SYMPOSIUM CC

Supercooled Liquids, Glass Transition, and Bulk Metallic Glasses

December 2 – 6, 2002

Chairs

Takeshi Egami	Univ of Pennsylvania
A. Lindsay Greer	Cambridge Univ
Akihisa Inoue	Tohoku Univ
Srinivasa Ranganathan	Indian Inst of Science

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* Invited paper

SESSION CC1: OVERVIEW, PROCESSING AND APPLICATION
Chair: Takeshi Egami
Monday Morning, December 2, 2002
Republic B (Sheraton)

8:30 AM *CC1.1
FLOW, DEFORMATION, AND PROCESSING OF BULK AMORPHOUS METALS. W.L. Johnson, Keck Laboratory of Engineering, California Institute of Technology, Pasadena, CA.

9:00 AM *CC1.2
BULK-SOLIDIFYING NONFERROMAGNETIC IRON-BASED AMORPHOUS METALS: A CLASS OF AMORPHOUS STEEL ALLOYS. S. Joseph Poon[a], Gary J. Shiflet[b], V. Ponnambalam[a], F.Q. Guo[a]; [a]University of Virginia, Dept. of Physics, Charlottesville, VA; [b]University of Virginia, Dept. of Mater. Sci., Charlottesville, VA.

9:30 AM *CC1.3
STRUCTURAL AMORPHOUS METALS. Leo Christodoulou, DARPA/DSO, Arlington, VA.

10:00 AM BREAK

10:30 AM CC1.4
SYNTHESIS AND PROPERTIES OF SOFT MAGNETIC Fe-BASED BULK AMORPHOUS ALLOYS. Akihiro Makino, Akita Prefectural Univ, Dept of Machine Intelligence and Systems Science, Honjo, JAPAN; Akihisa Inoue, Inst for Materials Research, Tohoku Univ, Sendai, JAPAN.

10:45 AM CC1.5
BIOMEDICAL POTENTIAL OF A ZIRCONIUM BASED BULK METALLIC GLASS. J.A. Horton, Oak Ridge National Laboratory; D.E. Parsell, Univ. of Mississippi.

11:00 AM CC1.6
CENTRIFUGAL PROCESSING OF METALLIC LIQUIDS – NEW SEARCH TOOL FOR BULK METALLIC GLASS COMPOSITIONS. Jörg F. Löffler, University of California, Department of Chemical Engineering and Materials Science, Davis, CA; William L. Johnson, California Institute of Technology, W.M. Keck Laboratory, Pasadena, CA.

11:15 AM CC1.7
ELECTROCHEMICAL REMOVAL OF OXYGEN FOR PROCESSING GLASS-FORMING ALLOYS. Alberto Castellero, Sven Bossuyt, George Chen, University of Cambridge, Dept of Materials Science and Metallurgy, Cambridge, UNITED KINGDOM.

11:30 AM CC1.8
PROCESSING OF BULK METALLIC GLASS FOAMS. Alan H. Brothers, Dorian K. Balch, Christopher San Marchi, David C. Dunand, Northwestern University, Dept of Materials Science and Engineering, Evanston IL.

11:45 AM CC1.9
THERMAL TEMPERING OF BULK METALLIC GLASSES. C. Can Aydiner, Dept. of Applied Mechanics, Ersan Ustundag, Dept. of Materials Science, California Institute of Technology, Pasadena, CA.

SESSION CC2: GLASS FORMABILITY
Chair: A. Lindsay Greer
Monday Afternoon, December 2, 2002
Republic B (Sheraton)

1:30 PM *CC2.1
GLASS FORMABILITY AND STABILITY IN Pd-Ni-Cu-P ALLOYS. R.B. Schwarz, U. Harms, and T.D. Shen, Los Alamos Natl Laboratory, Los Alamos, NM.

2:00 PM *CC2.2
EXTERNAL EFFECT ON THE CRITICAL COOLING RATE FOR GLASS FORMATION IN Pd-Cu-Ni-P ALLOYS. Nobuyuki Nishiyama, Inoue Superliquid Glass Project, ERATO, JST, Sendai, JAPAN; Akihisa Inoue, IMR, Tohoku Univ, Sendai, JAPAN.

2:30 PM *CC2.3
COMPUTER-AIDED DEVELOPMENT OF MULTICOMPONENT METALLIC GLASSES. Akira Takeuchi and Akihisa Inoue, Tohoku Univ., Institute for Materials Research, Sendai, JAPAN.

3:00 PM BREAK

3:30 PM *CC2.4
FRAGILITY AND GLASS-FORMING ABILITY OF METALLIC LIQUIDS. Ralf Busch, Oregon State University, Dept. of Mechanical Engineering, Corvallis, OR.

4:00 PM CC2.5
ATOMISTIC THEORY OF GLASS FORMATION AND ATOMIC TRANSPORT IN BULK METALLIC GLASSES. T. Egami, Univ of Pennsylvania, Dept of Materials Science and Engineering, Philadelphia, PA.

4:15 PM CC2.6
ON THE GLASS FORMING ABILITY CRITERIA OF BULK METALLIC GLASSES. Z.P. Lu, C.T. Liu, Oak Ridge Natl Laboratory, Oak Ridge, TN.

4:30 PM CC2.7
A COMPARISON OF QUASICRYSTAL FORMING ABILITY AND BULK GLASS FORMING ABILITY. S. Ranganathan, Department of Metallurgy, Indian Institute of Science, Bangalore, INDIA; A. Inoue, Institute for Materials Research, Tohoku University, Sendai, JAPAN.

4:45 PM CC2.8
EFFECT OF ADDITIONS OF STRONG OXIDE FORMERS ON THE GLASS FORMING ABILITY OF A Zr-Cu-Ni-Al-Ti MELT. A.A. Kundig, D. Lepori, and P.J. Uggowitzer, Institute of Metallurgy, Swiss Federal Institute of Technology Zurich, Zurich, SWITZERLAND; A.J. Perry, A.I.M.S. Consulting, Buchs SG, SWITZERLAND; S. Rossmann, Vacumet AG, Winterthur, SWITZERLAND; A. Blatter, PX-Holding SA, La Chaux-de-Fonds, SWITZERLAND; A. Dommann, Institute for Microsystems, Interstate University of Applied Sciences of Technology Buchs, Buchs SG, SWITZERLAND.

SESSION CC3: POSTER SESSION
Chair: Gary J. Shiflet
Monday Evening, December 2, 2002
8:00 PM
Exhibition Hall D (Hynes)

CC3.1
AN APPLICATION OF BULK METALLIC GLASS AS HIGH-PRESSURE GASKET FOR *IN-SITU* X-RAY DIFFRACTION. Duanwei He, Yusheng Zhao, J. Qian, S. Bobev, K.A. Lokshin, Los Alamos National Laboratory, NM; H.K. Mao, J.Z. Hu, J. Shu, J. Xu, Geophysical Laboratory, Carnegie Institution of Washington, Washington, DC.

CC3.2
CORROSION BEHAVIOR OF BULK GLASS-FORMING MAGNESIUM-BASED ALLOYS IN WEAKLY ACIDIC TO STRONGLY ALKALINE SOLUTIONS. A. Gebert, R.V. Subba Rao, U. Wolff and J. Eckert, IFW Dresden, GERMANY.

CC3.3
IN-PLANE ANISOTROPY IN HETERO-AMORPHOUS (FeCoB)-(SiO_2) THIN FILMS. P. Johnsson, S.I. Aoqui, V.P. Denysenkov, A.M. Grishin, Dept of Condensed Matter Physics, Royal Institute of Technology, Stockholm-Kista, SWEDEN; M. Munakata, Energy Electronics Lab, Sojo University, Kumamoto, JAPAN.

CC3.4
FRICTION WELDING OF BULK METALLIC GLASSES USING THE SUPERCOOLED LIQUID STATE. Yoshihito Kawamura, Shoji Takuo and Ohno Yasuhide, Kumamoto University, Dept of Materials Science, Kumamoto, JAPAN.

CC3.5
CONSOLIDATION OF ZIRCONIUM-BASED AMORPHOUS POWDER INTO BULK GLASS. K.T. Hartwig, I. Karaman, J. Robertson, R. Barber, J.-T. Im, Texas A&M University, Dept. of Mechanical Engineering, College Station, TX; I. Anderson, Iowa State University, Ames Laboratory, Ames, IA; and S.N. Mathaudhu, Texas A&M University, Dept. of Mechanical Engineering, College Station, TX.

CC3.6
CONSOLIDATION OF BULK METALLIC GLASSES. Joachim H. Schneibel, Oak Ridge National Laboratory, Metals and Ceramics Division, Oak Ridge, TN; S.C. Deevi, Philip Morris USA, Research Center, Richmond, VA.

CC3.7
COMPARISON OF GLASS FORMATION BY MECHANICAL ALLOYING AND CASTING IN THE QUASI TERNARY Zr-Al-CuNiCo SYSTEM. Rainer K. Wunderlich, Hans -J. Fecht, University of Ulm, Faculty of Engineering, Ulm, GERMANY; Partha Chattopadhyay, Indranil Manna, Indian Institute of Technology, Khargapur, INDIA.

CC3.8
MICROSTRUCTURE AND MAGNETIC PROPERTIES OF BULK AND SPLAT-QUENCHED $Nd_{60}Fe_{30}Al_{10}$ GLASS-FORMING ALLOYS. A. Bracchi, K. Samwer, I. Physikalisches Institut, Universität Göttingen, Göttingen, GERMANY; S. Schneider, M. Seibt, IV. Physikalisches Institut, Universität Göttingen, Göttingen, GERMANY; J.F. Löffler, Dept of Chemical Engineering and Materials Science, University of California, Davis, CA.

CC3.9
GLASS-FORMING ABILITY AND CRYSTALLIZATION BEHAVIOR IN HIGH-DENSITY BULK METALLIC GLASSES. L.J. Kecskes, S.F. Trevino, and R.H. Woodman, U.S. Army Research Laboratory, Weapons and Materials Research Directorate, Aberdeen Proving Ground, MD.

CC3.10
Transferred to CC4.3

CC3.11
DYNAMIC CROSSOVER IN SUPERCOOLED LIQUIDS INDUCED BY HIGH PRESSURE. Riccardo Casalini, Naval Research Laboratory, Chemistry Division, Washington, DC; Marian Paluch, Institute of Physics, Silesian University, POLAND; C. Michael Roland, Naval Research Laboratory, Chemistry Division, Washington, DC.

CC3.12
DYNAMICS OF PERTURBED GRANULAR MEDIA: FROM THE GLASSY TO THE FLUID BEHAVIOR. Patrick Mayor, Gianfranco D'Anna, Gérard Gremaud, Institut de physique de la matière complexe, Ecole Polytechnique Fédérale de Lausanne, Lausanne, SWITZERLAND.

CC3.13
APPARENT THERMODYNAMIC SIGNATURES OF THE GLASS TRANSITION IN SYSTEMS WITHOUT ATTRACTION. Sanat Kumar, Department of Materials Science and Engineering, Pennsylvania State University, University Park, PA.

CC3.14
CORRELATION BETWEEN THERMAL EXPANSION AND GLASS TRANSITION TEMPERATURE OF BULK GLASSY ALLOYS. Hidemi Kato, Akihisa Inoue, Tohoku Univ., Institute for Materials Research, Sendai, JAPAN; Nobuyuki Nishiyama, Baolong Shen, ERATO, Inoue Superliquid Glass Project, Sendai, JAPAN; H.S. Chen, Lucent Technologies, Bell Laboratories, Murray Hill, NJ.

CC3.15
STABILITY OF SPINODAL NETWORKS IN UNDERCOOLED Pd-Si ALLOYS. Y.L. Yip, H.W. Kui, Dept of Physics, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong P.R. CHINA.

CC3.16
TEMPERATURE AND FREQUENCY DEPENDENCE OF THE SPECIFIC HEAT CAPACITY OF DIFFERENT GLASS FORMING LIQUIDS. C. Glorieux[†], E.H. Bentefour and J. Thoen, Laboratorium voor Akoestiek en Thermische Fysica, Departement Natuurkunde, Katholieke Universiteit Leuven, Leuven, BELGIUM. [†]Postdoctoral researcher for Fonds voor Wetenschappelijk Onderzoek-Vlaanderen (FWO-V).

CC3.17
TWO-LIQUID SEPARATION IN UNDERCOOLED Co-Cu ALLOYS. X.Y. Lu[a,b], M. Kolbe[a], B. Wei[b], D.M. Herlach[a]; [a]Institute of Space Simulation, German Aerospace Center (DLR), Cologne, GERMANY; [b]Department of Applied Physics, Northwestern Polytechnical University, Xian, P.R. CHINA.

CC3.18
Abstract Withdrawn

CC3.19
SINGLE-PARTICLE JUMPS IN A BINARY LENNARD-JONES GLASS. Katharina Vollmayr-Lee, Department of Physics, Bucknell University, Lewisburg, PA.

CC3.20
ELECTRONIC STRUCTURAL ANALYSIS OF REFRACTORY ALLOY GLASSES VIA SYNCHROTRON RADIATION. Michelle L. Tokarz, John C. Bilello, Matt Daniels, University of Michigan, Ann Arbor, MI; John Pople, Zofia Rek, Stanford Synchrotron Radiation Laboratories, Palo Alto, CA.

CC3.21
A COMPARISON OF MEASURED AND SIMULATED Al AND Al-Cu LIQUID STRUCTURES. J.R. Morris, M.J. Kramer, D. Sordelet, Ames Laboratory, U.S. Dept. of Energy; M. Asta, Dept. of Materials Science, Northwestern University; J.J. Hoyt, Sandia National Laboratories, U.S. Dept. of Energy.

SESSION CC4: STRUCTURAL RELAXATION AND DYNAMICS
Chair: S. Joseph Poon
Tuesday Morning, December 3, 2002
Republic B (Sheraton)

8:30 AM *CC4.1
LIQUID DE-EXCITATION IN TIME INSTEAD OF TEMPERATURE: NEW ASPECTS OF INHOMOGENEITY AND FRAGILITY. C.A. Angell[a], S. Borick[a], L-M. Wang[a], and A. Hayashi[a], Y-Z. Yue[b], and J.R.D. Copley[c]; [a]Dept. of Chemistry and Biochemistry, Arizona State Univ., Tempe, AZ; [b] Danish Center for Materials Technology, Aalborg University, Aalborg, DENMARK; [c]National Institute of Science and Technology, Gaithersburg, MD.

9:00 AM CC4.2
CAGE DECAY, JOHARI-GOLDSTEIN RELAXATION, AND TRANSITION TO COOPERATIVE RELAXATION IN GLASS-FORMING LIQUIDS. K.L. Ngai, Marian Paluch, R. Casalini, Naval Research Laboratory, Washington, DC.

9:15 AM CC4.3
GLASS TRANSITION IN BULK METALLIC GLASSES STUDIED BY INTERNAL FRICTION AND ULTRASONIC METHODS. Wei Hua Wang, Institute of Physics, Chinese Academy of Sciences, Beijing, P.R. CHINA.

9:30 AM CC4.4
RELAXATION MAPPING ANALYSIS WITH AN HYPERBOLIC HEATING RATE. C.J. Dias, CENIMAT, Dep. de Cíncia dos Materiais, Faculdade de Cíncias e Tecnologia, Universidade Nova de Lisboa, Monte de Caparica, PORTUGAL.

9:45 AM CC4.5
COMPARISON BETWEEN THERMAL AND DEFORMATION-INDUCED STRUCTURAL RELAXATION IN ATOMIC GLASSES. Magesh Nandagopal, Marcel Utz, Institute of Materials Science and Department of Physics, University of Connecticut, Storrs, CT.

10:00 AM BREAK

10:30 AM *CC4.6
STRUCTURAL RECOVERY IN POLYMER GLASSES AFTER CHEMICAL ACTIVITY JUMPS. Gregory B. McKenna, Yong Zheng, Mataz Alcoutlabi, Lameck Banda, Texas Tech University, Department of Chemical Engineering, Lubbock, TX.

11:00 AM CC4.7
DIFFUSION IN Pd-BASED GLASS FORMERS FROM THE GLASSY STATE TO THE EQUILIBRIUM MELT. Volker Zöllmer, Klaus Rätzke, Franz Faupel, Lehrstuhl für Materialverbunde, Technische Fakultät der Universität Kiel, Kiel, GERMANY.

11:15 AM CC4.8
DIFFUSION AND RELAXATION IN GLASSES AND THEIR MELTS. D. Caprion, Universite Libre de Bruxelles, BELGIUM; M. Kluge, H.R. Schober, Institut für Festkörperforschung, Forschungszentrum Jülich, Jülich, GERMANY.

11:30 AM CC4.9
SPATIALLY HETEROGENEOUS DYNAMICS AND STRING-LIKE MOTION IN SIMULATED GLASS-FORMING LIQUIDS AND METALLIC GLASSES. Y. Gebremichael, N. Lacevic, M.I. Vogel and S.C. Glotzer, Dept of Chemical Engineering, University of Michigan, Ann Arbor, MI.

11:45 AM CC4.10
RELATIVE CONTRIBUTIONS OF THERMAL ENERGY AND FREE VOLUME TO THE TEMPERATURE DEPENDENCE OF STRUCTURAL RELAXATION IN FRAGILE GLASS-FORMING LIQUIDS. Mike Roland, Marian Paluch, Riccardo Casalini, Naval Research Lab, Chemistry Div, Washington, DC.

SESSION CC5: NATURE OF SUPERCOOLED LIQUID
Chair: William L. Johnson
Tuesday Afternoon, December 3, 2002
Republic B (Sheraton)

1:30 PM *CC5.1
THE ENERGY LANDSCAPE APPROACH TO THE STUDY OF GLASS-FORMING LIQUIDS AND THE GLASS TRANSITION. Srikanth Sastry, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur Campus, Bangalore, INDIA.

2:00 PM CC5.2
ENERGY LANDSCAPES AND NONEQUILIBRIUM DYNAMICS OF SUPERCOOLED LIQUIDS AND GLASSES. Daniel J. Lacks, Dept of Chemical Engineering, Tulane University, New Orleans, LA.

2:15 PM CC5.3
ATOMIC-LEVEL STRESSES, LOCAL FREEZING AND RELATIONSHIP TO FLUCTUATIONS IN THE POTENTIAL ENERGY LANDSCAPE. Mahadevan Khantha, Hao Chen and Takeshi Egami, Dept of Materials Science and Engineering, Univ of Pennsylvania, Philadelphia, PA.

2:30 PM CC5.4
RELAXATION DYNAMICS OF GLASS-FORMING LIQUIDS STUDIED BY ULTRASONIC SPECTROSCOPY. M. Cutroni, A. Mandanici, Universite di Messina, Dipartimento di Fisica and INFM, Messina, ITALY.

2:45 PM CC5.5
NMR INVESTIGATION OF $Pd_{43}Ni_{10}Cu_{27}P_{20}$ FROM THE MELTING POINT TO THE GLASSY STATE. Lilong Li, Yue Wu, Department of Physics and Astronomy and Curriculum in Applied and Materials Sciences, University of North Carolina, Chapel Hill, NC; Jan Schroers, W.M. Keck Laboratory of Engineering Materials, California Institute of Technology, Pasadena, CA.

3:00 PM BREAK

3:30 PM *CC5.6
THE HEAT CAPACITY AND ENTROPY DECREASE OF EQUILIBRIUM LIQUIDS AND DISORDERED CRYSTALS ON COOLING TO 0 K. G.P. Johari, Department of Materials Science and Engineering, McMaster University, Hamilton, Ontario, CANADA.

4:00 PM CC5.7
SPECIFIC HEAT OF UNDERCOOLED LIQUID IN COMPLEX CRYSTAL FORMING Ti-Zr-Ni ALLOYS. G.W. Lee, A.K. Gangopadhyay, K.F. Kelton, Washington Univ, Dept of Physics, St. Louis, MO; R.W. Hyers, M.B. Robinson, J. Rogers, NASA/ George C. Marshall Space Flight Center, Huntsville, AL; T.J. Rathz, Univ of Alabama, Huntsville, AL.

4:15 PM CC5.8
CONNECTION BETWEEN KINETICS AND THERMODYNAMICS OF SUPERCOOLED LIQUIDS: THE NATURE OF RELAXATION TIME NEAR THE CROSSOVER TEMPERATURE. Udayan Mohanty, Boston College, Dept of Chemistry, Newton, MA.

4:30 PM CC5.9
AN INVESTIGATION ON THE FRAGILITY OF METALLIC GLASS FORMING LIQUIDS. G.J. Fan, Chemical Engineering and Materials Science, University of California, Davis, CA; R.K. Wunderlich and H.J. Fecht, Ulm University, Materials Division, Ulm, GERMANY.

4:45 PM CC5.10
THERMODYNAMICS OF SUPERCOOLED LIQUID SILICON AND ITS GLASS TRANSITION: A COMPUTER SIMULATION STUDY. Caetano R. Miranda and A. Antonelli, Instituto de Física "Gleb Wataghin", Universidade Estadual de Campinas, Campinas, SP, BRAZIL.

SESSION CC6: POSTER SESSION
Chair: Ralf Busch
Tuesday Evening, December 3, 2002
8:00 PM
Exhibition Hall D (Hynes)

CC6.1
DEPENDENCE OF METALLIC GLASS MECHANICAL PROPERTIES ON THE LIQUID TEMPERATURE PRIOR TO QUENCH. Fabio Albano, Michael L. Falk, Sharon C. Glotzer, University of Michigan, Dept of Materials Science and Engineering, Ann Arbor, MI; Naida Lacevic, Johns Hopkins University, Baltimore, MD.

CC6.2
MECHANISMS OF DYNAMIC FAILURE IN BULK METALLIC GLASSES. T. Jiao, The Johns Hopkins Univ, Dept of Mechanical Engineering, Baltimore, MD; C. Fan, The Johns Hopkins Univ, Dept of Materials Science & Engineering, Baltimore, MD; L.J. Kecskes, U.S. Army Research Laboratory, Weapons and Materials Research Directorate, AMSRL-WM-MD, Aberdeen Proving Ground, MD; T.C. Hufnagel, The Johns Hopkins Univ, Dept of of Materials Science & Engineering, Baltimore, MD; K.T. Ramesh, The Johns Hopkins Univ, Dept of Mechanical Engineering, Baltimore, MD.

CC6.3
THE EFFECT OF ATOMIC-SCALE OPEN-VOLUME ON KINETIC, FLOW AND FRACTURE PROCESSES IN A Zr-Ti-Ni-Cu-Be BULK METALLIC GLASS. Daewoong Suh and Reinhold H. Dauskardt, Department of Materials Science and Engineering, Stanford University, Stanford, CA.

CC6.4
ELECTRON SCREENING IN BULK AMORPHOUS Pd-Ni-P AND Pd-Ni-Fe-P ALLOYS. Q. Li, D. Greig, University of Leeds, Department of Physics and Astronomy, Leeds, UNITED KINGDOM; J.A.D. Matthew, University of York, Department of Physics, York, UNITED KINGDOM; T.H. Shen, University of Salford, Joule Physics Laboratory, Great Manchester, UNITED KINGDOM; E.A. Seddon, and G. Beamson, Daresbury Laboratory, CLRC, Warrington, Cheshire, UNITED KINGDOM.

CC6.5
STRUCTURE AND DYNAMICS OF BeF_2 AND BeH_2 BASED GLASSES. K. Lantzky, S. Sampath, and J.L. Yarger, University of Wyoming, Department of Chemistry, Laramie, WY.

CC6.6
THEORETICAL SCHEME FOR THE STUDY OF THERMODYNAMIC AND TRANSPORT PROPERTIES OF SIMPLE FLUIDS AT THE LIQUID-GLASS TRANSITION LINE. M. Robles, Centro de Investigación en Energía Universidad Nacional Autónoma de Mexico, Temixco, Mor., MEXICO; L.I. Uruchurtu Facultad de Ciencias, Universidad Autónoma del Estado de Morelos, Cuernavaca Mor. MEXICO; M. López de Haro, Centro de Investigación en Energía, Universidad Nacional Autónoma de Mexico, Temixco, Mor., MEXICO.

CC6.7
A THERMODYNAMIC MODEL FOR AMORPHIZATION AND TOPOLOGICAL CRITERIA. O.N. Senkov, UES, Inc, Dayton, OH;

D.B. Miracle, Air Force Research Laboratory, AFRL/MLLMD, Wright-Patterson AFB, OH; S. Rao, UES, Inc, Dayton, OH.

CC6.8
A GEOMETRIC MODEL FOR SHORT-RANGE ATOMIC CONFIGURATIONS IN AMORPHOUS Al ALLOYS. D.B. Miracle and O.N. Senkov†, Air Force Research Laboratory, Materials and Manufacturing Directorate, Wright-Patterson AFB, OH. †UES, Inc., Dayton, OH.

CC6.9
GLASS TRANSITION IN THE IMMISCIBLE Cu-Ta SYSTEM STUDIED BY MOLECULAR DYNAMIC SIMULATIONS WITH A NEWLY CONSTRUCTED N-BODY POTENTIAL. B.X. Liu, L.T. Kong, H.R. Gong, W.S. Lai, Advanced Materials Laboratory, Department of Materials Science and Engineering, Tsinghua University, Beijing, CHINA.

CC6.10
A MONTE CARLO AND MOLECULAR DYNAMICS STUDY OF DISORDER TRAPPING IN Ni_3Al. J.J. Hoyt, Sandia National Laboratories, Albuquerque, NM; M. Asta, Dept. of Materials Science and Engineering, Northwestern University, Evanston, IL.

CC6.11
INHERENT STRUCTURES OF SIMULATED LIQUID AND AMORPHOUS METALS. Alvaro Posada-Amarillas, Dept de Investigacion en Fisica, UNISON; E. Urrutia-Banuelos, Prog de Posgrado en Ciencias (Fisica), UNISON; I.L. Garzon, Instituto de Fisica, UNAM, MEXICO.

CC6.12
CALCULATED AFFECT OF ALLOY ADDITIONS ON THE SATURATION MAGNETIZATION OF AMORPHOUS $Fe_{0.80}B_{020}$. D.M.C. Nicholson, Oak Ridge National Laboratory, Yang Wang, Pittsburgh Supercomputing Center; Mike Widom, Carnegie Mellon University.

CC6.13
MEASURED AND CALCULATED ELECTRONIC STRUCTURE OF $Ni_{0.40}Pd_{0.40}P_{0.20}$ AND $Cu_{0.40}Pd_{0.40}P_{0.20}$. D.M.C. Nicholson, Oak Ridge National Laboratory; Faisal M. Alamgir, Himanshu Jain, David B. Williams, Dept. of Material Science & Engineering, Lehigh University; R.B. Schwarz, Los Alamos National Laboratory.

CC6.14
FIRST PRINCIPLES BULK AMORPHOUS STRUCTURES GENERATED BY PSEUDO POTENTIAL MOLECULAR DYNAMICS AND LOCALLY SELF CONSISTENT MULTIPLE SCATTERING RAPID QUENCH. Siddartha Naidu, Mike Widom, Carnegie Mellon University; Yang Wang, Pittsburgh Supercomputing Center; D.M.C. Nicholson, G.M. Stocks, Oak Ridge National Laboratory.

CC6.15
THE ELECTRONIC AND MAGNETIC STRUCTURE OF IRON-BASED BULK AMORPHOUS ALLOYS: AN AB INITIO APPROACH. Yang Wang, Mike Widom, Carnegie Mellon University, Pittsburgh, PA; Don Nicholson, Oak Ridge National Laboratory, Oak Ridge, TN; Marek Mihalkovic, Siddartha Naidu, Carnegie Mellon University, Pittsburgh, PA.

CC6.16
EFFECT OF CSRO ON GLASS FORMATION IN BINARY SYSTEMS. Hao Chen, Mahadevan Khantha, Takeshi Egami, Univ of Pennsylvania, Dept of Materials Science and Engineering, Philadelphia, PA.

CC6.17
MOLECULAR DYNAMICS SIMULATION OF DYNAMICS IN LIQUID AND GLASSY Ag-Cu METALLIC ALLOYS. A.S. Bakai, N.P. Lazarev, National Science Center, Kharkiv Institute of Physics and Technology, Kharkiv, UKRAINE; K.L. Ngai, Naval Research Laboratory, Washington, DC.

CC6.18
STOCHASTIC DIFFERENTIAL EQUATION FOR CRACK FRONT PROPAGATION IN GLASSY MATERIALS. Pier Giuseppe Gabrielli, ENEA, Unit Materiali Centro Ricerche Casaccia, Rome, ITALY.

CC6.19
MECHANICALLY ALLOYED Zr-Cu-Al-Ni GLASS COMPOSITES CONTAINING SECOND-PHASE ZrC PARTICLES. Stefano Deledda, Jürgen Eckert, Ludwig Schultz, IFW Dresden, Institute of Metallic Materials, Dresden, GERMANY.

CC6.20
SIMULATIONS OF THE FAILURE MODES OF MODEL METALLIC GLASSES. Fabio Albano, Bin Hu, Michael L. Falk, University of Michigan, Dept of Materials Science and Engineering, Ann Arbor, MI; Alok Paranjpye, Glenn Beltz, University of California, Santa Barbara, Dept of Mechanical and Environmental Engineering, Santa Barbara, CA.

CC6.21
Abstract Withdrawn

CC6.22
SIMULATION OF CRYSTALLIZATION AND STRESS RELAXATION IN METALLIC GLASSES. Yoshiaki Kogure and Masao Doyama, Teikyo University of Science & Technology, Uenohara, Yamanashi, JAPAN.

SESSION CC7: STRUCTURE AND MODELING - I
Chair: Ersan Ustundag
Wednesday Morning, December 4, 2002
Republic B (Sheraton)

8:30 AM *CC7.1
ICOSAHEDRAL ORDER IN LIQUIDS AND GLASSES. K.F. Kelton, Department of Physics, Washington University, St. Louis, MO.

9:00 AM CC7.2
DIFFRACTION EXPERIMENTS ON THE SHORT-RANGE ORDER IN UNDERCOOLED METALLIC MELTS.
Dirk Holland-Moritz, Thomas Schenk, Dieter M. Herlach, DLR, Institut für Raumsimulation, Linder Höhe, Köln, GERMANY; Virginie Simonet, Laboratoire de Physique des Solides (UMR CNRS/UPS), Université de Paris-Sud, Orsay, FRANCE; Robert Bellissent, Centre dÉtudes Nucléaires de Grenoble, DRFMC/SPSMS/MDN, Grenoble, FRANCE; Pierre Convert, Thomas Hansen, Institut Laue-Langevin, Grenoble, FRANCE.

9:15 AM CC7.3
THE SPECIFIC HEAT AND ENTROPY OF SIMPLE SUPERCOOLED LIQUIDS AND GLASSES. A.V. Granato, University of Illinois at Urbana-Champaign, Urbana, IL.

9:30 AM CC7.4
EFFICIENT ATOMIC PACKING IN METALLIC GLASSES. Daniel B. Miracle, Wynn S. Sanders, Air Force Research Laboratory, Materials and Manufacturing Directorate, Wright-Patterson AFB, OH; Oleg N. Senkov, UES, Inc., Dayton, OH.

9:45 AM CC7.5
SIMPLE ATOMIC MODEL WITH UNUSUAL THERMO-DYNAMICS. P. Keblinski, R.K Dash, Material Science and Engineering Department, Rensselaer Polytechnic Institute, Troy, NY; M.Z. Bazant, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA; and M.M. Treacy, NECI, Princeton, NJ.

10:00 AM BREAK

10:30 AM *CC7.6
LOCAL CLUSTERING STRUCTURES IN Fe-BASED AND Zr-BASED GLASSY ALLOYS. Muneyuki Imafuku, Inoue Superliquid Glass Project, ERATO, JST, Sendai JAPAN; Eiichiro Matsubara, Akihisa Inoue, Institute for Materials Research, Tohoku University, Sendai, JAPAN.

11:00 AM CC7.7
LOCAL ATOMIC TOPOLOGY OF Al- AND Fe-BASED METALLIC GLASSES BY NEUTRON DIFFRACTION. Kyungsoo Ahn, Despina Louca, G. Shiflet, and J. Poon, University of Virginia, Charlottesville, VA; T. Egami, University of Pennsylvania, Philadelphia, PA.

11:15 AM CC7.8
THE STRUCTURAL ORIGINS OF THE STABILITY OF Pd-Ni-P BULK METALLIC GLASS. Faisal M. Alamgir, Brookhaven National Lab, Upton, NY; Himanshu Jain, David B. Williams, Lehigh University, Bethlehem, PA; Donald Nicholson, Oak Ridge National Lab, Oak Ridge, TN; Ricardo B. Schwarz, Los Alamos National Lab, Los Alamos, NM.

11:30 AM CC7.9
STRUCTURE OF SHEAR BANDS IN ZIRCONIUM-BASED METALLIC GLASSES OBSERVED BY TRANSMISSION ELECTRON MICROSCOPY. Xiaofeng Gu, Todd C. Hufnagel, Johns Hopkins Univ, Dept of Materials Science and Engineering, Baltimore, MD; Kenneth J.T. Livi, Johns Hopkins Univ, Dept of Earth and Planetary Sciences, Baltimore, MD.

11:45 AM CC7.10
TRANSIENT DEFORMATION AND FLOW IN BULK METALLIC GLASSES AND DEEPLY UNDERCOOLED GLAS- FORMING LIQUIDS – A SELF CONSISTENT DYNAMIC FREE VOLUME MODEL. Sven Bossuyt, A. Lindsay Greer, Univ of Cambridge, Dept of Materials Science and Metallurgy, Cambridge, UNITED KINGDOM; Marios Demetriou, Jun Lu, William Johnson, California Inst of Technology, Division of Engineering and Applied Science, Pasadena, CA.

SESSION CC8: STRUCTURE AND MODELING - II
Chair: Daniel B. Miracle
Wednesday Afternoon, December 4, 2002
Republic B (Sheraton)

1:30 PM *CC8.1
SELF-ORGANIZATION IN NETWORK GLASSES. P. Boolchand, D.G. Georgiev, Tao Qu, Fei Wang, University of Cincinnati, Department of ECECS, Cincinnati, OH.

2:00 PM CC8.2
INTERMEDIATE RANGE ORDER IN SILICATE MELTS AND GLASSES: COMPUTER SIMULATION STUDIES. Jürgen Horbach, Anke Winkler, Walter Kob, Kurt Binder, Johannes Gutenberg Universität Mainz, Institut für Physik, Mainz, GERMANY.

2:15 PM CC8.3
BEHAVIORS OF THE FREE VOLUME IN MODEL GLASS-FORMING LIQUIDS. Mo Li, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA.

2:30 PM CC8.4
PHASE TRANSITION AND LOCAL ORDERING IN METALLIC GLASS FORMING LIQUIDS. Hyon-Jee Lee[a,b], Tahir Çağın[b], William A. Goddard III[b], and William L. Johnson[a], California Institute of Technology, Pasadena, CA; [a]Materials Science Department; [b]Materials and Process Simulation Center.

2:45 PM CC8.5
CALCULATIONS OF THE STRUCTURE AND PROPERTIES OF RAPIDLY QUENCHED Ni/Zr ALLOYS. Frank J. Cherne, Michael I. Baskes, Ricardo B. Schwarz, and Srinivilliputher G. Srinivasan, Structure and Property Relations, Los Alamos National Laboratory, Los Alamos, NM.

3:00 PM BREAK

3:30 PM CC8.6
FIRST PRINCIPLES SIMULATION OF IRON-BASED INTERMETALLIC ALLOYS. Michael Widom, Siddartha Naidu, Marek Mihalkovic, Carnegie Mellon Univ., Dept. of Physics; Don Nicholson, Oak Ridge National Lab; Yang Wang, Pittsburgh Supercomputer Center.

3:45 PM CC8.7
ROLE OF MAGNETIC STRUCTURE AND MINIMA IN THE LOCAL SPIN DENSITY OF STATES IN THE FORMABILITY OF AMORPHOUS Fe ALLOYS. D.M.C. Nicholson, Oak Ridge National Laboratory; Yang Wang, Pittsburgh Supercomputing Center; Mike Widom, Carnegie Mellon University.

4:00 PM CC8.8
THE DIRECT CALCULATION OF SOLID AND LIQUID FREE ENERGIES OF METALS AND ALLOYS USING THE EMBEDDED ATOM METHOD. Xueyu Song, Department of Chemistry, Iowa State University, Ames, IA; James R. Morris, Metals and Ceramics Sciences, Ames Laboratory, U.S. Department of Energy, Ames, IA.

4:15 PM CC8.9
FREE VOLUME COALESCENCE AND VOID FORMATION IN THE $Zr_{41.2}Ti_{13.8}Cu_{12.5}Ni_{10.0}Be_{22.5}$ BULK METALLIC GLASS. Wendelin J. Wright, Stanford Univ, Dept of Materials Science and Engineering, Stanford, CA; T.C. Hufnagel, Johns Hopkins Univ, Dept of Materials Science and Engineering, Baltimore, MD; W.D. Nix, Stanford Univ, Dept of Materials Science and Engineering, Stanford, CA.

4:30 PM CC8.10
THERMODYNAMIC MODELING OF Al-BASED METALLIC GLASSES. Michael Gao, Gary J. Shiflet, University of Virginia, Dept of Materials Science and Engineering, Charlottesville, VA.

4:45 PM CC8.11
NONLINEAR DENSITY FLUCTUATIONS AND SPATIAL HETEROGENEITIES NEAR THE COLLOIDAL GLASS TRANSITION. Michio Tokuyama, Yayoi Terada, Tohoku Univ, Institute of Fluid Science, Sendai, JAPAN; Irwin Oppenheim, Massachusetts Institute of Technology, Dept of Chemistry, Cambridge, MA.

SESSION CC9: MECHANICAL PROPERTIES
Chair: Akihisa Inoue
Thursday Morning, December 5, 2002
Republic B (Sheraton)

8:30 AM *CC9.1
OBSERVATIONS OF STRESS-INDUCED STRUCTURAL DISORDER AND FICTIVE STRESS IN BULK METALLIC GLASSES. H.S. Chen, Bell Labs, Lucent Technologies, Murray Hill, NJ; H. Kato, A. Inoue, IMR, Tohoku Univ, Sendai, JAPAN.

9:00 AM CC9.2
MEASUREMENT OF STRAIN-RATE SENSITIVITY AND VISCOUS FLOW CHARACTERISTICS IN A Zr-BASED METALLIC GLASS. S.C. Medeiros, A.K. Ghosh, University of Michigan, Dept of Materials Science and Engineering, Ann Arbor, MI.

9:15 AM CC9.3
FRACTURE TOUGHNESS AND FATIGUE OF AMORPHOUS METALS AND COMPOSITES. J.J. Lewandowski, S. Solv'yev, P. Lowhaphandu, Case Western Reserve University, Dept of Materials Science and Engineering, Cleveland, OH.

9:30 AM CC9.4
HIGH TEMPERATURE DEFORMATION IN THE AMORPHOUS OR PARTIALLY CRYSTALLISED $Zr_{41.2}Ti_{13.8}Cu_{12.5}Ni_{10}Be_{22.5}$ BULK METALLIC GLASS. Q. Wang[a,b], J.J. Blandin[a], M. Suery[a], J.M. Pelletier[b]; [a]GPM2, ENSPG, Grenoble, FRANCE; [b]GEMPPM, INSA Lyon, Villeurbanne, FRANCE.

9:45 AM CC9.5
DEFORMATION AND FRACTURE OF BULK METALLIC GLASSES AND THEIR COMPOSITES. Katharine M. Flores, Reinhold H. Dauskardt, Stanford University, Dept. of Materials Science and Engineering, Stanford, CA.

10:00 AM BREAK

10:30 AM *CC9.6
NANO-MICROFORMABILITY OF BULK METALLIC GLASSES AND THE FORMING TECHNOLOGIES. Yasunori Saotome, Dept of Mechanical Engineering, Gunma University, Gunma, JAPAN.

11:00 AM CC9.7
FATIGUE BEHAVIOUR OF SOME Fe-BASED METALLIC GLASS WIRES. Jorge Verduzco[a], Russell Hand, Hywel Davies, University of Sheffield, Dept. of Engineering Materials, Sheffield, UNITED KINGDOM. [a]Present address: Instituto de Investagaciones Metalurgicas (UMSNH), MEXICO.

11:15 AM CC9.8
DEFORMATION OF IN-SITU-REINFORCED BULK METALLIC GLASS COMPOSITES. Bjoern Clausen, Seung-Yub Lee, Ersan Ustundag, California Institute of Technology, Dept. of Materials Science, Pasadena, CA; Donald W. Brown, Mark A.M. Bourke, Los Alamos National Laboratory, Materials Science and Technology Division, Los Alamos, NM.

11:30 AM CC9.9
MICROSTRUCTURE AND PROPERTIES OF THE TUNGSTEN WIRE/PARTICLE REINFORCED $Zr_{57}Nb_5Al_{10}Cu_{15.4}Ni_{12.6}$ METALLIC GLASS COMPOSITES. Haein Choi-Yim, Jan Schroers, and William L. Johnson, W.M. Keck Laboratory of Engineering Materials, California Institute of Technology, Pasadena, CA.

11:45 AM CC9.10
ELEVATED TEMPERATURE FATIGUE CRACK PROPAGATION OF A Zr-Ti-Cu-Ni-Be BULK METALLIC GLASS. Peter A. Hess and Reinhold H. Dauskardt, Stanford Univ, Dept of Materials Science and Engineering, Stanford, CA.

SESSION CC10: CRYSTALLIZATION
Chair: Srinivasa Ranganathan
Thursday Afternoon, December 5, 2002
Republic B (Sheraton)

1:30 PM *CC10.1
DEVITRIFICATION OF ALUMINUM AND IRON-BASED

AMORPHOUS METALS. Gary J. Shiflet[a], S. Joseph Poon[b], M. Gao[a], J. Wang[a], M. Akiyoshi[a], V. Ponnambalam[b], F.Q. Guo[b]; [a]University of Virginia, Dept. Mater. Sci. and Eng., Charlottesville, VA; [b]University of Virginia, Dept. Physics, Charlottesville, VA.

2:00 PM CC10.2
INFLUENCE OF THE Al CONTENT ON THERMAL STABILITY AND PHASE SELECTION DURING CRYSTALLIZATION OF Zr-Cu-Ni-Al METALLIC GLASSES. Lyudmila Lyubenova, Angelika Rudiger, Monika Meuris, Uwe Koster, Dept. Chem. Eng., University of Dortmund, Dortmund, GERMANY.

2:15 PM CC10.3
ANALYSIS OF PRIMARY CRYSTALLIZATION IN AMORPHOUS ALUMINUM ALLOYS. J.H. Perepezko, W.S. Tong, J. Hamann, R.J. Hebert, G. Wilde and H. Rösner, Univ. of Wisconsin-Madison, Dept. Materials Science and Engineering, Madison, WI, and Forschungszentrum Karlsruhe, Karlsruhe, GERMANY.

2:30 PM CC10.4
ANOMALOUS SMALL-ANGLE X-RAY SCATTERING STUDIES OF THE EARLY STAGES OF NANOCRYSTALLIZATION IN AMORPHOUS $Zr_{52.5}Ti_5Cu_{17.9}Ni_{14.6}Al_{10}$. T.C. Hufnagel, Department of Materials Science and Engineering, Johns Hopkins University, Baltimore, MD.

2:45 PM CC10.5
UNDERCOOLING AND X-RAY STRUCTURAL STUDIES OF UNDERCOOLED Ti-Zr-Ni LIQUIDS. G.W. Lee, A.K. Gangopadhyay, K.F. Kelton, Physics Department, Washington University, St. Louis, MO; R.W. Hyers, NASA/George C. Marshall Space Flight Center, Huntsville, AL; T.J. Rathz, University of Alabama, Huntsville, AL; M.B. Robinson, J. Rogers, NASA/George C. Marshall Space Flight Center, Huntsville, AL; A.I. Goldman, Iowa State University, Ames, IA; D.S. Robinson, Advanced Photon Source, Argonne, IL.

3:00 PM BREAK

3:30 PM CC10.6
PHASE EVOLUTION DURING CRYSTALLIZATION OF AN AMORPHOUS TiAl SHEET. O.N. Senkov, UES, Inc. Dayton, OH; M.D. Uchic, Air Force Research Laboratory, Materials and Manufacturing Directorate, AFRL/MLLMD, Wright-Patterson AFB, OH.

3:45 PM CC10.7
RELAXATION AND DEVITRIFICATION IN A Zr-Pd-Cu ALLOY DURING ISOTHERMAL ANNEALING. M.J. Kramer, F. Besser, N. Yang, and D.J. Sordelet, Metal and Ceramic Sciences Program, Ames Laboratory (USDOE) Department of Materials Science and Engineering, Iowa State University, Ames, IA; Y. Zhang and P.L. Lee, Advanced Photon Source (APS), Argonne National Laboratory, Argonne, IL.

4:00 PM CC10.8
THE EFFECT OF ULTRASONICATION ON SUPERCOOLED LIQUIDS OF NAPHTHALENE. Hiroshi Abe, Issei Hori, Takaharu Yatomi, Makoto Kikuchi, Hitoshi Matsumoto, Haruyo Yoshizaki, National Defense Academy, Dept Materials Science and Engineering, Yokosuka, JAPAN.

4:15 PM CC10.9
FORMATION, CRYSTALLIZATION AND HYDROGEN STORAGE PROPERTIES OF $Ti_{25}Hf_{50}Ni_{25}$ METALLIC GLASSES. V.T. Huett and K.F. Kelton, Washington University, St. Louis, MO.

4:30 PM CC10.10
EFFECTS OF ANNEALING AND ANNEALING PLUS PRESSURE ON DEVITRIFICATION OF $Al_{87}Ni_7Gd_6$. P. Wesseling, B.C. Ko, L.O. Vatamanu, J.B. Caris, J.J. Lewandowski, Case Western Reserve University, Dept of Materials Science and Engineering, Cleveland, OH.

4:45 PM CC10.11
STUDY OF THE QUASICRYSTAL FORMATION IN $Zr_{46.8}Ti_{8.2}Cu_{7.5}Ni_{10}Be_{27.5}$ BULK METALLIC GLASS. Jean-Louis Soubeyroux, Laboratoire de Cristallographie, CRETA/CNRS, Grenoble, FRANCE; Jean-Marc Pelletier, Bertrand Van De Moortele, Thierry Epicier, GEMPPM, INSA Lyon, Villeurbanne, FRANCE.

SESSION CC11: POSTER SESSION
Chair: Despina A. Louca
Thursday Evening, December 5, 2002
8:00 PM
Exhibition Hall D (Hynes)

CC11.1
Abstract Withdrawn

CC11.2
STRUCTURAL DISORDER IN SILICA GLASS – HOW DOES THE DISORDER AFFECT PROPERTIES? Kazuya Saito, Akira J. Ikushima, Research Center for Advanced Photon Technology, Toyota Technological Institute, Nagoya, JAPAN.

CC11.3
CONTAINERLESS SOLIDIFICATION OF NIOBIUM AND BOROCARBIDE SUPERCONDUCTORS BY ELECTROSTATIC LEVITATION. Hiroyuki Takeya, Yeon Soo Sung, Takashi Mochiku, Kazuto Hirata, Kazumasa Togano, National Institute for Materials Science, Ibaraki, JAPAN; JST-CREST, Saitama, JAPAN.

CC11.4
DECOMPOSITION KINETICS IN MAGNETIC BULK AMORPHOUS ALLOY $Nd_{60}Al_{10}Fe_{20}Co_{10}$. Peng Yuan, Xun-Li Wang, Jinkui Zhao, Yan-Dong Wang, Oak Ridge National Laboratory, Oak Ridge, TN; Wei-Hua Wang, Zhi Zhang, Institute of Physics, Chinese Academy of Sciences, Beijing, CHINA; and Soenke Seifert, Chemistry Division, Argonne National Laboratory, Argonne, IL.

CC11.5
INFLUENCE OF Ni AND Cu ON THE FORMATION OF QUASICRYSTALS IN Zr70Pd30 METALLIC GLASSES. Lioba Jastrow[a], Van Huett[b], Kenneth F. Kelton[b], Uwe Koster[a]; [a]Dept. of Chem.Eng., University of Dortmund, Dortmund, GERMANY; [b]Dept. of Phys., Washington University, St. Louis, MO.

CC11.6
ISOTHERMAL AND NON-ISOTHERMAL CRYSTALLIZATION BEHAVIOR IN Al-BASED METALLIC GLASSES. F.Q. Guo[a], M.C. Gao[b], G.J. Shiflet[b] and S.J. Poon[a]; [a]Univ. of Virginia, Dept. of Physics, Charlottesville, VA; [b]Univ. of Virginia, Dept. of Materials Science and Engineering, Charlottesville, VA.

CC11.7
CRYSTALLIZATION OF ALUMINUM IN POWDER-PROCESSED Al-RARE EARTH-TRANSITION METAL ALLOYS. A. Vassiliev, M. Aindow, M. Blackburn, University of Connecticut, Storrs, CT; and T. Watson, Pratt and Whitney, E. Hartford, CT.

CC11.8
CRYSTAL PHASES OF GLASS-FORMING MIXTURES. Julian Fernandez, Comision Nacional de Energia Atomica, Buenos Aires, ARGENTINA; Asaph Widmer-Cooper, Peter Harrowell, University of Sydney, School of Chemistry, Sydney, AUSTRALIA.

CC11.9
NANOCRYSTALLINE ZrN PARTICLES EMBEDDED IN Zr-Fe-Cu-Al-Ni AMORPHOUS MATRIX. M.A. Bab, L.C. Damonte, L. Mendoza-Zélis, Depto. de Física, Universidad Nacional de La Plata, La Plata, ARGENTINA; S. Deledda and J. Eckert, IFW Dresden, Institut für Metallische Werkstoffe, Dresden, GERMANY.

CC11.10
EFFECTS OF STRESS STATE ON FLOW AND FRACTURE OF A BULK METALLIC GLASS. P. Wesseling, P. Lowhaphandu, J.J. Lewandowski, Case Western Reserve University, Dept of Materials Science and Engineering, Cleveland, OH.

CC11.11
HARDNESS INDENTATION STUDIES ON METALLIC GLASSES. P. Wesseling, J.B. Caris, L.O. Vatamanu, J.J. Lewandowski, Case Western Reserve University, Dept of Materials Science and Engineering, Cleveland, OH.

CC11.12
DUCTILE DENDRITIC PHASE REINFORCED BULK METALLIC GLASS FORMING ALLOYS. Guo He, Wolfgang Loeser, Juergen Eckert, Ludwig Schultz, IFW Dresden, Dresden, GERMANY.

CC11.13
Abstract Withdrawn

CC11.14
CHARACTERIZATION AND MECHANICAL PROPERTIES OF BULK $Mg_{60}Cu_{30-y}Y_{10}Si_Y$ ALLOYS AT DIFFERENT MICROSTRUCTURAL STATES. U. Wolff, N. Pryds, M. Eldrup, A.S. Pedersen, J.A. Wert, Materials Research Department, Risoe National Laboratory, Roskilde, DENMARK.

CC11.15
Abstract Withdrawn

CC11.16
FREE VOLUME EVOLUTION IN BULK METALLIC GLASS DURING HIGH TEMPERATURE CREEP. B.S. Sundar Daniel[a], Martin Heilmaier[b], Birgit Bartusch[c], Jörn Kanzow[a], Katja Günther[a], Klaus Rätzke[a], Jürgen Eckert[c], Franz Faupel[a]; [a]Lehrstuhl für Materialverbunde, Technische Fakultät, Kiel Universität, Kiel, GERMANY; [b]Technology Center, Plansee AG, Reutte/Tirol, AUSTRIA; [c]IFW Dresden, Institut für Metallische Werkstoffe, Dresden, GERMANY.

CC11.17
MECHANICAL PROPERTIES OF Nb-BASED AMORPHOUS THIN RIBBONS AS THE HYDROGEN PERMEABLE MEMBRANE. Shin-ichi Yamaura, Ken-ichiro Sasamori, Hisamichi Kimura, Akihisa Inoue, Institute for Materials Research, Tohoku Univ. Sendai, JAPAN; Yo-ichiro Shinpo, Hitoshi Okouchi, Motoki Nishida, Osamu Kajita, Fukuda Metal Foil & Powder Ltd., Kyoto, JAPAN.

CC11.18
ELASTIC PROPERTIES AND MICROSTRUCTURE OF METALLIC GLASSES $Pd_{39}Ni_{10}Cu_{10}P_{21}$ STUDIED BY MICROACOUSTICAL TECHNIQUE. V.M. Levin, Iou. S. Petroniouk, Lab. of Acoustic Microscopy, Institute of Biochemical Physics, Russian Academy of Sciences; Limin Wang, Institute of Physics, Chinese Academy of Sciences; Jiankai Hu, Lab. of Ultrasonic NDT, Dept. of Electronic Engineering, Univ. of Science & Technology of China; Qianlin Zhang, Dept. of Electronic Engineering, Graduate School, Univ. of Science & Technology of China.

CC11.19
MICROSTRUCTURE AND MECHANICAL PROPERTIES OF SLOWLY COOLED Zr-Nb-Cu-Ni-Al COMPOSITES WITH DUCTILE BCC PHASE. U. Kühn, J. Eckert, N. Mattern and L. Schultz, Institut für Festkörper- und Werkstoffforschung, Dresden, GERMANY.

CC11.20
IN-SITU MECHANICAL BEHAVIOR OF FIBER-REINFORCED BULK METALLIC GLASS COMPOSITES. Seung-Yub Lee, Ersan Ustundag, Bjoern Clausen, Haein Choi-Yim, California Institute of Technology, Dept. of Materials Science, Pasadena, CA; Donald W. Brown, Mark A.M. Bourke, Los Alamos National Laboratory, Materials Science and Technology Division, Los Alamos, NM.

CC11.21
IN-SITU CRYSTALLINE PHASE REINFORCED BULK METALLIC GLASS MATRIX COMPOSITE IN La, Pd AND Zr BASED ALLOYS. Yong Zhang[a], Hao Tan, Dong Wang, Yi Li[a], Department of Materials Science, National University of Singapore, Singapore, SINGAPORE; [a]Also at Singapore-MIT Alliance, AMM&NS programvanced Materials for Micro- and Nano-systems Program, Singapore, SINGAPORE.

CC11.22
FORMATION AND CRYSTALLIZATION OF Al-Y-Fe-Ti GLASS. L.Q. Xing[a], A. Mukhopadhyay[b], W.E. Buhro[b], K.F. Kelton[a]; [a]Dept. of Physics, Washington University, St. Louis, MO; [b]Dept. of Chemistry, Washington University, St. Louis, MO.

SESSION CC12: NANOPARTICLES AND NONMETALLIC GLASSES
Chair: Kenneth Kelton
Friday Morning, December 6, 2002
Republic B (Sheraton)

8:30 AM *CC12.1
PHASE FORMATION, MICROSTRUCTURAL DESIGN AND MECHANICAL PROPERTIES OF BULK METALLIC GLASS COMPOSITES. J. Eckert, U. Kühn, G. He, W. Löser, N. Mattern, A. Gebert, IFW Dresden, Institute of Metallic Materials, Dresden, GERMANY.

9:00 AM CC12.2
LOCAL INHOMOGENEITIES IN DENSE COLLOIDAL SYSTEMS. J.C. Conrad, I. Cohen, Harvard Univ, Dept of Physics/DEAS, Cambridge, MA; Eric R. Weeks, Emory Univ, Dept of Physics, Atlanta, GA; D.A. Weitz, Harvard Univ, Dept of Physics/DEAS, Cambridge, MA.

9:15 AM CC12.3
INHERENT STRUCTURES AND GLASS FORMATION TENDENCY IN SIMULATED ALKALI HALIDES. J.W. Palko and J. Kieffer, Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI.

9:30 AM CC12.4
POLYAMORPHISM AND ANOMALOUS BEHAVIORS IN AMORPHOUS SILICA. L. Huang and J. Kieffer, Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI.

9:45 AM CC12.5
GLASS FORMATION AND REDDISH COLORING PROPERTIES IN ZINC PHOSPHOTELLURITE GLASS. Tomoya Konishi[a], Takaharu Hondo[b], Tetsuo Araki[b], Keishi Nishio[b], Toshio Tsuchiya[b], Takehisa Matsumoto[a], Shigeru Suehara[a], Shin-ichi Todoroki[a], Satoru Inoue[a]; [a]National Institute for Materials Science, Advanced Materials Laboratory, Tsukuba, Ibaraki, JAPAN; [b]Tokyo University of Science, Dept of Materials Science and Technology, Noda, Chiba, JAPAN.

10:00 AM BREAK

10:30 AM CC12.6
NANOCRYSTALLISATION AND NANOQUASICRYSTALLISATION IN (Ti/Hf)-Zr-(Ni/Cu) TERNARY ALLOYS. Joysurya Basu, D.V. Louzguine[a], A. Inoue[a] and S. Ranganathan, Department of Metallurgy, Indian Institute of Science, Bangalore, INDIA; [a]Institute for Materials Research, Tohoku University, Sendai, JAPAN.

10:45 AM CC12.7
ALLOY PHASE FORMATION IN ISOLATED NANOMETER-SIZED PARTICLES IN THE Au-Sn AND Sn-Bi SYSTEMS. J.G. Lee, H. Mori, Res Ctr for UHVEM, Osaka Univ, Osaka, JAPAN; H. Yasuda, Dept of Mech Eng, Kobe Univ, Kobe, JAPAN.

11:00 AM CC12.8
ELECTRON IRRADIATION EFFECT ON THE MICROSTRUCTURE AND PHASE STABILITY OF Fe-BASED $Fe_{71.0}Zr_{9.0}B_{20.0}$ METALLIC GLASS WITH A WIDE SUPERCOOLED LIQUID REGION. Takeshi Nagase, Osaka Univ, Dept of Materials Science and Engineering, Osaka, JAPAN; Yukichi Umakoshi, Osaka Univ, Dept of Materials Science and Engineering & Handai Frontier Research Center, Osaka, JAPAN; Naoto Sumida, Kagawa Univ, Faculty of Engineering, Kagawa, JAPAN.

11:15 AM CC12.9
NANO-STRUCTURED EUTECTIC Al_2O_3-$GdAlO_3$-HfO_2 COMPOSITE BY RAPID SOLIDIFICATION. Shunji Araki, Jose M. Calderon-Moreno, Masahiro Yoshimura, Tokyo Institute of Technology, Center for Materials Design, Yokohama, JAPAN.

11:30 AM CC12.10
NANOPARTICLES FOR ELECTRONIC MATERIALS BY CRYOGENIC PROCESSING. Derek Graham, David Sutton and Raymond Oliver, ICI Strategic Technology Group, Redcar, UNITED KINGDOM.

11:45 AM CC12.11
NANOCRYSTALLIZATION BEHAVIOUR IN THE Cu-BASED GLASSY ALLOYS. M. Kasai, J. Saida and M. Nakayama, Inoue Superliquid Glass Project, ERATO, JST, Sendai, JAPAN; M. Matsushita, JEOL Ltd., Akishima, Tokyo, JAPAN; T. Osuna, E. Matsubara and A. Inoue, Institute for Materials Research, Tohoku University, Sendai, JAPAN.