

Table of Contents

Preface and Committees

Chapter 1: Aerospace Structural Metallic Materials/Ti Alloys

Consolidation of Ti Powder by a Compression Rotation Shearing System at Room Temperature - Effect of Pivot Rotation Speed on Consolidation

N. Nakayama, S. Kato, H. Takeishi and H. Miki 3

Fatigue Crack Propagation Rates and Local Texture Relationship in 2099-T83 Al-Li Alloy

F.A.T. Goma, D. Larouche, C. Blais, R. Gauvin, J. Boselli, A. Bois-Brochu and M. Brochu 9

Chapter 2: Aluminium Alloys

Influence of Mixing Parameters on the Density and Compaction Behavior of Carbon Anodes Used in Aluminum Production

K. Azari, H. Alamdari, H. Ammar, M. Fafard, A. Adams and D. Ziegler 17

Recovery Behaviour at the Inter-Alloy Region of a Cold Rolled Clad Aluminum Alloy

D. Bag, B.J. Diak and H.O. Jin 23

Al-Li Alloy 2099-T83 Extrusions: Static Mechanical Properties, Microstructure and Texture

A. Bois-Brochu, F.A.T. Goma, C. Blais, D. Larouche, R. Gauvin and J. Boselli 29

Effect of Grain Refinement on Residual Strain and Hot Tearing in B206 Aluminum Alloy

F. D'Elia, C. Ravindran and D. Sediako 35

Microstructure Evolution in an Al-Cu-Mg-Ag Alloy during ECAP at 300°C

M. Gazizov and R. Kaibyshev 41

Analysis on Behavior of Hydrogen in Ion-Plated Pure Aluminum

H. Iwashashi, G. Itoh, K. Saitoh and T. Shikagawa 47

The Ca-Rich Corner of the Al-Ca-Zn System

S. Konica, Y.N. Zhang, D. Kevorkov and M. Medraj 51

Rheo-Extrusion of Hypereutectic Al-14.8Si-4.5Cu-1.1Mg Alloy

N. Mori, Y. Uetani, M. Dohi, K. Matsuda and S. Ikeno 57

Aging Behavior of Al-Mg-Ge Alloys with Different Mg₂Ge Contents

T. Murakami, K. Matsuda, T. Nagai, J. Nakamura, T. Kawabata and S. Ikeno 63

The Crystal Structure of the β'-Phase Including Ag in Al-Mg-Si-Ag Alloy

J. Nakamura, K. Matsuda, T. Sato, C.D. Marioara, S.J. Andersen, R. Holmestad and S. Ikeno 67

Investigation of the Substructure Evolution within Grains of Different Orientations during Recrystallization in a Commercial Al Alloy

O. Sukhopar, M. Kuzmina and G. Gottstein 71

Microstructural Control of a Zn-Al Eutectoid Alloy by Hot-Rolling

N.T. Loc, G. Itoh, Y. Yi, Y. Motohashi and T. Sakuma 77

TEM Observation of Cu and Ag Addition Al-Mg-Si Alloys

M. Tokuda, K. Matsuda, T. Nagai, J. Nakamura, T. Kawabata and S. Ikeno 81

Behavior of Hydrogen in Electrolytically Charged Aluminum

T. Tsutsumi, T. Watakabe and G. Itoh 84

Variation of Aging Behaviour for TM-Addition Al-Mg-Si Alloys

S.M. Wang, K. Matsuda, T. Kawabata and S. Ikeno 88

Behavior of Hydrogen Invasion in Aluminum Alloys from Different Environments

T. Watakabe, G. Itoh and Y. Hatano 92

Chapter 3: Biomaterials

Silk Fibroin: A Promising Biomaterial

M. Agostini de Moraes, M.F. Silva, R.F. Weska and M.M. Beppu 99

Study of Cellular Adhesion by Means of Micropillar Surface Topologies	105
F. Boccafoschi, M. Rasponi, C. Mosca, E. Bocchi and S. Vesentini	
The Role of Collagen Type I on Hematopoietic and Mesenchymal Stem Cells Expansion and Differentiation	111
B. Çelebi, N. Pineault and D. Mantovani	
On the Interface between Plasma Fluorocarbon Films and 316L Stainless Steel Substrates for Advanced Coated Stents	117
M. Cloutier, S. Turgeon, P. Chevallier and D. Mantovani	
Monitoring Compliance and Elastic Modulus in a Bioreactor for Optimal Control of Vascular Tissue Growth	123
F. Couet, S. Meghezi, L. Levesque and D. Mantovani	
Rheological Studies of an Injectable Radiopaque Hydrogel for Embolization of Abdominal Aortic Aneurysms	129
A. Fatimi, J.M. Coutu, G. Cloutier and S. Lerouge	
Fabrication of Artificial Intervertebral Spacer by Functionally Graded Zirconia	136
T. Fujii and T. Asaoka	
Fabrication and Characterization of Porous Implant Products with Aligned Pores by EBM Method for Biomedical Application	142
N. Ikeo, T. Ishimoto, H. Fukuda and T. Nakano	
Ultrasonic Setup for Testing Hydrogels: Preliminary Experiments on Collagen Gels	146
R.M. Irastorza, M. Achilli, M. Amadei, E. Blangino, B. Drouin and D. Mantovani	
The Effect of Dynamical Strain on the Maturation of Collagen-Based Cell-Containing Scaffolds for Vascular Tissue Engineering	152
L. Levesque and D. Mantovani	
Why Mechanical Properties of Collagen Scaffolds Should Be Tested in a Pseudo-Physiological Environment?	158
S. Meghezi, P. Chevallier and D. Mantovani	
Polysaccharides Grafting on Fluorocarbon Films Deposited by Plasma on 316L Stainless Steel for Long Term Stable Stent	164
E. Michel, P. Chevallier, A. Barrère, D. Letourneau and D. Mantovani	
Synthesis and Characterisation of New Superelastic and Low Elastic Modulus Ti-Nb-X Alloys for Biomedical Application	170
A. Ramarolahy, P. Castany, T. Gloriant, F. Prima, P. Laheurte, A. Eberhardt and E. Patoor	
Development of a Targeted Drug Delivery System: Monoclonal Antibodies Adsorption onto Bonelike Hydroxyapatite Nanocrystal Surface	175
E.M. Varoni, M. Iafisco, L. Rimondini and M. Prat	
Thermal Treatment Effects on Biopolymer Multilayered Thin Films	181
F.C. Vasconcellos, R.A. Bataglioli, E.B. Flores and M.M. Beppu	
Improvement of Collagen Hydrogel Scaffolds Properties by the Addition of Konjac Glucomannan	187
R.F. Weska, M. Achilli, M.M. Beppu and D. Mantovani	

Chapter 4: Composites

Investigating the Potential of TiB₂-Based Composites with Ti and Fe Additives as Wettable Cathode	195
H. Heidari, H. Alamdar, D. Dubé and R. Schulz	
Microstructure and Superconductive Property of MgB₂/Al Composite Materials	201
M. Mizutani, D. Tokai, K. Matsuda, K. Nishimura, T. Kawabata, Y. Hishinuma and S. Aoyama	
Microstructure of the New Route Wire Fabrication of V₃Ga Compound Superconducting Wire Using High Ga Content Cu-Ga/V Precursor Composite Material	205
S. Murakami, M. Mizutani, K. Matsuda, K. Nishimura, T. Kawabata and Y. Hishinuma	
Fabrication of W-12wt%Cu Composites by Powder Metallurgy Method: Activated Sintering	209
J. Samei, D.E. Green and V. Stoilov	
Fabrication and Reaction Mechanism of <i>In Situ</i> TiC and TiB₂ Reinforced Mg Matrix Composites	215
M. Shamekh, M. Pugh and M. Medraj	

Chapter 5: Energy Materials

Microstructure Evolution in a P911 Steel under Creep Conditions

A. Kipelova, A. Belyakov and R. Kaibyshev

223

Chapter 6: Fracture and Mechanical Behaviour

Role of Delamination Fracture for Enhanced Impact Toughness in 0.05 %P Doped High Strength Steel with Ultrafine Elongated Grain Structure

M. Jafari, Y. Kimura and K. Tsuzaki

231

Effect of Die Temperature on Tensile Property of Rheocast Phosphor Bronze

T. Kose, Y. Uetani, K. Nakajima, K. Matsuda and S. Ikeno

237

The Brittle-to-Ductile Transition Behaviour in Fe-Al Single Crystalline Alloys

K. Maeno, M. Tanaka, K. Higashida, M. Fujikura and K. Ushioda

243

Study of Self-Compacting Fly Ash Concrete Using Silica Fume Admixture

P. Parasivamurthy, V. Jawali and P.A. Venkatakrisna

249

Chapter 7: Friction Stir Processing

Microstructure, Mechanical and Corrosion Behaviour of AN AA2024-T3 FSW Joint

E. Bousquet, A. Poulon-Quintin, O. Devos, M. Puiggali and M. Touzet

257

Improving Friction Stir Welding between Copper and 304L Stainless Steel

Y. Imani, M.K.B. Givi and M. Guillot

263

Dissimilar Friction Stir Welding of 2014 to 6061 Aluminum Alloys

C. Jonckheere, B. de Meester, A. Denquin and A. Simar

269

Microstructure Characterization of Friction Stir Spot Welded TRIP Steel

T.C. Lomholt, Y. Adachi, J. Peterson, R. Steel, K. Pantleon and M.A.J. Somers

275

Microstructure Control and Mechanical Properties of 7075 Aluminum Alloy by Means of Multi-Pass Friction Stir Processing

Y. Matsuda, G. Itoh and Y. Motohashi

281

The Effects of Heat Treatment and Cold Working on the Microstructure of Aluminum Alloys Welded by Friction Stir Welding (FSW) Technique

M. Mohammadtaberhi, M. Haddad-Sabzevar and M. Mazinani

287

Investigation of Friction Stir Welding of Stainless Steel Using a Stop-Action-Technique

C. Pfeiffer, T. Weinberger, H. Schröttner, S. Mitsche and N. Enzinger

293

Influence of Post Weld Heat Treatment on Microstructure and Mechanical Properties of Friction Stir-Welded 2014Al-T6 Alloy

Z. Zhang, B.L. Xiao and Z.Y. Ma

299

Chapter 8: Fuel Cells & Hydrogen Storage Technologies

Catalytic Properties of TiNi Foils for Methanol Decomposition

J. Sakurai, Y. Xu, M. Demura, T. Hirano and R. Tamura

307

Chapter 9: Intermetallics

Strengthening by Addition of Refractory Elements to Ni₃(Si,Ti) Intermetallic Alloys

D. Imajo, Y. Kaneno and T. Takasugi

315

Ductilization of a Ni₃(Si,Ti) Intermetallic Alloy by Addition of Interstitial Type Elements

H. Kosaka, Y. Kaneno and T. Takasugi

321

Chapter 10: Magnesium Alloys

Discontinuous and Continuous Precipitation during Aging in Mg-Al System Alloys	329
Y. Ebata, M. Furui, S. Ikeno, K. Sakakibara and S. Saikawa	
HRTEM Observation of the Age Hardening Precipitates in Mg-Gd-Sc Alloys, with Different Gd Concentrations	335
T. Fujii, K. Matsuda, T. Kawabata and S. Ikeno	
Microstructure Observation of AM60 Magnesium Alloy Solidified by Rapidly Quench	339
T. Maekawa, M. Furui, S. Ikeno, T. Yamaguchi and S. Saikawa	
The Development of Novel Textures in Rare Earth Element Containing Magnesium Alloys	343
M. Majkut, B.J. Diak and L.W.F. Mackenzie	
HRTEM Observation of Early Stage of Precipitation in Mg-Gd-Y Alloys	350
D. Nakagawa, T. Kawabata, K. Matsuda and S. Ikeno	
Effect of Zn Content on Aging Behavior of Binary Mg-Zn Alloys	354
R. Nakanishi, T. Kawabata, K. Matsuda and S. Ikeno	
Effect of Zn Contents on Microstructure in AZ-Series Magnesium Alloys	358
Y. Narukawa, K. Watanabe, K. Matsuda, T. Kawabata and S. Ikeno	
Evolution of as-Cast Microstructure of Mg-Al Alloys with Solute Content and Cooling Rate	362
M. Paliwal, D.H. Kang, E. Essadiqi and I.H. Jung	
Electrochemical Behavior of Mg-6mass%Al Alloy Corroded in Na₂SO₄ and NaCl Solutions	368
S. Saito, S. Sunada, M. Furui, S. Ikeno and S. Saikawa	
Effect of Grain Size on Microstructure and Aging Behavior in AM60 Magnesium Alloy	373
H. Takano, M. Furui, S. Ikeno, T. Yamaguchi and S. Saikawa	
Effect of Al and Mn Contents on Microstructure in AM-Series Magnesium Alloys	379
T. Tsuchiya, K. Watanabe, K. Matsuda, T. Kawabata, K. Sakakibara, T. Yamaguchi, S. Saikawa and S. Ikeno	
Crystallographic Orientation Relationship between Discontinuous Precipitates and the Matrix in AM-Series Alloys	383
K. Watanabe, K. Matsuda, T. Kawabata and S. Ikeno	
Morphological and Crystallographic Characterizations of the Ca-Mg-Zn Intermetallics Appearing in Ternary Diffusion Couples	387
Y.N. Zhang, D. Kevorkov, F. Bridier and M. Medraj	

Chapter 11: Modelling & Simulation

Effect of Dimensional Variation on Induction Process Parameters Using 2D Simulation	395
N. Barka, P. Bocher, J. Brousseau and P. Arkinson	
Numerical Simulation of Solidification Behavior and Grain Structure for Multi-Crystalline Silicon Casting and its Experimental Verification	401
J.Y. Liu, W.S. Hwang, J.W. Huang and Y.W. Chang	
Simulation of Phase Transformation by Analysis of First Derivative of Dilatation Using Avrami Equation during Continuous Cooling in Low Carbon Steels	407
B.J. Park, J.M. Choi and K.J. Lee	
Influence of Microstructural Inhomogenities on Internal Stress and Strain Distributions during Creep	411
C. Pein, B. Sonderegger and C. Sommitsch	
The Influence of Alloying Elements on Grain Boundary and Bulk Cohesion in Aluminum Alloys: <i>Ab Initio</i> Study	417
V.I. Razumovskiy, I.M. Razumovskii, A.V. Ruban, V.N. Butrim and Y.K. Vekilov	
Effects of Minor Elements X(X=Mo, Ni, Ti) on Asymptotic Behavior along Peak Top of the Major Elenet in Fe-Cr Type Alloys	423
N. Takemoto and Y. Saito	
On the Onset of Dynamic Recrystallization in Steels	431
G. Varela-Castro, J.M. Cabrera and J.M. Prado	
Study of Micro Droplet Impingement Process of Molten Lead-Free Solder by Inkjet Printing Process	437
C.H. Wu, H.L. Lin and W.S. Hwang	
Multi-Pass Simulation of Heavy Plate Rolling Including Intermediate Forced Cooling	443
B. Xiao, E.J. Palmiere, A.A. Howe and H.C. Carey	

Effect of Mo and Ni on Phase Separation in Fe-Cr-Mo-Ni Quaternary Alloys	449
L.L. Yang and Y. Saito	
Grain Boundary Embrittlement of Fe Induced by P Segregation: First-Principles Tensile Tests	449
M. Yuasa and M. Mabuchi	
FE Simulation of Metal Orthogonal Cutting Processes Based on 3D Adaptive Remeshing Procedure	455
J. Zhang, A. Cherouat and H. Borouchaki	
	461

Chapter 12: Nanostructured Materials

Surface Modification and Functionalization of Oxide Nanoparticles for Superhydrophobic Applications	469
J.D. Brassard, D.K. Sarkar and J. Perron	
Microstructural and Mechanical Characterization of Multilayered Iron Electrodeposits	474
C. Chan, J.L. McCrea, G. Palumbo and U. Erb	
Temperature Changes during Deformation of Polycrystalline and Nanocrystalline Nickel	480
T. Chan, D. Backman, R. Bos, T. Sears, I. Brooks and U. Erb	
Highly Sensitive Pure and Pd-Doped LaFeO₃ Nanocrystalline Perovskite-Based Sensor Prepared by High Energy Ball Milling	486
M. Ghasdi and H. Alamdari	
Synthesis and Characterization of Organic-Inorganic Layered Perovskite Compounds Using Fullerene Derivatives	492
A. Hamaguchi, M. Yoshizawa-Fujita, Y. Takeoka and M. Rikukawa	
Preparation of Nanostructured Superhydrophobic Copper and Aluminum Surfaces	497
Y. Huang, D.K. Sarkar and X.-. Chen	
Synthesis and Characterization of Polythiophenes Having Phosphonate Ester Groups	502
M. Katagiri, M. Yoshizawa-Fujita, Y. Takeoka and M. Rikukawa	
Direct Patterning by Inkjet Printing 3-Mercaptopropionic Capped Nano Silver Suspension	508
Y.F. Liu, W.S. Hwang, Y.F. Pai and M.H. Tsai	
Surface Modification of Al Components Using Spark Plasma Sintering	514
J. Milligan and M. Brochu	
Structure and Magnetic Properties of Mn-Zn Ferrite Synthesized by Glycine-Nitrate Auto-Combustion Process	520
G.R. Mirshekari, S.S. Daee, H. Mohseni, S. Torkian, M. Ghasemi, M. Ameriannejad, M. Hoseinizade, M. Pirnia, D. Pourjafar, M. Pourmahdavi and K. Gheisari	
Corrosion Behaviour of Nanocrystalline Zn-Ni and Zn-Ni-Co Electrodeposits	526
L. Monaco, J.L. McCrea, G. Palumbo and U. Erb	
Crystallographic Features of the A-Type and CE-Type Antiferromagnetic States in the Simple-Perovskite Manganite System Sr_{1-x}Nd_xMnO₃	532
Y. Onezawa, Y. Inoue, M. Arao and Y. Koyama	
Fabrication of Organic-Inorganic Nano-Hybrid Materials Containing Oligothiophene Derivatives	538
M. Sato, M. Yoshizawa-Fujita, Y. Takeoka and M. Rikukawa	
Disclosing the Mechanical Properties of Green Calcium-Silicate-Hydrates by Statistical Nanoindentation Techniques	544
L. Sorelli, D. Vallée, A.R. Alizadeh, J. Beaudoin and N. Randall	
Strain Hardening in Polycrystalline and Nanocrystalline Nickel	550
B.T.F. Tang, U. Erb and I. Brooks	
Presence of the Ferroelectric Monoclinic State in the Mixed Ferroelectric System Ba(Ti_{1-x}Zr_x)O₃	555
H. Tsukasaki and Y. Koyama	
Thermal Conductivity and Electrical Resistivity in Polycrystalline and Nanocrystalline Nickel	561
S. Wang, I. Brooks, J.L. McCrea, G. Palumbo, G. Cingara and U. Erb	

Chapter 13: Neutron Scattering & X-Rays Studies of Advanced Materials

Neutron Diffraction Investigations of a CuAlBe Shape Memory Alloy	
M. Dubois, M.H. Mathon, V. Klosek, G. Andre and A. Lodini	569
Evaluation of Residual Stress in SPR Joint by Neutron Diffraction	
R. Haque, J.H. Beynon, O. Kirstein, Y.C. Wong and Y. Durandet	575
Identification of Iron Rusts on Rail by X-Ray Diffraction and Vibrational Analysis	
Y. Sone, J. Suzumura, N. Kamura and T. Sasaki	581
HRTEM Observation of Alpha-Phase in Al Added 60/40 Cu-Zn Alloy	
A. Maeda, K. Matsuda, J. Nakamura, T. Kawabata, S. Ikeno and Y. Uetani	586
Nondestructive Structure Test of Cam-Shaft Using both Eddy Current and X-Rays	
O. Yaguchi, Y. Okada and T. Sasaki	590

Chapter 14: Severe Plastic Deformation

Simulation of Grain Growth of Materials Produced by Severe Plastic Deformation	
Y. Mizuno, K. Okushiro and Y. Saito	597
Influence of HPT or Rolling on Age-Hardening in Al-Mg-Si Alloys	
T. Nagai, K. Matsuda, J. Nakamura, S. Ikeno, T. Kawabata, D. Akama, Z. Horita and H. Shoichi	603
Submicrocystalline Structures and Tensile Behaviour of Stainless Steels Subjected to Large Strain Deformation and Subsequent Annealing	
I. Shakhova, A. Belyakov, R. Kaibyshev, Y. Kimura and K. Tsuzaki	607

Chapter 15: Smart/Intelligent Materials & Processes

Functional Properties of Nanostructured Ti-Ni SMA Produced by a Combination of Cold, Warm Rolling and Annealing	
Y. Facchinello, V. Brailovski, T. Georges and S. Prokoshkin	615
Debonding Characterization of SMA/Polymer Morphing Structures	
C. Fischer, P. Terriault and V. Brailovski	621
Design of Active Bias Sma Actuators for Morphing Wing Applications	
T. Georges, V. Brailovski and P. Terriault	627
Characterization of Piezo Fiber-Based Sensors Responses in Multifunctional Composites	
M. Mehdizadeh, S. John, C.H. Wang, V. Verijenko and P. Callus	633
Cold Workability, Mechanical Properties, Pseudoelastic and Shape Memory Response of Silver Added Ti-5Cr Alloys	
A. Wadood, T. Inamura, H. Hosoda and S. Miyazaki	639
Martensite Variant Reorientation of NiMnGa/Silicone Composites Containing Polystyrene Foam Particles	
Y. Watanabe, M. Okuno, Y. Shimizu, H. Kanetaka, T. Inamura and H. Hosoda	645

Chapter 16: Steels

Influence of the Hot Rolling Process on the Mechanical Behaviour of Martensitic Steel	
M. Asadi and H. Palkowski	653
Very Hard Synchrotron X-Ray Radiation as an Advanced Characterization Method Applied to Advanced High-Strength Steels	
D. Carmele, T. Rieger, K. Herrmann, S. Meyer, T. Lippmann, A. Stark, W. Bleck and U. Klemradt	660
Deformation Induced Pearlite Transformation and Spheroidization: Effect of Alloying Additions	
M. Caruso, H. Verboomen and S. Godet	666
Microstructure and Deformation Behavior of a Hot Forged 9%Cr Creep Resistant Steel	
I. Fedorova, Z. Yanushkevich, A. Belyakov and R. Kaibyshev	672

Effect of Microstructure on Formation of Ductile Fracture Surface in Steel Plate	678
T. Fukahori, S. Suzuki, N. Yamada, M. Aramaki and O. Furukimi	
Microstructure Characterization of White Layer Formed by Hard Turning and Wire Electric Discharge Machining in High Carbon Steel (AISI 52100)	684
S.B. Hosseini, U. Klement and J. Kaminski	
Precipitation of Si and its Influence on Mechanical Properties of Type 441 Stainless Steel	690
T.J. Juuti, L.P. Karjalainen and E.P. Heikkilä	
Effects of Hot-Forging Process on Combination of Strength and Toughness in Ultra High-Strength TRIP-Aided Martensitic Steels	696
J. Kobayashi, K.I. Sugimoto and G. Arai	
Carbon Distribution and the Influence on the Tempering Behaviour in a Hot-Work Tool Steel Aisi H11	702
C. Lerchbacher, S. Zinner and H. Leitner	
Systematic Approach to Clarify the Mechanism of Dynamic Transformation in Fe-6Ni-0.1C Alloy	707
N. Park, A. Shibata and N. Tsuji	
'Quenching and Partitioning' - An <i>In Situ</i> Approach to Characterize the Process Kinetics and the Final Microstructure of TRIP-Assisted Steel	713
T. Rieger, K. Herrmann, D. Carmele, S. Meyer, T. Lippmann, A. Stark, W. Bleck and U. Klemmradt	
Evolution of Microstructure and Mechanical Properties during Annealing of Cold Rolled Fe-24Mn-3Al-2Si-1Ni-0.06C Twip Steel	719
A.A. Saleh, A. Gazder, D.B. Santos and E.V. Pereloma	
Topological Analysis of Martensite Morphology in Dual-Phase Steels	725
N. Sato, M. Ojima, S. Morooka, Y. Tomota and Y. Adachi	
Structural Changes in a 304-Type Austenitic Stainless Steel Processed by Multiple Hot Rolling	730
Z. Yanushkevich, A. Belyakov and R. Kaibyshev	
Bubble Structures, Fishscaling Resistance and Adhesion of Vitreous Enamel to Low Carbon Steel	736
A.W. Zhang, S.H. Jiao, Z.Y. Jiang and D.B. Wei	
Investigation on Properties of Bentonite Type in Cold Bonded Pelletization of Flue Dust	743
G.J. Chen, W.S. Hwang, S.H. Liu and J.M. Chou	

Chapter 17: Superalloys

INCONEL 718 Recrystallization in the Delta Supersolvus Domain	751
J. de Jaeger, D. Solas, T. Baudin, O. Fandeur, J.H. Schmitt and C. Rey	
Microstructural Evolution of Compacted Graphite Iron under Thermo-Mechanical Fatigue Conditions	757
S. Ghodrat, M. Janssen, R.H. Petrov, L.A.I. Kestens and J. Sietsma	
Interparticle Liquid Film Formation during Spark Plasma Sintering of Inconel 718 Superalloy	763
D. Levasseur and M. Brochu	
Effect of Electric Field Treatment on Vacancy of Inconel 718 Superalloy at 1073 K	769
Y. Wang, L. Wang, X.Y. Zhang, Y.L. Li, Y. Liu and Y.S. Chao	

Chapter 18: Surface Engineering/Coatings

Micropatterning Polymer Materials to Improve Endothelialization	777
M.C. Boivin, P. Chevallier, S. Turgeon, J. Lagueux and G. Laroche	
Superhydrophobic Surface Elaboration Using Plasma Polymerization of Hexamethyldisiloxane (HMDSO)	783
L. Foroughi Mobarakeh, R. Jafari and M. Farzaneh	
Effect of Different Aluminium Surface Treatments on Ice Adhesion Strength	788
Z. Ghalmi, R. Menini and M. Farzaneh	

Preparation of Photocatalytic TiO₂ Filter by Chemical Surface Treatment from Ti Non-Woven Fabric	793
M. Kondo and T. Asaoka	
Characterization of Microwave Plasma for Polymer Surface Modification Using FTIR Emission Spectroscopy	797
M. Mavadat, S. Turgeon, A. Ricard and G. Laroche	
Formation of Fe-Al Intermetallic Compound Film on Carbon Steel by Shot Peening and Heat Treatment	802
Y. Harada, Y. Miura and K. Takahashi	
Tribological Characterization of Electroless Nickel-Boron Coatings	808
V. Vitry, A.F. Kanta, A. Sens and F. Delaunois	
Biology Inspired Superhydrophobic Surfaces	814
J.J. Victor, D. Facchini, G. Palumbo and U. Erb	
Oxidation Resistance of Al-Rich Aluminide Coating on TiAl Based Alloy by Thermal Spray and Diffusion Treatment	820
T. Yagi, T. Sasaki, T. Watanabe and A. Yanagisawa	

Chapter 19: Thermomechanical Processing: Steels

Formation of Deformation-Induced Divorced Eutectoid Pearlite above the Ae₁	829
V.V. Basabe, J.J. Jonas and C. Ghosh	
Thermomechanical Processing of a Nb-Microalloyed Steel in a Controlled-Forging Treatment	835
D. Nakhai, P.H. Benhangi, M. Mazinani, F. Fazeli and M.R. Ghandehari Ferdowsi	

Chapter 20: Welding & Joining

Solid Freeform Fabrication of Al-Li 2199 via Controlled-Short-Circuit-MIG Welding	843
D.W. Heard, J. Boselli, R. Gauvin and M. Brochu	
Degradation Mechanism of Tungsten Electrode for Fusing Joining	849
S. Ishii, G. Itoh, S. Mukae and N. Itoh	
Friction Stir Welding of Al-Li AA2199: Parameters, Precipitates and Post Weld Heat Treatment	853
R. Ivanov, J. Boselli, D. Denzer, D. Larouche, R. Gauvin and M. Brochu	
Determination of Global and Local Tensile Behaviours of Laser Welded Ti-6Al-4V Alloy	859
S.H.K. Abu, X.J. Cao, J. Gholipour Baradari, P. Wanjara, J. Cuddy, A. Birur and M. Medraj	
Brazing of Cemented Carbides at Lower Temperatures	865
S. Yaoita, T. Watanabe and T. Sasaki	
Studies on Shielded Active Gas Forge Welded API 5CT L80 Material at Different Cooling Rates	871
P. Vinothkumar, S.M. Ganesan, J.K. Solberg, B. Salberg and P.T. Moe	
Assessment of Mechanical Parameters of PMMA Used in Human Body	877
A. Szarek	
Microstructure Investigation of Aluminide Coatings after Platinum Modification Deposited by CVD Method on Inconel 713 LC Ni-Base Superalloy	883
M. Yavorska, J. Sieniawski, R. Filip and T. Gancarczyk	