

Table of Contents

Plenary

Improvements & Innovations in the Continuous Casting Process at POSCO J.Y. Chung	3
TiNi-Base and Ti-Base Shape Memory Alloys S. Miyazaki and H.Y. Kim	5

Advanced Ferrous Alloys and Processing

	I.
The Recrystallization Behaviour of Nb Microalloyed Steels H. Beladi and P. Hodgson	25
Phase Transformation Rule, Microstructure and Properties of JG590 High Strength Steel Y. Feng and W.H. Sun	29
Effect of Initial Grain Size on the Dynamic Recrystallization Behaviours of Austenite A. Dehghan-Manshadi and P. Hodgson	33
Microstructure and Mechanical Properties of Ni-Free High Nitrogen Austenite Stainless Steels Fabricated by Mechanical Alloying Method R. Murakami, Y. Aoyama, N. Tsuchida, Y. Harada and K. Fukaura	37
Enhancement of Fatigue Strength of SAE 1045 Steel by Tempering Treatment and Shot Peening S. Yazdania, N. Yoozbashi and A. Ebrahimi	41
Effect of Lower Final Rolling Temperature on Mechanical Properties of V-N Microalloyed Mild Steel J.Q. Qing, B.Q. Wu, J.C. Wu and Y. He	45
Effect of Reheating and End Cooling Temperature on Microstructure Refinement in a Low Carbon High Strength Nb-Ti Microalloyed Dual Phase Steel L.D. Yao, Z.G. Li, X.F. Mao, X.L. Tao and K.M. Wu	49
The Comparative Effectiveness of Nb Solute and NbC Precipitates at Impeding Grain Boundary Motion in Nb-Steels C.R. Hutchinson, H.S. Zurob, C.W. Sinclair and Y. Bréchet	53
Microstructural Features of a Ultra Low Carbon High Strength Acicular Ferrite Steel Thick Plate Z.Q. Cao, A.B. Zhang, D. Luo, Z.H. Xia, Y.D. Zhang and K.M. Wu	57
The Study of Inner Surface Crack Formation of Seamless Modified 9Cr-1Mo Tube Rolled on Mandrel Mill and Its Application S.Z. Li, J. Xu, Y.D. Yin, J.G. Xue and Y. Feng	61
The Nanohardness of Acicular Ferrite and Bainitic Ferrite in Low Carbon Microalloying Steel C.J. Shang, X. Liang, X.M. Wang, X.L. He and H. Liu	65
Crystallography of BCC Precipitates at Grain Boundary Corners in FCC Matrix T. Takeuchi, Y. Adachi, D. Dorner and M. Enomoto	69
Slab Method Analysis and FEM Simulation on Rotating Compression Forming of Cylinder Considering Coulomb Friction G.Y. Tzou, W.T. Chien, M.N. Huang and D.L. Cai	73
Effects of Ti and Nb Stabilization on the Recrystallization and the Pitting Potential in Fe-21%Cr Ferritic Stainless Steels W.B. Dong, L. Ma and L.Z. Jiang	77
Effect of Intermittent Heating on Creep Behaviour of Advanced 9-12%Cr Power Plant Steels V. Sklenička, K. Kuchařová, M. Svoboda and I. Saxl	81
Optimization of Residual Manganese in Molten Metal in Basic Oxygen Furnace (BOF) O.A. El Hady, A.E. Amer, I.S. El Mahallawi and Y.S. Shash	85

Superplastic Deformation Behavior of Spray Formed High Speed Tool Steel at 820°C C.D. Zhou, J.F. Fan, H.R. Le and J.G. Zhang	91
Effects of Addition of V and Nb on Ω in High Cr Ferritic Steels M. Mitsuhashi, Y. Yoshida, K. Ikeda, H. Nakashima and T. Wakai	95
Microstructural Characterization of Oxide Scale Formed by Early Stage of Oxidation of 17%Cr-Mn-Ni Austenitic Stainless Steel T. Oshima, Y. Yamaguchi and K. Kuroda	99
Study on Susceptibility of Hydrogen Embrittlement in a Tool Steel X.T. Wang and T. Siwecki	103
High Speed Deformation of Ultrafine Grained TWIP Steel R. Ueji, K. Harada, N. Tsuchida and K. Kunishige	107
Precipitation Hardening in Fe-1.03%Cu Structural Steel H.P. Ren, H.Y. Wang, Z.C. Liu and L. Chen	111
Mechanics of Asymmetric Rolling of Thin Strip with Effect of Work Roll Edge Contact Z.Y. Jiang, H.B. Xie, L.M. Yang, H.T. Zhu, D.B. Wei and A.K. Tieu	115

Light Metals

	II.
The Role of Deformation Twinning on Creep of Titanium Alloys S. Ankem and P.G. Oberson	121
Industrial Application in 2014 T6 Aluminum Alloys Having High Corrosion and Weather Resistant by Anionic Resin Coating with Mirror Luster M. Hara, K. Matsuda, T. Iwai, M. Kihara, W. Yamauchi, Y. Takigawa and K. Higashi	127
Formation of a Recrystallized and Recovered Multilayered Microstructure in a Hybrid Aluminium Alloy M.Z. Quadir, L. Bassman, O. Al-Buhamad and M. Ferry	131
Effects of Sb and RE on the Solutionized Microstructure and Microhardness of Mg-6Al-1Zn-0.7Si Magnesium Alloy M.B. Yang, F.S. Pan, Y.L. Ma and L.W. Tang	135
Improvements in Strength and Electrical Conductivity in 7B04 Aluminum Alloy Pre-Stretched Thick Plates Via Low-Temperature Retrogression and Re-Ageing Heat Treatments Z.H. Li, B.Q. Xiong, Y.A. Zhang, B.H. Zhu, F. Wang and H.W. Liu	139
Influence of Structure and Ionic Radius on Solubility Limit in the Mg-Re Systems J.H. Zhang, H.F. Liu, W. Sun, H.Y. Lu, D.X. Tang and J. Meng	143
Study on the In Situ SEM Tension Observation of E-A356 Alloys J.W. Li, J.P. Xie, W.Y. Wang and S.Z. Wei	147
Characterization of Intermetallic Phases and Planar Defects in Mg-Y-Zn Alloys Y.M. Zhu, A.J. Morton and J.F. Nie	151
A Constitutive Equation Coupling the Grain Size during the High Temperature Deformation of Ti-6.62Al-5.14Sn-1.82Zr Alloy J. Luo, M.Q. Li and Y.Q. Hu	155
The Influence of Process Parameters during Machining of Ti6Al4V Alloy S. Palanisamy, M.S. Dargusch, S.D. McDonald and D.H. StJohn	159
Long Term Creep Properties of a Die-Cast Mg-Al-Ca Alloy Y. Terada and T. Sato	163
Fundamental Research on Fatigue Properties of Closed-Packed Hexagonal Lattice Metal under Biaxial Stress Y. Ito, A. Shimamoto, T. Nemoto, K. Koide, A. Inamori, S. Yanai and H. Matsuura	167
Precipitation Hardening Behavior of Al-4wt.%Cu Alloys Aged at Low Temperature under High Magnetic Field L.Y. Cui, X.N. Li and M. Qi	171
Microstructural Refinement and Mechanical Property Improvements of Ti-5Al-1Sn-1V-1Zr-0.76Mo Alloy by Equal Channel Angular Extrusion Processing V. Protasov, G. Colombo, S.M.L. Sastry and M.A. Imam	175
Mechanical Properties and Press Formability of Mg Alloy Processed by Cross-Roll Rolling Y. Chino, K. Sassa, A. Kamiya, N. Saito and M. Mabuchi	179

In Situ Investigation of Orientation Changes during Heating of Extruded AZ31 S.B. Yi, H.G. Brokmeier and J. Homeyer	183
Influence of Extrusion Temperature on Microstructure, Texture and Fatigue Performance of AZ80 and ZK60 Magnesium Alloys M. Shahzad, D. Eliezer, W.M. Gan, S.B. Yi and L. Wagner	187
Development of New Types of Magnesium Alloys Containing Sr or RE Elements F.S. Pan, M.B. Yang and Y.L. Ma	191
Structure and Mechanical Properties of Mg-Zn-RE System Alloys J. Yang, J. Wang, W.L. Xiao, L.D. Wang, Y.M. Wu, H.J. Zhang and L.M. Wang	199
Hydrogen Evolution Behavior in an Al-Mg-Si Alloy Affected by Hydrogen Embrittlement K. Horikawa and H. Kobayashi	203
Tensile Properties and Deformation-Fracture Behavior of Ti-6Al-4V Alloy at Cryogenic Temperature S.L. Dong, Y.C. Xin, G. Lu, D.Z. Yang, S.Y. He and E.H. Han	207
Study on Al Alloy Surfaces Treated by Ion Beams Y.L. Li, X.D. Peng and W.D. Xie	211
Determination of Sr Content in Mg-Sr Alloys Using Faas X.D. Peng, Y.B. Feng, H. Nie, W.D. Xie and Q.Y. Wei	215
High Temperature Tensile Properties of a Mg-8%Li Alloy Shear-Strained by Torsion Working and ECAP T. Morita, M. Furui and H. Anada	219
Recycling of Mg-Al-Ca Based Alloy by Vacuum Distillation M. Inoue, N. Shima and T. Tsukeda	223
Laser Rapid Forming of Ti-Ni Functionally Graded Alloy X.J. Xu, X. Lin, J. Chen, F. He and W.D. Huang	227
Microalloying Effects of Ca, Ag, Ni and Zn on Mechanical Properties in an Mg-3mass%Y Alloy M. Suzuki, K. Tsuchida and K. Maruyama	231
Improvement of Strength and Ductility by Controlling PFZ with Microalloying Elements in Al-Zn-Mg Alloys T. Ogura, H. Shoichi and T. Sato	235
The Effect of Ag-Addition on Precipitation Sequence in Al-1.0mass%Mg₂Si-Excess 0.4mass%Si Alloy K. Niwa, K. Matsuda, J. Nakamura, T. Sato and S. Ikeno	239
HRTEM Observation of Rod-Shape Precipitates in Al-Mg-Si-Ag Alloy Aged at 523 K J. Nakamura, K. Matsuda, Y. Nakamura, T. Sato and S. Ikeno	243
Research on Solution and Aging Treatment of Mg-7Zn-3Al Alloy J. Zhang, F.S. Pan and R.L. Zuo	247
Effect of Processing Route on Microstructure and Texture Development in ECAP of Al-Ti Alloy Y. Watanabe, P.D. Sequeira, O. Sitdikov, H. Sato, Z.G. Zhang and I.S. Kim	251
Effects of Homogenization Treatment on Mechanical Properties of Hot-Rolled AZ31 Magnesium Alloy X.S. Huang, K. Suzuki, A. Watazu, I. Shigematsu and N. Saito	255
Fatigue in Ti-6Al-4V at Very High Cycles X.J. Cao, M.R. Sriraman and Q.Y. Wang	259
3D Image-Based Modeling of Ductile Fracture in an Aluminum Alloy Using Synchrotron X-Ray CT Images L. Qian, H. Toda, K. Uesugi, M. Kobayashi and T. Kobayashi	263
Fatigue Fracture Behavior of Mg-Zn-Y Alloys M. Tsushida, K. Toda, H. Kitahara, S. Ando and H. Tonda	267
Developments of Magnesium Alloys by Melt Stirring Method S. Ando, L.P. Bu, S. Tanaka, H. Kitahara and H. Tonda	271
HREM and HAADF Studies of Precipitates in the Mg-Y-Nd Alloy System W. Sun, L. Sun, L.L. Liu and Z. Zhang	275
Microstructural Characterization and Temperature Analysis in Friction Stir Welding of A383/5052 Dissimilar Aluminum Alloys M. Kokubo, S. Kazui, T. Kaneuchi, Y. Takayama, H. Kato and S. Hirano	279

First-Principles Calculation of Interaction Energies between Solutes and/or Vacancies for Predicting Atomistic Behaviors of Microalloying Elements in Aluminum Alloys H. Shoichi, F. Nakamura and T. Sato	283
Influences of Rolling Conditions on Texture and Mechanical Properties of AZ31 Magnesium Alloy Processed by Differential Speed Rolling K. Suzuki, X.S. Huang, A. Watazu, I. Shigematsu and N. Saito	287
Effect of Granule Size in Semi-Solid Slurry on Rheo-Extrusion of A7075 Aluminum Alloy Y. Uetani, R. Nagata, H. Takagi, K. Matsuda and S. Ikeno	291
Influences of Hydrogenation on Microstructure and Microhardness of Ti6Al4V Alloy J.W. Zhao, H. Ding, W.J. Zhao, X.F. Tian, H.W. Xiao and H.L. Hou	295
Phase Analysis for Mg-Zn-Y Magnesium Alloys by Using Extraction Technology C.P. Liu, F.S. Pan and W.Q. Wang	299
HRTEM Observation of Precipitates at Early Stage of Aging in Mg-Gd-Zr Alloy T. Kawabata, T. Matsuno, K. Matsuda, S. Kamado, Y. Kojima and S. Ikeno	303
HRTEM Observation of the Age Hardening Precipitates in Mg-Gd-Sc Alloy K. Fukumori, T. Kawabata, K. Matsuda and S. Ikeno	307
Changes in the Mechanical Properties and Microstructure of AZ91 Cast Mg Alloy Caused by Heat Treatment K. Fujii, T. Kawabata, K. Matsuda and S. Ikeno	311
Microstructure Sensitive Design and Quantitative Prediction of Effective Conductivity in Fuel Cell Design H. Garemsani, D.S. Li and M.A. Khaleel	315
Effects of Various Thermal and Environmental Exposure on the Mechanical Properties of Aluminum Alloys E.W. Lee and O.S. Es-Said	319
Effect of Initial Microstructure under Different Solidification Conditions on Hot Working Behavior of AZ31 Alloy L. Shang, S. Yue, E. Essadiqi, A. Javaid, J.T. Carter and R. Verma	325
Effect of TiH₂ on the Microstructures and Refining Performance of Al-Ti-C Master Alloy H.Y. Zhuang and X.M. Pan	329
Solute Content and the Tensile Behavior of High Pressure Die Cast Mg-Al Alloys A.V. Nagasekhar and C.H. Cáceres	333
Electromagnetic Stirring Processing and its Influence on Mechanical Properties of ZL102(or Al-Si) Alloy X.F. Zhang, Y.S. Du, L.Y. Qi and G.Y. Liu	337
Investigation of Streaking Defects on Aluminium Extrusions H. Zhu, C.H. Cáceres, X.Q. Zhang, M.J. Couper and A.K. Dahle	341
Integrating Process, Material and Business Strategies to Transform a Small-Medium Aluminium Products Manufacturer I. Dover, H. Baumann, D.H. StJohn and M.S. Dargusch	345
On-Line Aging to Improve the Tensile Strength and Conductivity of Cold-Drawing AA6201 Wires T.G. Zhou, Z.Y. Jiang, J.L. Wen and A.K. Tieu	349
From Angel Food Cake to Porous Titanium – A Novel Powder Metallurgical Approach for Metallic Foam Utilizing Food Processing and Ceramic Processing Techniques K.C. Wong	353
Resistance of Thin Al Foam Panels to Deep Indentation M.I. Idris, T. Vodenitcharova and M. Hoffman	357

Intermetallics and High Temperature Alloys

III.

Preparation of the Al-Cu-Co and Al-Cu-Ni Ternary Intermetallic Powders via a Solid-Liquid Reaction Ball Milling Technique D. Chen, J.G. Cai, W. Wu, G. Chen and H.G. Yan	363
Preparation of Ti-Al Intermetallics by Aluminum Melt Infiltration-Diffusion Annealing Technique L.Q. Chen, J.J. Wang and L. Chen	367

Oxidation Behavior and Pack Siliconized Oxidation-Resistant Coatings of an Nb-Based Ultrahigh Temperature Alloy	
X.P. Guo, L.X. Zhao, P. Guan and K. Kusabiraki	371
Microstructure and Mechanical Properties of Dual Multi-Phase Intermetallic Alloys Composed of Geometrically Close Packed Ni₃X Structures	
T. Takasugi and Y. Kaneno	375
Development of a Second Generation TiAl Turbocharger	
T. Tetsui	379
Microstructure and Deformation Behavior of Lamellar Ti-Rich TiAl Crystal with Lotus-Type Aligned Pores	
T. Nakano, T. Tachibana, K. Hagihara, Y. Umakoshi, T. Ide, M. Tane and H. Nakajima	383
Microstructures Evolution of a Ni-Base Superalloy after Long-Term Aging at 750°C	
T. Cui, J.J. Wang, L.Q. Chen, G.P. Zhao and H.C. Yang	387
Effect of Third Elements on Pseudoelastic Behavior in Fe₃Al Single Crystals	
H.Y. Yasuda, T. Kase, S. Minamiguchi, A. Yokoyama, Y. Umakoshi, P.M. Bronsveld and J.T.M. de Hosson	391
Strengthening and Ductilization of D0₃-Type Fe₃Al Intermetallic Alloys by Dispersion of Laves Phases Fe₂Zr and Fe₂Nb	
N. Matsumoto, Y. Kaneno and T. Takasugi	395
Mechanical Properties of Zr-Added Fe-Al Intermetallic Alloys Containing Large Second Phase Particles	
J. Machida, S. Kobayashi, Y. Kaneno and T. Takasugi	399
Influence of Electrical Parameter on the Size of Superalloy Powders Prepared by Spark Plasma Discharge Process	
J. Yu, C.C. Ge, G.H. Ni, L.L. Meng, W.P. Shen and Y.D. Meng	403
Microstructure and Plastic Deformation Behavior of Ni₃V Single Crystals	
K. Hagihara, M. Mori and Y. Umakoshi	407
The Effects of Nb and Cr Addition on Mechanical and Chemical Properties of Cold-Rolled Ni₃(Si,Ti) Intermetallic Foils	
Y. Kaneno and T. Takasugi	411
Microstructure and Mechanical Properties of In718 Alloy Produced with Twin-Scanning Atomizer	
Z.D. Li, G.Q. Zhang, Z. Li, W.Y. Xu, R.P. Yao, H. Yuan and Y. Zhang	415
Dependence of Strain Rate and Environment on the Mechanical Properties of the Ni-19Si-3Nb-1Cr-0.2B Intermetallic Alloy at High Temperature	
C.C. Fu, C.M. Chung, L.J. Chang, C.F. Chang and J.S.C. Jang	419
Effect of Isothermal Forging on Microstructures and Mechanical Properties of Nb-Si In Situ Composite	
Y.W. Kang, S.Y. Qu, Y.F. Han, J.X. Song and D.Z. Tang	423
High Temperature Oxidation Behavior of MoSi₂ under Low Pressure Atmosphere	
A. Ibano, K. Yoshimi, A. Yamauchi, R. Tu, K. Maruyama, K. Kurokawa and T. Goto	427
Reliable Titanium Aluminide Texture Measurement Using EBSD	
M. Nave and H. Inoue	431
Phase Equilibria between γ-Fe (A1) and Fe₂Ti Laves (C14) Phases and Microstructure in Fe-Ti-Ni Ternary System at Elevated Temperatures	
T. Sugiyura, S. Ishikawa, T. Matsuo and M. Takeyama	435
Mechanical and Physical Properties of Ni₃Al-Based Alloys with Cr Carbides Dispersion	
S. Miura, H. Goldenstein, K. Ohkubo, H. Sato, Y. Watanabe and T. Mohri	439
Defect Generation in Some Transition-Metal Silicides in Accommodating the Deviation from the Stoichiometric Compositions	
H. Inui, K. Tanaka, K. Kishida and S. Harada	443
A 21st. Century Perspective on Molybdenum Powder Production by Hydrogen Reduction	
G.P. Martins, T. Kangsadan, G. Scott, C. Wagner and J. Van Hoose	447
Oxidation Behaviours of MoSi₂ Single Crystal at the Temperatures of 773K and 1473K	
L.T. Zhang, A.D. Shan and J.S. Wu	453
Plastic Deformations in L1₀-Ordered Single Crystals with their c/a Ratios Less than Unity	
K. Tanaka, H. Ide, Y. Sumi, K. Kishida and H. Inui	459
Thermoelectric Properties of Ru₂Si₃-Based Chimney-Ladder Phases	
K. Kishida, A. Ishida, K. Tanaka and H. Inui	463

Hydrogen Permeation Properties of Nb-Based Two-Phase Compounds Y. Yamaguchi, K. Kishida, K. Tanaka, H. Inui, S. Tokui, K. Ishikawa and K. Aoki	467
Modification of Ni-Cr-Co-Mo-Nb-Ti-Al Superalloy for USC Power Plant Application at Temperature above 750°C X.S. Xie, S.Q. Zhao, J.X. Dong, G.D. Smith, B.A. Baker and S.J. Patel	471
Phase Equilibria and Atomic Diffusion in the Ir/CoAl System Y. Kimura, M. Ohsaki, H. Fujita and Y. Mishima	477
Microstructures and Mechanical Properties of Ti-48Al-2Cr-2Nb-xW D.Y. Seo, S. Bulmer, H. Saari and P. Au	481

Advanced Ceramics

	IV.
Improvement of Strength, Weibull Modulus and Damage Tolerance of SiC Y. Hirata, N. Matsunaga, N. Hidaka, T. Maeda, T. Arima and S. Sameshima	489
Hydrothermal Synthesis of Bi_{1.5}ZnNb_{1.5}O₇ Nanopowders J.L. Huang, X. Wang, L.S. Yang, C.W. Cui and X.H. Yang	495
Study of the Preparation Technology and Properties of BaBi₄Ti₄O₁₅ Ceramics J.L. Huang, L.H. Li, K. Zhang and B. Yin	499
Edge Effects in Sliding Wear Behavior of ZrO₂-WC Composites and WC-Co Cemented Carbides K. Bonny, P. de Baets, O. Van der Biest, J. Vleugels and B. Lauwers	503
Study of Water-Debinding for Ceramic Parts by Injection Molding Z.P. Xie, L.L. Wang and X.F. Yang	507
Millimeter-Wave Assisted Sintering of Polycrystalline Ytria for Laser Host Material M.K. Hornstein, R.W. Bruce, A.W. Fliflet, S.H. Gold, M. Kahn and M.A. Imam	511
Barium Titanate Nanopowders Prepared from the Modified Oxalate Co-Precipitation Method P. Pookmanee, C. Khantha and S. Phanichphant	515
Fabrication of Bi_{2-x}Sb_xTe₃ (x=0-1.5) Thick Film by Centrifugal Deposition T. Aoki, Y. Kinemuchi, H. Kaga, C. Ito, H. Ishiguro, H. Morimitsu, S. Uchimura and K. Watari	519
Synthesis of Ultra-Fine and High-Pure Zirconium Diboride Powders Using Solution-Based Processing C.A. Wang, H.L. Wang, L. Yu and Y. Huang	523
Simultaneous Synthesis and Consolidation of W-Added ZrB₂ by Pulsed Electric Current Pressure Sintering and their Mechanical Properties H. Ken, T. Endo, K. Masaki, S. Nakane, T. Nishimura, Y. Morisada and K. Mizuuchi	527
Silicon Nitride/Boron Nitride Composite by Combustion Synthesis K. Zhang, Q. Zhang, P.F. Wang, L. Bai, W.P. Shen and C.C. Ge	531
Grain Growth Behavior of Al₂O₃-ZrO₂ with a Small Amount of Zirconia M. Nagashima and M. Hayakawa	535
Design of Mold Materials for Encapsulating Semiconductors Using Epoxy Molding Compounds S. Kitaoka, N. Kawashima, K. Maeda, T. Kuno and Y. Noguchi	539
Fabrication Processes and Properties of Highly Pure MgAlON Materials Q. Huang, Y. Huang, C.A. Wang and H.X. Zhang	543
Development of Efficient Metal Catalyst Support S. Muraoka, K. Kitamura, S. Kishi, T. Nakazawa and Y. Shimizu	547
Microstructure and Electrical Properties of Calcium Copper Titanate Ceramics L.J. Liu and H.Q. Fan	551
Negative Thermal Expansion in Mn₃Ga(Ge,Si)N Anti-Perovskite Materials Y. Sun, C. Wang and Y.C. Wen	557
Wear Characteristics of Bulk Ti₃AlC₂ under Current-Carrying Conditions Z.Y. Huang, H.X. Zhai, H. Zhang and H.B. Zhang	563
Depth Selective Electronic State Analysis of Implanted Nitrogen in Visible-Light Response TiO₂ Photocatalyst T. Yoshida, S. Muto and J. Wakabayashi	567
Novel Aluminium Nitride Surface Coatings Formed on Aluminium D. Kent, G.B. Schaffer and J. Drennan	571

Densification and α/β Phase Transformation of SHS Si_3N_4 Containing Al_2O_3 and Y_2O_3 during Sintering	
L. Bai, C.C. Ge, W.P. Shen, K. Zhang and X.D. Mao	577
Zinc Oxide Ceramics with High Mobility as n-Type Thermoelectric Materials	
Y. Kinemuchi, H. Kaga, S. Tanaka, K. Uematsu, H. Nakano and K. Watari	581
Preparation and Characterization of β-SiAlON Ceramics from High Aluminium Fly Ash via Carbothermal Reduction-Nitridation	
J.H. Li, H.W. Ma and Y. Cao	587
XRD and HRTEM Study of Zirconia Nanoparticles Synthesized by Laser Ablation	
H. Abe, H. Kobayashi, Y. Katano, T. Iwai and N. Sekimura	591
Effect of Oxygen Partial Pressure on Electrical Conductivity of Ca-Ru-O Compounds Prepared by Spark Plasma Sintering	
N. Keawprak, R. Tu and T. Goto	595
Spark Plasma Sintering of βSiAlON-cBN Composite	
M. Hotta and T. Goto	599
Fabrication of Alumina and Silicon Carbide Fibers from Carbon Fibers	
Y.J. Lin and S.Y. Shen	603
Fabrication and Electrical Property of SiC-AlN Composites	
J. Hojo, Y. Nonaka, K. Kamada, N. Enomoto, M. Hotta and K. Shirouzu	607
Effect of Calcination on Mechanical Properties of Hydroxyapatite / Zirconia Composite Sintered by Spark Plasma Sintering	
B.K. Moon, K. Kamada, N. Enomoto, J. Hojo and S.W. Lee	613
Dielectric Properties and Microstructure of Nearly Zero Temperature Coefficient τ_f of Forsterite Ceramics	
Z.N. Ismarrubie, M. Ando, T. Tsunooka, I. Kagomiya and H. Ohsato	617

Composite Materials

	V.
Sintering and Performance of MgO-CaO Materials with Nano-Sized ZrO_2 Addition	
M. Chen, C.Y. Lu and J.K. Yu	623
High Volume Fraction Carbide Reinforced Copper Matrix Composites for Sliding Contact Applications	
F. Akhtar	627
Preparation of Silica Microcapsules Containing Phase Change Paraffin Wax	
C.Y. Miao, G. Lü, K. Cao, Y.W. Yao, G.Y. Tang and D. Weng	631
Online Wear Monitoring of Polymer Matrix Composites	
J. Quintelier, P. Samyn, W. De Waele and J. Degrieck	635
Frictional Behavior of Glass Fiber Reinforced Polyester under Different Loads	
J. Quintelier, F. Van den Abeele, L. De Doncker, W. De Waele, J. Degrieck and P. Samyn	639
A Pressured Steam Jet Approach to Tool Wear Minimization in Cutting of Metal Matrix Composites	
D. Anjaiah, R. Shetty, R. Pai, M.V. Kini and S.S. Rao	643
Mechanical Properties Variation with Test Temperature for Liquid Phase Sintered 95W-3.5Ni-1.5Fe Alloys	
S.H. Islam, M. Tufail and X.H. Qu	647
Influence of Secondary Electro-Conductive Phases on Sliding Wear Performance of Zirconia Based Ceramic Composites	
K. Bonny, P. de Baets, O. Van der Biest, J. Vleugels and B. Lauwers	651
Metal Coated Functionalized Single-Walled Carbon Nanotubes for Composites Application	
Q. Zeng, J. Luna, Y. Bayazitoglu, K. Wilson, M.A. Imam and E.V. Barrera	655
Effects of SiO_2 Particles on Wear Behavior of Cu-SiO_2 Dispersion-Hardened Alloys	
H. Sato and Y. Watanabe	659
Fabrication of Polystyrene Fibers Containing Nanoparticles of TiO_2 and ZnO by Electrospinning	
M. Kobayashi, M. Egashira and T. Konno	663
Surface Nano-Deformation Behavior in Particle-Reinforced Al Composite	
Y. Tanaka, Y.F. Liu and Y. Kagawa	667

Basalt Reinforced Plastics: Some Operating Properties G.S. Abashidze, F.D.S. Marquis and N.M. Chikhradze	671
Effect of Boron on the WC Morphology in Sub Micron Tungsten Carbide-Aluminide Composites M. Ahmadian, T. Chandra, D. Wexler and A. Calka	675
Damping Capacities of B/Al Composite Subjected to Thermal-Mechanical Cycling Y.C. Qin and S.Y. He	679
Synthesis of 1, 2-Aceanthrylenedione Catalyzed by Anhydrous $AlCl_3$ C.Y. Zhang, M. Chen, Y. Zhang, X.H. Yuan and H. Liu	683
Oxidation Behavior of Ti_3SiC_2-SiC Ceramic Composites D.G. Zhu and Z.G. Wang	687
Effects of the Morphology of Silicon Phase on the Properties of Zinc Based Composites A.L. Wei, W. Song, X.D. Wu, W. Liang and L.H. Xu	693
Damping Characteristics of a NiMnGa/Polymer Composite Material X.G. Sun and C.Y. Xie	697
Chemical In Situ Synthesis of Aluminum Alloy Composites R.G. Reddy and V. Kumar	701
A Study on Manufacture of SiCp/Fe Composites by Specimen Current Heating Hot Press Sintering G. Wang, Y.F. Yang and Y.P. Zong	705
Synthesis and Mechanical Properties of Advanced Polyimide/Silicon Dioxide Nanocomposites Q.X. Zhang, K. Naito and Y. Kagawa	709
Structure of Natural Nano-Laminar Composites: TEM Observation of Nacre T. Sumitomo, H. Kakisawa, Y. Owaki and Y. Kagawa	713
Measurement of Strain and Stress Distribution of Composite Materials by Electron Moiré Method S. Kishimoto, Y. Tanaka, Y.M. Xing and G.C. Lee	717
Rapidly Solidified Thick Deposit of Fe-B-Cr Alloy by Plasma Spraying Y. Hoshiyama, K. Hirano, H. Miyake and K. Murakami	721
A Relation between Laboratory and Full-Scale Testing of Polyester/Polyester Composites under Static and Dynamic Load P. Samyn, J. Quintelier, W. van Paepegem and W. De Waele	725
Electrical Conductivity of VGCF/ Aluminum Composites Fabricated by Electro Spark Sintering G. Sasaki, F. Kondo, K. Matsugi and O. Yanagisawa	729
Mechanical Properties of Nano-Laminar Glass/Metal Composite H. Kakisawa, T. Sumitomo, Y. Owaki and Y. Kagawa	733
Study on Toughening Mechanism of Nano-Composite Ceramics Prepared by Mixed Coagulative Method B. Zhao, G.F. Gao and Y. Wu	737
Fabrication of Structural Composite Accompanied with a Function of Thermoelectric Conversion Y. Takayama, T. Abe, T. Yashiro, H. Watanabe and H. Kato	743
Microstructure and Properties of Porous CMCs Prepared by HIPing the Pyrolyzed ZrO_2/ Si / Phenol Resin Composite M.A. Sharif and H. Sueyoshi	747
Study on In Situ Synthesized Titanium Matrix Composites D. Zhang, J.Q. Lu, W.J. Lu and J.N. Qin	751
An Amendment Method for Stress and Strain of Double-Curved Laminated Composite Y.S. Liu, J. Liu, A.Q. Wang and Z.F. Yue	757
Tensile Behaviour of Nano-Particulate Reinforced Aluminium Matrix Composites at Elevated Temperatures A. Ahmed, A.J. Neely, K.K. Shankar and S.L.I. Chan	761
Effect of Aluminum Addition on Thermal Properties of Mg/SiC_p Composites Y. Zhang, X.T. Wang, L. Chen and X.B. He	765
Microstructure Control of Ceramic-Intermetallic Composites by Heat-Treatment before Combustion Synthesis K. Matsuura, K. Ohsasa and Y. Obara	769

Enhanced Wear Resistance of CFRP Laminates via Carbon Nano-Particles Dispersed Surfaces T. Tanimoto	773
Flexural/Twist Anisotropy Influence on Elastic Instability of a Plate Composite Laminate J. Raška	777
Bacteria-Templated Synthesis of ZnO Hollow Spheres via a Facile Hydrothermal Method H. Zhou, T.X. Fan and D. Zhang	781
In Situ Synthesis of Hierarchical Nanocomposites Utilizing Redox-Active Biofibers by a Novel Biogenic Technique Q. Dong, H.L. Su, D. Zhang, W. Cao and J. Han	787
The Effect of Matrix on the Mechanical Properties of Squeeze Cast Al - 50 % SiC_p Composites H. Mindivan, S. Kayali and H. Çimenoglu	791
Dynamic Mechanical Thermal Properties of a New Metal/Polymer Composite for Fused Deposition Modelling Process W.Q. Song and S.H. Masood	795
Strength Prediction for Jute Polyester Composite for Transverse Fiber Reinforcement A.A. Shaikh and S.A. Channiwala	799

Advanced Forming and Processing

VI.

Numerical Analysis of Force and Power Parameters in Cold Ring Rolling L.G. Guo and H. Yang	805
Microstructure and Mechanical Properties of the Spray-Deposited Al-10.8Zn-2.8Mg-1.9Cu Alloy at Various Aging Conditions F. Wang, B.Q. Xiong, Y.A. Zhang, B.H. Zhu, H.W. Liu, X.J. Mi and X.Q. He	809
Subgrain Boundaries in ECAP Aluminium I. Saxl, V. Sklenička, L. Ilucová, M. Svoboda and P. Král	813
Freeform Fabrication of Non-Metallic Objects by Selective Laser Sintering and Infiltration B.Y. Stevinson, D.L. Bourell and J.J. Beaman	817
Manufacturing Technologies for Small Lot Size, Short Cycle Time and Low Cost K.P. Cooper	821
Advanced Plastic Processing Techniques for the Densification of Spray Deposited Preforms Z.H. Chen, H. Zhang, D. Chen, H.G. Yan and G. Chen	827
Effects of Friction on Precision Forging Process of Blade with a Damper Platform Y.L. Liu, H. Yang and T. Gao	831
Texture Aspects of Deformation Processes under Equal-Channel Angular Pressing of Metals Y. Perlovich, M. Isaenkova, V. Fesenko and M. Grekhov	835
Development of Substructure Non-Uniformity under Equal-Channel Angular Pressing M. Isaenkova, Y. Perlovich, V. Fesenko and M. Grekhov	839
Butt Joining of Dissimilar Sheets by Shot Peening Y. Harada, M. Fukunaga, K. Fukaura, S. Ujihashi and Y. Kobayashi	843
Formation of Ultrafine Grained Structure in SUS 304 Stainless Steel Produced by High Pressure Torsion (HPT) J.G. Li, M. Umemoto, Y. Todaka and K. Tsuchiya	847
Lining of Carbon Steel with Metal Foils by Shot Peening Y. Harada, K. Fukaura and D.G. Kim	853
Preparation of Homogeneous Fe-Al Intermetallic Compound Sheet by Multi-Layered Rolling and Subsequent Heat Treatment A. Nishimoto and K. Akamatsu	857
A New Method to Produce Superfine and Nano-Sized Fe Powders: Spark Plasma Discharge Process C.C. Ge, J. Yu, W.P. Shen, C. Cheng, G.H. Ni, L.L. Meng, M. Li, C.X. Zhang and Y.D. Meng	861
Preparing Semisolid Light Alloys by Vibrating Wavelike Sloping Plate Process and Thixoforming R.G. Guan, Z.H. Xing, L. Shi, C. Wang and Y. Wang	865

Optimization of Particle Size and Distribution by Hydrostatic Extrusion M. Lewandowska and K. Wawer	869
Synthesis of 3, 3-Biacenaphthene through Coupling Reaction of Acenaphthene Catalyzed by [Bmim]Cl/FeCl₃ Ionic Liquid M. Chen, X.H. Yuan, Y. Zhang, C.Y. Zhang and X.N. Chen	873
Microstructures and Phase Transformations of Ti-50.9at%Ni Alloy Processed by Equal Channel Angular Extrusion at Medium Temperature C.Y. Xie and Z.G. Fan	877
Effect of Shear Deformation on Deformed Microstructures of Austenitic Grains T. Inoue and F.X. Yin	881
Research on the Blank Selection in the Power Spinning Process of Parts with Transverse Inner Rib F. Ma, H. Yang and M. Zhan	885
The Study on the Microstructure Characters of Pure Iron during Cold Rolling by High Energy X-Ray Diffraction Y.D. Liu, H. Tong, Q.W. Jiang, Y. Ren, Y.D. Wang and L. Zuo	889
Distortion Analysis of Aluminum Alloy for Sheet Metal Forming after Solution Treatment C.C. Torng, C.K. Huang and H.M. Chang	893
Influence of Microshot Peening on Surface Layer Characteristics of Cold Tool Steel Y. Harada, K. Fukaura, T. Aoki, D. Yokoi and Y. Haruna	897
Mapping of the Granular Flow during the Irreversible Deformation Processes in Spatially Extended Polycrystalline Systems J.D. Muñoz-Andrade	901
Fine-Grained Structure in Extruded Magnesium Alloy with Long-Period Stacking Order Phase T. Morikawa, D. Kinoshita, Y. Kawamura and K. Higashida	905
Microstructure and Mechanical Properties of Titanium Severely Strained by Means of Friction Roll Processing M.Q. Shi, Y. Takayama and H. Kato	909
Fabrication of Nanostructured Materials by Hydrostatic Extrusion: Advantages and Limitations K.J. Kurzydłowski and M. Lewandowska	913
X-Ray Study on Mg-Sm Alloy Produced by HPT M. Gotoh, K. Kitagawa, S.V. Dobatkin and Y. Hirose	917
Study on Warm Flow Compacted Tungsten-Based Alloy Powder for Cross-Shape Part Z.Y. Xiao, J. Wang, T.L. Ngai, M. Shao and Y.Y. Li	921
Semisolid Forging of Cast Iron Using Rapid Resistance Heating S. Maki, K. Suzuki and K. Mori	925
Analysis of Deformation Textures and Microstructure in ECAE Processed Copper Single Crystals via Route C G. Wang, S.D. Wu, Y.D. Wang, Y.P. Zong, C. Esling and L. Zuo	929
Surface Features in Honing Zirconia Ceramics Using Fine Grains with Ultrasonic Assistance G.F. Gao, B. Zhao, Q.H. Kong and C.S. Liu	933
Ultrasonic Spectroscopy and X-Ray Diffraction Study for ARB Aluminum K. Hirai, T. Ichitsubo, E. Matsubara and N. Tsuji	937
An Investigation on the Microstructure and Mechanical Properties of Mg-3Al-1Zn Alloy via Spray Forming Y.B. Li, H. Cui, J.F. Huang, Y.H. Cai, Z.H. Wang and J.S. Zhang	941
Research on Properties of SiCp/AZ61 Magnesium Matrix Composites in Fabrication Processes H. Yan, M.F. Fu, F.Y. Zhang and G.X. Chen	945
Measurement of Cutting Temperature Using Wireless Sensing System C.Y. Ho, Y.C. Lee and Y.S. Tzeng	949
Application of PEG/PMMA Binder for Powder Injection Moulding of Hardmetals N. Chuankrerkkul, H.A. Davies and P.F. Messer	953
Microstructure and Properties of Al-Zn-Mg-Cu-Mn In Situ High Strength Alloy Y.H. Cai, H. Cui, Y.B. Li, J.F. Hang and J.S. Zhang	957

Mechanical Properties of Equal Channel Angular Extruded Magnesium Boride (MgB₂) Powder in Tubes (PITs)	
A.V. Nagasekhar, T.H. Yip, R.K. Guduru and K.S. Ramakanth	961
Relationship between Saturation Curve and Peening Parameters for Aerospace Shot Peening Process	
C.K. Huang, C.C. Torng and H.M. Chang	965
Synthesis of Tin Oxide (SnO₂) by Precipitation	
H. Taib and C.C. Sorrell	969
Synthesis of Tin Oxide (SnO₂) by the Oxalate Route: Effects of Addition Method and Ageing	
H. Taib and C.C. Sorrell	973
Atomistic Studies of Deformation Mechanism of Nanocrystalline Al-Ti and Al-Fe Alloys from First-Principles	
T. Uesugi, Y. Takigawa and K. Higashi	977
Coating with Supersonic Free-Jet PVD	
N. Niwa, A. Yumoto, T. Yamamoto, F. Hiroki and I. Shiota	981

Advanced Melt Processing, Casting and Joining

VII.

Experimental Study of Grain Growth in Aluminium Melts under the Influence of Ultrasonic Melt Treatment	
T.V. Atamanenko, D.G. Eskin and L. Katgerman	987
Unsteady-State Solidification under Forced Flow Conditions	
A.N. Turchin, D.G. Eskin and L. Katgerman	991
Effect of Structure on Hot Tearing Properties of Aluminum Alloys	
D.G. Eskin and L. Katgerman	995
Microstructure and Mechanical Property of Al₂O₃/Y₃Al₅O₁₂ (YAG) Eutectic Ceramic In Situ Composite Prepared by Laser Zone Melting	
H.J. Su, J. Zhang, L. Liu and H.Z. Fu	999
A Model for Lamellar-Rod Eutectic Transition	
S. Liu, J.H. Lee and R. Trivedi	1003
Influence of Processing Parameters on Interfacial Heat Transfer Coefficient at the Metal-Die Interface of Die Cast AM50 Alloy	
Z.P. Guo, S.M. Xiong, S.H. Cho and J.K. Choi	1007
Fracture Analysis of Superplastic Diffusion Bonding Joints between Titanium Alloy and Stainless Steel	
M. Wang, J.W. Dai, H.Z. Guo and C.X. Ma	1011
3D Microstructure Development during Unconstrained Solidification of Aluminum Alloys	
D. Ruvalcaba, D.G. Eskin and L. Katgerman	1015
Study on Process of Magnesium Alloy Investment Casting	
G.Y. Yang, W.Q. Jie, Q.T. Hao and J.H. Li	1019
Control of Carbides and Graphite in Ni-Hard Type Cast Iron for Hot Strip Mills	
S. Villanueva Bravo, K. Yamamoto, H. Miyahara and K. Ogi	1023
Welding of Fine Metal Particles by Using a Tungsten Needle and Measurement of the Strength of the Joints	
T. Konno, M. Egashira and M. Kobayashi	1027
Intensifying Smelting Synthesis Technique of 2500m³ Blast Furnace	
B. Chu, Y. Xiao and P.H. Tang	1031
A Study of hBN-Y₂O₃ Composite Investment for Casting Ti-6Al-4V Alloy	
B. Shen, H.B. Liu, X.M. Mao and C.H. Li	1035
The Analysis of the Blowing Process with the Top Lance of the Argon Oxygen Decarburization (AOD) in Baosteel	
D.G. Li, H.B. Chi and S.J. Shao	1039
Joining of Aluminium Alloy and Mild Steel Sheets Using Mechanical Clinching	
Y. Abe, T. Kato and K. Mori	1043
Synthesis of Ultrafine Particles of Iron and Iron Nitride by Evaporation of Iron in Gas Mixtures of Argon and Ammonia or Argon and Nitrogen	
S. Yokoyama and K. Saito	1047

The Effect of Heat Treatment on the Microstructure and Mechanical Properties of Laser Rapid Forming Ni-Based Alloy Rene88DT	
F. He, J. Chen, X.M. Zhao, X. Lin, X.J. Xu and W.D. Huang	1051
Inhibition of Austenite Grain Growth by Particles and Solute Elements in Fe-0.05% C and Fe-10% Ni Alloys Deoxidized by Mn-Si, Ti, Mg, Zr and Ce	
A.V. Karasev, R. Inoue and H. Suito	1055
Microstructure and Mechanical Properties at the Unsteady Areas of Non-Linear Friction Stir Welding	
H. Takahara, M. Tsujikawa, S.W. Chung, Y. Okawa and K. Higashi	1059
Process and Practice of EAF with De-P Hot Metal Charging for Melting Stainless Steel	
F.Y. Zhu, H.B. Chi, X.Y. Jiang and W.D. Mao	1063
Rheological Transitions at Low Solid Fraction in Solidifying Magnesium Alloy AZ91	
C.M. Gourlay, B. Meylan and A.K. Dahle	1067
Liquid Metal Free Surface Motion Submerged in an AC Magnetic Field	
K. Iwai and S. Asai	1071
Spray Forming of Al-Fe-Cr-Ti and Al-Si-Li Alloys	
C. Banjongprasert, S.C. Hogg, I.G. Palmer, N. Grennan-Heaven, I.C. Stone and P.S. Grant	1075

Magnetic, Electronic and Optical Materials

VIII.

Enhanced Red Emission in Lithium Doped $\text{CaWO}_4\text{:Eu}^{3+}$ and $\text{CaMoO}_4\text{:Eu}^{3+}$ Phosphor	
S.K. Shi, J. Gao and J. Zhou	1081
Microwave-Assisted Synthesis of Phase Pure YFeO_3 Nanocrystallite	
J. Liu, J.M. Xie, H. Zhang, Z.J. Gu and X.M. Lü	1085
Photodegradation of Formaldehyde over Doped TiO_2 Prepared by Hydrothermal Method under Visible Light Irradiation	
X.M. Lü, J. Liu, J.M. Xie, H. Zhang and Z.J. Gu	1089
Enhancement of Magnetocaloric Effects in Single Phase $\text{La}_{1-z}\text{Nd}_z(\text{Fe}_{0.88}\text{S}_{0.12})_{13}$	
S. Fujieda, A. Fujita and K. Fukamichi	1093
Characterization and Microwave Absorption of “Core/Shell”-Type Nanoparticles	
H. Huang, X.F. Zhang, B. Lv, J.P. Lei, J.P. Sun, X.L. Dong and C.J. Choi	1097
Fabrication of Iron Oxide Nanostructures by Electron Beam-Induced Deposition	
M. Shimojo, M. Takeguchi, K. Mitsuishi, M. Tanaka and K. Furuya	1101
Effect of Mn Substitution on the Structure and Microwave Properties of Nd-Fe-B Nanocomposites	
G.Z. Xie, P. Wang, B.S. Zhang, L.K. Yuan, Y. Shi, P.H. Lin and H.X. Lu	1105
Onset Magnetic Field for Rearrangement of Martensite Variants in Ni_2MnGa	
T. Fukuda, N. Okamoto and T. Kakeshita	1109
Thermal Behavior of Electron Irradiation Defects in CZ-Si	
H.Y. Cui, Y.X. Li, G.F. Chen, L.L. Cai and E. Zhao	1113
Large Linear and Volume Magnetostriction in Fe-Ga Alloys	
C.B. Jiang, J.H. Liu, F. Gao and H.B. Xu	1117
Improvement of Magnetic Characteristic in Spheroidal Graphite Cast Iron	
A. Matsumoto and N. Kanetake	1123
Nano-Order Structural Analysis of White Light-Emitting Silicon Oxide Prepared by Successive Thermal Carbonization/Oxidation of the Porous Silicon	
S. Muto, A.V. Vasin, Y. Ishikawa, N. Shibata, J. Salonen and V.P. Lehto	1127
Microstructure of Anisotropic Nd-Fe-B Film Magnets Prepared by Pulsed Laser Deposition	
M. Ishimaru, M. Itakura, N. Kuwano, S. Sato, M. Nakano and H. Fukunaga	1131
An Actuator Laser of Optical Disk Drive High-Frequency Electromagnetic Vibrations Characteristic Analysis	
L.Y. Wu, H.G. Ban, J. Deng and R. Guo	1135

Thin Film Materials and Processing

IX.

Structural, Electrical and Magnetic Properties of Ni₃₃Fe₆₇ and Ni₂₁Fe₇₉ Films Deposited on SiO₂/Si(100) at 633 K by DC Magnetron Co-Sputtering X.B. Chen, H. Qiu, P. Wu and Y. Tian	1141
Deposition of a Well-Adherent Nano-Crystalline Diamond Coating on Titanium Using CH₄-H₂ Gas Mixture S.J. Askari and F.X. Lu	1145
Nickel Metal Induced Lateral Crystallization of Patterned Amorphous Silicon Thin Film G. Nakagawa and T. Asano	1149
Preparation of Chain-Like Carbon Nano-Tubes Film and its Field Emission Properties Z.Q. Wang, J.H. Gao, N. Yao and B.L. Zhang	1153
Structural and Mechanical Properties of AlN Films by Pulsed Bias Arc Ion Plating M. Zhang, G.Q. Lin, A.M. Wu, S.Z. Hao, C. Dong and L.S. Wen	1157
Structural Evolution Upon Annealing of Multi-Layer Si/Fe Thin Films Prepared by Magnetron Sputtering X.N. Li, B. Hu, C. Dong and X. Jiang	1161
Performance of Low Resistivity Electrode Prepared by Electroless Plated for Amorphous Silicon Thin-Film Transistors C.Y. Tsay, C.K. Lin, H.M. Lin, S.C. Chang and B.C. Chung	1165
A Splats Obtaining System for Thermal Spray Deposits W.T. Hsiao, W.H. Liao, M.S. Leu and C.Y. Su	1169
Investigation of Aluminum Content on the Properties of Sol-Gel-Derived Zinc Oxide Thin Films S.W. Xue and X.T. Zu	1173
Pulsed Closed Field Unbalanced Magnetron Sputtering (P-CFUBMS) Deposited TiC/a:C Thin Films J.L. Lin, B. Mishra, M. Pinkas and J.J. Moore	1177
High-Performance Poly-Ge Thin-Film Transistor with NiGe Schottky Source/Drain T. Sadoh, H. Kamizuru, A. Kenjo and M. Miyao	1181
Investigation of Mechanical and Structural Properties of AlN Thin Films Prepared by Mid-Frequency Pulsed Magnetron Sputtering Z.X. Mu, A.M. Wu, L. Jia, Z.W. Wang, H.Y. Zhao and S.G. Liu	1185
A Study on Formability of a Polyimide Film by Using Visco-Elasticity Measurement and Hot-Embossing Tests S.W. Youn, K. Suda, M. Takahashi and R. Maeda	1189
Growth and its Properties of GaMnN Film Based on ECR-PEMOCVD F.W. Qin, A.M. Wu, H. He, X. Jiang, Y. Xu and B. Gu	1193
Nanowire Fabrication of Silicon-Based Materials H. Kohno and S. Takeda	1197
Microstructure and Electrical Properties of Nano Ni-Cr Thin-Films Fabricated by Magnetron Co-Sputtering Techniques J.C. Zhou and J.W. Yan	1201
Synthesis of Single-Walled Carbon Nanotube Networks on Silicon Nanowires H. Yoshida, T. Uchiyama, J. Kikkawa, H. Kohno and S. Takeda	1205
High Rate Growth of Highly-Crystallized Ge Films on Quartz from VHF Inductively-Coupled Plasma of GeH₄ + H₂ T. Sakata, K. Makihara, H. Deki, S. Higashi and S. Miyazaki	1209
Characterization of Electronic Charged States of Nickel Silicide Nanodots Using AFM/Kelvin Probe Technique R. Nishihara, K. Makihara, Y. Kawaguchi, M. Ikeda, H. Murakami, S. Higashi and S. Miyazaki	1213
Effect of Reducing Thickness of TiN Buffer Layers on Epitaxial Growth of GaN Layers K. Ito, Y. Uchida, S.J. Lee, S. Tsukimoto, Y. Ikemoto, K. Hirata, T. Uemura and M. Murakami	1217
Cracking of Aluminum Nitride Film on Stainless Steel Substrate at Elevated Temperature D. Nishijima, T. Tabaru and M. Akiyama	1221
Material Characteristics and Electrical Modeling of Ultra Thin Copper Oxides in ULSI Application T. Ohba	1225
Polymer Thin Films Prepared by RF Magnetron Sputtering of PTFE on NiTi Alloys L. Li and F.T. Zi	1229

Electrical Properties and Microstructures of Ultraviolet Transparent Ga₂O₃ Thin Films Y. Shigetoshi, S. Tsukimoto, H. Takeda, K. Ito and M. Murakami	1233
Ultra-Large Area RF Plasma Sources Employing Multiple Low-Inductance Internal-Antenna Modules for Flat Panel Display Processing Y. Setsuhara, K. Takenaka, D. Tsukiyama, K. Nishisaka and A. Ebe	1237
Performance of Titanium-Tungsten-Silicon-Aluminum Based Coated Cutting Tools T. Wada	1241

Amorphous and Quasicrystalline Materials, Nanocrystalline Materials

X.

XRR and SAXS Study of Hydrogenated Amorphous Silicon Oxycarbide (a-SiOC:H) Films B.P. Swain	1247
Microstructure of 430L Stainless Steel Powders during High-Energy Ball Milling H.W. Ni, H. He, G.Q. Li, W.T. Zhan, D.Q. Cang and Z.G. Dan	1251
Size Controlled ZnO Nanoparticles Prepared by Water-in-Oil Microemulsion D.Y. Han, C.B. Shen, W.W. Shi, D.D. Li, Z.B. Chao and D.Z. Zhao	1255
Ab-Initio Data for Interatomic Interactions in Zr-Rich ZrCu Alloys and Embedded-Atom-Method Potentials M. Asato, R. Tamura, N. Fujima and T. Hoshino	1259
The Production and Elevated Temperature Properties of Ca₆₅Mg₁₅Zn₂₀ Bulk Metallic Glass K.J. Laws, B. Gun and M. Ferry	1263
Ternary Sm-Al-Co Bulk Metallic Glass Formation Designed Using a Cluster Line Approach J. Wu, Q. Wang, Y.H. Li, J.B. Qiang, Y.M. Wang and C. Dong	1267
Viscous Flow Behaviors of Supercooled Liquids of Pre-Annealed Zr₅₅Cu₃₀Al₁₀Ni₅ Bulk Metallic Glasses T. Yamasaki, S. Maeda, T. Kikuchi, T. Fukami, Y. Yokoyama, T. Yamamoto, H. Kimura and A. Inoue	1271
Cluster-Based Bulk Metallic Glass Formation in Co (-Fe)-Si-B-Nb Alloy Systems Q. Wang, C.L. Zhu, Y.H. Li, J. Wu, C. Dong, J.B. Qiang, W. Zhang and A. Inoue	1275
Environment-Assisted Cracking of Zr-Based Bulk Metallic Glass Y. Nakai, M. Seki and Y. Yoshioka	1279
Density and Enthalpy Relaxation Behavior in a Bulk Pd₄₀Ni₄₀P₂₀ Metallic Glass O. Haruyama and S. Yamada	1283
Ultrasonic Attenuation Properties of Glassy Alloys in Views of Complex Viscoelasticity M. Fukuhara, W. Zhang, D.V. Louzguine-Luzgin and A. Inoue	1287
Fabrication of Ni_{52.5}Nb₁₀Zr₁₅Ti₁₅Pt_{7.5} Bulk Metallic Glassy Matrix Composite Containing Dispersed ZrO₂ Particulates by Spark Plasma Sintering G.Q. Xie, D.V. Louzguine-Luzgin, H. Kimura, F. Wakai and A. Inoue	1291
Plastic Deformation of Electrodeposited Nanocrystalline Ni-W Alloys at High Temperatures H. Yokoyama, T. Yamasaki, T. Kikuchi and T. Fukami	1295
Low Cycle Fatigue of Electrodeposited Pure Nanocrystalline Metals P. Cavalieri	1299
Comparison of Mechanical Properties between As-Quenched and Annealed Metallic Glass Pd₄₄Cu₃₁Ni₈P₁₇ T. Fukami, M. Fukatani, D. Okai, T. Yamasaki, O. Haruyama and A. Inoue	1303
Small-Scale Resistance Spot Welding of Zr Based Glassy Alloys S. Fukumoto, K. Fujiwara, Y. Yokoyama, Y. Murakami and A. Yamamoto	1307
Origin of Different Dependence of Apparent Glass-Forming Ability on Casting-Atmosphere-Pressure in Zr-Al-Ni-Cu-Pd Alloy System A.D. Setyawan, H. Kato, J. Saida and A. Inoue	1311
Controlled Elasticity in Nano-Structured Metallic Glass by Ion Implantation Method S. Muraishi, H. Naito, J. Shi, Y. Nakamura and T. Aizawa	1315
Hydrogen Production by Methanol Steam Reforming Using Amorphous Metal Membranes S. Yamaura, S. Uemiyu, H. Kimura and A. Inoue	1319
Shear Banding Analyses of Amorphous Alloys with Crystalline Particles Y. Shibutani, J.Y. Park and M. Wakeda	1323
Quasicrystallization of (Zr₆₅Al_{7.5}Cu_{27.5})₉₅Ti₅ Glassy Alloy J.B. Qiang, W. Zhang and A. Inoue	1329

Effects of Addition of Al, Ti and Ag on Glass-Forming Ability of Cu₅₀Zr₅₀ Alloy Q.S. Zhang, W. Zhang and A. Inoue	1333
Solid Solution Formation Criteria for High Entropy Alloys Y. Zhang and Y.J. Zhou	1337
Glass Forming Ability and Thermal Properties of a Cu-Based Bulk Metallic Glass Microalloyed with Silicon J.S.C. Jang, Y.C. Huang, C.H. Lee, I.S. Lee and L.J. Chang	1341
Microstructure and Mechanical Properties in Friction Stir Processed Zr-Al-Ni-Cu Bulk Metallic Glass J. Kobata, Y. Takigawa, S.W. Chung, H. Tsuda, T. Uesugi, H. Kimura and K. Higashi	1345
Structure of Zr-Cu and Zr-Ni Liquid Alloys Studied by High-Energy X-Ray Diffraction A. Mizuno, T. Kaneko, S. Matsumura, M. Watanabe, S. Kohara and M. Takata	1349
Defect Structures in Al-Ni-Rh Crystalline Approximants Studied by HREM and HAADF Techniques W. Sun, Y.H. Chen, J.P. Wang and Z. Zhang	1353
Microstructure of Rapidly Solidified Co-Sn-Ti and Co-Sn-Si Alloys S. Fujisawa, K. Yoshimi, H. Kato and K. Maruyama	1357
Fe-Metalloid Metallic Glasses with High Magnetic Flux Density and High Glass-Forming Ability A. Makino, T. Kubota, M. Makabe, C.T. Chang and A. Inoue	1361
Development of the Ni-Based Metallic Glassy Alloys for PEFC Separator M. Yokoyama, S. Yamaura, H. Kimura and A. Inoue	1367
Ultrasonic Properties of a Ti_{47.4}Zr_{5.3}Ni_{5.3}Cu₄₂ Glassy Alloy during Progressive Devitrification I. Seki, M. Fukuhara and A. Inoue	1371
Fabrication of the Bulk Amorphous Ni-W Alloy by an Electroforming Process S. Wakayama, Y. Kimoto, Y. Takigawa, T. Uesugi and K. Higashi	1375
Characterization and Modification of Nanocrystalline Iron Oxide Powders Prepared by an Inert Gas Condensation Technique C.K. Lin, C.Y. Tsay, C.Y. Chen, W.H. Chan, C.Y. Su and H.M. Lin	1379
The Effects of Size of Catalysts on the Morphology of Carbon Fibers F. Li, X.P. Zou, J. Cheng, H.D. Zhang, P.F. Ren, G. Zhu and M.F. Wang	1383
Raman Spectroscopic Characterization of Carbon Nanofibers Obtained by Using Metal Chloride as Catalyst Precursor F. Li, X.P. Zou, J. Cheng, H.D. Zhang, P.F. Ren, G. Zhu and M.F. Wang	1387
Structural Stability and Elasticity in Zr-Based Bulk Metallic Glasses S. Zhang, T. Ichitsubo, Y. Yokoyama, K. Miyagi and E. Matsubara	1391
Carbon Nanotube Nano Composites for Multifunctional Applications F.D.S. Marquis	1397
Pinpoint Nano-Crystallization and Magnetization in Fe-Nd-B Metallic Glass by Electron Irradiation T. Nagase, A. Nino and Y. Umakoshi	1403
Unique Nano-Crystalline Structure Formation in Zr-Pd Metallic Glass by Electron Irradiation Technique Y. Umakoshi, T. Nagase and T. Hosokawa	1407
SiC Nanowires Synthesized by Microwave Heating B. Lu, J.X. Liu, H.W. Zhu and X.H. Jiao	1413
A Study of Testing the Nanocatalyst Decomposition Efficiency of Methanol (CH₃OH) and Ethanol (C₂H₆O) C.S. Jwo, C.C. Chen, H. Chang, S.L. Chen and C.H. Lin	1417
Synthesis of New Ni-Ta-Based Bulk Glassy Alloy with High Fracture Strength of over 3000 MPa W. Zhang, K. Arai, J. Qiang, C. Qin, F. Jia and A. Inoue	1421
Synthesis and Consolidation of Nano-Sized NiCo Powder by Powder Technology Rout W.M. Daoush	1425
Development of Amorphous and TiAl-Nb₂Al Intermetallic Nanocomposite Powders by Mechanical Alloying S. Kumaran, B. Chantaiah and T.S. Rao	1429

Biomaterials, Smart Materials and Structures

XI.

Phase Constitution and Heat Treatment Behavior of Zr-Nb Alloys

M. Ikeda, T. Miyazaki, S. Doi and M. Ogawa

1435

Preparation and Characterization of Natural Hydroxyapatite: A Comparative Study of Bovine Bone Hydroxyapatite and Hydroxyapatite from Calcite

M.K. Herliansyah, D.A. Nasution, M.H. Bin Abdul Shukor, A. Ide-Ektessabi, M.W. Wildan and A.E. Tontowi

1441

Stress-Induced Lattice Transit Behavior in a Cold-Rolled Cu-Al-Mn Two-Way Shape Memory Alloy

J.J. Wang, B.L. Wu, Z.W. Huang, T. Cui, Y.D. Wang, R. Kainuma and K. Ishida

1445

Change in Material and Structural Parameters of Bone Mechanical Function during Long-Bone Regeneration

T. Ishimoto, T. Nakano, Y. Umakoshi, M. Yamamoto and Y. Tabata

1451

pH-Sensitivity of N-Carboxyethyl Chitosan Hydrogel and Drug Controlled Release In Vitro

Z.W. Li, L.Y. Zhang and Q.X. Zeng

1455

Polarisation Behaviour of 316L Stainless Steel in Cell Culture Environment

S. Hiromoto

1459

Behavior and Preparation of Single Crystal of Cu-Al-Ni-Be SMA

H.P. Xu, H. Hu, G.F. Song, C.H. Li and X.M. Mao

1463

A New Concept of Biomaterials to Induce Tissue Regeneration

Y. Tabata

1467

Mechanical Behaviors of Ti-29Nb-13Ta-4.6Zr-XO for Biomedical Applications Subjected to Cold Working and Various Heat Treatments

M. Niinomi, T. Akahori, M. Nakai, H. Ishikawa and M. Ogawa

1471

Effects of Cross-Linkage and Hydroxyl Groups on Bonding Strength between Titanium and Segmented Polyurethane through 3-(Trimethoxysilyl) Propyl Methacrylate

H. Sakamoto, Y. Hirohashi, H. Doi, K. Noda and T. Hanawa

1477

Effect of Rotation Speed on Transformation Behavior in Ti-48at%Ni Shape Memory Alloy Melt-Spun Ribbon

H.Y. Xing, H.Y. Kim and S. Miyazaki

1481

Experimental Study of Stress Induced Martensite Transformation under Plane State of Stress

J. Cortés-Pérez, A. Souza Jiménez, G.A. Lara Rodríguez, L.A. Ferrer A. and H. Flores Zúñiga

1485

Corrosion Behavior of Zirconium Based Alloys in Simulated Body Fluids

Y. Tsutsumi, Y. Takano, H. Doi, K. Noda and T. Hanawa

1489

Effect of Heat Treatment Temperature on the Mechanical Property in Cast TiNi Shape Memory Alloy

K. Kitamura, Y. Sawada, T. Kuchida, T. Inaba, M. Tokuda and Y. Yoshimi

1493

Effect of Iron Addition on Co-29Cr-6Mo Alloys for Biomedical Applications

S.H. Lee, H. Chiba, B. Syuto, N. Nomura and A. Chiba

1497

Effect of Nitrogen on Microstructure of Porous CoCrMo Alloy Compacts for Biomedical Applications

N. Nomura, M. Abe, S.H. Lee and A. Chiba

1501

Change in Tensile and Fatigue Properties of Biomedical Ti-29Nb-13Ta-4.6Zr Alloy Fabricated by Various Processings

T. Akahori, M. Niinomi, M. Nakai and M. Ogawa

1505

Hard-Ceramic Layer Formed on Ti-29Nb-13Ta-4.6Zr and Ti-6Al-4V ELI during Gas Nitriding

M. Nakai, M. Niinomi, T. Akahori, N. Ohtsu, H. Nishimura, H. Toda, H. Fukui and M. Ogawa

1509

Hydroxyapatite Formation on Calcium Phosphate Coated Titanium

M. Sato, R. Tu, T. Goto, K. Ueda and T. Narushima

1513

Rolling Texture of α' -Phase in Ti-22mol%Nb-3mol%Al Biomedical Shape Memory Alloy

T. Inamura, R. Shimizu, J.I. Kim, H.Y. Kim, K. Wakashima, S. Miyazaki and H. Hosoda

1517

Surface Modification of Titanium with Hydrothermal Treatment

A. Obata and T. Kasuga

1521

Decomposition of a Biocompatible Zr-Ta-Nb Alloy W. Sun	1525
Nano-HA Coating on Titanium Surface Fabricated by Modulation of Self-Assembled Monolayer and Bovine Serum Albumin B. Feng, A. Liu, N. Wu, J. Weng, S.X. Qu, J.X. Wang and X. Lu	1529
Orientation Dependent Internal Friction of Textured Ti-Nb-Al Shape Memory Alloy Y. Yamamoto, T. Inamura, K. Wakashima, H.Y. Kim, S. Miyazaki and H. Hosoda	1533
Catalytic Combustion Synthesis of Carbon Nanofibers G. Zhu, X.P. Zou, J. Cheng, F. Li, H.D. Zhang, P.F. Ren and M.F. Wang	1537
Martensitic Transformation of TiAu Shape Memory Alloys H. Hosoda, R. Tachi, T. Inamura, K. Wakashima and S. Miyazaki	1541
New Developments in Extruded Magnesium Alloys for Structural Applications K.U. Kainer, J. Bohlen and D. Letzig	1545
Silk as Substratum for Cell Attachment and Proliferation T.V. Chirila, Z. Barnard, Z. Zainuddin and D. Harkin	1549
Enhancing the Bonding Strength of Plasma-Sprayed HA Coating on Pure Ti S. Yang and H.C. Man	1553
New Mathematical Models for Effective Drug Diffusivity Estimation in 2D S. Wang and X. Lou	1557
Effect of Small Amount of Dopant on Phase Stability of Zirconia Bioceramics Y. Takigawa, T. Uesugi and K. Higashi	1561
Structure Control of Hydroxyapatite Using a Magnetic Field K. Iwai, J. Akiyama and S. Asai	1565
Novel Waste Processing by Means of Mechanochemical Treatment Q.W. Zhang and F. Saito	1569

Fuel Cells and Hydrogen Storage Materials

XII.

Hydrogen Storage Properties of FCC Type Mg-Transition Metal Hydrides Prepared by GPa High Pressure Method T. Takasaki, D. Kyoi, N. Kitamura, S. Tanase and T. Sakai	1577
Comparison between Mg/Cu Super-Laminates and Mg₂Cu Powder in Microstructure and Hydrogen Storage Properties K. Tanaka, N. Takeichi, H. Tanaka, N. Kuriyama, T.T. Ueda, M. Tsukahara, H. Miyamura and S. Kikuchi	1581
Hydrogen Quasi-Chemically Trapped between Defective Graphene Layers in Nanostructured Graphite Y. Miyabe, T. Yoshida, S. Muto and T. Kiyobayashi	1585
Pt₄ZrO₂/C Cathode Catalyst with Excellent Durability for High Temperature PEMFC Based on H₃PO₄ Doped PBI G. Liu, H.M. Zhang and Y.W. Ma	1589
Phase Transition of Mg/Pd Laminate Composites during Hydrogenation/Dehydrogenation N. Takeichi, H. Tanaka, K. Tanaka, N. Kuriyama, T.T. Ueda, M. Tsukahara, H. Miyamura and S. Kikuchi	1593
Ammonia Synthesis Using Atomic Hydrogen Supplied From Silver-Palladium Alloy Membrane M. Itoh, M. Saito, N. Tajima and K. Machida	1597
Structural Characterization of D₂ in Cu₃(1,3,5-Benzenetricarboxylate)₂ Using Neutron Powder Diffraction V.K. Peterson, Y. Liu, C.M. Brown and C.J. Kepert	1601
Synergetic Effect of Oxides on Hydrogen Reaction Kinetics of Magnesium Hydride A. Patah, A. Takasaki and J.S. Szmyd	1605
Hydrogenation Characteristics of Mg Based Alloy Prepared by Super Lamination Technique R. Mori, H. Miyamura, S. Kikuchi, K. Tanaka, N. Takeichi, H. Tanaka, N. Kuriyama, T.T. Ueda and M. Tsukahara	1609

Degradation Properties of Hydrogen Storage Alloys and Change of Microstructure during the Degradation	
H. Tanaka, S. Han, Q. Xu, N. Kuriyama, K. Aihara and N. Taoka	1613
The Alloy Design of Metallic Interconnector of Solid Oxide Electrolyte Fuel Cell (SOFC)	
I.B. Chen, S.S. Lian, C.Y. Li, W.J. Shong and R.Y. Lee	1617
In Situ High-Resolution Observation for Decomposition of NaAlH_4	
H. Kawasaki, S. Ohnuki, T. Suda, N. Hashimoto and Y. Kojima	1621
Preparation and Hydrogen Storage Properties of Mg-Ni-B BCC Alloys	
H.Y. Shao, K. Asano, H. Enoki and E. Akiba	1625
HRTEM Study of Nanostructures in Hydrogen-Absorbing Mg-Ni and Mg-Ni-La Alloys Prepared by Melt-Spinning	
K. Tanaka, T. Miwa, K. Morishita, K. Sasaki and K. Kuroda	1629
Thermoelectric Power Hydrogen Sensors for Reversible Hydrogen Storage Materials	
A.N. Lasseigne-Jackson, A. Zamarron, I. Ashraf, B. Mishra and D.L. Olson	1633
Characteristics of Hydrogen Storage by Sn/MgH₂ Nanocomposite Obtained by Mechanical Milling of MgH₂ with Sn	
H. Imamura, K. Yoshihara, M. Yoo, I. Kitazawa, Y. Sakata, S. Ooshima and T. Kataoka	1637

Ecomaterials and Porous Materials

XIII.

Self-Propagating High-Temperature Synthesis of Porous Nickel-Titanium	
R. Ayers, V. Ferguson, D. Belk and J.J. Moore	1643
Modeling of Mechanical Behavior of Porous Sintered Timing Wheel in Contact with Chain Wheels	
M. Alizadeh, H. Khorsand and A. Shokuhfar	1649
Recycled Aluminum Alloy Matrix Composites with Artificial Pellets Made of Incineration Ashes	
Y. Iwabuchi and I. Kobayashi	1653
Processing of Nanoporous Gold by Dealloying and its Morphological Control	
M. Hakamada and M. Mabuchi	1657
Influence of Density on the Compressive Properties in Porous Copper Produced by Spacer Method	
M. Hakamada, Y. Asao, T. Kuromura, Y.Q. Chen, H. Kusuda and M. Mabuchi	1661
Structural Analysis on Anisotropic Deformation Properties of Highly Porous Aluminum Material	
T. Asahina, I. Jeon, K. Katou and T. Sonoda	1665
Electro-Deposition for Foamed Zinc Material from Zinc Sulfate Solution	
Q.H. Tian, X.Y. Guo, P. Xue, Y. Song and L. Duan	1669
Fabrication of Low Temperature Foaming Glass Materials Using Hydrothermal Treatment	
T. Yoshikawa, S. Sato and T. Tanaka	1673
Three-Dimensional Zinc Mapping inside Aluminum Foams Using Synchrotron X-Ray Microtomography	
T. Ohgaki, Y. Takami, H. Toda, T. Kobayashi, Y. Suzuki, K. Uesugi, K. Makii, T. Takagi and Y. Aruga	1677
Fatigue Strength of Lotus-Type Porous Magnesium	
H. Seki, M. Tane and H. Nakajima	1681
Whisker Initiation Behavior from Electrodeposited Sn/Cu Coating on Cu Leadframe	
T. Kato, H. Akahoshi, T. Terasaki, T. Iwasaki, M. Nakamura, T. Hashimoto and A. Nishimura	1685
Processing and Mechanical Properties of Porous Titanium-Niobium Shape Memory Alloy for Biomedical Applications	
J.Y. Xiong, Y.C. Li, Y. Yamada, P. Hodgson and C.E. Wen	1689
Mechanical and Thermal Properties of Micro-Closed Cellular Materials Containing Different Materials from that of Cell Walls	
S. Kishimoto, Y. Hasegawa and H. Kodama	1693
Unusual Wetting Behavior of Liquid Metals on Porous Layer Formed at Surface of Iron Substrate Prepared by Oxidation-Reduction Process	
N. Takahira, T. Yoshikawa and T. Tanaka	1699

Oxidation Behavior of Cu Nanoparticles and Formation of Hollow Cu₂O Spheres R. Nakamura, D. Tokozakura, J.G. Lee, H. Mori and H. Nakajima	1703
The Production Practice on Digesting Solid Wastes in Blended Material for Sinter S.R. Xia and H.Z. Sun	1707
Fabrication of Functionally Porous Structures by the Sheet Lamination Method K. Yamasaki, S. Fukuda, T. Murakami and K. Maekawa	1711
Room Temperature Superplastic Deformation of Closed-Cell Zinc Alloy Foams K. Kitazono, T. Seo and Y. Takiguchi	1715
Physicochemical Properties of Carbons Prepared from Physic Nut Waste by Phosphoric Acid and Potassium Hydroxide Activations C. Pechyen, D. Aht-Ong, D. Atong and V. Sricharoenchaikul	1719

Energetic Particles-Materials Interactions and Nuclear Materials

XIV.

Degradation Mechanisms of Pressure Vessel Internal Steel (18Cr-10Ni-Ti) Irradiated with Heavy Ions V. Voyevodin, O. Borodin, V. Bryk, A. Kalchenko, A. Parkhomenko and G. Tolstolutsкая	1725
Formation of Al-Based Intermetallic Compound under Ion Implantation at Lower Temperature H. Kinoshita, N. Sakaguchi, S. Watanabe, H. Takahashi, M. Kawai, R. Gotthardt and F. Phillipp	1729
Fabrication of Cermet Nuclear Fuels Designed for the Transmutation of Transuranic Isotopes S.M. McDeavitt, A. Parkison, A.R. Totemeier and J.J. Wegener	1733
Characterization of High Strength Alloy Formed by Ion Irradiation of Metallic Glasses J. Carter, E.G. Fu, S.M. McDeavitt, X.H. Zhang, G.Q. Xie and L. Shao	1737
Corrosion Behavior of CLAM in Liquid LiPb Alloy at 480°C M.L. Zhang, Q.Y. Huang, Y.C. Wu, Z. Zhu, S. Gao, Y. Song and C. Li	1741
Co Addition Effect on the Precipitation Behavior of Laves Phase in Fe-10Cr Ferritic Alloy I.S. Kim, S.M. Lee, J.Y. Kim, Y. Watanabe, H. Sato, Z.G. Zhang, H.R. Jung and C.Y. Kang	1745
Application of Combustion Synthesis to the Production of Actinide Bearing Nitride Ceramic Nuclear Fuels M. Reigel, C. Donohoue, D. Burkes, J.J. Moore and J.R. Kennedy	1749
A Molecular Dynamics Study of Helium-Vacancy Clusters Production due to Cascades in α-Iron L. Yang, X.T. Zu, H.Y. Xiao, F. Gao, X.Y. Wang and K.Z. Liu	1753
Formation of Defect Clusters in SrTiO₃ Crystals Implanted with Xenon Ions M.H. Song, X.J. Guo, N. Ishikawa, M. Takeguchi, K. Mitsuishi and K. Furuya	1757
EXAFS Study on Irradiated ODS Ferritic Steel M.A. Pouchon, J.C. Chen, C. Degueldre, A. Froideval, H. Emerich and W. Van Beek	1761
In Situ TEM Observation of Precipitation of Zirconium Hydrides in Zircaloy-4 under Hydrogen Ion Implantation Y. Shinohara, H. Abe, T. Kido, T. Iwai and N. Sekimura	1765
Localized Deformation in Neutron-Irradiated Zirconium and Zircaloy-4 N. Hashimoto and T.S. Byun	1769
Effects of Neutron Irradiation and Thermal Aging on Mechanical Properties of ODS Ferritic Steels for Advanced Nuclear Systems R. Kasada, H.S. Cho, N. Okuda and A. Kimura	1773
Fabrication and Evaluation of Plasma-Sprayed Molybdenum for Plasma Facing Materials W.Z. Yao, S.X. Song, Z.J. Zhou, W.W. Cong and C.C. Ge	1777

Modeling and Simulation of Materials and Processes

XV.

Experiment and FEM Simulation on Residual Stress of Cold Expansion Hole X.J. Shao, J. Liu, Y.S. Liu and Z.F. Yue	1783
Numerical Modeling of Microstructure Evolution and Dendrite Growth for Al-Si Alloy Casting during Low Pressure Die Casting B. Li, Q.Y. Xu and B.C. Liu	1787

Material Structure Simulation Techniques and Applications J. Zhou and T.R. Zhou	1793
A Simplified CA Method for Simulating the Microstructure of Magnesium Alloy Components L. Huo, Z.Q. Han, Z.Y. Liu and B.C. Liu	1797
Numerical Simulation on the Liquid Metal Flow of the Acceleration Phase in the Shot Sleeve of Cold Chamber Die Casting Process J. Yang, L. Yuan, S.M. Xiong and B.C. Liu	1801
Phase Field Modeling of Recrystallization Grain Growth during Re-Aging Process in Cu-Ni-Si Alloy Y.Q. Long, P. Liu and W.M. Zhang	1805
An Anisotropic Model for the Plastic Response of Powder Compacts W.R. Ruziwa and A. Cocks	1809
Simulation of Cold Ring Rolling Based on Rate Dependent Crystal Plasticity H.W. Li, H. Yang, Z.C. Sun, M. Wang and L.Y. Li	1813
Gas Velocity Measurements of Close-Coupled Atomizers S.L. Zhao, J.F. Fan, S.B. Ren and H.R. Le	1819
New Expression of the Chemical Bond in Perovskite-Type Oxides Y. Shinzato, Y. Saito, H. Yukawa, M. Morinaga, T. Baba and H. Nakai	1823
Numerical Modeling of Scale Dependent Mechanical Properties of Metal Polycrystals T. Ohashi and H.M. Zbib	1827
Crack Tip Dislocations and its Shielding Effect M. Tanaka, Y. Hoshino, A. Hartmaier and K. Higashida	1833
First-Principles Studies on Grain Boundary Energies of [110] Tilt Grain Boundaries in Aluminum Y. Inoue, T. Uesugi, Y. Takigawa and K. Higashi	1837
Study on Dynamic Measurement of Thermal Stress during Solidification of a Casting Specimen J.F. Zhang, J.W. Kang and B.C. Liu	1841
Use of Taguchi Method to Study a Robust Design for H-Sectioned Porous Beams during Rolling D.C. Chen and C.F. Chen	1845
Experimental Investigation of Isotropic and Kinematic Hardening in Al-3Cu-0.05Sn (wt%) J. da Costa Teixeira, L. Bourgeois, C.W. Sinclair and C.R. Hutchinson	1849
The Effect of Transformation Plasticity on Prediction of Tooth Distortion of Heat-Treated Helical Gear A. Sugianto, M. Narazaki, M. Kogawara, S.Y. Kim and S. Kubota	1853
Iterative Modification of Lumped Heat Capacity Method on Predicting Residual Stress and Distortion of Still-Quenched S45C Steel Cylinder A. Sugianto, M. Narazaki and M. Kogawara	1857
Surface Energy of In-Doped ZnO Studied by PAW+U Method Y.S. Gu, J.J. Qi and Y. Zhang	1861
The Motion of Dislocation in Iron Pinning by Carbon Interstitials X.L. Shu and C.Y. Wang	1865
Parameter Identification of Thermal Visco-Plastic Model Considering Dynamic Recrystallization Q.L. Jin and Y.S. Zhang	1869
Effect of the Guide-Roll Positional Angle to the Stability of Radial Ring Rolling Y.X. Hao, L. Hua, G.S. Chen and D.M. Wang	1875
Numerical Simulation of Compacting Process of Green Sand Molding Based on Sand Filling W.Z. Li and J.J. Wu	1879
Precise Rolling Force Calculation for the Tandem Cold Mill Z.J. Jiao, H. Zhang, J. Wang, C.H. Liu and X. Liu	1883
Study on the Simulation of Grinding Based on Virtual Reality Technology T.B. Yu, J.Y. Yang, Y.D. Gong, F. Xu, F. Liang and W.S. Wang	1887
Finite Element Modeling the Effect of Pressing Temperature and Temperature Rise on ECAE Process of CP-Ti H. Jiang and C.Y. Xie	1891

Improved FE Modeling of Center Crack Occurrence in Tube Rounds during Two-Roll Rotary Rolling Process	1895
S.Z. Li, J. Xu, X.G. Duan, J.M. Zheng, J.G. Xue and F. Pan	
Thermodynamic Analysis of the Fe-Mn-P Ternary Phase Diagram by Combining the First-Principles and CALPHAD Methods	1899
T. Tokunaga, N. Hanaya, H. Ohtani and M. Hasebe	
3-D FE Simulation and Analysis on Radial-Axial Large Ring Rolling	1903
L.B. Pan, L. Hua and J. Lan	
Ab Initio Lattice Dynamics and Thermodynamics of MgS and Related II-VI Semiconductors in Zincblende Structure	1907
S.Q. Wang	
Numerical Simulation and Optimisation of Sheet Metal Forming for Auto-Body Panel Using AutoForm Software	1911
X.Z. Wang, S.H. Masood and M. Dingle	
Stacking Fault Energy of Cu-Ga Alloys from First Principles	1915
S. Fujita, T. Uesugi, Y. Takigawa and K. Higashi	
Modeling and Experimental Observation of the Plastic Anisotropy and Damage of CP-Ti during Multi-Pass ECAE	1919
H. Jiang, Z.G. Fan and C.Y. Xie	
Point Defects in L1₀ Phase FePt Alloy: A First Principle Study	1923
Y. Sui, Z.Y. Chen, X.L. Shu and T.M. Wang	
Cosmic Micromechanics Connection with Irreversible Deformation Processes in Spatially Extended Crystalline Systems	1927
J.D. Muñoz-Ándrade	
The Thermal, Mechanical and Electronic Properties of Nanoscale Materials: Ab Initio Study	1931
K. Masuda-Jindo, V. Van Hung and M. Menon	
Phase Field Calculations with CVM Free Energy within Square Approximation	1935
T. Mohri, N. Fujihashi and Y. Chen	
The Study of Undercooling of Homogeneous Nucleation for Metallic Melting	1941
C. Huang, B. Song and P. Zhao	
Study on the Wrinkling and Edge Irregularity during Bending of a Roll-Formed Plate	1945
J.J. Sheu, M.Y. Huang and C.W. Liu	
Optimization of Bending Process of Large Marine Crankthrow by Computer Simulation	1949
M.Y. Sun, S.P. Lu, D.Z. Li and Y.Y. Li	
Physical Modeling on Recrystallization of Austenite in Steels in Thermo-Mechanical Processing	1953
X.T. Wang, Z.L. Yu, T. Siwecki, G. Engberg and Z.Q. Sun	
Nonlinear Steady Temperature Fields in Non—Homogeneous Materials	1957
Y. Dai, Q. Sun, W. Tan and C.Q. Sun	
Mathematical Simulation of Billet Profile during Spray Forming Process	1961
S.B. Ren, J.F. Fan, H.R. Le and S.L. Zhao	
The Effect of Solidification Models on the Prediction Results of the Temperature Change of the Aluminum Cylinder Head Estimated by FDM Solidification Analysis	1967
H. Onda, K. Sakurai, T. Masuta, K. Oikawa, K. Anzai, W. Kasprzak and J. Sokolowski	
First Principles Study of Point Defects in Uranium Dioxide	1971
Y. Chen, M. Iwasawa, Y. Kaneta, T. Ohnuma, H.Y. Geng and M. Kinoshita	
Modeling of Contact Pressure in Sheet Metal Forming	1975
M.P. Pereira, W.Y. Yan and B.F. Rolfe	
Stability of Crystallographic Orientations in Equal Channel Angular Extrusion of HCP materials: Application to Texture Analysis in Titanium	1979
S.Y. Li	
Atomic Simulations on the Grain Subdivision of a Crystalline Metal	1983
T. Shimokawa, T. Kinari and S. Shintaku	
Heat and Mass Transfer in the Process of EB Penetration	1987
J.E. Ho and C.Y. Ho	
Numerical Modelling of Spray Formed Grain Size Evolution	1991
J.W. Mi and P.S. Grant	

Development and Application of the Finite Element Analysis Program of the Stress-Based Forming Limit Criterion for Sheet Metal Forming M.H. Chen, J.H. Li, L. Gao, D.W. Zuo and M. Wang	1995
Optimum Cooling Channels Design and Thermal Analysis of an Injection Moulded Plastic Part Mould A.B.M. Saifullah and S.H. Masood	1999

Materials Characterization and Evaluation

XVI.

Extraction of Elastic Modulus and Hardness of the Soft Metallic Films on Hard Substrates by Nanoindentation X.Y. Zhou, H.R. Wang, Z.D. Jiang and R.X. Yu	2005
Characterization of Precipitates by Three-Dimensional Electron Tomography K. Kaneko, K. Sato, Z. Horita and K. Inoke	2009
Study of the Early Stages of Recrystallization in a Cold Rolled ELC Steel Using FIB-EBSD Tomography W.Q. Xu and M. Ferry	2013
Determining the Surface Properties and Inherent Properties of Solid Materials Using Material-Independent Indentation Technique Y.W. Bao and L. Sun	2017
Direct Observation of Nanostructural Fluctuation during Radiation-Induced Amorphization S. Watanabe	2021
Reciprocating Friction and Wear Behavior of WC-Co Based Cemented Carbides Manufactured by Electro-Discharge Machining K. Bonny, P. de Baets, O. Van der Biest, J. Vleugels and B. Lauwers	2025
Sulfide Precipitations in Steel and its Role of a Residual Level of Copper Y. Ishiguro, T. Murayama and K. Sato	2029
Stress Distribution in Be Compact Tension Specimen R.W. Li and P. Dong	2033
Effect of Structure and Morphology on Photo-Oxidation Degradation of Polyethylene R. Yang, Y. Liu and J. Yu	2037
Physical Aging and Creep Behavior of Poly(Methyl Methacrylate) W.B. Luo, X. Tang, R.G. Zhao, J.H. Tan and Y. Tomita	2041
Structural Characterization of Cu₅₀Zr₄₅Ti₅ Glassy Alloy under Thermal Annealing and Electron Irradiation G.Q. Xie, Q.S. Zhang, D.V. Louzguine-Luzgin, W. Zhang and A. Inoue	2045
Effect of Mg Content on the Precipitation in Al-Mg-Ge Alloys K. Matsuda, T. Munekata and S. Ikeno	2049
Effects of Transformation Stress and Deformation before Austenitization on Nucleation of Intragranular Bainite K. Nakai, N. Kanno, R. Asakura, T. Sakamoto, S. Kobayashi, M. Hamada and Y. Komizo	2053
Growth and Characterization of Pb(Mg_{1/3}Nb_{2/3})O₃ Crystals by a Single-Step Low-Temperature Process X.L. Chen and H.Q. Fan	2059
Creep Characterization of Power-Law Materials through Pseudo-Steady Indentation Tests H. Takagi and M. Fujiwara	2063
Variation of Hardness with Microstructure Evolutions in Metastable β Titanium Alloy TIMETAL[®]LCB T. Sakamoto, K. Nakai, M. Maeda and S. Kobayashi	2067
The Relationship between the Bending Direction and Burgers Vector of Threading Dislocations at a Coherent Heterointerface in AlGaN/AlN Layers N. Kuwano, T. Yokote, H. Miyake, K. Hiramatsu and T. Shibata	2071
Electron Holography on Charging Effect in Non-Conductive Materials K.H. Kim, J.J. Kim, W.X. Xia, Z. Akase and D. Shindo	2075
Physical Properties of Li₂Pd₃B and Li₂Pt₃B Superconductors H. Takeya, S. Kasahara, M. El Massalami, T. Mochiku, K. Hirata and K. Togano	2079

Characterization of Nano-Scale Particles in Hot-Rolled, High Strength Low Alloy Steels (HSLA)	
I.B. Timokhina, P. Hodgson, S.P. Ringer, R.K. Zheng and E.V. Pereloma	2083
"In Situ-Tracking" Observation of Stainless Steel Microstructural Development during Elevated Service Using EBSD and SEM	
Y.M. Huang, Q. Fu and C.X. Pan	2087
Site-by-Site Electronic Structure Analysis of Al-Containing Complex Compounds Using Channeling EELS and First Principles Calculations	
K. Tatsumi, Y. Yamamoto and S. Muto	2091
X-Ray Reflectivity Studies of Pt/AlN Multilayered Films	
T. Harumoto, J. Shi and Y. Nakamura	2095
Stoichiometric Study of Iron Sulfide Prepared by Mechanochemical Reaction	
C.K. Lin, C.Y. Chen, P.Y. Lee and C.C. Chan	2099
Effect of Shot-Peening on Fine Grain Steel	
K. Seki, H. Munetoh, M. Gotoh and H. Hirose	2103
A Study on the Microstructure of Ultra Low Carbon Bainitic Steels by RPC Technique	
Z.F. Wang, S.K. Pu, Y. Guan, P.H. Li, L.X. Wu and Q.F. Chen	2107
In Situ Analysis of Phase and Magnetic Transformation Process in Fe-Pt Nanoparticles	
M. Nakanishi, K. Sasaki, H. Saka and K. Kuroda	2111
Effect of Isothermal Aging on the Growth and Morphology of the Intermetallic Compounds Formed at the Solder/Cu Interface of the Lead - Free Solder Joint	
Y. Fu, Q. Zhang, F. Sun and H.Y. Bai	2115
Microstructural Stability of Duplex Stainless Steel Weldments	
J. Dobránszky and J. Ginsztler	2119
Investigation of Phase Composition in Dense and Porous Gelcast Alumina Sintered under Argon Atmosphere	
R.L. Menchavez, M. Fuji, T. Yamakawa, T. Endo and M. Takahashi	2123
Thermal Degradation and Kinetic Characterizations of Jatropa Waste under Isothermal and Dynamic Experiments	
V. Sricharoenchaikul and D. Atong	2127
A Characteristic of Spherical Indentation Curve and its Application in Measuring Material Properties	
W.Y. Yan, Q.P. Sun and P. Hodgson	2131
Transmission Electron Microscopy Studies of Oxidation of Single Crystal Silicon Carbide at High Temperature	
B. Chayasombat, N. Tarumi, T. Kato, T. Hirayama, K. Sasaki and K. Kuroda	2135
Corrosion Behavior of Pure Titanium Produced by MIM Process under SSRT Condition	
S. Sunada, M. Kawagishi and K. Majima	2139
Electrochemical Dissolution Characteristics of Magnesium Alloy Produced by Roll Compaction Process	
S. Sunada, T. Kawamura, K. Kondoh, H. Notoya and K. Majima	2143
Evaluation of Corrosion Resistance of WC-Co Based Alloys in H_2SO_4	
S. Sunada, Y. Hosada, T. Yamamoto and K. Majima	2147
Crystallographic Analyses on Cracks Initiated by Rolling Contact Fatigue in High Carbon Chromium Bearing Steel	
K. Hiraoka, T. Fujimatsu, K. Hashimoto, S. Fukumoto and A. Yamamoto	2151
Particle Size Characterisation of Tin Oxide (SnO_2) Precipitated by Various Techniques: Consistency of Data	
H. Taib and C.C. Sorrell	2155
Preparation and Characterisation of TiO_2 Thick Films Fabricated by Anodic Oxidation	
H.Z. Abdullah and C.C. Sorrell	2159
Preparation and Characterisation of TiO_2 Thick Films Fabricated by Electrophoretic Deposition	
H.Z. Abdullah and C.C. Sorrell	2163
Preparation and Characterisation of TiO_2 Thick Films by Gel Oxidation	
H.Z. Abdullah and C.C. Sorrell	2167
An Investigation of TiO_2 Thin Film in Dye Sensitized Solar Cells by Electrophoresis Method	
H. Chang, W.A. Chen and M.J. Kao	2171

A Study on Dynamic Stability of the Fe₃O₄ Magnetorheological Fluid H. Chang, K.L. Tsai and T.T. Tsung	2175
High Cycle Fatigue Behavior of Thermally Oxidized Ti6Al4V Alloy M. Cingi, O. Meydanoglu, H. Guleryuz, M. Baydogan, H. Çimenoglu and S. Kayali	2179
Fast and Non Destructive Technique to Characterize Thin Film Porosity: Example on Cubic Mesoporous TiO₂ Thins Films A. Moreau, C. Defranoux, J.P. Piel, A. Bourgeois and M.O. Martin	2183

Damage Evaluation and Life Assessment

XVII.

Determination of Material Constants for Crack Size-Dependence Crack Growth Model U.H. Tiong, R. Jones and L. Molent	2189
Acoustic Emission as Analyzing Tool for Wear Mechanisms of Composite Materials J. Quintelier, J. Degrieck, P. Samyn, W. De Waele, G. Kalogiannakis and D. Van Hemelrijck	2193
Heating Effects in WC-Co Cemented Carbides as a Result of Reciprocative Dry Sliding Friction K. Bonny, P. de Baets, O. Van der Biest, J. Vleugels and B. Lauwers	2197
Fatigue and Damage Testing Rubber with Steel Cord Materials Combined M. Kopecky	2201
Transition Method of Geometrically Similar Element to Calculate the Stress Concentration Factor of Notch Y.T. Li, Z.Y. Rui and C.F. Yan	2205
Multi-Scale Modeling of the Corrosion of Metals under Atmospheric Corrosion I.S. Cole, T.H. Muster, D.A. Paterson, S.A. Furman, G.S. Trinidad and N. Wright	2209
Cyclic Deformation of Al-Mg Single Crystals with a Single Slip Orientation T. Fujii, S. Uju, C. Watanabe, S. Onaka and M. Kato	2213
Creep Damage Evaluation by Hardness in Advanced High Cr Ferritic Steels H.G. Armaki, K. Yoshimi, K. Maruyama, M. Yoshizawa and M. Igarashi	2217
Thermoelastic Analysis of Crack Propagation in AA6082 Friction Stir Welded Joints R. Di Sante, P. Cavaliere, G.L. Rossi and A. Squillace	2221
The Method of Torsional Cylindrical Shaft with Annular Notch in Quadric Coordinate Y.T. Li, C.F. Yan and W.Y. Jin	2225
Investigation of Deformation Gradients in Surface Zone of Mechanically Surface Treated CuZn30 S.B. Yi, T. Ludian and L. Wagner	2229
Analysis of Creep Deformation Process of Heat Resistant Steels Using Positron Annihilation Lifetime M. Igarashi, K. Moriguchi, S. Muneki, F. Abe and Y. Shirai	2233
A Combination of Mathematical Morphology and Thermal Analysis of Wear Debris Explaining Polymer Sliding Mechanisms P. Samyn, A. Ledda, J. Quintelier, I. Van Driessche, G. Schoukens, P. de Baets and W. De Waele	2237
An Investigation on Failure Analysis of Titanium Gas Turbine Compressor Blades H. Sepehri Amin, A. Kermanpur, S. Ziaei-Rad, H. Farhangi and M. Mosaddeghfar	2241
In Situ-Tracking Evaluation for Corrosion Progress at Fusion Boundary of Dissimilar Steel Welded Joints in H₂S Containing Solution C.X. Pan and Q. Fu	2245
Characteristics of Electrical Discharge Pulse Sound for Hammering Test Y. Akematsu, K. Kageyama, N. Mohri, H. Murayama and M. Kanai	2249
The Influencing Factors and Assessment Rule of Fatigue Life of Shaft Based on Product Lifecycle Management Y.T. Li, P. Ma and J.T. Zhao	2253
Safe Decomposition of Asbestos by Mechano-Chemical Reaction R. Inoue, J. Kano, K. Shimme and F. Saito	2257
Three-Dimensional Finite Element Modelling of Laser Shock Peening Process C.H. Yang, P. Hodgson, Q.C. Liu and L. Ye	2261
Effect of Different Surface Treatments on Fatigue Life of NiTi Wires W.D. Miao, X.J. Mi, H.C. Li and B.D. Qi	2265

Phase Transformation and Their Applications

XVIII.

Numerical Simulation of Microstructural Evolution during Aging of Cu-Ni-Fe Alloys E.O. Avila-Davila, D.V. Melo-Maximo, O. Soriano-Vargas, M.L. Saucedo-Muñoz and V.M. Victoria-Hernández	2271
Precipitation in Aged N-Containing Austenitic Stainless Steels M.L. Saucedo-Muñoz and V.M. Victoria-Hernández	2275
A Theoretical Model for Digestive Ripening D.K. Lee, S.I. Park, J.K. Lee and N.M. Hwang	2279
Design of Structure, Composition and Heat Treatment Process for High Strength Steel T.Y. Hsu and Z.Y. Xu	2283
Phase-Field Simulation of γ''(D0₂₂) Precipitation in Ni Base Superalloys T. Koyama and H. Onodera	2287
Preparation and Thermal Property of Phase Change Material Microcapsules by Phase Separation Y. Zhang, W.J. Lin, R. Yang, Y.P. Zhang and Q.W. Zhang	2293
Metastable Precipitates and their Misfit Strains in a Cu-0.9wt%Be Single Crystal R. Monzen, T. Sakai and C. Watanabe	2297
Growth of Individual Austenite Grains Measured with 3DXRD Microscopy V.I. Savran, S.E. Offerman, N.H. van Dijk, E.M. Lauridsen, L. Margulies and J. Sietsma	2301
HRTEM Observation of β'-Phase in Cu-40.26 at.% Zn Alloy M. Nishiyama, D. Hamatani, K. Matsuda, T. Kawabata, Y. Uetani and S. Ikeno	2305
Interfacial Structural Modification of Martensitic Transformations Q.P. Meng and N. Chen	2309
Shape Memory Behavior of Ti-50.9at%Ni Alloy after ECAE Processes Z.G. Fan and C.Y. Xie	2313
A Study of the Microstructural Evolution and Strengthening Effects of Non-Spherical Precipitates in an Al-Cu-Based Alloy J. da Costa Teixeira, L. Bourgeois and C.R. Hutchinson	2317
Mechanical Properties of Cu-4.0wt%Ni-0.95wt%Si Alloys with and without P and Cr Addition C. Watanabe, F. Nishijima, R. Monzen and K. Tazaki	2321
Specimen-Size Dependence of the Martensitic Transformation Temperature of Yttria Doped Zirconia M. Tamaki, T. Onda and M. Hayakawa	2325
Phase Diagram and Precipitation Behaviour in Ni-Rich Region of Ni-Ta-Al Ternary System Y. Tsukada, K. Hasuie, Y. Murata and M. Morinaga	2329
Effect of Magnetic Field on Isothermal Martensitic Transformation in SUS304L Stainless Steel J.H. Lee, T. Fukuda and T. Kakeshita	2333
Relation between Diffuse Scatterings and Fermi Surface Nesting in Iron Doped Ti-Ni Alloys T. Yamamoto, M.S. Choi, S. Majima, T. Fukuda, T. Kakeshita, E. Taguchi and H. Mori	2337
Textures in AZ31 Magnesium Alloy Induced by Repeated Cross Wavy Rolling A. Yamamoto, Y. Tsukahara and S. Fukumoto	2341
Influence of Repeated Quenching After Carburizing on Prior Austenite Grain Size T. Fujimatsu, M. Nishikawa, K. Hashimoto and A. Yamamoto	2345
Femtosecond Laser Synthesis of Polymorphic Diamond from Highly Oriented Pyrolytic Graphite T. Sano, K. Takahashi, A. Hirose, O. Sakata, M. Okoshi, N. Inoue and K.F. Kobayashi	2349
Hydrogen Diffusivity and Permeability In Pd_{50-x}Ti₅₀(Cr, Fe)_x Alloys O. Yoshinari and D. Itoh	2353
Two-Phase Microstructures Formed by Phase-Separations of Ordered Precipitates in Fe-Si-V Alloys M. Doi, T. Moritani and T. Kozakai	2357
TEM Observations of Two-Phase Microstructure Formed by Phase Separation of Gamma-Prime Precipitates in Ni-Al-Si Alloys T. Moritani, M. Ota, T. Kozakai and M. Doi	2361

TEM Observations of Precipitation of Coherent L1₂ and D0₂₂ Ordered Phases in Ni-V-Ge Alloys	
Y. Inuzuka, S. Ito, T. Kozakai and M. Doi	2365
Phase Transformations in the Metallic Materials Being Electrodeposited and their Application for the Development of Advanced Technologies for Anticorrosive Protection of Canned-Food Steel Sheet	
O. Girin	2369
Development of Nanocrystalline Copper-Refractory Metal Alloys	
J.M. Rigsbee	2373

Interfaces and Surface Engineering

XIX.

Surface Microstructure and Corrosion Resistance of 316L Stainless Steel after High Current Pulsed Electron Beam Treatment	
S.Z. Hao, P.S. Wu, T. Grosdidier and C. Dong	2381
Intergranular Corrosion of Ultrafine Grain Copper Fabricated by ECAP	
H. Miyamoto, T. Mimaki, A. Vinogradov and S. Hashimoto	2385
Improvement of Surface Roughness on ABS 400 Polymer Using Design of Experiments (DOE)	
D. Horvath, R. Noorani and M. Mendelson	2389
Fatigue Life Enhancement by Surface Coating of Ni/Cu Multilayered Films	
Y. Kaneko, Y. Nishijima, T. Sanda and S. Hashimoto	2393
Dependence of Vickers Hardness on Annealing Temperature at Co/Cu Multilayered Films	
Y. Kaneko, H. Sakakibara and S. Hashimoto	2399
Influence of Surface Finishing and Binder Phase on Friction and Wear of WC Based Hardmetals	
K. Bonny, P. de Baets, O. Van der Biest, J. Vleugels and B. Lauwers	2403
Subsurface Microstructure Induced by Sliding Wear in a Copper Single Crystal	
Y. Ohno, J. Inotani, Y. Kaneko and S. Hashimoto	2407
The Influence of PtFe and Nano Aluminium Particles on the Anticorrosive Performance of Waterborne Coating	
L.L. Xue, L.K. Xu and Q.F. Li	2411
Tilt Grain Boundaries in Pure Copper Bicrystals in 1M NaNO₂ Solution	
H. Miyamoto, K. Kuroda and T. Mimaki	2415
An Overview of Cold Spray Technique	
N. Bala, H. Singh and S. Prakash	2419
Structural and Electrical Properties of ZnO Films on Freestanding Thick Diamond Films	
J. Sun, Y.Z. Bai, J.C. Sun, T.P. Yang, G.T. Du and X. Jiang	2423
TEM Characterization of 2° Tilt Grain Boundary in Alumina	
E. Tochigi, N. Shibata, A. Nakamura, T. Yamamoto and Y. Ikuhara	2427
Effect of Surface on Recrystallization	
F. Inoko, K. Kashihara, T. Okada and M. Tagami	2431
First-Principle Study of Sulfur Adsorption on Ir(100) Surface	
S.H. Ma and X.T. Zu	2435
Thermodynamic Processes and Phenomena Induced by High Current Pulsed Electron Beam	
Y. Qin, Z.F. Song, C. Dong, X.G. Wang, S.Z. Hao, J.X. Zou, A.M. Wu and Q.F. Guan	2439
Surface Characteristics and Corrosion Behavior of Ti-4Al-2V Alloy Implanted with Al and Nb	
Y.Z. Liu, X.T. Zu, S.Y. Qiu and X.Q. Huang	2443
Study of Metal Coating on Lead-Free High Refractive Index Glass Prepared from Local Sand	
P. Dararutana and N. Sirikulrat	2447
Tribological Properties of Ni/Cu Multilayers	
T. Hattori, Y. Kaneko and S. Hashimoto	2451
The Surface Analysis of Melted Arc Copper Beads	
Y. Wu, C.Z. Zhao, M. Di and W. Gao	2455

Characterization of Coating Morphology and Heat-Resistance in Plasma Electrolytic Oxidation of Magnesium Alloy	
L.S. Wang, C.X. Pan, Q.Z. Cai and B.K. Wei	2459
Dislocation Structure Analysis of Low Angle Tilt Grain Boundaries in Alumina by Elastic Theory	
A. Nakamura, E. Tochigi, N. Shibata, T. Yamamoto and Y. Ikuhara	2465
Atomic Force Microscopy of Sintered and Thermoplastic Polyimide Surfaces after Macroscopic Wear Tests	
P. Samyn, J. Quintelier, G. Schoukens, P. de Baets and W. De Waele	2469
Effects of Laser Processing Parameters on Grain Boundary Character Distribution and Corrosion Resistance of Austenite Stainless Steel	
S. Yang, H. Kokawa and Z.J. Wang	2473
Surface Layer Hardness of Austenitic Stainless Steel via Low Temperature Plasma Carburizing and/or Nitriding	
M. Tsujikawa, S. Noguchi, N. Yamauchi, N. Ueda, T. Sone and K. Nakata	2477
Interfacial Microstructure of Titanium Nitride – Titanium Diboride Composite Synthesized by Hot Shock Compaction	
S. Ii, T. Nishitani and R. Tomoshige	2481
Investigation on Fatigue Crack Growth Behaviour in S45C Steel by Water Cavitation Peening with Aeration	
B. Han, D.Y. Ju and T. Nemoto	2485

Plenary

Deformation Induced Ferrite Transformation in Microalloyed Steels: Theory and Application	
Y.Q. Weng, X.J. Sun and H. Dong	2491