

Table of Contents

Preface

Novel Multicomponent Alloys

B. Cantor, F. Audebert, M. Galano, K.B. Kim, I.C. Stone and P.J. Warren 1

Metastable Nanostructured SPD Ti-Ni Alloys with Unique Properties

R. Valiev, D. Gunderov and V.G. Pushin 7

Primary Nanocrystallization and Amorphous Alloy Stability

J.H. Perepezko and R.J. Hebert 13

The Scale of Devitrification in Bulk Metallic Glasses

A.L. Greer 19

Amorphous Metal Formation and Crystallization - Coupled Processes in Crystal Nucleation

-
K.F. Kelton 25

In Situ Formed Bulk Nanostructured Ti-Base Composites

J. Eckert, J. Das, G. He, W. Löser, E. Ma, Y. Li, M.L. Sui, T.G. Woodcock and A. Gebert 31

Rapid Solidification of Au Alloys

L. Battezzati, G. Fiore and M. Massazza 37

Structure and Surface States of Cu-O Based Nanocrystalline Powders

A.Y. Yermakov, M.A. Uimin, V.R. Galakhov, A.A. Mysik, O.V. Koryakova, V.G. Kharchuk, V.A. Vykhodetz, V.S. Gaviko, K. Kuepper, S. Robin and M. Neumann 43

Non-Equilibrium Arc-Melted Binary Ti-Fe Bulk Alloys with Ultra-High Strength and Enhanced Ductility

D.V. Louzguine-Luzgin, H. Kato and A. Inoue 49

Phase Formation in Quinary Ti-Based Nanocomposites and an Analogous Ternary System with a View to Thermodynamic Modelling

T.G. Woodcock, F.-. Xie, G. Alcalá, S. Mato, W. Löser, A. Gebert, J. Eckert and L. Schultz 53

Crystallization Behavior of Co-Sputtered Amorphous Ti-C and Co-C Thin Films

T.J. Konno and K. Bandoh 57

Elasticity Study of Nanostructured Copper Thin Films

H. Mizubayashi, K. Fujita, K. Fujiwara and H. Tanimoto 61

Surface Nano-Structuring of Zr Thin Film via Ni-Implantation

S. Muraishi and T. Aizawa 65

The Formation of Nanocrystalline Structure in Amorphous Fe-Si-B Alloy by Severe Plastic Deformation

G.E. Abrosimova, A.S. Aronin, S.V. Dobatkin, S.D. Kaloshkin, D.V. Matveev, O.G. Rybchenko, E.V. Tatyannin and I.I. Zverkova 69

High Temperature Synthesis of Si-Based Nanomaterials from Silica Rich Oxide

S.V. Komarov, D.V. Kuznetsov, V.V. Levina and M. Hirasawa 73

Novel Composites Aluminum-Multi-Walled Carbon Nano-Tubes

R. Martínez-Sánchez, I. Estrada-Guel, M. Miki-Yoshida, I. Segura-Cedillo, W. Antúnez-Flores and J.I. Barajas-Villaruel 77

Temperature Dependence of Elastic Constant of Zr-Cu-Al-Ni Bulk Glasses Measured by Ultrasonic-Wave Resonance

D. Okai, K. Kakei, T. Fukami, T. Yamasaki, T. Zhang and A. Inoue 81

Blanking of Bulk Amorphous Alloy Sheets Fabricated by a Squeeze Casting Method under Hydraulics Pressure

H.G. Jeong, W.J. Kim, J.C. Bae, D.J. Yoon, S.J. Lim and K.H. Na 85

Jump-Like Deformation of $Zr_{46.8}Ti_8Cu_{7.5}Ni_{10}Be_{27.5}$ Bulk Amorphous Alloy

E.D. Tabachnikova, V.Z. Bengus, Y.I. Golovin, V.I. Ivolgin, V.V. Korenkov, A.I. Tyurin, S.V. Potapov and M.P. Macht 89

Design and Synthesis of Cu-Based Metallic Glass Alloys with High Glass Forming Ability

Y.C. Kim, D.S. Sung and E. Fleury 93

Preparation of Mg-Y-Cu Bulk Metallic Glass by High Energy Ball Milling

P.Y. Lee, M.C. Kao and C.K. Lin 97

From Bulk Metallic Glasses to Amorphous Metallic Coatings M. Petrzlik, P.V. Vakaev, T.R. Chueva, T.A. Sviridova, V.V. Molokanov, Y.K. Kovneristy and E.A. Levashov	101
Synthesis of Ni-Based Bulk Metallic Glasses Composites by Spark Plasma Sintering J.K. Lee, H.J. Kim, T.S. Kim, D.M. Lee, S.Y. Shin and J.C. Bae	105
Effect of Low Temperature Pre-Annealing on the Thermal Stability and Mechanical Properties of Ni-Zr-Al-Hf-Nb Bulk Metallic Glass W.B. Kim, B.J. Ye, J.C. Bae and S.H. Yi	109
Mechanical Alloying of Metal Matrix Composites Reinforced by Quasicrystals S.D. Kaloshkin, V.V. Tcherdyntsev, A.A. Stepashkin, V.N. Gulbin, B.V. Jalnin, A.I. Laptev, E.V. Obruchevea and V.D. Danilov	113
Thermal Stability and Magnetic Properties of (Fe,Co)-RE-B Bulk Glassy Alloys W. Zhang, Y. Long, M. Imafuku, X.M. Wang and A. Inoue	117
Magnetism and Self-Assembled Structure Utilizing Micro- and Nano-Particles K. Shimada, A. Shibayama, E. Yuze, H. Saitoh and S. Ishio	121
Fabrication of Magnetic Ni and Fe Nano Powders by Levitational Gas Condensation (LGC) Method Y.R. Uhm, J.S. Oh, W.W. Kim and C.K. Rhee	125
Hydrogen Evolution Reaction on Co₃₀Ni₇₀, Co₃₀Mo₇₀, Ni₃₀Mo₇₀, and Co₁₀Ni₂₀Mo₇₀ Alloy Powders Produced by Mechanically Alloying M.A. Domínguez-Crespo, E.M. Arce Estrada, L. Díaz-García, J.R. Vargas-García, M. Plata-Torres and I. Avila-García	129
Nano-Scaled Microstructure Evolution of W-Ni-Fe-Co Heavy Alloy by Mechanical Alloying J.S.C. Jang, K. Liu, S.F. Tsao, L.J. Chang, J.C. Fwu, C.T. Hsu and K.H. Tseng	133
Mechanical Properties of Nanocrystalline L1₂ -Type (Al+12.5at.%M)₃Zr(M=Cu ,Mn) Synthesized by Mechanical Alloying S.H. Lee, K.I. Moon and K.S. Lee	137
Mechanically Alloyed Boride/Ti₅₀Cu₁₈Ni₂₂Al₄Sn₆ Glassy Alloy Composites with a Wide Supercooled Liquid Region L.C. Zhang, Z.Q. Shen, S.D. Kaloshkin and J. Xu	141
Preparation of Ti₅Si₃-Reinforced Titanium Aluminides by Mechanical Alloying from Brittle Powders H.M. Wu and J.H. Huang	145
Microstructural Evolution in Mechanically Alloyed Nanocrystalline Al-20 at.% Mg Alloy A. Revesz, L. Nagy, G. Ribárik, Z. Kovács, T. Ungár and J. Lendvai	149
Consolidation of Mechanically Milled Cu-Al₂O₃ Composite Powder D. Hernández-Silva, C.A. Cordoba-Rodriguez and M.A. García-Bernal	153
Deformation and Dissolution of Cementite by Severe Plastic Deformation M. Umemoto, Y. Todaka, A. Ohno, M. Suzuki and K. Tsuchiya	157
Preparation of Metallic Glass/Crystalline Metal Conjoined Parts by Plastic Flow Joining Process R. Tominaga, K. Amiya, A. Tokairin, Y. Fujimoto, S. Takahashi and A. Inoue	161
Microstructural Characterization in Al-C-Al₂O₃ Composites Produced by Mechanical Milling A. Santos-Beltrán, V. Gallegos-Orozco, A. Díaz-Díaz, I. Estrada-Guel, M. Miki-Yoshida and R. Martínez-Sánchez	165
Characterization of Al-Based Composites Produced by Mechanical Milling Using Electron Energy Loss Spectroscopy V. Gallegos-Orozco, A. Santos-Beltrán, I. Estrada-Guel, R. Martínez-Sánchez and F. Espinosa-Magaña	169
Mechanically Driven Nanostructured Magnesium-Aluminum Alloy H. Yabe and T. Kuji	173
Synthesis and Electrochemical Properties of Mg-Ni-Y-Al Alloy with Mechanical Alloying L.M. Wang, X.B. Zhang and M.S. Zhao	177
Dynamic Compaction of Mechanically Alloyed Fe-Si Nano Powders by Magnetic Pulsed Pressure G.H. Lee, C.K. Rhee, W.W. Kim and K.S. Lee	181
Preparation of FePt Alloys by Mechanical Alloying H. Yoshida, H. Kimura, S. Yamaura, T. Shima and A. Inoue	185

The Behavior of CoSn and CoIn₂ Intermetallic Compounds upon Mechanical Milling Y.S. Kwon, P.P. Choi and K.B. Gerasimov	189
Low Temperature Phase Formation in Mechanically Alloyed Cu-Ga Powders S.J. Hong and C. Suryanarayana	193
Texture Control of Bulk Mechanical Alloyed Bi-Te Thermoelectric Materials via Shear Extrusion S.S. Kim and T. Aizawa	197
Crystallization and Thermal Properties of Zr-Al-Cu-Ni Based Amorphous Alloy Added with Boron and Silicon J.S.C. Jang, S.C. Lu, L.J. Chang, T.H. Hung, J.C. Huang and C.Y.A. Tsao	201
Low-Temperature Crystallization of Metallic Glass Induced by Electropulsing T. Hao, H. Tanimoto and H. Mizubayashi	205
Inflammability of Melt-Spun Zr-Based Metallic Glasses L. Jastrow, M. Meuris and U. Köster	209
Microstructure of a Metallic Glass Joint Welded by Electron Beam Examined by Anomalous Small-Angle Scattering at Zr K Edge I. Murase, H. Okuda, R. Kurosaki, S. Ochiai, Y. Yokoyama and K. Inoue	213
Structural Observation and RMC Modeling for Ni-Zr and Cu-Zr Metallic Glasses T. Fukunaga, D. Touya, K. Itoh, T. Otomo, K. Mori, H. Kato and M. Hasegawa	217
Effect of Ion-Implantation on the Mechanical Properties of a Zr-Ni Amorphous Alloy H. Kubota, S. Koyama, K. Takashima and Y. Higo	221
Glass Transition T_g and Thermal Expansion in Glassy Materials Measured by Time-Resolved X-Ray Diffraction K. Ota, K. Hajlaoui, G. Vaughan, M. Di Michiel, D.V. Louzguine-Luzgin, A. Inoue and A.R. Yavari	225
Zero Temperature Coefficient and Stability of Electrical Resistibility of Ni-Si-B Amorphous Alloys T. Bitoh, A. Makino, M. Zama and H. Kudoh	229
Material Performance and Phase Transformation of Super Rapid-Solidified Shape Memory TiNiCu Ribbon with Nano-Amorphous Microstructures M. Yokoyama, Y. Furuya, Y. Shinya, T. Okazaki, S. Kajiwara, T. Kikuchi, K. Ogawa, H. Kimura and A. Inoue	233
Full-Potential KKR Calculations for Point Defect Energies in Al T. Hoshino and F. Nakamura	237
The Entropy of Grafted Polymer Layers in Good Solvent T. Sakamoto, S. Ishii and K. Ohno	241
First-Principles Calculations of Hydrogen-Terminated Si(100)2x1 Surface with Missing Dimers S. Masatsuji, Y. Noguchi, S. Ishii and K. Ohno	245
Calculation of Energy Bands for Peanuts-Shaped Fused Fullerene Polymers S. Ueda, Y. Noguchi, S. Ishii, J. Onoe and K. Ohno	249
Effect of Fe Content on Structure and Surface Properties of Hydrotalcite-Like Compounds J. Ortiz Landeros, B. Zeifert, M. Hesiquio-Garduño, A. Vázquez and J. Salmones	253
Structures and Mössbauer Spectra for Fe-C Powders Prepared by Atomization K. Tokumitsu and R. Yamamoto	257
Development of High Performance Magnesium Alloys by Rapid Solidification Z.H. Chen, J. Chen, W. Xia and H.G. Yan	261
Ultra-Strong and Ductile Hypereutectic Ti-Based Bulk Alloys L.V. Louzguina, D.V. Louzguine-Luzgin and A. Inoue	265
Viscosity of Some Fe-Ni Based Liquid Alloys and Their Rapid Solidification T. Yamasaki, H. Ushio, D. Okai, T. Fukami, H. Kimura, K. Sasamori and A. Inoue	269
On the Role Plaid by a Liquid in the Preparation of Nanocrystalline Materials by Ball-Milling D. Guérard and R. Janot	275
Properties of Al-MgB₂ Materials Processed by Mechanical Alloying and Spark Plasma Sintering M. Kubota, J. Kaneko and M. Sugamata	279
Development of Metallic Glasses by Semi-Empirical Calculation Method A. Takeuchi and A. Inoue	283

Pinpoint the Best Glass Forming Alloy by Microstructure Study in Cu₈Zr₃-Cu₁₀Zr₇ Eutectic System of Cu-Zr Binary System	
D. Wang, H. Tan and Y. Li	287
Nanoforming of Metallic Glass with Nano-Scale Die Fabricated by Focused Ion Beam	
Y. Saotome, S. Okaniwa, T. Zhang and A. Inoue	291
Phase Transformation and Microstructure Change in Fe-Zr-B Amorphous Alloys by Thermal Annealing and Electron Irradiation	
Y. Umakoshi and T. Nagase	295
Transition Metal and Transition Metal Fluorides as Catalysts in MgH₂-Based Nanocomposites	
W.J. Botta Filho, J.F.R.d. Castro, G. Vaughan and A.R. Yavari	299
Short-Range Order in Metastable Co₇₅ Pd₂₅ Melts	
D. Holland-Moritz, T. Schenk, V. Simonet, R. Bellissent and D.M. Herlach	305
Electrochemical Storage of Hydrogen in Mg-Nanocomposites: Influence of the FeF₃ Catalyst	
C. Poinssignon, A. Borissova, J.F.R.d. Castro, F. Aguey and A.R. Yavari	311
Hydrogen Permeation Characteristics and Structural Features of Melt-Spun Ni-Nb-Zr Amorphous Alloy Membranes	
S. Yamaura, K. Wakoh, H. Kimura, E. Matsubara, A. Inoue, Y. Shimpo, M. Nishida and O. Kajita	315
Chemical State of Ti Atoms in NaAlH₄ Doped with a Ti-Based Precursor by Ball Milling	
A. Léon, O. Kircher, J. Rothe and M. Fichtner	319
Fracture Toughness in Zr-Based Bulk Metallic Glass	
F. Kazutaka, N. Nishiyama, K. Amiya, T. Zhang, H. Kimura and A. Inoue	323
Modeling of Crystallization Kinetics of Bulk Amorphous Alloys during Cooling	
S.B. Lee and N.J. Kim	327
Finite Element Simulations for Hot Forming of Bulk Amorphous Alloys	
Y.S. Lee	331
Effect of Yttrium Addition on the Formation of Ti-Zr-Ni Quasicrystal	
A. Matsumoto, K. Kobayashi, T. Nishio and K. Ozaki	335
Local Structures of Zr-Based Metallic Glasses in Terms of Quasicrystal Formation and Stability of Supercooled Liquid State	
J. Saida, M. Imafuku, S. Sato, E. Matsubara and A. Inoue	339
Characterization of Hydrogen Storage Alloy Mg₂Co Synthesized by Bulk Mechanical Alloying	
Y.J. Wang, T. Aizawa and C. Nishimura	343
Solid-State Synthesis of Mg₂Si_{1-x}Y_x (Y=Ge and Sn) Thermoelectric Materials via Bulk Mechanical Alloying	
R.B. Song, T. Aizawa, A. Yamamoto and T. Obara	347
Transformation between Nanocrystalline and Amorphous Phases in Zr-X Alloys during Accumulative Roll Bonding	
P.J. Hsieh, J.C. Huang, J.S.C. Jang and C.Y.A. Tsao	351
Cu-Hf-Ti-(Mo, Nb, Ta) Bulk Glassy Alloys with High Corrosion Resistance and High Strength	
C. Qin, W. Zhang, K. Asami, H. Kimura and A. Inoue	355
Deformation Behavior of a Zr₅₅ Al₁₀ Ni₅ Cu₃₀ Bulk Metallic Glass at High Temperatures	
H.S. Shin, Y.-. Jung, K.H. Kim, J.H. Ahn, H. Kato and A. Inoue	359
Development of Shear Bands in a Bulk Metallic Glass and Composite upon Cold Rolling	
J.S. Park, H.K. Lim, J.H. Kim, J.M. Park, H.J. Chang, W.T. Kim and D.H. Kim	363
Die Casting and Properties Study of a Bulk Amorphous Zr_{38.5}Cu_{15.25}Ni_{9.75}Ti_{16.5}Be₂₀	
S. Wu and C. Tu	367
Fabrication of Bulk Amorphous Alloy Sheets by Strip Casting	
J.G. Lee, S.S. Park, S.B. Lee, H. Chung and N.J. Kim	371
Friction and Wear Behavior of Laser Irradiated Amorphous Metal	
M. Tsujikawa, D. Azuma, M. Hino, H. Kimura and A. Inoue	375
Effect of Carbon Addition on the Thermal Stability and Glass Forming Ability of Misch Metal-Based Bulk Metallic Glass Matrix Composites	
J.H. Kim, J.S. Park, H.T. Jeong, H.J. Chang, W.T. Kim and D.H. Kim	379

Mechanical Modelling of Carbon Nanotube Reinforced Metal Matrix Composites Y.G. Jeong, M.H. Seo, S.C. Yoon, S.I. Hong and H.S. Kim	383
Environmental Stability of Zr-Based Glass-Matrix Composites A. Gebert, U. Kühn, A.A. Kündig, N. Radtke and L. Schultz	387
High Temperature Oxidation-Sulfidation of Cr-ZrO₂-Al₂O₃ Composite Fabricated by Mechanical Alloying and Spark Plasma Sintering A. Martínez-Villafañe, U. Arce-Colunga, V.M. Orozco-Carmona, C. Gaona-Tiburcio, R.A. Saucedo-Acuña, R. Martínez-Sánchez and S.D. De la Torre	391
In Situ Formed Cu-Based Nanocomposite by Hot Pressing of Mechanically Alloyed Cu-Zr-Ti Composites Containing WC Particles as a Second Phase C.C. Wang, J.S. Chen, R.R. Jen and P.Y. Lee	395
Preparation of Pt-YSZ Nanocomposites by MOCVD and Their Electrochemical Properties A.M. Torres-Huerta and J.R. Vargas-García	399
Quality of Compaction and Microhardness of Bulk Nanocrystalline Al₈₈Mn₅Ni₅Fe₂ Alloy Consolidated at High Pressure H. Dimitrov, J. Latuch, G. Cieślak and T. Kulik	403
Formation of High-Quality Nanocrystalline Ni-W Electrodeposits by Using a Multi-Anode Type Electrode H. Matsuoka, T. Okada, T. Yamasaki and T. Fukami	407
High-Strength Nanocrystalline Ni-W Electrodeposits and Their Precision Forming at High Temperatures N. Oda, H. Matsuoka, T. Yamasaki and T. Fukami	411
Structural and Hydriding Properties of the Mg-Ni-H System with Nano- and/or Amorphous Structures K. Ikeda, Y. Nakamori and S. Orimo	415
Structure and Hydrogen Absorption Property of Mg₂Ni-Ti Alloy Powders Prepared by Mechanical Alloying C.K. Lin, C.K. Wang, H.C. Lin and P.Y. Lee	419
Bulk Ferromagnetic (Fe_{0.87}Co_{0.13})_{71.5-x}Tb_{3.5}Nb_xB₂₅ Glassy Alloys with a High Glass-Forming Ability Y. Long, R.C. Ye, Y.Q. Chang and F. Wan	423
Quasi-Dislocation Dipole-Type Defects and Low Coercivity of Fe-Based Soft Magnetic Glassy Alloys T. Bitoh, A. Makino and A. Inoue	427
Soft Magnetic Properties of Amorphous Fe_{73-x}Nb_xAl₄Si₃B₂₀ Alloys C.R.M. Afonso, C. Bolfarini, W.J. Botta Filho and C.S. Kiminami	431
Characteristic of Oxidation and Color Properties of Mechanically-Alloyed and Pulsed-Current-Sintered Ti-Si Alloy by Heat Treatment K. Ozaki, A. Matsumoto, T. Nishio and K. Kobayashi	435
Crystal Structure of Iron-Palladium Alloys by Mechanical Alloying H. Yabe and T. Kuji	439
Depression of the Peritectic Melting Point of FeSn₂ in FeSn₂-FeSn Nanocomposites Produced by Mechanical Milling Y.S. Kwon, J.S. Kim, K.B. Gerasimov and S.S. Avramchuck	443
Influence of Particle Size on the Hydrogen Sorption Properties of Ball-Milled MgH₂ with Nb₂O₅ as Catalyst A. Revesz, D. Fátay, D. Zander and T. Spassov	447
Lead-Free Solder System Bi₅-Ag₃-Cu_{0.5}-Sn Prepared by Mechanical Alloying C. Carreño-Gallardo, I. Estrada-Guel, M. Neri-Flores and R. Martínez-Sánchez	451
Mechanical Alloying of Titanium with Rare Gas (He, Ar and Xe) T. Shiota and Y. Higo	455
Phase Transformations in Ti-Zr-Ni Compositions by Mechanical Alloying and Annealing Y.V. Zhernovenkova, T.A. Sviridova, S.D. Kaloshkin, J. Xu, V.V. Tcherdyntsev and I.A. Tomilin	459
Stress Induced Formation of Stable & Metastable Phases in Semi-Crystalline Polymers during Cryogenic Mechanical Milling M. Stranz, U. Köster and F. Katzenberg	463
Preparation of Ti+Ti₆Si₂B+Ti₅Si₃ and Ti+Ti₆Si₂B+TiB Powders by High-Energy Ball Milling and Subsequent Heat Treatment B.B. Fernandes, A.S. Ramos and P.A. Suzuki	467

Nanocrystallization of Martensite Steels and Ti-6Al-4V Alloy by Shot Peening Y. Todaka, M. Umemoto, Y. Watanabe and K. Tsuchiya	471
Thermodynamic Approach for Predicting the Glass Forming Ability of Amorphous Alloys D. Kim, B.J. Lee and N.J. Kim	475
Frictional Behavior of Nanocrystalline-Amorphous Duplex Microstructures of Zr-Based Metallic Glass: An Atomic Force Microscopy Analysis T. Benameur, K. Gammoudi, A.R. Yavari and A. Inoue	479
Patterning of Self-Oriented Nanocrystals in an Amorphous Alloy under Focused Ion Beam Irradiation Y. Kamibayashi, T. Kamikawa, K. Takashima and Y. Higo	483
Temperature Dependence of Linear Expansion Coefficient in Metallic Glass Zr-Al-Cu-Ni T. Fukami, H. Yamamoto, S. Sonobe, D. Okai, T. Yamasaki, T. Zhang and A. Inoue	487
Influence of Be on the Glass Forming Ability and Thermal Stability of Al-Based Metallic Glasses N. Tian, M. Ohnuma and K. Hono	491
Thermal Stability, Microstructure and Mechanical Behavior around the Glass Transition Temperature of a Cu₆₀Zr₂₂Ti₁₈ Amorphous Alloy A. Revesz, P. Henits, S. Hóbor and Z. Kovács	495
Kinetic Analysis of Magnetically Assisted Formation of Cu(II) Ammonium Complex from Cu Nanoparticles K. Hirose, S. Kitashima, M. Senna, M.A. Uimin and A.Y. Yermakov	499
Anelasticity in FCC Nanocrystalline Metals N. Yagi, A. Ueki, H. Mizubayashi and H. Tanimoto	503
Refinement of Cu-Phthalocyanine Powder by Nozzle-Jeto Water Cavitation K. Tokumitsu, H. Saijo, K. Majima, H. Kato and R. Yamamoto	507
Formation of Quasicrystals in Zr-Ti-Nb-Cu-Ni-Al Alloys by Casting or Annealing U. Kühn, J. Eckert, S. Scudino, A. Gebert, N. Radtke, N. Mattern and L. Schultz	511
Fabrication and High Performance Characteristics of Metallic Glassy Alloy Tubes C. Ma, N. Nishiyama and A. Inoue	515
Microstructural Characterization of Rapidly Solidified Al-6.5%Si-4%Cu Alloy Powders Produced by Gas Atomization C.F. Ferrarini, L.A. Bereta, W.J. Botta Filho, C.S. Kiminami and C. Bolfarini	519
Atomic-Scale Structure of Si_xGe_{1-x} Solid Solutions I. Yonenaga, M. Sakurai, M.H.F. Sluiter and Y. Kawazoe	523
Deformation-Induced Mixing Reactions in Cu-Cd Multilayers R.J. Hebert, G. Wilde and J.H. Perepezko	527
Viscous Flow Forming of Zr-Based Bulk Metallic Glasses for Industrial Products H. Soejima, N. Nishiyama, H. Takehisa, M. Shimanuki and A. Inoue	531
Glass-Forming Ability and Magnetic Properties of (Fe,Co)-B-Si-Nb Bulk Glassy Alloys A. Urata, K. Amiya and A. Inoue	535
Structure and Mechanical Properties of Ti-Cu-Ni Cast Alloy with High-Strength K. Amiya, H. Soejima, N. Nishiyama and A. Inoue	539
Characterization of Super-Precision Microgear Made of Ni-Based Metallic Glass M. Ishida, H. Takeda, N. Nishiyama, Y. Shimizu, K. Kita, Y. Saotome and A. Inoue	543
Anomalous Crystallization Induced by Ultrasound in Pd_{42.5}Ni_{7.5}Cu₃₀P₂₀ Metallic Glass T. Ichitsubo, E. Matsubara, K. Anazawa, N. Nishiyama, M. Naito and Y. Hirotsu	547
Structure and Hydrogen Permeation of Ni-Nb-Zr Amorphous Alloy M. Sakurai, S. Yamaura, K. Wakoh, E. Matsubara and A. Inoue	551
The Contribution of Grain-Boundary Activity to Plasticity in Nanocrystalline Fe - The Effect of Grain-Boundary Relaxation D. Jang and M. Atzmon	555
Mechanically Alloyed MgB₂ Superconductors: Microstructure, Tape Formation and Critical Currents L. Schultz, O. Perner, W. Hässler, C. Fischer, G. Fuchs, B. Holzapfel and J. Eckert	559
Alloy Phase Formation in Isolated Nanometer-Sized Particles in the Sn-Pb System H. Mori and J.G. Lee	565
Comparison of Nanocrystallization in Steels by Ball Milling, Shot Peening and Drilling M. Umemoto, Y. Todaka, Y. Watanabe, J.G. Li and K. Tsuchiya	571

Deformation Behavior and Microstructure Development of Ultrafine Grained Iron Y. Futamura, K. Kawasaki, H. Hidaka, T. Tsuchiyama and S. Takaki	577
Effects of Mechanical Activation on the Synthesis of WC from Wolframite (FeWO₄) and Graphite J. Temuujin, M. Senna, T. Jadambaa and D. Byambasuren	581
Structural Changes in High Speed Steel Powders Subjected to Ball Milling D. Oleszak, A. Grabias and T. Kulik	585
Preparation of Noble Metal (Ru, Ir)-Carbon Nano-Composites by MOCVD as Catalytic Electrode for Oxygen Sensors T. Kimura, G. Suzuki and T. Goto	589
Formation Regularities of the Phases in Al Alloy Nanometer Powders by Gas Evaporation Technology H.G. Yan, Z.H. Chen, G. Chen and J. Chen	593
Giant Irradiation Effects in FCC Nanocrystalline Metals H. Tanimoto, N. Yagi and H. Mizubayashi	597
Nanocrystallization of Drill Hole Surface by High Speed Drilling Y. Todaka, M. Umemoto, J.G. Li and K. Tsuchiya	601
High Speed Transformation of Ni-C System from FCC to HCP Structure with Fluctuating Mill K. Tokumitsu and R. Yamamoto	605
Formation of Polymer Blends and Nano-Composites by Cryogenic Mechanical Milling M. Stranz, U. Köster and F. Katzenberg	609
Surface Amorphization of TiNi Shape Memory Alloy by Shot Peening K. Tsuchiya, H. Nakayama, Y. Todaka, M. Umemoto and K. Morii	615
Nanostructure and Texture of Ni and Ni/SiC Nanocomposites Coatings P. Ari-Gur, K. Alogab, A. Alamr, H. Alkhasawneh and S. Mirmiran	619
Preparation and Characterization of Nanocrystalline Noble Metal Films by MOCVD R. Martinez Guerrero, M.Z. Figueroa Torres, I.M. Montaña Zuñiga, E.M. Arce Estrada and J.R. Vargas-García	623
Microstructural Characterization of Spray Formed Al-9Si-3Cu-1Fe and Al-9Si-3Cu-1Fe + Al-4Si-4Fe Co-Deposited Alloy L.A. Bereta, C.S. Kiminami, W.J. Botta Filho and C. Bolfarini	627
Corrosion Behavior of NdFeB-Based Nanocrystalline Permanent Magnets A. Gebert, M. Rada, A. Kirchner, J. Lyubina, O. Gutfleisch and L. Schultz	631
Thermal Stability of Magnetic Properties of Nanocrystalline Fe-Co-Hf-Cu-B Alloys X.B. Liang, J. Ferenc, M. Kowalczyk, T. Kulik and A. Ślawska-Waniewska	635
Bulk Nanostructured Cu-2.5vol.%Al₂O₃ Alloy Synthesized Using High Energy Mechanical Milling D.L. Zhang, C.C. Koch, R.O. Scattergood and K. Youssef	639
Bulk Mechanical Alloying of Zr-Cu System by Accumulative Roll Bonding (ARB) N. Tsuji, S. Kato, S. Ohsaki, K. Hono and Y. Minamino	643
Is There Phases Separation in Cu₆₀Ti₂₀Zr₂₀ Alloy? J.Z. Jiang, W. Roseker, L. Gerward and G. Goerigk	647
XAFS Study on Solid State Amorphization Process of MgNi Alloys T. Nasu, Y. Nomura, M. Sakurai and T. Usuki	653
Crystallization Behaviour of Novel(Ti₃₃Zr₃₃Hf₃₃)_{100-x}(Ni₅₀Cu₅₀)_x Alloys with X=48 to 55 K.B. Kim, P.J. Warren, B. Cantor and J. Eckert	657
Electron Irradiation Induced Amorphization and Crystallization in Zr_{66.7}Cu_{33.3} Metallic Glass T. Nagase and Y. Umakoshi	661
Crystallization Behavior of Zr-Based Bulk Metallic Glass under Super High Magnetic Field M. Qi, X.D. Wang and D.Z. Yang	665
Mechanical Characterization of Cu₆₀Zr₂₂Ti₁₈ Bulk Metallic Glasses G. Alcalá, A. Concustell, S. Mato, T.G. Woodcock, A. Gebert, M.D. Baró and J. Eckert	669
(Fe,Co)-B-Si-Nb Bulk Glassy Alloys with High Glass-Forming Ability and Super-High Strength B.L. Shen, C.T. Chang and A. Inoue	673

Nanostructural Control by Additive Pd in Cast Zr₅₀Cu₄₀Al₁₀ Glassy Alloys with Good Fatigue Properties	
Y. Yokoyama, M. Nishijima, K. Hiraga, P.K. Liaw and A. Inoue	677
On the Structural Relaxation and Nanoindentation Studies of Changes in Free Volume in Zr-Based Bulk Metallic Glasses	
T. Benameur, A.R. Yavari, A. Inoue and B. Guelorget	681
Ca-Mg-Zn Bulk Metallic Glasses with Strong Glass-Forming Ability Synthesized under Air Atmosphere	
E.S. Park and D.H. Kim	687
Effect of Strain on the Crystallization Kinetics of Bulk Amorphous Alloys	
G.T. Bae, S.B. Lee, K.S. Lee, Y.W. Chang and N.J. Kim	691
Compositional Effect on the Stability of the Amorphous Phase in Al-La-Ni Alloys	
T. Biswas, S. Ranganathan and H. Kimura	695
High Strength Ti-Based Bulk Glassy Alloys with Distinct Ductility	
N. Nishiyama, C. Ma, H. Soejima, K. Amiya and A. Inoue	699
Structure and Properties of Rapidly Solidified and Mechanically Milled Nanostructured Al-Ni-Mn Alloys	
S.J. Hong, C. Suryanarayana and B.S. Chun	703
Deformation Mechanisms of Nanostructured Metallic Materials	
H.S. Kim	709
A New Method for Synthesizing Mg-Based Alloys by Hydrogen Treated Mechanical Alloying	
M. Matsuura, K. Konno and M. Yoshida	715
Preparation of Binary and Ternary Intermetallic Powders via a Novel Reaction Ball Milling Technique	
Z.H. Chen and D. Chen	719
Fabrication of a TiC/Ti₅Si₃ Nano-Grained Composite for Micro-Parts Using Pseudo-Superplastic Deformation by Non-Equilibrium PM Process	
N. Miyano, M. Yoshimoto, Y. Kumagai, K. Isonishi and K. Ameyama	723
Electric Erosion Behavior of Nanocomposites	
Y.S. Kwon, J.S. Kim, D.V. Dudina, O.I. Lomovsky, M.A. Korchagin and V.I. Mali	727