

PROGRAM

Mechanics and Properties of Noncrystalline Materials, I: Amorphous Metals

23 – 28 April 2006
Holiday Inn Lido Hotel
Beijing, China

Conference Chair

Mo Li
Georgia Institute of Technology, USA

Conference Co-chairs

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California Institute of Technology, USA

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Sunday, April 23, 2006

16:00 – 18:00	Registration
18:00 - 19:00	Welcome reception
20:00	Dinner

NOTES

- **Please observe “No Smoking” at ECI technical sessions, meals and social hours.**
- **Speakers should allow time at the end of their presentation for questions and discussion.**
- **Please silence your cell phone during technical sessions.**

Monday, April 24, 2006

- 07:00 – 08:30 Breakfast
- 09:00 – 09:10 Greeting from the Chairs (Mo Li and Yue Zhang)
- 09:10 – 10:00 **Opening Lecture**
Chair: M. Li
- W. L. Johnson
Potential Energy Landscape of Amorphous Metals
- 10:00 **Session I: Thermodynamics of Glass-Forming Systems**
Session Chairs: N. Q. Lam and J. Eckert
- 10:00 – 10:40 Invited Talk
T. Egami
Theory of Glass Transition and Liquid Fragility in Metallic Glasses
- 10:40 – 11:10 Coffee Break
- 11:10 – 11:50 Invited Talk
H. Fecht
Correlation between Thermodynamic and Kinetic Fragility in Bulk Metallic Glasses
- 11:50 – 12:30 Invited Talk
R. Busch
Thermodynamics, Kinetics, and Configuration Entropy in Bulk Metallic Glasses
- 12:30 – 12:50 M. P. Anisimov
Topology of the Glass Formation Rate Surfaces
- 13:00 – 14:00 Lunch
- 14:00 – 16:30 *ad hoc* discussions / Free time
- 16:30 **Session II: Mechanics and Dynamic Processes**
Session Chairs: J. Lewandowski and A. Peker
- 16:30 – 17:10 Invited Talk
T. G. Nieh
Strength and Strain Hardening of Bulk Metallic Glasses
- 17:10 – 17:30 W. H. Jiang
Spatiotemporally-Inhomogeneous Plastic Flows of a Bulk Metallic Glass

Monday, April 24, 2006 (continued)

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| 17:30 – 18:00 | Coffee Break |
| 18:00 – 18:40 | Invited Talk
M. Atzmon
<i>Nanoindentation of an Al-rich Metallic Glass – Shear Band Behavior, Serrated Flow and Pileup</i> |
| 18:40 – 19:20 | Invited Talk
Y. Bai
<i>Comparison between Void-Induced and Thermo-assisted Shear Banding in Bulk Metallic Glasses</i> |
| 19:20 – 19:40 | G. P. Zheng
<i>Studies on the Universality of Deformation in Metallic Glasses Using Nanoindentation and Statistical Models</i> |
| 19:40 – 20:00 | V. Keryvin
<i>Deformation Regimes under an Indenter Contacting a Bulk Metallic Glass: Influence on Shear-Band</i> |
| 20:00 | Dinner |

Tuesday, April 25, 2006

- 07:00 – 08:30 Breakfast
- 09:00 **Session III: Mechanical Properties - I**
Session Chairs: W. L. Johnson and S. Bossuyt
- 09:00 - 09:40 Invited Talk
A. Inoue and B. L. Shen
Fracture Toughness and Fatigue Strength of Ti- and Cu-Based Bulk Glassy Alloys
- 09:40 – 10:20 Invited Talk
J. Schroers
Dynamic and Kinetic Phenomena in Processing of Bulk Metallic Glasses
- 10:20 – 11:00 Coffee Break
- 11:00 – 11:40 Invited Talk
J. Lewandowski
Flow and Fracture Studies on Bulk Metallic Glasses
- 11:40 – 12:00 J. Das
Mechanical Behavior Cu- Base Bulk Metallic Glasses
- 12:00 – 12:20 S. B. Biner
Ductility of Bulk Metallic Glasses and their Composites with Ductile Reinforcements: Experiments and Simulations
- 12:20 – 12:40 K. F. Yao
The Deformation Behavior of an Fe-based Bulk Metallic Glass
- 12:30 – 14:00 Lunch
- 14:30 – 16:30 **Poster Session**
Session Chairs: G. P. Zheng and M. Li
- [P-1] K. Hajlaoui, M. Stoica, G. Vaughan and A.R. Yavari
Kinetic of Structural Relaxation in Metallic Glasses Measured by Real-Time Diffraction Using Synchrotron Radiation
- [P-2] E. D. Tabachnikova, V. Z. Bengus, L. N. Pal-Val, P. P. Pal-Val, Yu. V. Milman, S. I. Chugunova, N. H. Pryds and A. S. Pedersen
Mg₃₀Cu₆₀Y₁₀ Bulk Amorphous Alloy Mechanical and Acoustical Properties

Tuesday, April 25, 2006 (continued)

- [P-3] J. P. Chu, C. L. Chiang, H. Wijaya, R. T. Huang, C. W. Wu, B. Zhang, W. H. Wang and T. G. Nieh
Compressive Deformation of Rare-Earth Ce-Based Metallic Glasses
- [P-4] Z. F. Zhang, H. Zhang, F. F. Wu, and G. He
Deformation, Fracture, Plasticity and Melting Phenomenon of Bulk Metallic Glasses and Their Composites
- [P-5] Q. G. Meng, J. G. Li and M. G. Xia
Dilatometric Study of Mechanical Properties in Pr-Based Bulk Metallic Amorphous Alloys
- [P-6] W.Y. Liu, D.G. Pan, H.F. Zhang, Z.Q. Hu, H. Wang
Deformation Behavior of Bulk $Mg_{65}Cu_{25}Y_{10}$ Amorphous Alloy in the Super-Cooled Liquid Region
- [P-7] H. Li
Statistical Characteristics of The Indentation-Induced Strain Bursts in A Zr-Based Metallic Glass
- [P-8] N. Liu, H. N. Cai, F. C. Wang, H. F. Zhang and L. Wang
Dynamic Deformation and Failure Properties of 3d Net Sic/Zr-Based Amorphous Composites
- [P-9] Y. F. Xue, H. N. Cai, L. Wang, F. C. Wang and H. F. Zhang
Dynamic Compressive Deformation and Failure Behavior of Tungsten Skeleton/Zr-Based Amorphous Matrix Composites
- [P-10] Z.W. Zhu, H.F. Zhang, Q.S. Zhang and Z.Q. Hu
Nanocrystal Reinforced Bulk Metallic Glass Matrix Composites with Large Compressive Plasticity in Cu-Zr-Ti-Y Alloys
- [P-11] G. Y. Sun, G. Chen and G. L. Chen
Innovative Processing for Ductile BMG Composites
- [P-12] F. F. Wu, Z. F. Zhang, H. Zhang, S. X. Mao, and J. Eckert
Fracture Behavior of Two Kinds of Bulk Metallic Glassy Composites
- [P-13] G. C. Ma, J. Cai, W. Li, H. F. Zhang and Z. Q. Hu
The Wetting Behavior and Interfacial Characteristics of In-Sn Alloy on Amorphous and Crystalline $Cu_{46}Zr_{45}Al_7Gd_2$ Substrates
- [P-14] P. Jalali and M. Li
Molecular Dynamics Simulation of Shear Behavior in Particulate Systems

Tuesday, April 25, 2006 (continued)

- [P-15] M. Iqbal, J.I. Akhter, W.S. Sun, H.F. Zhang, Z. Q. Hu
Effect of Additional Elements on Mechanical Properties of Specially Constituted Zr-Based Bulk Amorphous Alloys
- [P-16] D. G. Pan, W. Y. Liu, H. F. Zhang, B. Z. Ding And Z. Q. Hu
The Effect of Ni Addition on The Thermal Stability and Mechanical Properties in Mg₆₅Cu₂₀Ag₅Gd₁₀ Bulk Metallic Glass
- [P-17] B. Z. Liu, Y. M. Wu and L. M. Wang
Glass Forming Ability and Mechanical Properties of Ti-Cu-Zr-Ni-Pd Bulk Metallic Glass
- [P-18] K. Liu, J. Wang and W. Liu
Numerical and Experimental Research for Explosive Welding Between Amorphous Alloy Film and Aluminum Plate
- [P-19] N. Chen, K F Yao, F Ruan and Y Q Yang
The Influence of Cooling Rate on the Micro-Hardness of Pd-Si Binary Glass Alloys
- [P-20] Y. Liu, T. H. Zhang, D. M. Xing, W. H. Li, B. C. Wei
The Effect of Structural Relaxation and Crystallization on Plastic Deformation Process in Zr-Based Metallic Glass
- [P-21] Y. F. Xue, H. N. Cai, L. Wang and F. C. Wang
Dynamic Compressive Deformation and Failure Behavior of Tungsten Skeleton Zr-Based Amorphous Matrix Composites
- [P-22] . Liu, H. N. Cai, F. C. Wang, H. F. Zhang and L. Wang
Dynamic Deformation and Failure Properties of 3d-Net Sic/Zr-Based Amorphous Matrix Composites
- [P-23] K. Q. Qiu, Z.Y. Suo, B. Yu and Y.L. Ren
Deformation Behavior of Tungsten Fiber Reinforced Zr-Based Metallic Glass

Tuesday, April 25, 2006 (continued)

16:30

Session IV: Mechanical Properties - II

Session Chair: H. Fecht

16:30 – 17:10

Invited talk

R. Dauskardt

Mechanisms of Fatigue Damage Formation and Evolution in Bulk Metallic Glasses

17:10 – 17:50

Invited Talk

Y. Li

Fracture Toughness of Ductile Bulk Metallic Glasses

18:00 – 22:30

Dinner

Chinese Art/Music Performance (19:15-20:45)

Wednesday, April 26, 2006

- 07:00 – 08:30 Breakfast
- 08:30 – 12:30 Excursion
Leaving for Forbidden City at 8:30 AM
- 12:30 – 13:45 Lunch
- 14:00 **Session V: Mechanical Properties - III**
Session Chair: T. G. Nieh
- 14:00 – 14:40 Invited Talk
W. H. Wang
Fracture in Brittle Metallic Glasses
- 14:40 – 15:20 Invited Talk
K. Flores
Characterization of the Free Volume Distribution in A Bulk Metallic Glass
- 15:20 – 16:00 Invited Talk
S. Bossuyt
Effect of Temperature on Elastic Properties of Bulk Metallic Glass
- 16:00 – 16:30 Coffee Break
- 16:30 **Session VI: Effects of Alloying Elements on Mechanical Properties**
Session Chairs: J. Schroers and Y. Li
- 16:30 – 17:10 Invited Talk
Y. Zhang
A Metallographic Study of the Minor Yttrium Addition on the Glass Forming Ability of Cu And Ti-Based Alloys
- 17:10 – 17:30 M. X. Xia
Effect of Alloying Elements on Mechanical Properties of Ti-Based Bulk Metallic Glasses
- 17:30 – 17:50 D. C. Qiao
Effects of Hf Addition on the Glass-Forming Ability and Mechanical Properties of Cu-Based Bulk Metallic Glasses
- 17:50 – 18:30 Coffee Break

Wednesday, April 26, 2006 (continued)

- 18:30 – 18:50 M. Iqbal
Effects of Additional Elements on Mechanical Properties of Specially-Constituted Zr-Based Bulk Amorphous Alloys
- 18:50 – 19:10 A. V. Dobromyslov
Synthesis of Amorphous Alloys from Elementary Powders by Intense Plastic Deformation under Pressure
- 20:00 - 22:30 Banquet
Invited Speaker: *Shiyi Chen*
Dean of Engineering School, Beijing University

Thursday, April 27, 2006

- 07:00 – 08:30 Breakfast
- 09:00 **Session VII: Atomistic Simulation and Modeling**
Session Chairs: T. Egami and A. Inoue
- 09:00 – 09:40 Invited Talk
A. S. Argon
Computer Simulation and Analysis of Plasticity in Amorphous Silicon
- 09:40 – 10:00 A. V. Vakhrouchev
Modeling the Processes of the Structure Formation, Interaction and Self-Organization of Nanoelements
- 10:00 – 10:20 Shin-Pon Ju
Molecular Dynamics, Monte Carlo, and Related Coarse-Grained Model
- 10:20 – 10:50 Coffee Break
- 10:50 – 11:30 Invited Talk
M. Li
Microscopic Deformation Processes in Amorphous Metals from Atomistic Simulations
- 11:30 – 11:50 M. D. Demetriou
Amorphous Metallic Foam: Processing and Mechanics
- 11:50 – 12:10 Z. F. Zhang
Deformation, Fracture, Plasticity and Melting Phenomenon of Bulk Metallic Glasses and their Composites
- 12:10 – 12:30 Isabella Gallino
Isothermal Enthalpic Relaxation and its Relation to the Thermodynamics and Crystallization of the $Zr_{58.5}Cu_{15.6}Ni_{12.8}Al_{10.3}Nb_{2.8}$ Bulk Metallic Glass Forming Alloy
- 12:30 – 14:00 Lunch
- 14:00 – 16:30 *ad hoc* discussions / Free time

Thursday, April 27, 2006

- 16:30 **Session VIII: Applications of Metallic Glasses**
Session Chairs: K. Flores and M. Atzmon
- 16:30 - 17:10 Invited Talk
A. Peker
Use and Applications of Bulk Metallic Glasses: Opportunities and Challenges
- 17:10 – 17:50 Invited Talk
N. Thadhani
High-strain Rate Deformation and Constitutive Modeling of BMG Tungsten Composites
- 17:50 – 18:30 Coffee Break
- 18:30 – 19:10 Invited Talk
T. Hufnagel
Strength, Toughness, and Fracture of Metallic Glasses welded with Reactive Multilayer Foils
- 19:10 – 19:30 J. Xu
Strength and Plasticity of Recently-Discovered Mg-Based Bulk Metallic Glasses with Exceptional Glass-Forming Ability
- 20:00 Dinner

Friday, April 28, 2006

- 07:00 – 08:00 Breakfast
- 09:00 **Session IX: Alloy Design and Processing**
Session Chairs: P. Liaw and W. H. Wang
- 09:00 - 09:40 Invited Talk
J. Eckert
Interplay between Alloy Design, Processing Conditions and Mechanical Properties of Bulk Metallic Glasses and Composites
- 09:40 – 10:20 Invited Talk
U. Ramamurty
Plasticity and Toughness of Bulk Metallic Glasses
- 10:20 - 10:50 Coffee Break
- 10:50 - 11:30 Invited Talk
P. Liaw
Fatigue Behavior of Bulk-Metallic Glasses
- 11:30 – 11:50 L. F. Liu
Characterization of Temperature-Dependent Shear Behavior of Zr-Based Bulk Metallic Glass Using Shear-Punch Testing
- 11:50 – 12:10 G. J. Fan
Mechanical Behavior of Advanced Materials: From Bulk Metallic Glasses To Bulk Nanocrystalline Metals And Alloys
- 12:10 – 12:30 W. B. Dong
Microstructure and Mechanical Properties of Zr-Cu-Ni-Al-Ta Glassy Matrix Composites
- 12:30 – 12:40 Closing Remarks (W. L. Johnson)
- 12:30 Adjourn