U. Smart Materials

Organizers: Chengbao Jiang, Xiaobing Ren, Yunzhi Wang, Weimin Huang, Yingqing Fu

Session U1: Friday Afternoon, Oct.21, 2016
Chairs: Xiaobing Ren, Yandong Wang
Room: Hall 1, VIP Room

13:30-13:55 U-01 (Keynote)
Strain Glass as A New Class of Smart Materials
Xiaobing Ren
Xi’an Jiaotong University

13:55-14:20 U-02 (Keynote)
New-type confined martensitic transformation explored by synchrotron-based X-ray and neutron diffraction techniques
Yandong Wang
University of Science and Technology Beijing

14:20-14:40 U-03 (Invited)
Martensite structure of Ti-Ni-Cu shape memory alloy thin films containing different precipitates
Xianglong Meng, Jing Wang, XiaoYang Yi, Wei Cai
School of Materials Science & Engineering, Harbin Institute of Technology

14:40-15:00 U-04 (Invited)
Achieving superior two-way actuation by the stress-coupling of nanoribbons and nanocrystalline shape memory alloy
Shijie Hao, Lishan Cui
China University of Petroleum-Beijing

15:05-15:30 U-06
Effects of sputtering parameters on composition and mechanical properties of TiNiCu thin films
Jing Wang, Xianglong Meng
Harbin Institute of Technology

15:30-15:45 U-07
Accelerated search for materials with targeted properties by adaptive design
Dezhen Xue¹, Balachandran Prasanna V.², Turab Lookman²
1. State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University, Xi’an 710049, China
2. Theoretical Division, Los Alamos National Laboratory, MS-B262, Los Alamos, New Mexico 87545, USA

15:45-16:05 Coffee Break

16:05-16:20 U-08
Microstructure, Shape Memory Effect and Superelasticity Property of Ti-Nb Binary Thin Film
Xianglong Meng, Bin Sun, Jianyong Sun, Wei Cai
National Key Laboratory Precision Hot Processing of Metals, Harbin Institute of Technology

16:20-16:35 U-09
Isothermal martensite formation originating from the crystallization of strain glass
Fan Ye¹, YuanChao Ji¹, Xiaobing Ren¹
1. Xian Jiao Tong University
2. National Institute for Material Science

Session U2: Saturday Morning, Oct.22, 2016
Chairs: YunZhi Wang, Xiangdong Ding
Room: Hall 1, VIP Room

8:30-8:55 U-10 (Keynote)
Phase Transition Graph – a New Tool for the Design of High Performance Ferroic Smart Materials
Yipeng Gao¹, Suliman Dregia¹, Yunzhi Wang¹*
1. The Ohio State University
2. Xian Jiao Tong University

8:55-9:20    U-11 (Keynote)
Interface driven pseudo-elasticity in α-Fe nanowires
Xiangdong Ding
Xi’an Jiaotong University

9:20-9:40    U-12 (Invited)
Superelasticity, corrosion resistance and biocompatibility of Ti–Zr–Nb–Fe shape memory alloy
Yan Li
Beihang University

9:40-10:00    U-13 (Invited)
Formation and novel properties of the third class of ferroic materials: glass-ferroic composite
Yuanchao Ji¹, Xiaobing Ren¹, Xiangdong Ding¹, Minxia Fang¹, Dong Wang¹, Kazuhiro Kazuhiro²
1. Frontier Institute of Science and Technology, State Key Laboratory for Mechanical Behaviour of Materials, Xi’an Jiaotong University, Xi’an 710049, China
2. Ferroic Physics Group, National Institute for Materials Science, Tsukuba, 305-0047 Ibaraki, Japan

10:00-10:20    Coffee Break

10:20-10:35    U-14
Temperature memory effect of Ti-Ni-Hf-Y high temperature shape memory alloy
Jun Li¹, Xiaoyang Yi², Weihong Gao², Wenlong Song¹, Xianglong Meng²
1. College of Mechanical and Electrical Engineering, Northeast Forestry University, Harbin 150001, China
2. School of Materials Science and Engineering, Harbin Institute of Technology, Harbin 150001, China

10:35-10:50    U-15
Slim hysteretic superelasticity of Ti-Ni-Nb strain glass alloys
Andong Xiao, Xiaobing Ren
Multi-Disciplinary Research Center, Frontier Institute of Science and Technology, Xi’an Jiaotong University

10:50-11:05    U-16
A study of ultrafine-grained TiNiNb shape memory alloy
Yunxiang Tong¹, Guangchao Wang¹, Feng Chen¹, Bing Tian¹, Li Li¹, Yufeng Zheng²
1. Institute of Materials Processing and Intelligent Manufacturing, College of Materials Science and Chemical Engineering, Harbin Engineering University, Harbin 150001, China
2. Department of Materials Science and Engineering, College of Engineering, Peking University, Beijing 100871, China

11:05-11:20    U-17
Effect of sintering temperature on the transformation behaviors, microstructure and mechanical properties in Ti-Ni-Hf high temperature shape memory alloys with a network structure
Xiaoyang Yi, Weihong Gao, Xianglong Meng, Wei Cai, Liancheng Zhao
School of Materials Science and Engineering, Harbin Institute of Technology, Harbin 150001, China.

Chairs: Chengbao Jiang, Renchao Che
Room: Hall 1, VIP Room

13:30-13:55    U-18 (Keynote)
Giant heterogeneous magnetistriction in Fe-Ga alloys
Chengbao Jiang, Yangkun He, Huibin Xu
Beihang University

13:55-14:15    U-19 (Invited)
In situ low-temperature Lorentz TEM platform for smart magnetic materials via atomic structure
design
Renchoa Che
Fudan University

14:15-14:35 U-20 (Invited)
Enhancing multifunctional properties of Heusler-type magnetic shape memory alloys via tailoring magnetostructural transformation
Daoyong Cong, Lian Huang, Xiaoming Sun, Yuhai Qu, Yandong Wang
University of Science and Technology Beijing

14:35-14:55 U-21 (Invited)
Development of Ni (CuCo)MnGa alloys with modified magnetostructural transition and magnetocaloric effect
Jingmin Wang, Hui Hua, Panpan Li, Chengbao Jiang
School of Materials Science and Engineering, Beihang University

14:55-15:10 U-22
Improved elastocaloric effect in boron-doped Ni-Mn-In magnetic shape memory alloys
Zhi Yang, DaoYong Cong, YanDong Wang
State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, No. 30 Xueyuan Rd, Haidian District, Beijing 100083, People’s Republic of China

15:10-15:25 U-23
Microstructure and deformation behavior of Fe nanoparticle reinforced CuZnAl composite
Feng Yang, Lishan Cui
China University of Petroleum Beijing

15:25-15:40 U-24
Phase structure and magnetostrictive properties of Fe-Co alloys
Yongjun Han, Yangkun He, Chengbao Jiang
School of Materials Science and Engineering, Beihang University, Beijing 100191, People’s Republic of China

15:40-16:00 Coffee Break

16:00-16:15 U-25
Magnetostrictive behaviors in ferromagnetic strain glass alloys
Hui Zhao1, Yuanchao Ji1, Sen Yang1, Xiaobing Ren1
1. Multi-Disciplinary Research Center, Frontier Institute of Science and Technology, State Key Laboratory for Mechanical Behavior of Materials, MOE Key Laboratory for Nonequilibrium Synthesis and Modulation of Condensed Matter, School of Science, Xi’an Jiaotong University, Xi’an 710049, China
2. Ferroic Physics Group, National Institute for Materials Science, Tsukuba, 305-0047 Ibaraki, Japan

16:15-16:30 U-26
Magnetically controlled damping in a polymer-bonded Ni-Mn-Ga composite
Xiaogang Sun1, Chaoying Xie2, Yourui Tao1, Anru Wu1
1. School of Engineering, Hunan Institute of Engineering
2. School of Material Science and Engineering, Shanghai Jiao Tong University
Oxidized-CNT/Polymer Composite Hydrogel
Yujie Chen, Hafeez Rehman, Hezhou Liu
Xi’an Jiaotong University

9:35-9:50    U-30
Fabrication of P(NIPAM-AM)@Au NRs hollow spheres for Near-Infrared Controlled Photothermal Drug Release
Jing Hu
School of Perfume and Aroma Technology, Shanghai Institute of Technology, Shanghai

9:50-9:55    U-31
Thermomechanical, Mechanical and Shape Memory Properties of Graphene Oxide/Styrene Based SMP Nanocomposite
Dawei Zhang, Keke Zhang, Shuai Yang, Jiyou Gu
Northeast Forestry University

10:05-10:25   Coffee Break

10:25-10:40    U-32
2D Photonic Crystal Nanocomposite Hydrogel Membrane
Yalong Liu, Yunsheng Chen, Qingsong Zhang
Tianjin Polytechnic University

10:40-10:55    U-33
Machine-learning-assisted search for high electro-strain in BaTiO3-based ferroelectrics
Ruihao Yuan
State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University, Xi’an 710049, China

10:55-11:10   U-34
CO2-switchable Polymers and Nanohybrids
Yujun Feng
Polymer Research Institute, State Key Laboratory of Polymer Materials Engineering, Sichuan University

11:10-11:25    U-35
Research on abnormal physical properties of antiperovskite Mn3XN compounds with strong spin-lattice coupling
Ying Sun1, Sihao Deng1, Kewen Shi1, Pengwei Hu1, Huiqing Lu1, Lei Wang1, Qingzhen Huang2, Cong Wang1
1. Center for Condensed Matter and Materials Physics, Department of Physics, Beihang University
2. NIST Center for Neutron Research, National Institute of Standards and Technology, United States

11:25-11:40   U-36
Shape memory effect and superelasticity in two dimensional Li doped phosphorene
Junkai Deng1, Zhe Liu2
1. State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University, Xi’an, 710049, China
2. Department of Mechanical and Aerospace Engineering, Monash University, Clayton, VIC 3800, Australia

Poster

U-P01
Sensing an inhomogeneous strain due to the surface relief in FeNiCoTi shape memory alloy by using graphene
Liqiang Zhang, Lishan Cui
China University of Petroleum, Beijing

U-P02
Fabrication and magnetostrictive properties of large-size TbDyFe alloy
Naijuan Wang1, Yuan Liu1, Yanxiang Li1
1. School of Materials Science and Engineering, Tsinghua University, Beijing 100084, China,
2. Key Laboratory for Advanced Materials Processing Technology (Ministry of Education)

U-P03
The influence of Nb content on the corrosion behavior of NiTiNb shape memory thin films
Kun Li1, Yan Li1, Yongqing Fu2, Lu Sun1
1. Beihang University,
2. Northumbria University

U-P04
Synthesis of Cs$_2$WO$_3$ and its near-infrared absorbing properties
Xiaopeng Cui, Zhang Chen, Yanfeng Gao
School of Materials Science and Engineering, Shanghai University, Shanghai 200444, China

U-P05
Perspective Smart Matters for Application in Cementing Slurry
Gufan Zhao, Weina Di
SINOPEC Research Institute of Petroleum Engineering, Beijing 100101, China

U-P06
Synthesis, characterization and phase transition property of VO$_2$(M) nanostructures
Yasi Fang

U-P07
To obtain as-casting La-Fe-Si magnetocaloric alloys with a dual-phase microstructure
Liang Yang, Zhenni Zhou, Jun Li, Qiaodan Hu, Jianguo Li
School of Materials Science and Engineering, Shanghai Jiao Tong University

U-P08
Synthesis of V-ZrSiO$_4$ Ceramic Pigments from Gels
Xue Di, Yanfeng Gao
Shanghai University

U-P09
Synthesis and conductivity properties of Gd$_{0.8}$Ca$_{0.2}$BaCo$_2$O$_{5+\delta}$, double perovskite by sol-gel combustion
Rong Zhang$^1$, Yi Lu$^1$, Ling Wei$^1$, Zhenggang Fang$^1$, Chunhua Lu$^1$, Yaru Ni$^1$, Zhongzi Xu$^1$, Shunyan Tao$^2$, Peiwen Li$^3$
1. State Key Laboratory of Materials-Orient Chemical Engineering, College of Materials Science and Engineering, Nanjing Tech University, Nanjing 210009, People's Republic of China
2. Key Laboratory of Inorganic Coating Materials, Chinese Academy of Sciences, Shanghai 200050, People's Republic of China
3. Department of Aerospace and Mechanical Engineering, The University of Arizona, Tucson, AZ 85721, USA

U-P10
Strain induced martensite stabilization and shape memory effect of Ti-20Zr-10Nb-4Ta alloy
Chengyang Xiong$^1$, Li Yao$^1$, Yan Li$^1$
1. School of Materials Science and Engineering, Beihang University
2. Beijing Key Laboratory for Advanced Functional Materials and Thin Film Technology, Beihang University

U-P11
Micro-abrasion-corrosion behaviour of a biomedical Ti-25Nb-3Mo-3Zr-2Sn alloy in simulated physiological fluid
Zhenguo Wang$^1$, Yan Li$^1$, Weijiu Huang$^2$, Xiaoli Chen$^2$, Haoran He$^2$
1. School of Materials Science and Engineering, Beihang University
2. School of Materials Science and Engineering, Chongqing University of Technology
3. Beijing Key Laboratory for Advanced Functional Materials and Thin Film Technology, Beihang University

U-P12
Microstructure and magnetostriction of Tb-doped Fe-Ga alloys
Weina Zhao, Jianrong Gao
Key Laboratory of Electromagnetic Processing of Materials (Ministry of Education) Northeastern University Shenyang 110819, People’s Republic of China

U-P13
Design of High Temperature Ti-Pd-Cr Shape
Memory Alloys with Small Thermal Hysteresis
Deqing Xue
State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University, Xi’an 710049, China.

U-P14
Facile Preparation of Hierarchical Sn-doped WO₃ Nanomaterials with Enhanced Gas-sensing Properties
Aihua Yan¹, Fei Huang¹, Hui Zhao²
Low Carbon Energy Institute, China University of Mining and Technology
School of Materials Sciences and Engineering, China University of Mining and Technology

U-P15
Synthesis and phase transition properties investigation of W-doped vanadium dioxide
Fengyu Kong¹, Anding Wang², Tangfu Feng¹, Fang Wang¹, Jinzhi Wang¹, Guanghai Li³
1. Ning Bo University of Technology, Ning Bo, Zhejiang, China
Key Laboratory of Magnetic Materials and Devices, Ningbo
2. Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ning Bo, Zhejiang, China
Key Laboratory of Materials Physic, Anhui Key Laboratory of Nanomaterial and Nanotechnology, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei, PR China

U-P16
Hot deformation behavior and dynamic recrystallization of Ti₅₀Ni₄₇Fe₃ shape memory alloy
Xianqian Yin¹, Chan-Hee Park², Yan-Feng Li¹, Yu-Ting Zuo¹, Sang-Won Lee², Jong-Teak Yeom², Xu-Jun Mi¹
1. General Research Institute for Nonferrous Metals
2. Korea Institute of Materials Science

U-P17
Microstructures and Phase transformations of Ti₃₀ZrₓNb (x=5, 7, 9, 13 at. %) Shape Memory Alloys
Wentao Qu¹, Xuguang Sun¹, Bifei Yuan¹, Chengyang Xiong², Fei Zhang², Yan Li²
1. School of Mechanical Engineering, Xi’an Shiyou University
2. School of Materials Science and Engineering, Beihang University