavior in dual-phase high entropy alloy
Lili Ma1,2, Lu Wang1, Yunfei Xue1, Zhuhua Nie1, Tangqing Cao1, Yang Ren3
1. School of Materials Science and Engineering, Beijing Institute of Technology, Beijing, 100081, China.
2. School of Chemical Engineering, Qinghai University, Xining, 810016, China.
3. X-ray Science Division, Argonne National Laboratory, Argonne, IL 60439, USA

G-P31
Phase Structures and Formation Criterion of Topologically Close-packed Phase in CoCrFeNiMo System Alloys
Ning Liu, Zhen Peng, WenDong Du, PengHui Wu, XiaoJing Wang
School of Materials Science and Engineering, Jiangsu University of Science and Technology

G-P32
Microstructure, Nano-precipitation and properties of CoCrCuFeNiMnx high-entropy alloys
Ning Liu, Wendong Du, Penghui Wu, zhen Peng, Xiaojing Wang
Jiangsu University of Science and Technology

G-P33
Microstructure and mechanical properties of a refractory NbMoTaWVCr high entropy alloy fabricated by mechanical alloying and spark plasma sintering
Yan Long, Xiaozhen Li, Xiaodong Chen, Nan Gao, Jinfu Zhang
National Engineering Research Center of near-net-shape forming for metallic materials, School of Mechanical and Automotive Engineering, South China University of Technology, Guangzhou, 510640, China

G-P34
Effect of Al content and cooling rate on the microstructure and mechanical properties of AlxCrFeNiV0.3 high entropy alloys
Baoyuan Cheng, Yunfei Xue, Lili Ma, Tangqing Cao
School of Materials Science and Engineering Beijing Institute of Technology, Beijing, 100081, China

G-P35
Microstructure and mechanical behavior of Co-free FeCoNiCu high entropy alloy
Yilu Zhao, Tong Yang, Da Chen, Yong Yang, Ji-Jung Kai
City University of HongKong

G-P36
Kinetics study on non-isothermal crystallization of Cu50Zr50 metallic glass
Qian Gao
Xian University of Technology

G-P37
Co-based bulk metallic glasses with excellent soft-magnetic properties and high strength
Qikui Man1,2, Yaqiang Dong1,2, Chuntao Chang1,2, Xinmin Wang1,2, Run-wei Li1,2
1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences
G-P38
The corrosion resistance of Fe-based bulk metallic glass with in situ sulfide particle in hydrochloride solution
Shanlin Wang¹, Yong Huang¹, Yvbing Gong¹, Hongxiang Li²
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2. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology, Beijing, 100083, China

G-P39
Discharge Enhancement Effect of Amorphous Alloys Spark Plasma Aid
Minggang Wang
Changechun University of Technology

G-P40
Effect of Zr/Hf ratio on the non-isothermal crystallization kinetics in Zr₅₇.₄Ni₈.₂Cu₃₅.₄Al₁₆.₄Ta₈ metallic glass
Caimin Huang, Shun Li, Shuxin Bai
National University of Defence Technology

G-P41
Study of crystalline transformation for Mg₆₁Zn₃₅Ca₄ glass using isoconversional method
Dao Zhang, Wangshu Lu, Sen Yang
Nanjing University of Science and Technology

G-P42
Formation of calcium phosphate layer on a Ni-free Ti-based metallic glass for potential biomedical applications
Wei Yang, Shujie Pang, Ying Liu, Tao Zhang
Key Laboratory of Aerospace Materials and Performance (Ministry of Education), School of Materials Science and Engineering, Beihang University, Beijing, China

G-P43
A novel Ti-based amorphous/nanocrystalline brazing filler metal for high-strength joining of Ti-6Al-4V alloy
Yan Si, Lulu Sun, Shujie Pang, Tao Zhang
Key Laboratory of Aerospace Materials and Performance (Ministry of Education), School of Materials Science and Engineering, Beihang University, Beijing 100191, China

G-P44
Effect of Rare Earth Er on Structure and Mechanical Properties of Zr-based Bulk Metallic Glasses
Li Chunyan¹,²+, Yin Jinfeng¹, Zhao Yanchun¹,², Kou Shengzhong¹,²
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