# TABLE OF CONTENTS

## Volume 1

### ADVANCED FERROUS ALLOYS AND PROCESSING

- **Sticking Mechanisms Occurring during Hot Rolling of Ferritic Stainless Steels**
  J.S. Lee, C.Y. Son, C.K. Kim, D.J. Ha, S.H. Lee, K.T. Kim, Y.D. Lee

- **Sound Radiation Characteristics for Structural Damage Identification**
  U. Lee, I.J. Jang, H.S. Go, T.J. Kim

- **Optimization Results of High Strength Steel Production Process**
  Y. Feng, H. Sun

- **Metal Injection Molding of Nickel-Free Austenitic Stainless-Steel: I-Manufacturing Process**
  Y. Kuroda, M. Komada, R. Murakami, S. Fukumoto, N. Tsuchida, Y. Harada, K. Fukaura

- **Metal Injection Molding Method of Ni-Free Austenitic Stainless Steel II - Microstructure and Mechanical Properties**
  M. Komada, Y. Kuroda, R. Murakami, N. Tsuchida, Y. Harada, K. Fukaura, S. Fukumoto

- **Aqueous Corrosion Characteristics of Iron Aluminides**
  Y.H. Yoo, J.G. Kim

- **Continuous Cooling Transformation Behavior of High Strength Low-Alloyed Cold Rolled Sheet Steel**
  H. Liu, D.Z. Zhong, L.Q. Zhao, T. Peng, L.X. Wu, J. Zeng

- **Study of High Temperature Wear Resistance of Hot Work Steel for Magnesium Alloy Die Casting**
  W.Z. Li, N. Qu

- **Dry Sliding Wear Mechanisms of the High Nitrogen Austenitic 18Cr-18Mn-2Mo-0.9N Steel at Different Applied Loads**
  Y.S. Kim, S.D. Kim, S.J. Kim

- **Fluid-Structure Coupled Analyses of Composite Wind Turbine Blades**
  T.H. Cheng, I.K. Oh

- **Cementite Decomposition of Pearlitic Steels during Cold Drawing**

- **The Texture Evolution of Dual Phase Steel Sheets**
  Y.D. Liu, Q.W. Jiang, T. He, Y.D. Wang, L. Zuo

- **Effects of Finishing Rolling Temperature on the Microstructural Behavior for Fe-0.1C Steel as a Function of Niobium Content**

- **Plastic Deformation Behavior of Micro-Alloyed Cold Forging Steel**
  Y.N. Kwon, Y.S. Lee, J.H. Lee

- **Abnormal Grain Growth of Fe-3%Si Steel Approached by Solid-State Wetting Mechanism**
  K.J. Ko, P.R. Cha, J.T. Park, J.K. Kim, N.M. Hwang

- **Analysis on Void Closure Behavior during Hot Open Die Forging**
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIB and TEM Studies on the Bainitic Microstructure in Low Carbon HSLA Steels</td>
<td>70</td>
</tr>
<tr>
<td>J.S. Kang, S.S. Ahn, C.Y. Yoo, C.G. Park</td>
<td></td>
</tr>
<tr>
<td>The Potentiality of Micro-Scaled Multi-Filament Wire Forming Using Repetitive Hydrostatic Extrusion Process</td>
<td>74</td>
</tr>
<tr>
<td><strong>LIGHT METALS</strong></td>
<td></td>
</tr>
<tr>
<td>Mechanical Behaviors of Mg-6%Al-0.2%Mn Based Casting Alloys</td>
<td>78</td>
</tr>
<tr>
<td>J.M. Kim, J.H. Jun</td>
<td></td>
</tr>
<tr>
<td>Processing and Tensile Property of Nano Dispersed Al-Fe-(Mo, V, Zr) Bulk Alloy</td>
<td>82</td>
</tr>
<tr>
<td>T.K. Jung, M.S. Kim, W.Y. Kim, H.C. Kwon, S. Yi</td>
<td></td>
</tr>
<tr>
<td>Enhanced Formability of AZ31 Magnesium Alloy Sheet Processed by Equal Channel Angular Rolling and Annealing Treatment</td>
<td>86</td>
</tr>
<tr>
<td>Z.H. Chen, Y.Q. Cheng, W.J. Xia, H.G. Yan, D. Chen</td>
<td></td>
</tr>
<tr>
<td>The Effect of Alloying Elements on the c/a Ratio of Magnesium Binary Alloys</td>
<td>90</td>
</tr>
<tr>
<td>J.S. Park, Y.W. Chang</td>
<td></td>
</tr>
<tr>
<td>Forging Process Design of Al Rotating Arm Holder by FE Analysis</td>
<td>94</td>
</tr>
<tr>
<td>Effects of Heat Treatments on Microstructure of AM50 Magnesium Alloy</td>
<td>98</td>
</tr>
<tr>
<td>Y.L. Ma, F.S. Pan, M.B. Yang</td>
<td></td>
</tr>
<tr>
<td>Homogeneity of Grain Refinement of Aluminum Alloy with Compressive Torsion Processing</td>
<td>102</td>
</tr>
<tr>
<td>Y. Kume, M. Kobashi, N. Kanetake</td>
<td></td>
</tr>
<tr>
<td>Effect of Alloying Elements on Mechanical Properties for A356 Casting Alloy</td>
<td>106</td>
</tr>
<tr>
<td>Research and Development of Mg-Al-Sr Alloys</td>
<td>110</td>
</tr>
<tr>
<td>X.D. Peng, H. Nie, W.D. Xie, F.S. Pan</td>
<td></td>
</tr>
<tr>
<td>Preparation of Mg-Sr Alloy Using Electrochemical Reduction</td>
<td>113</td>
</tr>
<tr>
<td>N.C. Liu, W.D. Xie, X.D. Peng, Q.Y. Wei, H.D. Li</td>
<td></td>
</tr>
<tr>
<td>Relationship between Tensile Deformation and Crystallographic Orientation of Grains in the Balanced Al-Mg2 Si Alloys</td>
<td>118</td>
</tr>
<tr>
<td>K. Horiba, J. Tsukiyama, K. Matsuda, Y. Uetani, S. Ikeno</td>
<td></td>
</tr>
<tr>
<td>Relationship between Tensile Deformation and Crystallographic Orientation of Grains in Al =-Mg-Si Alloys with Cu</td>
<td>122</td>
</tr>
<tr>
<td>J. Tsukiyama, K. Matsuda, Y. Uetani, S. Ikeno</td>
<td></td>
</tr>
<tr>
<td>Influence of Compressive Torsion Processing Temperature on Microstructure Refinement and Property of Aluminum Alloy</td>
<td>126</td>
</tr>
<tr>
<td>S. Tahara, Y. Kume, M. Kobashi, N. Kanetake</td>
<td></td>
</tr>
<tr>
<td>Heat Resistance of Mg-Nd Based Casting Alloys Containing Gadolinium and Yttrium</td>
<td>130</td>
</tr>
<tr>
<td>J.H. Jun, B.K. Park, J.M. Kim, K.T. Kim</td>
<td></td>
</tr>
<tr>
<td>Effect of Ca and Sr Content on Elevated Temperatures Mechanical Properties of a Cast AZ91 Magnesium Alloy</td>
<td>134</td>
</tr>
<tr>
<td>I. Takeuchi, K. Hirai, Y. Takigawa, T. Uesugi, K. Higashi</td>
<td></td>
</tr>
<tr>
<td>Mechanical Properties of Twin Roll Cast AZ91 Magnesium Alloy at Room Temperature</td>
<td>138</td>
</tr>
<tr>
<td>S.H. Uchida, I. Takeuchi, G. Gonda, K. Hirai, T. Uesugi, Y. Takigawa, K. Higashi</td>
<td></td>
</tr>
<tr>
<td>Influence of Initial Texture on Twin Formation and Plastic Deformation of Rolled AZ31 Mg Alloy</td>
<td>142</td>
</tr>
</tbody>
</table>
Microstructure and Dynamic Ultra-Micro Hardness of the As-Cast and Extruded Mg-Al-Ca-Sm Alloys
H.T. Son, J.S. Lee, J.M. Hong, D.G. Kim, K. Yoshimi, K. Maruyama .......................................................... 146

HRTEM Observation of the Age Hardening Precipitates in Mg-Zn Alloy .......................................................... 150
S. Mori, T. Kawabata, K. Matsuda, S. Ikeno

Continuous Rheological Forming of A6061 Wrought Aluminum Alloy by Using Helical Shape Stirrer and its Thixoforging Process .......................................................................................................................... 154
C.G. Kang, S.M. Lee

Effect of Heat Treatment on Microstructures and Properties of Mg-9Gd-4Y-0.3Zr Alloy ......................... 160
S.J. Yao, W.X. Li, S. Yang, D.Q. Yi

Titanium Hydriding and Consolidation for Recycling of Titanium Tuning Chip ................................. 164
J.M. Jang, W.S. Lee, S.H. Ko, I.H. Kim

INTERMETALLICS AND HIGH TEMPERATURE ALLOYS

Influence of Microstructure Change on the Superplastic Properties of Ti3Al Base Alloy .......... 168
Y.Y. Liu, Z.K. Yao, X. Luo, L.K. Cao

Thermodynamic Analysis of Nb-Cr Powders of Mechanical Alloying .................................................. 172
X.W. Nie, S.Q. Lu, K.L. Wang

Attempt to Control Spatial Distribution of Nano-Gold Particles Using Nanoporous Surfaces of FeAl Single Crystal .......................................................................................................................... 176
M. Tsunekane, K. Yoshimi, K. Maruyama

Effect of Heat Treatment Conditions on Microstructure and Fracture Toughness of a Cast Ti-Al Alloy ............................................................................................................................... 180
T.K. Ha, J.Y. Jung

Interfacial Characteristics of Iron Aluminides Intermetallic Layers on Al-Coated Steel Sheet .............................................................. 184
Y. Rahmawan, E.R. Baek, T.H. Kim

Crystal Structure and Thermoelectric Properties of ReSi1.75 Based Alloys ........................................... 188
S. Harada, K. Tanaka, K. Kishida, H. Inui

Effect of Texture on Deformation Behavior of AZ31 Mg Alloy ................................................................. 192
J.E. Park, Y.J. Yang, Y.W. Chang

First Principles Calculations of Thermodynamic Quantities and Phase Diagrams of High Temperature BCC Ta-W and Mo-Ta Alloys .................................................................................................. 196
K. Masuda-Jindo, V. Van Hung, P.E.A. Turchi

Mechanical Properties According to Heat Treatment for Gas Turbine Blade Material .................. 200
M.Y. Kim, S.H. Yang, K.H. Song

Effect of Creep Deformation on the Crystallographic Orientation Distribution in Ni Base Superalloy ................................................................................................................................. 204
T. Inoue, K. Tanaka, H. Adachi, K. Kishida, H. Inui

Effect of Applied External Stress on Hydrogen Desorption from Metal Hydrides .................. 208
R. Matsumoto, K. Tanaka, K. Kishida, H. Inui

Elastic Properties of L10-Ordered Single Crystals .................................................................................. 212
C. Wang, K. Tanaka, K. Kishida, H. Inui

Microstructure Evolution during Lithiation and Delithiation of Ni3Sn2 Anode for Lithium Secondary Batteries ....................................................................................................................... 216
T. Kosho, K. Kishida, K. Tanaka, H. Inui

Crystal Structure Variation of Ru2Si3 Upon Alloying with Mn .................................................................. 220
T. Koyama, A. Ishida, K. Kishida, K. Tanaka, H. Inui
Creep Deformation and Microstructure of Alloy 617 Foil at High Temperature ..........................224
  S.K. Sharma, J.W. Choi, K.J. Kang

ADVANCED CERAMICS

Fabrication of Textured SrBi2Nb2O9 Ceramics by Templated Grain Growth ..............................228
  C.W. Cui, J.L. Huang, L.H. Gao, X.H. Yang, X. Wang

Study on the Properties of Doped La in BaBi4Ti4O15 Ceramic ..............................................232
  X.H. Yang, J.L. Huang, X. Wang, C.W. Cui

Characterization of Bismuth Titanate Powders .......................................................................236
  P. Pookmanee, S. Phanichphant

In Situ Synthesis of TiB2-TiCx Ceramic Matrix Composites by Hot Isostatic Pressing ..................240
  D.G. Zhu, H.L. Sun, L.H. Wang

Preparations and Characterizations of Perovskite PMN Ceramics by Using a One-Step Calcination Method .................................................................244

Corrosion Behavior of Si3N4 Ceramics under High-Temperature and High-Pressure Water Condition .................................................................248
  W.J. Kim, S.M. Kang, J.Y. Park

Electromechanical Properties of NKN-5LT Multilayer Actuator ............................................252
  M.S. Kim, S.J. Jeong, J.S. Song

H2/CO2 Gas Separation Characteristic of Zeolite Membrane at High Temperature ..................256
  W.T. Kwon, S.R. Kim, E.B. Kim, S.Y. Bae, Y.H. Kim

Hydrogen Separation Characteristics of SiC Nanoporous Membrane at High Temperature ..........260

Electrochemical Properties of Cathode for Solid Oxide Fuel Cell with Gd-Doped Ceria Electrolyte .................................................................264

Fabrication of Porous Alumina Ceramics by Spark Plasma Sintering Method ..............................268
  D.H. Choi, K. Kamada, N. Enomoto, J. Hojo, S.W. Lee

COMPOSITE MATERIALS

Dynamic Thermo-Mechanical Properties of Chemically Surface Modified MWCNTs Reinforced Polymeric Composites .................................................................272
  A.B. Sulong, J.H. Park

Fabrication of Carbon Nanotubes Reinforced Polyethylene Fibers by Melt Spinning: Process Optimization and Mechanical Strength Characterization .......................276
  A.B. Sulong, J.H. Park

Interfacial Characteristics and Wear Resistance of WCp/White-Cast-Iron Composites .................280
  G.S. Zhang, Y.M. Gao, J.D. Xing, S.Z. Wei, X.L. Zhang

Spectral Element Modeling for Elastic Two-Layer Beams ..........................................................284
  S.J. You, I.J. Jang, U. Lee

Properties of CB/Rubber Composites Filled by Carbon Black Used as Catalysts for Hydrocarbon Decomposition .................................................................288
  S.Y. Dai, G.Y. Ao, M.S. Kim
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromagnetic Interference Shielding Properties of Carbon Nanotubes</td>
<td>292</td>
</tr>
<tr>
<td>Reinforced Composites</td>
<td></td>
</tr>
<tr>
<td>T.W. Kim, H.R. Lee, S.S. Kim, Y.S. Lim</td>
<td></td>
</tr>
<tr>
<td>A Study on Fatigue Properties of a TiNi/Al Shape Memory Alloy</td>
<td>296</td>
</tr>
<tr>
<td>Microstructure and Superconductive Property of the Extruded MgB2/Al</td>
<td>300</td>
</tr>
<tr>
<td>Composite Materials</td>
<td></td>
</tr>
<tr>
<td>K. Matsuda, M. Morobayashi, K. Nishimura, K. Mori, S. Aoyama, Y.</td>
<td></td>
</tr>
<tr>
<td>Hishinuma, S. Ikeno</td>
<td></td>
</tr>
<tr>
<td>Numerical Simulations for Uniaxial Ratcheting of SiCP/6061Al Composites Concerning Particulate Arrangement</td>
<td>304</td>
</tr>
<tr>
<td>S.J. Guo, G.Z. Kang, C. Dong</td>
<td></td>
</tr>
<tr>
<td>Fabrication of Oxide Ceramics Composite by Reactive Infiltration Process</td>
<td>308</td>
</tr>
<tr>
<td>Y. Kobayashi, M. Kobashi, N. Kanetake</td>
<td></td>
</tr>
<tr>
<td>Effect of Powder Blending Ratio on Synthesis of TiB2 Particles by Al-Ti-B Combustion Reaction</td>
<td>312</td>
</tr>
<tr>
<td>W. Yoshida, M. Kobashi, N. Kanetake</td>
<td></td>
</tr>
<tr>
<td>Development of Hybrid FRP-Concrete Composite Compression Members</td>
<td>316</td>
</tr>
<tr>
<td>Effect of Phosphorus Doping into the Silicon as an Anode Material for Lithium Secondary Batteries</td>
<td>320</td>
</tr>
<tr>
<td>M.H. Kong, D.J. Byun, J.K. Lee</td>
<td></td>
</tr>
<tr>
<td>A Study on the Design Curves for Pultruded Composite Columns</td>
<td>324</td>
</tr>
<tr>
<td>Structural Behavior of Polymer Mortar GFRP Composite Pipe</td>
<td>328</td>
</tr>
<tr>
<td>J.H. Nam, S.S. Lee, S.J. Yoon, D.M. Ok, J.B. Kim</td>
<td></td>
</tr>
<tr>
<td>Physical Characteristic of Ready Mixed Concrete with Different Replacement Ratio of Recycled Aggregate</td>
<td>332</td>
</tr>
<tr>
<td>S.J. Yoon, S.Y. Seo, W.J. Lee</td>
<td></td>
</tr>
<tr>
<td>D. Aht-Ong, C. Pechyen, D. Atong</td>
<td></td>
</tr>
<tr>
<td><strong>ADVANCED FORMING AND PROCESSING</strong></td>
<td></td>
</tr>
<tr>
<td>Microstructure, Hardness, and Wear Resistance of Powder-Injection-Molded Products of Fe-Based Metamorphic Powders</td>
<td>340</td>
</tr>
<tr>
<td>C.K. Kim, C.Y. Son, D.J. Ha, T.S. Yoon, S.H. Lee</td>
<td></td>
</tr>
<tr>
<td>Fabrication of Sandwich Structure with Superplastic Forming Process from Diffusion Bonded Ti-6Al-4V Sheets</td>
<td>344</td>
</tr>
<tr>
<td>Preparation and Characterization of Tungsten Heavy Alloy Feedstock for Metal Injection Molding</td>
<td>348</td>
</tr>
<tr>
<td>S.H. Islam, X.H. Qu, M. Tufail</td>
<td></td>
</tr>
<tr>
<td>The Effect of Isothermal Forging Process Parameters on the Microstructure and the Properties of TA15 Near &amp; Titanium Alloy</td>
<td>352</td>
</tr>
<tr>
<td>Temperature Dependent Microstructure and Mechanical Behavior in AZ31 Alloy Processed by an Asymmetric Rolling</td>
<td>357</td>
</tr>
<tr>
<td>H.G. Jeong, W.J. Kim</td>
<td></td>
</tr>
</tbody>
</table>
Research on Horizontal Electromagnetic Continuous Casting of Sn-P Bronze Strips
C.H. Hui, T.J. Li, W.Z. Jin

Effects of Temperature and Strain Rate on Compressive Mechanical Properties of Ultrafine-Grained CP Titanium
Z.G. Fan, C.Y. Xie

Recrystallization Characteristics of Ti-50.9at%Ni Alloy Processed by Equal Channel Angular Extrusion
Z.G. Fan, C.Y. Xie

Experimental Study of Springback in Draw Bend Test of AZ31B Magnesium Alloy Sheet
M.G. Lee, J.G. Choi, H.Y. Kim, R.H. Wagoner, J.K. Lee

Texture and Formability of Frictionally Rolled AA 1050 Aluminum Alloy Sheets
S. Akramov, I. Kim, N.J. Park

The Study of Residual Stresses for Roller Hemmed Aluminum Alloys
D.O. Kim, D.W. Shin, Y.S. Yoon, Y.M. Ryu, B.S. Han

Formability and Mechanical Property of Aluminum Sheets Locally Surface-Modified by the Concept of Surface Friction Joining
C.G. Lee, S.J. Kim, H.N. Han, K.S. Chung

Evolution of Microstructure and Texture of Pure Al Single Crystal Having {112}<110> Orientation during Severe Plastic Deformation
N. Ishida, D. Terada, K. Kashihara, N. Tsuji

Characterization of Mg-Al Sheet Clad Materials Fabricated by Hot Rolling

Mechanical Properties of Ultra-Fine Grained Fe-Cr-Ni Alloy Fabricated by ARB
T. Maekawa, H. Kitahara, N. Tsuji

Extrudability and Bonding Strength of Copper Clad Aluminum Alloy Composites Produced by Indirect Extrusion Process

Effects of Microstructure on Mechanical Properties of HRS Processed SUS316L Stainless Steel
H. Fujiwara, M. Nakatani, Y. Iwahashi, K. Ameyama

Analysis of Surface Roughness of Immersion Sn Plating Film via Micro Etch Process
B.H. Park, H.S. Oh, S.P. Hong, S.J. Hong

Ring-Rolling Process for Manufacturing Ti-6Al-4V Plane and Profiled Ring-Products

Dynamic Recrystallization during Hot Extrusion in Mg-3AI-0.1Y Alloy
T. Noro, T. Uesugi, Y. Takigawa, M. Tsujikawa, H. Mabuchi, K. Higashi

Warm Forging Characteristics of AZ31 Alloy
Y.N. Kwon, Y.S. Lee, J.H. Lee

Low-Pressure Preheating Combustion Synthesis of Silicon Nitride
K. Zhang, L. Bai, W.P. Shen, C.C. Ge

Improved Density Distribution in Powder Metallurgy Parts with Filtering Methods
M.S. Kim

Dynamic Recrystallization during Hot Extrusion in AZ31 and AZ80 Alloys
M. Honda, T. Uesugi, Y. Takigawa, H. Mabuchi, K. Higashi

Study on Automated Scrap-Sorting by an Image Processing Technology
C.W. Kim, H.G. Kim
Microwave Assisted Esterification of Waste Cotton Fabrics for Biodegradation Films Preparation .................................................................441
U. Ratanakamnuan, D. Atong, D. Aht-Ong

Influence of Annealing Atmosphere on the Mechanical and Wear Properties of Free-Cutting Phosphor Bronze Alloy .................................................................445
H. Cho, B.S. Lee, H.Y. Kim, H.H. Jo

Grain Refinement of Mg-Y-Zn Alloy by Friction Stir Processing .................................................................449
T. Morishige, M. Tsujikawa, S. Oki, M. Kamita, S.W. Chung, K. Higashi

ADVANCED MELT PROCESSING, CASTING AND JOINING

Mechanical Milling of Prealloyed Cu-Cr Powders Prepared by Gas Atomization .................................................................453
H.K. Yeo, S.H. Ahn, K.H. Han

An Activity Model of N and V in Fe-C-V-N Molten Metal ........................................................................457
J. Peng, S.J. Wang, L.X. Liu, Y. Zhou, Y.C. Dong

Optimization of Laser-Arc Interspacing Distance during CO2 Laser-GMA Hybrid Welding by Using High-Speed Imaging .................................................................462
C.H. Kim, H.B. Chae, J.K. Kim, J.H. Kim

Mechanical Properties and Microstructure of Strip Casted Ag-27%Cu-25%Zn-3%Sn Brazing Alloy .................................................................466
K.A. Lee, S.J. Kim, M.C. Kim

Micro-Structural Evolution of AlCu5MnCdVA Cast Aluminum Alloy by Semi-Solid Isothermal Annealing Process .................................................................470
G.Y. Yang, W.Q. Jie, Q.T. Hao, R.Q. Zhang

A Study of Electroslag Welding Process for Special Welding Joint with Thick Plate .................................................................475
C.S. Park, Y.S. Ryu, J.S. Lee

Sintering Mechanism of Composite Ag Nanoparticles and its Application to Bonding Process-Effects of Ag2CO3 Contents on Bondability to Cu- .................................................................479
H. Tatsumi, Y. Akada, T. Yamaguchi, A. Hirose

Studies for the Influences of Welding Parameters of GMA Welded 600MPa Grade TRIP Steel .................................................................483

Effects of the Process Parameters on Beads by Plasma Arc Welding of the Membrane for LNG Ships .................................................................487
B.J. Kim, Y.R. Son, J.O. Yun, J.S. Lee

The Effect of Post Weld Heat Treatment on Mechanical Properties of Friction-Welded Alloy 718 and SNCRW Stainless Steel .................................................................491

Characteristics of SnOx-ZnO Composite Film on Poly Ethylene Terephalate (PET) Substrate Prepared by ECR-MOCVD .................................................................495
J.H. Park, D.J. Byun, J.K. Lee

Thermodynamic Calculation of Alpha-Case Formation in Titanium Alloys .................................................................499
S.Y. Sung, B.J. Choi, S.H. Noh, C.S. Hahn, Y.M. Ryu, B.S. Han, Y.J. Kim

Functions and Morphology of Metal Lead Addition to Ancient Chinese Bronzes .................................................................503
C.X. Pan, L.M. Liao, Y.L. Hu

In Situ Combustion Synthesis of Ti-Al Intermetallic Compounds in Al Alloy Casting Process .................................................................507
G.S. Cho, K.R. Lee, K.H. Choe, K.W. Lee

Permanent Mold Casting Practice and Microstructure and Mechanical Properties of Thin-Sectioned ADI Casting .................................................................511
B.M. Moon, B.H. Kim, J.S. Shin, S.M. Lee
Effect of Additive Powder on Microstructural Evolution in the Wide-Gap Brazed Region by In Situ High Temperature ESEM ..........................................................515
Y.H. Kim, K.T. Kim, S.Y. Shin, S.I. Kwun

A Study on the Welding Characteristics of Dissimilar Metal Using a High Power CW Nd:YAG Laser .........................................................................................................................518
H.J. Shin, Y.T. Yoo, B.H. Shin

Rheocast of Al-Si-Mg Alloy Containing 1Mass% Iron ........................................522

Improvement of the Accuracy of High Temperature Slab Weight in Continuous Casting .....526
S.Y. Kim, Y.S. Park, J.M. Park

Surface Roughness of Cu-Be Alloy (C17200) Rod Alloy Produced by Horizontal Type ......530

Effects of Electric Pulse on Solidification Structure of KS282 Alloy ................................534
L.J. He, J.Z. Wang, J.G. Qi, D.Q. Cang

Fatigue Crack Characteristics of Friction Stir Welded Aluminum Alloy Joints .................538
H.Q. Qu, M. Tsujiwaka, S.W. Chung, T. Hirata, S. Oki, K. Higashi

Alignment of Primary Phase of a Binary Alloy during Solidification .................................542
K. Iwai, M. Usui, S. Asai

MAGNETIC, ELECTRONIC AND OPTICAL MATERIALS

Microstructure and Properties of Cu-3.2Ni-0.75Si-0.3Zn Alloy for Lead Frame ..................545

Preparation of CaAl2O4: Eu2+ Long Persistent Blue Phosphor ........................................549
K.S. Bartwal, B.K. Singh, H. Ryu

Large Isothermal Magnetic Entropy Change after Hydrogen Absorption into La0.5Pr0.5(Fe0.88Si0.12)13 ..........................................................553
S. Fujieda, A. Fujita, K. Fukamichi

Exchange Bias Field Change of FeMn-NiFe Films by He Ion Irradiation Using DuoPIGatron Source ..................................................................................557
Y.O. Noh, C.G. Kim, C.O. Kim

Electrodeposited Nickel Nanowire Arrey ............................................................................561
B.H. Park, I. Kim

Effect of Continuous Casting Parameters on Microstructure and Texture of Gold Bonding Wire for Semiconductor Packaging ..................................................565
W.Y. Kim, H.S. Kim, E.K. Chung

Fabrication of Ta-Al-N Thin Films and its Cu Diffusion on Barrier Properties .................569
Y.Z. Li, J.C. Zhou

Synthesis and Growth Mechanism of ZnO Nanoneedles Using Thermal Oxidation Upon a Plated Zn Nanocrystalline Layer ..................................................573
W. Yu, C.X. Pan

Solventless Synthesis of Bi2S3 Nanowires and their Application to Solar Cells ...............577

The Improvement of Permeability and Strength in Soft Magnetic Composites Motor Core Using Spark Plasma Sintering Process ........................................583
H.R. Cha, C.H. Yun, H.T. Son, J.I. Cho
THIN FILM MATERIALS AND PROCESSING

Nanocrystalline Diamond Film Produced by Argon Addition in the CH4-H2 Microwave CVD Plasmas ................................................................. 587
S.J. Askari, F.X. Lu

Improving the Properties of Sapphire by Coatings ........................................ 591
L.P. Feng, Z.T. Liu

Directed Crystallization of Amorphous Silicon Deposits on Glass Substrates ........ 595
D.N. Lee

Recovery of Structural and Luminescent Properties in Zinc-Implanted ZnO Films .......... 601
S.W. Xue, X.T. Zu

Visible-Light Photodegradation of Rhodamine B on Carbon Doped Titanium Oxide Thin Film Prepared by Atmospheric MOCVD ........................................... 605
L.N. Li, J.H. Gu, Y. Zhang

Effect of Plating Condition on the Mechanical Properties and Residual Stress of Electroplated Copper Film .................................................. 609

Characterization of (Ti, Al) N Films Synthesized by Arc Ion Plating ......................... 613

Low-Temperature Deposition of Amorphous Carbon Films for Surface Passivation of Carbon-Doped Silicon Oxide .................................................. 617
K. Yamaoka, Y. Terai, N. Okada, T. Yamaguchi, Y. Yoshizako, Y. Fujiwara

Preparation and Characterization of Doped Nanometer TiO2 .................................. 621
L.Y. Song, Y.C. Wu, X.F. Lu

Effect of Residual Stress on P Doped Nano-Crystalline Silicon Deposited by HWCVD Films ................................................................. 625
B.P. Swain

MOCVD Growth of SiC Nanowires Aiming at the Control of their Shape .................. 629
S. Takao, H. Kohno, S. Takeda

Fabrication of OTFT Array with Coated Thin Film Dielectric and Printed Electrodes by Using Microcontact Printing ........................................... 633
J.D. Jo, T.M. Lee, C.H. Kim, K.Y. Kim, E.S. Lee, M. Esashi

AMORPHOUS AND QUASICRYSTALLINE MATERIALS, NANOCRYSTALLINE MATERIALS

Synthesis and Characterization of Y3Al5O12 Nanocrystals ........................................ 637
K.S. Bartwal, S. Kar, N. Kaithwas, M. Deshmukh, M. Dave, N.P. Lalla, H. Ryu

Preparation of Nano-Particles of Metal Oxides via a Novel Solid-Liquid Mechanocatalytic Reaction Technology .................................................. 641
D. Chen, S. Ni, G.L. Chen, Z.H. Chen

Crystal Growth in Amorphous Binary Alloys of Zr-Ni System .............................. 645
T. Fukami, I. Noda, M. Asada, D. Okai, T. Yamasaki

Effect of Magnetic Field on Crystallization of Fe-Based Metallic Glass .................... 649
Y.F. Yu, B.Z. Liu, J. Zhu, Y. Chang, M. Qi
Microstructure and Optical Properties of Fe-Doped SnO2 Nanoparticles
Synthesized by Hydrothermal Method
L.M. Fang, X.T. Zu

Volume 2

Structural Defects and Changes in Al-Pd-Fe Crystalline Approximant
J.P. Wang, W. Sun, Z. Zhang

Fabrication of Homogeneous Bulk Nanocrystalline Ni-W Alloys by an
Electroforming Process
A. Fujii, Y. Kimoto, S. Wakayama, Y. Takigawa, T. Uesugi, K. Higashi

Bulk Mechanical Alloying of Al/Fe Multilayer by Accumulative Roll-Bonding Process
T. Nakamura, H. Kitahara, J.G. Lee, N. Tsuji

Structural and Mechanical Behaviors of Partially Devitrified Ti-Based Bulk
Metallic Glass

Synthesis Behavior of La0.7Ca0.3MnO3 by Hydrothermal Method
H.S. Im, S.M. Lee, C.G. Lee, B.H. Koo, J.B. Yoon, M.H. Jung

Melting Liquid Joint Method of Ti(Cu)-Base Bulk Metallic Glassy Alloy
K.S. Son, X.M. Wang, A. Makino, A. Inoue

Y-Shaped Carbon Nanowires Obtained from Ethanol Flames and their Growth
Mechanism

Comparison between Tribological Characteristics of Al-Cu-Fe-B Quasicrystalline
and Mo Coatings
B.H. Kim, S.M. Lee

Upsetting of Ultrafine-Grained Bulk Al-Mg Alloy Consolidated by Hydrostatic
Extrusion

Glass Transition within the Cluster Variation Approximation
T. Mohri

Carbon Nanotubes Obtained by ECC Technique with Cobalt Salt as Catalyst
Precursor

Synthesis of Carbon Nanofibers by Ethanol Catalytic Combustion Technique

The Influence of Catalyst Nature on the Morphology of Multi-Directionally Grown
Carbon Nanofibers
F. Li, X.P. Zou, J. Cheng

Synthesis of Zr-Based Glassy Alloy Foams
A.K. Prasada Rao, Y.S. Oh, N.J. Kim

Magnetic and Mechanical Properties of Fe-Co-B-Si-Nb-M (M = Al, V, Mo,) Bulk
Metallic Glasses
O.J. Kwon, Y.K. Lee, J.J. Lee, Y.C. Kim, E. Fleury

Fine Crystalline Phase Dispersion in Zr-Based Bulk Metallic Glass by Laser
Irradiation
BIOMATERIALS, SMART MATERIALS AND STRUCTURES

High-Field Maxwell Stress Effect of Dielectric Actuator Based on Segmented Polyurethane .................................................................721
H.O. Lim, G.M. Bark, H. Park, H.H. Chun, N.J. Jo

Topology Optimization of Three-Dimensional Biodegradable Polymer Multi-Layer Microstructure for Implantable Drug Controlled Release ..................................................725
R.X. Yu, H.L. Chen, X.Y. Zhou

Evaluation of BAp Orientation Using Mouse Models for Osteoporosis (OPG-KO) and Osteopetrosis (op/op) ...........................................729
J.W. Lee, T. Nakano, S. Toyosawa, Y. Tabata, Y. Umakoshi

Biofunctionalization of Metal Surface by Immobilization of Poly(Ethylene Glycol) Terminated Amine ..................................................733

Microstructure and Mechanical Properties of Hot-Pressed Co-Cr-Mo Alloy Compacts ..............................................................737
Y. Sato, N. Nomura, S. Fujinuma, A. Chiba

Effect of Co-Doping Cation on Phase Stability of Zirconia Bioceramics in Hot Water ..........741
S. Yuhara, Y. Takigawa, T. Uesugi, K. Higashi

Effect of Sigma Phase in Co-29Cr-6Mo Alloy on Corrosion and Mechanical Properties ......745
S. Kuros, N. Nomura, A. Chiba

Effect of Second Phase Particles on Phase Stability of Zirconia in Hot Water ..................749
T. Shibano, Y. Takigawa, T. Uesugi, K. Higashi

Effects of Additional Elements on Structure, Mechanical Strength and Chemical Properties of Ni-Free Ti-Based Bulk Metallic Glasses for Biomaterials .............................................753
J.J. Oak, H. Kimura, A. Inoue

Effect of Thermo-Mechanical Processing on Texture and Elastic Modulus of Ti-Nb-Si Alloys for Biomedical Application ..................757
H.S. Kim, T.Y. Ra, H.J. Bang, Y.G. Yoo, W.Y. Kim

Configuration Optimization of Truss Structures Using Harmony Search Heuristic Algorithm ..................................................................761
K.S. Lee, J.K. Song

Hydroxyapatite Formation and Protein Absorption on Triethyl Phosphate Modified Titanium Surface .....................................................765
N. Wu, J. Weng, S.X. Qu, J.X. Wang, X. Lu, B. Feng

Preparation of Silicon-Containing Apatite Coating on Titanium ................................................769
T. Hashimoto, A. Obata, T. Kasuga

Ball-Like Carbon Deposits Synthesized by Catalytic Combustion .........................................................................................................773

Raman Spectroscopic Characterization for Carbon Nanofibers Produced by Using Ferric Chloride of Different Concentration as Catalyst Precursor ........................................777

Electrochemical Properties of TiN and ZrN Coated Ti-Hf Alloy ........................................................................................................781
Y.H. Jeong, H.C. Choe, S.J. Park, Y.M. Ko

AC Impedance Behaviors of Ti-Zr Binary Alloys for Biomaterials ..........785
M.Y. Oh, H.C. Choe, Y.M. Ko

Electrochemical Characteristics of Osteoblast Cultured Ti-Ta Alloy for Dental Implant .................................................................789
W.G. Kim, H.C. Choe, Y.M. Ko
Effects of Multi-Layered TiN/ZrN/Tooth-Ash Composite Coatings on the Surface Characteristics of Ti-(Nb, Zr, Ta, Hf) Dental Implant Alloys with Low Elastic Modulus ................................................................................................................................. 793
H.C. Choe, W.A. Brantley

FUEL CELLS AND HYDROGEN STORAGE MATERIALS

Study on Electrochemical Hydrogen Storage of Multi-Walled Carbon Nanotubes ............... 797
L. Xie, X.Q. Li

Nano Composite Membranes of Sulfonated Poly(2,6-Dimethyl-1,4-Phenylene Oxide)/Poly(2,6-Diphenyl-1,4-Phenylene Oxide) Copolymer and SiO2 for Fuel Cell Application ................................................................................................................. 801
Y.G. Jeong, H.S. Park, D.W. Seo, S.W. Choi, W.G. Kim

Progress on the Composite Membranes for PEM Fuel Cells .............................................. 805
H.M. Zhang

Investigation of PTFE-Reinforced Integral Multi-Layered Self-Humidifying Membranes for PEM Fuel Cells Application ................................................................. 810
Y. Zhang, H.M. Zhang

Increase of Electrolysis Cell Performance by Addition of PVDF and Graphite Powder on MEA for Regenerative Fuel Cells ........................................................... 814
H.K. Lee, S.W. Hong, S.W. Yang, W.M. Lee, J.M. Yoon

Improvement of Electrical and Thermal Properties of Epoxy Based Graphite Bipolar Plate for PEMFC ................................................................................................. 818
H.K. Lee, S.H. Chae, J.P. Shim, S.W. Yang

Hydrogen Storage Properties of Mg-Al Alloy Prepared by Super Lamination Technique .............................................................. 822

Surface Fractals and Wetting Properties of Porous Anodes Strengthened by Ni3Al for Molten Carbonate Fuel Cell ............................................................................. 826
Y.S. Kim, K.H. Moon, J.H. Lim

Effect of Ni Coating on Hydrogenation Kinetics in Pure Mg and Mg-Mg2Ni Eutectic Alloy .................................................................................................................... 830
M. Kusumoto, H. Saitoh

Synthesis and Decomposition of Pure Ca(AlH4)2 ................................................................... 834
N. Morisaku, K. Komiya, Y.Z. Li, H. Yukawa, M. Morinaga, K. Ikeda, S. Orimo

Hydrogen Solubility and Resistance to Hydrogen Embrittlement of Nb-Pd Based Alloys for Hydrogen Permeable Membrane ................................................................. 838

Development of Environmental Cell for Gas Reaction of Nano-Size Particles ...................... 842
K. Okudera, K. Hamada, T. Suda, N. Hashimoto, S. Ohnuki

Application of Open Celled Al in the Alloy Hydride System for Hydrogen Storage ............... 846
I.H. Kim, W.S. Lee, S.H. Ko, J.M. Jang, H.S. Kim

High-Pressure Synthesis of Novel Hydride in Ca-TM Systems ........................................... 850
Y. Yambe, R. Kataoka, D. Kyo, A. Kamegawa, H. Takamura, M. Okada

ECOMATERIALS AND POROUS MATERIALS

Electronic Transport Properties of Tin-Filled Cobalt Antimonides ........................................ 854
J.Y. Jung, S.C. Ur, I.H. Kim
Application of Porous Concrete to a Structural Foundation in Soft Ground

H.T. Kim, C.H. Yoo, J.S. Hwang, Y.J. Sim

Nb-NbN Cermet Film as Solar Selective Coating

C. Wang, X.K. Du, T.M. Wang

Fabrication of Magnesium Foam by Precursor Method Using Machined Chips

K. Mehara, M. Kobashi, N. Kanetake

Fabrication of Long Scale Aluminum Foam by Transfer Heat Foaming of Precursor

E. Mizutani, M. Kobashi, N. Kanetake

Optimization of Heat Treatment Parameters of Mo-Free High-Cr Cast Iron Mill Balls

S.M. Lee, B.H. Kim, J.S. Shin, B.M. Moon

ENERGETIC PARTICLES-MATERIALS INTERACTIONS AND NUCLEAR MATERIALS

Combustion Synthesis in Mn-Si-C-N Using Mn as a Surrogate for Am

W.P. Shen, C.C. Ge, L.F. Zhang, T.Y. Pan

Fabrication of Monolithic UAl2 Pellet for High-Density Nuclear Fuel


Microstructural Evolution in Cerium Dioxide Irradiated with Heavy Ions at High Temperature

T. Mihara, H. Abe, T. Iwai, T. Sonoda, E. Wakai

First-Principles Study of Structural and Electronic Property of Pyrochlore Dy2Sn2O7


Material Property of a Passive Oxide Formed on Alloy 600

D.J. Kim, H.C. Kwon, S.S. Hwang, H.P. Kim

MODELING AND SIMULATION OF MATERIALS AND PROCESSES

Modeling and Simulation of Driveline Test Bench for Automotive Chassis Component System


Numerical Simulation of Unidirectional Solidification Process of Turbine Blade Castings

J. Yu, Q.Y. Xu, B.C. Liu, J.R. Li, H.L. Yuan

Effect of Orifice Shape in Contour Crafting with Ceramic Material: A Simulation for Extrusion and Deposition Mechanism

H.K. Kwon, K.S. Kim

A New Growth Kinetics in Simulation of Dendrite Growth by Cellular Automaton Method

B.W. Shan, X. Lin, L. Wei, W.D. Huang

Numerical Simulation on Stress Fields of Lasers Brazed Fusion Welding

P. Dong, R.W. Li

Electronic State Calculation of Manganese Dioxide and Manganese-Molybdenum Oxide for Dimensionally Stable Anode


Solidification Behavior of AZ31 Magnesium Alloy Plate during HCC with Constant Velocity

C.D. Yim, B.S. You, J.E. Lee
Optimization of Preform in Forging Process Using Kriging Model ............................................................... 934

Springback Compensation Based on Finite Element for Multi-Point Forming in Shipbuilding .............................................................. 938

Application of RBF Network for Forecasting Characteristics of In-Flight Particles by Plasma Spraying ................................................................. 942
Y.Q. Gao, J.C. Fang, Z.Y. Zhao, L. Yang

Thermodynamic Analysis of the Ti-Zr-H Ternary Phase Diagram ........................................................................ 946
S. Ukita, H. Ohtani, M. Hasebe

Numerical Simulation and Experimental Research on Rolling Process of Conical Ring with Inner Steps ................................................................. 950
X.H. Han, L. Hua, J. Lan

Friction Stir Weld Modeling of Aluminum Alloys ............................................................................................................. 955
J.H. Cho, S.H. Kang, K.H. Oh, H.N. Han, S.B. Kang

Effect of Grain Boundary Characteristics on Lattice Orientations ........................................................................... 959
J.H. Cho

The Injection Molding Simulation of Lever Cam Ass’y Using High-Functional Polymer ........................................ 963
C.S. Hahn, S.H. Noh, D.O. Kim, Y.M. Ryu, B.S. Han

Hot Tearing Prediction of Aluminum Alloy in the Casting Process ........................................................................ 967
S.Y. Kwak, J.W. Baek, J.I. Kim, S.M. Yoo, J.K. Choi

Real-Time Simulation Measurement System for Transient Temperature of Impacting Droplet Based on the Virtual Instrument ................................................................. 971
L. Yang, J.C. Fang, Z.Y. Zhao, Y.Q. Gao

Recovery of Magnesium Oxide and Magnesium Hydroxide from the Waste Bittren ........................................ 975
S.W. Lee, J.H. Lim

Numerical Analysis on Flow Stress of AZ61B Magnesium Alloy during Hot Compression Simulation Testing ......................................................... 979
J. Peng, F.S. Pan, C.M. Song

Structure Stability and Electronic Structure of Semiconducting Rhenium Silicide with Doping ................................................................. 984
A.N. Qiu, L.T. Zhang, J.S. Wu

Characterization of Dynamic Globularization Behavior during Hot Working of Ti-6Al-4V Alloy ......................................................................... 988
J.T. Yeom, J.H. Kim, N.Y. Kim, N.K. Park, C.S. Lee

Prediction of Mechanical Properties and Microstructure Distribution of Normalized Large Marine Crankthrow ........................................................................ 992
M.Y. Sun, S.P. Lu, S.J. Li, D.Z. Li, Y.Y. Li

Application of Numerical Simulation Technology on the Design of Camera Shell During Die Casting Process ................................................................. 996
H. Yan, Z. Hu, T.S. Suan

Finite Element Analysis of Cable Products for High Impaction and Fatigue Resistance with Nonlinear Material Models ........................................................................ 1000
H.C. Yang, Y.M. Kwon, T.S. Kim, W.B. Kim

The Effect of the Heat Flux and Temperature on Thermal Strain of Aluminum Alloy Casting Mold ........................................................................... 1004
H.S. Yoon, Y.S. Kim, Y.K. Oh
MATERIALS CHARACTERIZATION AND EVALUATION

On the Microstructure and Properties of Tungsten Heavy Alloys ........................................... 1008
F. Akhtar

Physical Property Evaluation for High Purity Niobium and Tantalum Rare Metals .......... 1012
I.H. Kim, J.I. Lee, G.S. Choi, J.S. Kim

High Temperature Corrosion Behaviors of Carbon Steels by A Pressurized Water .......... 1016

Pulse Electroplating of Ni-P-Nano TiO2 and ZrO2 for Steam Generator Tube Repair ...... 1020

Long Term Degradation Behavior of Impact Properties of Hydraulic Forged Superalloy 718 during Exposure at High Temperature ................................................................. 1024
Y.S. Song, M.R. Lee, J.T. Kim

Natural Photo-Oxidation Degradation of Polypropylene Containing Nucleating Agent .... 1028
J.F. Li, R. Yang, J. Yu

Electric Field-Induced Structural Modulation of Epitaxial PbZrTiO3 Ferroelectric Thin Films as Studied Using X-Ray Microdiffraction .............................................................. 1032
C.W. Bark, S.W. Ryu, Y.M. Koo, H.M. Jang

Photocatalytic Activity of TiO2 Modified by Heteropolytungstate Acid ......................... 1036

Application of a Temperature-Compensating FBG Sensor to Strain Measurement .......... 1041
D.W. Jung, I.B. Kwon, N.S. Choi

Precipitation Behavior of MN(M=V,Nb) Phase in the 7Cr-1.5Mo Ferritic Heat Resistant Steels ................................................................. 1045
D.S. Bae, W.S. Jung

Dislocations in Phase-Change Ge2Sb2Te5 Alloy ................................................................. 1049
W. Zhang, S.A. Song, H.S. Jeong, J.G. Kim, Y.Y. Kim

Explosion Bulge Test of High Strength Low Alloy Steel PFS-700 in Air and Underwater ...... 1053
T.W. Park

Pb(Zr0.95Ti0.05)O3 Powders Synthesized by PEG Modified Pechini Method: Characterization and Sintering Behavior ................................................................. 1057

Nanostructural Characterization of Hydrothermally Stable α-Alumina-Based Composite Materials by Transmission Electron Microscopy ............................................................. 1061
S. Fujisaki, M.H. Zahir, Y.H. Ikuhara, Y. Iwamoto, K. Kuroda

Adhesion Promoter and Anti-Sticking Layer Effects on Adhesion Properties Using Symmetric AFM Probe ................................................................. 1065

A Study of Mechanical Behavior of Au Films by Visual Image Tracing System .......... 1069
S.J. Lee, S.M. Hyun, S.W. Han, H.J. Lee, J.H. Kim, Y.J. Kim

Effect of Cyclic Strain Rate on Environmental Fatigue Behaviors of SA508 Gr.1a Low Alloy Steel in 310 C Deoxygenated Water ................................................................. 1073

Effect of Processing Conditions of Dolomite on the Antiviral Activity ......................... 1077
K. Motoike, S. Hirano, H. Yamana, T. Onda, T. Maeda, M. Hayakawa

Fatigue Crack Growth Behaviors of AISI Type 347 Nuclear Piping Material ................. 1081
J.H. Yoon, J.M. Lee, M.W. Kim, B.S. Lee
Hydrazine-Dependency of Low-Alloy Steel Flow-Accelerated Corrosion in a Deoxygenated Solution at 250°C

K.W. Sung, H.I. Seo, U.C. Kim, W.Y. Maeng

Carbon Nanostructures by Using FeCl3 as Catalyst Precursor

H.D. Zhang, X.P. Zou, J. Cheng, F. Li, P.F. Ren

The Effect of Alloy Elements on Cyclic Fatigue Behavior of Bucket Candidate Materials for USC Power Plants


Evaluation of Corrosion Fatigue Crack Propagation Characteristics of TMCP Steel in Synthetic Seawater under Cathodic Protection

W.B. Kim, J.K. Paik

Application of Continuous Indentation Technique in Thermal Power Plant

D.S. Gil, Y.S. Ahn, S.K. Park

Micro-Scratch Analysis on Adhesion between Thin Films and PES Substrate

S.H. Lee, B.H. Seo, J.H. Seo

Microstructure-Based Computational Simulation and Experimental Measurement of Stresses in Spheroidized Steels

L. Che, M. Gotoh, Y. Horimoto, Y. Hirose

Assessment of Behaviour Characteristics for Geobag Wall System Using Recycled Waste Concrete

J.M. Kim, D.Y. Lee, S.Y. Oh

Nanoindentation Characterization of Mechanical Properties of Ferrite and Austenite in Duplex Stainless Steel


Characterization of Solid Synthetic Fuel Derived from Physic Nut and Glycerol Waste Using Single Particle Reactivity Analysis

D. Atong, V. Sricharoenchaikul

Characteristics of Residual Stress in P92 Steel Welds

K.B. Yoo, H.S. Choi, E.H. Kim, J.H. Kim

AE Evaluation of Relationship between AE Signals and Fracture Mechanisms for the Weldment of Pressure Vessel Steel

E.G. Na, S.K. Koh, D.W. Lee

Measurement of Residual Stress in Thin-Sized Steel Wires by Using Focused Ion Beam and Digital Image Correlation Method

Y.S. Yang, J.G. Bae, C.G. Park

Thermal Crack Propagation Behavior on Nitrided H13 Hot Work Die Steel


New Compositionally-Ordered GeSi Nano Dots Fabricated with 1250 keV Electrons

S.A. Song, L.I. Fedina, H.S. Baik, Y.J. Kim, Y.M. Kim, A.K. Gutakovskii, A.V. Latyshev

High-Resolution Dynamic Analysis of the Phase Transformation in Ge2Sb2Te5 Alloy

S.A. Song, W. Zhang, H.S. Jeong, J.G. Kim, Y.J. Kim

Terrace Formation of SrTiO3 (111) Substrates for Epitaxial Thin Film Growth with Various Etching Conditions

J.H. Suh, Y.S. Lee, C.G. Park

Microstructures and Growth Characteristics of Self-Assembled InAs/GaAs Quantum Dots Investigated by Transmission Electron Microscopy


DAMAGE EVALUATION AND LIFE ASSESSMENT

Distribution Characteristics of Stress Corrosion Cracks in a Retired Steam Generator

S.S. Hwang, M.K. Jung, H.P. Kim, J.S. Kim
A Study on the Evaluation of Characteristics and Useful Life Prediction of Rubber Component for Elevator Cabin ................................................................. 116
C.S. Woo, H.S. Park

The Effect of Strain Rate on the Fracture Modes of Mg Alloys ........................................ 117
G.F. Quan, D.C. Zhu, F. Yan, Z.M. Liu

The Evaluation of the Fatigue Life in Arc Welded Parts of SAPH45 Steels Using an Acoustic Emission Method ................................................................. 117
J.K. Kim, C.S. Jang, C.S. Kim

Development of a Fretting Wear Evaluation Method in the Nuclear Fuel Fretting by Using a Wear Scar Shape .............................................................. 118
Y.H. Lee, H.K. Kim

Design of Electrical Panels of Naval Vessels for Improved Fatigue, Shock and Vibration Performance ....................................................................................... 118

A New Method for Nondestructive Evaluation of Mechanical Properties Using Instrumented Indentation Technique ......................................................... 119
K.W. Lee, K.H. Kim, K.H. Kim, D.I. Kwon

Study on Assessing Safety of Materials with Defect by Thermal Image Camera ............... 119
K.S. Song

Mechanical Properties of Railway Wheel for Standard Reinforcement ............................ 119

Fatigue Life Evaluation of Pipe Welds in Power Plant Using Advanced Nondestructive Methods ......................................................................................... 120
S.G. Lee, K.B. Yoo, S.K. Park, D.G. Park

Experimental Study of Interference Factors and Finite Element Simulation on Oil-Gas Pipeline Magnetic Flux Leakage Density ................................................. 120
J. Qi

Thermophysical Behavior of Micro Void in ?-Via of Microelectronic Substrate during Reliability Test ...................................................................................... 121
H.S. Lee, H.J. Lee, S.C. Lim, H.C. Kwon

Damage Index Comparison for a Composite Stiffened Panel Using Lamb Wave ............... 121
C.Y. Park

Crack Initiation Factor by Impact Fretting Wear at INCONEL Alloy for Steam Generator Tube in Nuclear Power Plants ......................................................... 121

PHASE TRANSFORMATION AND THEIR APPLICATIONS

Spherulitic Structures in Bisphenol-A Polycarbonate Crystallized at High Pressure ....... 122
J. Lu, I.K. Oh, R. Huang, X.L. Wang

HRTEM Observation of ?-Phase in Cu-Zn Alloy Annealed at Lower Temperature ........ 122

Deformation and Corrosion Behavior of a High Purity Manganese Free AZ31 Magnesium Alloy ......................................................................................... 123
E. Kakutani, M. Jotoku, A. Yamamoto, H. Tsubakino

Effect of Cold-Rolling on Precipitation Phenomena in 316L Austenitic Stainless Steel ................................................................. 123

Femtosecond Laser Synthesis of High-Pressure Phases of Si ....................................... 123
α Phase Forming on Surface Layer and Precipitating inside of a Ti-Mo Based
Alloy Annealed in Air .......................................................... 1243
J. Song, C.Y. Xie

Strain Aging of Heavily Drawn Pearlitic Steel Wires .................. 1247
N. Min, Y.J. Gu, X.J. Jin

Phase Changes in AISI 436L Ferritic Stainless Steel after Nitrogen Permeation
Heat Treatment ........................................................................ 1251

The Effects of Si on the Nucleation Kinetics of Ferrite in Dual Phase Steels .......... 1255
S.H. Lee, K.J. Lee

Transmission Electron Microscopy (TEM) Observations of Phase-Separations of
Gamma-Prime Precipitates in Ni-Al-Fe and Ni-Si-Fe Ternary Alloys .................................. 1259
M. Senga, H. Kumagai, T. Moritani, M. Doi

INTERFACES AND SURFACE ENGINEERING

ECCI Observation of Dislocation Structure Formed around an Intergranular
Fatigue Crack in Copper .......................................................... 1263
Y. Kaneko, M. Ishikawa, S. Hashimoto

Microstructures of Ni/Cu and Ni-Co/Cu Multilayers Produced by
Electrodeposition Method ......................................................... 1267
Y. Kaneko, T. Sanda, S. Hashimoto

Friction Behavior of HVOF Thermal Spray Coating of Micron Size WC-Co Powder .......... 1271
Chun, S.Y. Hwang

Microstructures and Cavitation Erosion Resistance of Ni60/TiC Plasma-Clad
Coating .................................................................................. 1275
Y.P. Wu, P.H. Lin, Z.H. Wang, M. Cao, J.H. Hu

Grain Boundary Character Distributions of Strain-Annealed 304 Stainless Steel .......... 1280
X.Y. Fang, X. Zhang, H. Guo, W.G. Wang, B.X. Zhou

First Principles Study on the Adsorption of Alkali Metal on C(100)( 2×1) ...................... 1286
J.L. Nie, H.Y. Xiao, X.T. Zu, F. Gao

Some Observations Regarding Erosion-Corrosion Performance of HVOF-Sprayed
Cr3C2-NiCr and Cr3C2- NiCr-(25) WC-Co Coatings in Actual Boiler Environment .......... 1290
M. Kaur, H. Singh, S. Prakash

Joining of Aluminum Foam/Aluminum Metal by Spark Plasma Sintering Process .......... 1294

The Evolution of Surface Damage in Press-Fitted Shaft According to the Bending
Stress ..................................................................................... 1298
D.H. Lee, S.J. Kwon, J.B. Choi, Y.J. Kim

Pack Boronizing of a Co-Cr-W-C Alloy ........................................ 1302
M.H. Yeo, S.J. Kim, S.H. Bang, D.Y. Bae, K.H. Han

Study on the Properties of Chromium Matrix Composite Plated with Nanosized
Diamond Powders ................................................................. 1306
V.H. Nguyen, T.N. Hoang, S.C. Kwon, M. Kim, J.Y. Lee

Author Index