

Table of Contents

Preface

Committees

Surface Properties of 316L Austenitic Steel Improved by Simultaneous Diffusion of Titanium and Aluminium

I.M. Britchi, N. Ene, M. Olteanu, E. Vasile, P. Nita and E. Alexandrescu 1

Study of the Reactive Diffusion in the Presence of Dissolution of Copper in the Solder Melts

J. Drápala and P. Kubíček 8

Empirical Expression for Estimation of Thermal Characteristics of Materials Used for Thermal Protection

A.M. Essiptchouk, L.I. Charakhovski, W. Silva, G.P. Filho and H.S. Maciel 15

The Study of Droplet Impact Behavior on Flat Surface with Different Surface Properties

K.Z. Ku Shaari and R. Turton 19

Synthesis and Characterization of Ag Doped Hydroxylapatite via the Decomposition of EDTA Chelate

D. Cayir, C. Ergun and S. Guvendik 25

Thermo-Mechanical Materials Analysis

P. Košťál, I. Ružiak, Z. Jonášta and M. Tvrđý 30

Desorption of Hydrogen from CeNi₃ Intermetallic Hydrides

S.A. Lushnikov 35

Glycolic Acid Ethoxylate 4-Tert-Butylphenyl Ether as Drag Reducing Agent in Aqueous Media Flow

H.A.A. Bari, E. Suali and Z. Bin Hassan 40

Heat Diffusion in Solidifying Alumina Splat Deposited on Solid Substrate under Plasma Sprayed Conditions: Application to Coating Formation

Y. Lahmar-Mebdoua, A. Vardelle, P. Fauchais and D. Gobin 46

In Situ Synthesis of B₄C / TiB₂ Composites from Low Cost Sugar Based Precursor

E. Çakır, C. Ergun, F.Ç. Şahin and İ. Erden 52

Investigation of Dynamic Recrystallization in an Al-Li-Cu-Zr(-Mg) Alloy

A. Rezaei, S. Ahmadi and A. Shokuhfar 57

Microstructural Study of a High Bainite Dual Phase (HBDP) Steel Austempered at Different Temperatures

R. Bakhtiari and A. Ekrami 62

Pre-Aging and Maturing Effects on the Precipitation Hardening of an Al-Mg-Si Alloy

T. Abid, A. Boubertakh and S. Hamamda 68

Peculiarities of the Electron-Phonon Interaction in Graphite Containing Metallic Intercalated Layers

A. Feher, S.B. Feodosyev, I.A. Gospodarev, V.I. Grishaev, K.V. Kravchenko, E.V. Manzhelii and E. Syrkin 75

Ion Nitriding of CoCrMo Alloys

B. Kaya, S. Yilmaz and C. Ergun 82

Effect of Heat Treatments on the Structural and Mechanical Properties of Ti Thin Films Deposited on Steel Substrates by PVD Method

R. Gheriani and R. Halimi 88

Characterization of Titanium Carbides Coatings Using X-Ray Microanalysis in Scanning Electron Microscopy

R. Gheriani, R. Bensaha and R. Halimi 93

Numerical Simulation Study for the Effect of the Strength and the Direction of a Static Magnetic Field on the Transient Double-Diffusive Flow in Liquid Phase during an Alloy Solidification

F. Mechighel, B. Pateyron, M. Kadja, M. El Ganaoui and S. Dost 97

Mathematical Modeling of Squeeze Casting of Magnesium Alloy AM50

Z.Z. Sun, A. Yu, H. Hu and L.H. Han 105

A Kinetic Model for Dissolution of Second Phases in Die-Cast Mg Alloy AM50

L.H. Han, H. Hu, D.O. Northwood and X.Y. Nie 111

Simultaneous Wicking-Convection Heat Transfer Process with Non-Newtonian Power-Law Fluid	
O. Bautista, F. Méndez and E. Bautista	117
Effect of Annealing on Nanocrystalline Structure of Nb₃Sn Diffusion Layers in Composites with Internal Tin Sources	
E.N. Popova, V.V. Popov, E.P. Romanov, S.V. Sudareva, L.V. Elohina, A.E. Vorobyova, A.K. Shikov, V.I. Pantsyrny and S.V. Sudiev	126
Hydrogen-Induced Enhancement of Atomic Diffusion in Metals	
Y. Fukai	132
Anisotropy of Boride Layers: Effect on the Mechanical Properties of AISI 4140 Borided Steels	
I. Campos-Silva, N. López-Perrusquia, E. Hernández-Sánchez, M. Ortiz-Domínguez, D. Bravo-Bárceñas and J. Martínez-Trinidad	142
The Effect of Alloying Elements on the Stability of Centerline Segregation	
M. Réger, B. Verő, I. Kárdos and P. Varga	148
A Lattice Monte Carlo Analysis of Thermal Transport in Phase Change Materials	
T. Fiedler, I.V. Belova, A. Öchsner and G.E. Murch	154
Ultra Rapid Sintering of Ceramics	
P. Hing	162
Overview and Functional Characterization of Pb-Free Solders	
L.T. Chin, P. Hing, K.S. Tan and A.O. Olofinjana	169
Heat and Mass Transfer for a Constant Heat Boundary in Porous Reactive Medium under Local Non Equilibrium Conditions	
A. Bousri, K. Bouhadeh, H. Beji and O. Rahli	181
Models for the Porosity Growth and Dissolution in Single-Crystal Nickel-Base Superalloys	
B.S. Bokstein, V. Esin, A. Rodin and I.L. Svetlov	187
Molecular Dynamics Calculation of Hydrogen and Iron Diffusion in Molten Tantalum under an Electric Field	
E.A. Pastukhov, A.A. Vostrikov, N.I. Sidorov and V.P. Chentsov	193
Thermosolutal Convection in a Partly Multi-Layered Porous Annular Cavity	
M. Benzeghiba, K. Khenfer and S. Chikh	197
Defects Removal Using a Triangular-Shape Designed Tool	
P.S. Pa	203
Proposed Model of Water Adsorption/Desorption in a PEM Membrane	
S. Tosto, P. Knauth and M.L. Di Vona	209
Enhanced Mechanical Properties of Stainless Steel 316 L via Friction Stir Processing	
R. Salekrostam and M.K.B. Givi	215
Influence of Friction Stir Processing Parameters on the Fabrication of SiC/316L Surface Composite	
R. Salekrostam, M.K.B. Givi, P. Asadi and P. Bahemmat	221
Surface Roughness and Initial Pressure Effect on Superplastically Carburized Duplex Stainless Steel	
S.A.A. Azis, I. Jauhari, N.R.N. Masdek, N.W. Ahamad and H. Ogiyama	227
Effects of Processing Factors on Microstructure and Diffusivity of Diethylbenzene Dehydrogenation Catalyst	
M.E. Zeynali and I. Soltani	233
Liquid Diffusion in Polymers by Electrochemical-Impedance Spectroscopy (EIS)	
S. Chauffaille, O. Devos, J. Jumel and M.E.R. Shanahan	239
Diffusion in Materials by Atomic-Scale Modeling: Exploiting the Predictive Power of Classical and First-Principles Molecular Dynamics	
H. Bulou, C. Goyhenex and C. Massobrio	244
Numerical Study of a Vertical Solidification Process under Magnetic Field in Unsteady State	
S. Nouri, M. Benzeghiba and A. Benzaoui	254
Metallographic and Numerical Studies of the Role of Catalyst Particles of MgH₂-Mg System	
M. Celino, A. Montone, F. Cleri, A. Aurora, D.M. Gattia, S. Giusepponi and M. Vittori Antisari	263
An Approach for Analyzing the Growth Kinetics of Fe₂B Phase on AISI 1018 Steel	
M. Keddami	269

Reactive Diffusion of Uranium in Compacted Clay: Evaluation of Diffusion Coefficients by a Kinetic Approach	275
S. Korichi, A. Bensmaili and M. Keddami	
A Coupled Model of Two-Phase Diffusion and Flow through Deforming Porous Cosserat Media	281
D.P. Adhikary and H. Guo	
Dependence between the Boron Surface Concentration and the Growth Kinetics of Boride Layers in AISI 4140 Steels	294
M. Ortiz-Domínguez, I. Campos-Silva, J. Martínez-Trinidad, M. Elías-Espinosa, E. Hernández-Sánchez and D. Bravo-Bárceñas	
Diffusion in Electrodes Used for Resistance Spot Welding of Galvannealed Steel	300
M. de la Garza, P. del C. Zambrano, M.P. Guerrero-Mata, T. Réti, M. Réger, I. Felde and R. Colás	
β_2 (2x4) Reconstructed Surface and Characterization	308
H. Khachab, Y. Abdelkafi and A. Belghachi	
Effects of Nickel on Interface Morphology during Oxidation of Fe-Cu-Ni Alloys	318
L. Yin, S. Balaji and S. Seetharaman	
Thermal Properties and Crystallization Behavior of $Co_{67}Fe_4Cr_7Si_8B_{14}$ Amorphous Alloy	330
M. Haddad-Sabzevar, S. Sahebian, Z. Jamili and S.A. Hasheminejad	
Effect of Homogenization Time and Cooling Rate on Martensitic Transformations in Ti-57.5wt%Ni Alloy	339
P. Movahed, A. Shokuhfar, H. Kaffash, A. Etaati, H. Bolvardi and H. Tavakoli	
The Effects of Homogenization Time and Cooling Environment on Microstructure and Transformation Temperatures of Ni-42.5wt%Ti-7.5wt%Cu Alloy	344
E. Omrani, A. Shokuhfar, A. Etaati, A. Dorri M. and A. Saatian	
The Consideration of Splendid Increasing Trend of Green Fuel H_2 Production with the Help of Nanofine Materials	351
Z. Fakhroueian, N. Afroukhteh Langroudi, P. Esmailzadeh, H. Varmazyar, M. Ahmadi, A. Shafiekhani, M. Yousefi and M. Karami	
Analysis of the Recrystallization of Cold-Rolled Copper after Isothermal Annealing Using Electron Backscattered Diffraction Patterns	359
M. Matsushita and H. Ohfuji	
Mechanical Performance of the Annealed NiTi Shape Memory Alloy Coating onto 316L Stainless Bio-Steel	365
T.A. Abubakar, M. Rahman, D.P. Dowling, J. Stokes and M.S.J. Hashmi	
Characterization of the Intermetallic Compounds Formed during Hot Dipping of Electrical Steel in a Hypo-Eutectic Al-Si Bath	370
I.I. Danzo, K. Verbeken and Y. Houbaert	
Phase-Field Simulation on Coarsening of the γ' Phase Particles in Ni-Based Superalloys Considering Elastic Inhomogeneity	376
Y. Tsukada, Y. Murata, T. Koyama and M. Morinaga	
Diffusion of Ti, V and Nb in Ni_3Al at Elevated Temperatures	384
H. Fukaya, M. Moniruzzaman, Y. Murata, M. Morinaga, T. Koyama, W. Hashimoto, K. Tanaka and H. Inui	
Effect of Lubricant Volume and Working Gap on the Surface Roughness and Material Removal Rate in Magnetic Abrasive Finishing	390
M. Vahdati, E. Sadeghinia and A. Shokuhfar	
Air Characteristics in Air Turbine Spindle of Ultra Precision Machines	396
M. Vahdati, E. Azimi and A. Shokuhfar	
Magnetic Assisted Abrasion, a New Method for Nano Level Surface Finishing	402
M. Vahdati, E. Sadeghinia and A. Shokuhfar	
Fluid Flow in Tree-Shaped Constructal Networks: Porosity, Permeability and Inertial Parameter	408
A.F. Miguel	
Unifying Theory for Natural and Man-Made Flow Systems: an Application to Design of Porous Material for Particulate Control	413
A.F. Miguel	
Water Vapor Permeability of Clay Nanocomposites Based on Amorphous PET	422
A. Greco, C. Esposito Corcione and A. Maffezzoli	

Heat Transfer Enhancement of Jet Impingement on a Flat Plate Attached by a Porous Medium with a Center Cavity P.S. Wu, C.Y. Hsieh and S.T. Tsai	427
Analysis of Component Depth Profiles at the Interface of Ti6242 Alloy and SiC, SiN Coatings after High Temperature Oxidation in Air A. Galdikas, J.P. Rivière, T. Moskalioviene and L. Pichon	433
Embrittlement of Cu and Cu-Based Alloys by Bi and Bi₂Te₃ S. Zhevnenko, D.V. Vaganov and E.I. Gershman	439
Optical and Mechanical Properties of Aluminum Film Deposited on Glass Substrate S.C. Her and Y.H. Wang	444
The Effect of Matrix Stiffness on the Mechanical Properties of the Composite Reinforced with Multi-Wall Carbon Nanotube S.C. Her and S.W. Yeh	450
Numerical Simulation of Natural Convection in a Mold M. Pirmohammadi, G.A. Sheikhzadeh, M. Ghassemi and M. Hamed	456
Interdiffusion Studies in the Co- Mo System V.D. Divya, U. Ramamurty and A. Paul	462
Study on the Growth of Nb₃Sn Superconductor in Cu(Sn)/Nb Diffusion Couple A.K. Kumar, T. Laurila, V. Vuorinen and A. Paul	467
Formation of the Modulated Structure in a Steel by the Addition of a Strong Carbide Forming Element Y. Murata, T. Kita, T. Tsukamoto, Y. Tsukada, T. Koyama and M. Morinaga	472
Diffusion Studies in A₃B Compounds with A15 Structure R. Ravi, A.K. Kumar and A. Paul	477
Evaluations of Hydrogen Permeation on Al₂O₃-CuO-ZnO-Based Cobalt Composite Membrane J.H. Park, T.W. Hong and M.W. Jung	483
Study on Homogenization Time and Cooling Rate on Microstructure and Hardness of Ni-42.5wt%Ti-3wt%Cu Alloy A. Etaati, A. Shokuhfar, E. Omrani, P. Movahed, H. Bolvardi and H. Tavakoli	489
Fe Ions Diffusion and Oxygen Complexes Evolution during Thermodonors Annealing in B-Doped Czochralsky Silicon Crystal V. Skidanov	495
Computer Simulation Model for First-Order Phase Transition Fluctuation Stage A. Bondareva, T. Levchenko and G.I. Zmievskaya	502
Drying of Kaolin Clay Cylinders: Dynamic Neutron Radiography Studies I. Fijał-Kirejczyk, J.J. Milczarek, J. Banaszak, J. Żołądek and A. Trzcíński	508
Numerical Studies of the Diffusion Processes and First Step Oxidation in Nickel-Oxygen Systems by Variable Charge Molecular Dynamics S. Garruchet, O. Politano, P. Arnoux and V. Vignal	513
Internal Interface Strains Effects on UO₂/U₃O₇ Oxidation Behaviour N. Creton, V. Optasanu, S. Garruchet, L. Raceanu, T. Montesin, L. Desgranges and S. Dejardin	519
New Photothermal Deflection Method to Determine Thermal Properties of Bulk Semiconductors I. Gaied, S. Lassoued, F. Genty and N. Yacoubi	525
Investigation of Optical and Thermo-Electrical Properties of SnSb₂S₄ Thin Layers Using the Photothermal Deflection Technique I. Gaied, A. Gassoumi, M. Kanzari and N. Yacoubi	531
Investigation of Thermal Properties of Thin Semiconductor Layers Deposited on a Glass Substrate by the Photothermal Deflection Technique I. Gaied, M.B. Rabeh, A. Rabhi, M. Kanzari and N. Yacoubi	537
The Effect of Pressure on the Phase Transition of Pd₃Cu Alloy J. Davoodi and M. Ahmadi	543
Evaluations of Hydrogen Permeation on TiN-20wt.%Co Membrane by Hot Press Sintering K.I. Kim, S.H. Kim, W.G. Kim, S.C. Ur and T.W. Hong	549
Influences of Dye Doping and Hole Blocking Layer Insertion on OLED Performance C.H. Tesng, C.H. Liu and C.P. Cheng	555

Efficiency Improvement of Organic Light Emitting Diodes with Co-Deposited Hole Blocking Layer C.H. Liu, C.H. Tesng and C.P. Cheng	561
Intermetallic Growth: Structure-Sensitive Effects L.N. Paritskaya, Y.S. Kaganovsky and V.V. Bogdanov	567
The Kinetics of Gas Nitrided Layer Growth on Austenitic Stainless Steel J. Baranowska	573
Microstructure and Properties of Nanoclay Reinforced Asphalt Binders A. Zare-Shahabadi, A. Shokuhfar and S. Ebrahimi-Nejad	579
Effect of a Shield on Mixed Convection in a Rectangular Enclosure with Moving Cold Sidewalls and a Heat Source on the Bottom Wall G.A. Sheikhzadeh, S.H. Musavi and N. Sadoughi	584
The Effect of Traveling and Rotation Speeds on Mechanical Properties during Friction Stir Welding of Dissimilar Al Alloys J.C. Park and S.J. Kim	590
The Investigation on Optimum Corrosion Protection Potential of STS 316L in Seawater M.S. Han, J.C. Park, S.K. Jang and S.J. Kim	596
Phase Formation in $\text{FeO}_x\text{-SiO}_2\text{-Cu}_2\text{O-ZnO-FeS}$ System during Melts Crystallization E.N. Selivanov, R.I. Gulyaeva and N.I. Selmenskich	602
Heat Treatment Analysis of Large Al-Cu-Mg-Si Alloy Extrusion E. Gariboldi, D. Ripamonti and M. Vedani	608
A Contribution to the Analysis of the Thermo-Hydrodynamic Lubrication of Porous Self-Lubricating Journal Bearings S. Boubendir, S. Larbi and R. Bennacer	618
Measurement of Mass Diffusion Coefficient of Multi-Component System in Aqueous Media by Phase Shifting Interferometer A. Komiya, J.F. Torres and S. Maruyama	624
Diffusion of Hydrogen in Single Crystals of Monoclinic-ZrO_2 and Yttrium Stabilized Cubic Zirconia D. Khatamian	631
Notices on Method of Thickness Evaluation of TiN Layers on Magnesium Alloys M. Golabczak and A. Konstantynowicz	641
Numerical Simulation of Heat Losses between a Partition Plate and the Wall of the Head of a Plastic Heat Exchanger R. Aguilar Osorio and K. Cliffe	650
Anti-Sticking Properties of PVD CrWN_x, CrO_x and ZrO_x Coatings on Medical Electrode Application Y.L. Hsu, C.H. Lee, S.M. Chiu, Y.C. Sung, K.Y. Yang and C.W. Chu	656
Diffusion Kinetics of BSA Protein in Stimuli Responsive Hydrogels A.A. Naddaf, H.J. Bart and I. Tsibranska	664
Finite Volume Methods with Multi-Point Flux Approximation with Unstructured Grids for Diffusion Problems J. Ambrus, C.R. Maliska, F.S.V. Hurtado and A.F.C. da Silva	670
Heat and Mass Transfers and their Mutual Effects in Membrane Processes J.C. Min and M. Su	676
An Improved Method for Evaluating the Moisture Diffusivity in a Membrane T. Hu, J.C. Min and Y.Z. Song	682
Silicon Dioxide as a Boundary for Oxygen Outdiffusion from CZ-Si A. Barcz	688
Cu Ti Formation in Nb Ti/Cu Superconducting Strand Monitored by <i>In Situ</i> Techniques I. Pong, C. Scheuerlein, C. Senatore, L. Thilly, M. Di Michiel, A. Gerardin, S.C. Hopkins, L. Oberli, G. Geandier, B.A. Glowacki and L. Bottura	695
Structural Relaxation Process by Addition of B in CuHfTi Amorphous Alloys K. Yamada, N. Miura, A. Yamamoto, I.A. Figueroa, H.A. Davies and I. Todd	702
Heat Transfer in Black Holes R.L. Corral Bustamante, D. Sáenz, N.I. Arana and D. Cárdenas	708
Hydrogen Diffusivity and Solubility in Internally Oxidized $\text{Pd}_{0.97}\text{Zr}_{0.03}$ and $\text{Pd}_{0.97}\text{Nb}_{0.03}$ Alloys E.R. Lagreca, V.M. Azambuja and D.S. dos Santos	715

Hydrogen Diffusivity and Hydride Formation in Rich-Zirconium Alloys Used in Nuclear Reactors	
K.R.F. Silva, D.S. dos Santos, A.F. Ribeiro and L.H. Almeida	722
Three-Dimensional Study of Heat and Mass Transfer in a Partially Porous Elongated Cavity	
N. Mimouni, S. Chikh and R. Bennacer	728
Effects of the Microstructure on the Hydrogen Diffusivity in Ni-Based Superalloy 718	
T.S.A. Rosa, A.F. Ribeiro, L.H. de Almeida and D.S. dos Santos	733
Modeling of Turbulent Flow and Heat Transfer in Graphitic Foams	
J. Cepek and A.G. Straatman	739
Hydrogen Absorption/Desorption in Nanostructured Fe- and Ti-Doped Mg₂Ni Alloys	
I.C. Atías Adrián, F.A. Deorsola, G.A. Ortigoza-Villalba, B. DeBenedetti and M. Baricco	745
Surface Microstructure Evolution during Phase Transformation on Mn, Al and Si Alloyed Ultra Low Carbon Steel	
J. Gautam, R.H. Petrov, E. Leunis and L.A.I. Kestens	757
A Study of Photocatalyst of the TiO₂ Thin Film with Acid Dispersed CNT for Dye-Sensitized Solar Cell	
Y.W. Kim, E.N. Cho, S.C. Choi and D.W. Lee	764
Diffusion in Al-Ni and Al-NiCr Interfaces at Moderate Temperatures	
L. Čelko, L. Klakurková and J. Švejcár	771
A High Order Time Advancement Scheme for Prediction of Solidification Processes	
A. Abbasnejad, M.J. Maghrebi and H. Basirat Tabrizi	779
Experimental and Analytical Investigation of Ammonia Absorption into Ammonia-Water Solution: Estimated Interface Concentration	
H. Mustafa	785
Performance Characteristics of Capacity Control of Industrial Water Cooler Using Pulse Modulation Valves	
W.J. Choi, H.W. Kim, S.M. Baek, H.J. Kang, H.S. Lee and J.I. Yoon	790
Reaction Diffusion in Pb Free Solder-Cu System	
O. Taguchi, C.G. Lee, D.Y. Park, G.S. Shin, S. Suzuki and R. Nakamura	796
Numerical Analysis of Heat and Mass Transfer in an Annular Porous Adsorber for Solar Cooling System	
N. Allouache, R. Bennacer, S. Chikh and A. Al Mers	802
Investigation of the Interfacial Reaction between Optical Glasses and Various Protective Films and Mold Materials	
C.L. Chao, C.B. Huo, W.C. Chou, T.S. Wu, K.J. Ma, C.H. Kuo, Y.T. Chen and C.W. Chao	808
A Study of Porosity Influence on Thermal Diffusivity of Aluminium Foam by Experimental Analysis and Numerical Simulation	
A. Adamčíková, B. Taraba and J. Kováčik	814
Thermal Conductivity and Thermal Expansion of Copper Matrix Composites Reinforced with High Modulus C Fibres	
N. Beronská, P. Štefánik and K. Iždinský	820
Microsegregation Induced Inhomogeneity of Coarsening of γ' Precipitates in a Nickel-Based Single Crystal Superalloy	
M. Gebura and J. Lapin	826
Statistical Eulerian Diffusion Approach of Four-Way-Coupled Multiphase Systems	
R. Groll	832
Theoretical Investigation of the Relation between the Output of a Methane Internal Reforming SOFC and the Composition of the Feedstream	
E. Vakouftsi, C. Athanasiou, G. Marnellos and F.A. Coutelieris	838
Thermal Expansion of Advanced Materials for High Temperature Fusion Application	
T. Dvůrák, Š. Kavecký and P. Štefánik	844
Atomic Contribution to Valence Band Density of States in Gallium Oxide and Silicon Oxide Nano Layered Films	
T. Takeuchi, J. Nishinaga, A. Kawaharazuka and Y. Horikoshi	849
Microstructure and Hydrogenation Property of Mg-6.7 mol% Ni Alloy	
H. Saitoh and H. Nakamura	853

Depth Resolved and Elemental Selective XRF and XAS in Surface Layer of Annealed Fe-Cr Alloys	
K. Shinoda, S. Sato, S. Suzuki, H. Toyokawa, H. Tanida and T. Uruga	859
Depth Resolved XRF and XAS for Enrichment and Oxidation of Mn on Surface of Annealed Fe-Mn Alloys	
K. Shinoda, S. Sato, S. Suzuki, H. Toyokawa, H. Tanida, M. Takagaki, Y. Terada and T. Uruga	864
The Effect of TaN Interlayer on the Performance of Pt-Ir Protective Coatings in Glass Molding Process	
H.H. Chien, K.J. Ma, C.H. Kuo, C.B. Huo, C.L. Chao and Y.T. Chen	869
Thermal Stability of Al₂O₃ Coated Low Transition Temperature Glass	
K.J. Ma, H.H. Chien, S.P. Vattikuti, C.H. Kuo, C.B. Huo and C.L. Chao	875
Presentation of a New Method for Determination of Diffusion Coefficients of Gaseous Pollutants in Cladding Wall Materials Indoors	
J.J. Gonçalves, A.S. Santos, G.V. Silva and E.O. Fernandes	881
Macroporous Silicon Electrochemical Etching for Gas Diffusion Layers Applications: Effect of Processing Temperature	
S. Kouassi, G. Gautier, S. Desplobain, L. Coudron and L. Ventura	887
Thermal Diffusivity of Traditional and Innovative Sheet Steels	
E. Campagnoli, P. Matteis, G.M.M. Mortarino and G. Scavino	893
Electroless Ni-P Composites with ZrO₂: Preparation, Characterization, Thermal Treatment	
J. Novakovic, M. Delagrammatikas, P. Vassiliou and C.T. Dervos	899
Improvement of the Electrochemical Properties in Nano-Sized Al₂O₃ and AlF₃-Coated LiFePO₄ Cathode Materials	
C.W. Ahn, M.G. Ha, K.S. Hong, D.J. Lee, C.H. Doh, K.Y. Doh, J.M. Na, B.H. Song, H.M. Jeon, Y.G. Cho, H.S. Yang and E.D. Jeong	906
Characterization of Electrolytically Deposited CdSe on Ti Substrates	
T.G. Argyropoulos, J. Novakovic, M.D. Athanassopoulou, P. Vassiliou, J.A. Mergos and C.T. Dervos	912
The Effect of Al₂O₃ and Li₂O on the Anatase to Rutile Phase Transformation	
M.D. Athanassopoulou, T.G. Argyropoulos, G.T. Paparoupas, J.A. Mergos and C.T. Dervos	918
Effect of the Separating Distance of Twin Buildings on the Generated Flow Structure	
I. Bhouri Baouab, N. Mahjoub Said, H. Mhiri, G. Le Palec and P. Bournot	924
Pulse Electrolysis for the Production of Hard Ni/TiO₂-ZrO₂ Composite Coatings	
C. Kollia, I. Deligkiozi and M.M. Dardavila	930
Dispersion of Twin Inclined Fume Jets of Variable Temperature within a Crossflow	
A. Radhouane, N. Mahjoub Said, H. Mhiri, G. Le Palec and P. Bournot	936
Effect of Processing Parameters on the Structural and Mechanical Properties of Micro Arc Oxidized Aluminium Alloy	
I.M. Ozkara and M. Baydogan	942
Numerical Determination of Intrinsic Diffusion in Fe-Cr-Al Systems	
B. Wierzba, O. Politano, S. Chevalier and M. Danielewski	948
Numerical Simulations on the Growth of Thin Oxide Films on Aluminum Substrates	
A. Perron, S. Garruchet, O. Politano, G. Aral and V. Vignal	954
Conjugate Heat and Mass Transfer in Metal Foams: A Numerical Study for Heat Exchangers Design	
J.M. Hugo, E. Brun, F. Topin and J. Vicente	960
Oxygen Diffusion and Electrical Conductivity Measurements in Uranium Dioxide	
P. Garcia, M. Fraczekiewicz, C. Davoisne, G. Carlot, B. Pasquet, G. Baldinozzi, D. Siméone and C. Petot	966
Reaction-Assisted Diffusion Bonding of Advanced Materials	
A.S. Ramos, M.T. Vieira, S. Simões, F. Viana and M.F. Vieira	972
Simultaneous Measurements of Lattice and Grain Boundary Diffusion Coefficients via 2-Dimensional Simulations	
I. Blum, A. Portavoce, D. Mangelinck, J. Bernardini, K. Hoummada, R. Daineche, J.L. Lábár and V. Carron	978
Molecular Dynamics Simulation of the Buckling Behavior of Boron Nitride Nanotubes under Uniaxial Compressive Loading	
S. Ebrahimi-Nejad, A. Shokuhfar and A. Zare-Shahabadi	984

Heat Transfer of Mineral-Filled Polypropylene Foams M. Antunes, V. Realinho, A.B. Martínez, E. Solórzano, M.A. Rodríguez-Pérez and J.I. Velasco	990
Thermal Conductivity of Carbon Nanofibre-Polypropylene Composite Foams M. Antunes, V. Realinho, E. Solórzano, M.A. Rodríguez-Pérez, J.A. de Saja and J.I. Velasco	996
The Role of Diffusion Accommodation and Phase Boundary Wetting in the Deformation Behaviour of Ultrafine Grained Sn-Pb Eutectic F. Muktepavela and R. Zabels	1002
Three-Dimensional Double Diffusion Mixed Convection in Rectangular Channel Filled with Porous Medium O. Rahli, R. Bennacer, K. Bouhadeh, D.E. Ameziani and E. Ghorbel	1010
Collapse-Type Shrinkage's Characteristics in Both <i>Eucalyptus urophylla</i> and <i>E.cloeiziana</i> Wood under Heat-Treatment Conditions Y.Q. Wu, K. Hayashi and Y.C. Cai	1016
Study on Collapse-Shrinkage Characteristics in Plantation-Grown Eucalyptus Wood under Continuous and Intermittent Drying Regimes Y.Q. Wu, K. Hayashi and Y.C. Cai	1022
Characterization of Hard Coatings Modified with Nitrogen Implantation B. Skoric, D. Kakas and A. Miletic	1027
Hot-Extruded Microstructure and Mechanical Properties of Mg-Al-Sn Alloys Y.M. Kim, S.S. Park, S.K. Park, H.T. Son and J.S. Lee	1037
Al-Si-Fe Intermetallics on Fe-Substrates during Hot-Dipping P. Rodriguez-Calvillo, L. Suarez and Y. Houbaert	1042
Galvanized Coatings Produced in a Hot Dip Simulator (HDS) L. Suarez, D. Warichet and Y. Houbaert	1048
Comparison of Functional Properties of Thin Layers on Titanium and Cobalt Implant Alloys M. Grądzka-Dahlke	1053
Corrosion Resistance of Porous 316L Implant Steel M. Grądzka-Dahlke	1059
Diffusion in MC Carbides in High-Speed Steels during High-Temperature Treatments A.S. Chaus and M. Beznák	1065
Diffusion and Secondary Carbide Precipitation in High-Speed Steels A.S. Chaus and F.I. Rudnickii	1071
Influence on Olive Leaves (<i>Olea Europaea</i>, var. Serrana) Antioxidant Extraction Kinetics of Ultrasound Assisted Drying J.A. Cárcel, R.I. Nogueira, C. Rosselló, E.S. Mariano, M. Blasco and A. Mulet	1077
Ultrasound Effects on the Mass Transfer Processes during Drying Kinetic of Olive Leaves (<i>Olea Europea</i>, var. Serrana) J.A. Cárcel, R.I. Nogueira, J.V. García-Pérez, N. Sanjuán and E. Riera	1083
Alloying Effects on the Hydrogen Diffusivity during Hydrogen Permeation through Nb-Based Hydrogen Permeable Membranes H. Yukawa, G.X. Zhang, M. Morinaga, T. Nambu and Y. Matsumoto	1091
Automated Burner and Biogas Register for Sewage Treatment Mini Stations E. Godoy Junior, M.A. Marcelino, J.L. Silveira, J.R. Camargo, R.C. Correa and L.N. Henrique	1097
Complex Change in Superficial Layer Properties of Specimen Obtained by Metallurgical Powder under Vibration Process Method K. Hamouda, T. Sayah, J.P. Ankudimov, P.J. Ankudimov, A.P. Babichev, M.N. Benallal, D. Saidi and M.A. Djema	1103
A New Modified Austempering to Increase Strength and Ductility Simultaneously for UHS Steels S. Majid Safi and M.K.B. Givi	1109
Ultra Fine Grain via Friction Stir Processing of 7075-T6 Grade Aluminum Alloy M. Esmaily and A. Shokuhfar	1116
Effects of Load and Sliding Speed on Tribological Behavior of Plasma Sprayed Bronze-Alumina Coatings H. Bolvardi, H. Khorsand, P. Movahed and A. Etaati	1122
Predicting Behavior of Plasma Nitrided Ni+Al Composite Coating Using an Artificial Neural Network Model H. Bolvardi, A. Shokuhfar and N. Daemi	1127

Evolution of Interdiffused Gaussian-Shape Nanolayer in Au-Si(111) System at Ambient Condition	
J.K. Bal and S. Hazra	1133
Synthesis and Characterization of Gd₂O₃ Doped CeO₂ Nanopowders by a Glycothermal Process	
H.J. Kim, H.Y. Park, M.C. Chu and D.S. Bae	1140
Analysis of Cryogenic Refrigeration Cycle Using Two Stage Intercooler	
H.S. Lee, S.T. Oh, J.I. Yoon, S.G. Lee and K.H. Choi	1146
Kinetics of Isothermal Phase Transformations by Phase-Field Simulations: An Analogy between the Peritectic and Monotectic Systems	
G. Boussinot, E.A. Brener and D.E. Temkin	1152
Evaluation of the Corrosion Behavior of the Laser Gas Nitrided Ti-6Al-4V	
R.S. Razavi, G.R. Gordani, M. Salehi and H.C. Man	1160
Film Formation via Plasma Electrolyte Oxidation of Ti and Ti-5Mo-4V-3Al Alloy in High Alkaline Solutions	
M. Asadi, M. Attarchi, M. Vahidifar and A. Jafari	1167
Structural Stability of Composite Materials Prepared by Explosion Welding after their Heat Treatment	
M. Tršo, M. Benák, M. Turňa and P. Nesvadba	1171
Study of Explosion Welding of Mg Alloy with Aluminium	
M. Benák, M. Turňa, P. Palček and P. Nesvadba	1177
Comparative Tribological Behavior of V(N,C) and VC Diffusion Coatings	
F. Fazlalipour, M. Niki Nushari, N. Shakib and A. Shokuhfar	1183
Characterization of Thermal Contact Resistance in Metal Micro-Textured Thermal Interface Materials Using Electrical Contact Resistance Measurements	
R. Kempers, A.J. Robinson and A. Lyons	1190
Decreasing the Fouling of Heat Exchanger Plates Using Air Bubbles	
S.M. Baek, W.S. Seol, H.S. Lee and J.I. Yoon	1199
The Simulation of Heat and Vapour Transfer Trough Fibrous Materials	
I. Salopek Čubrić and Z. Skenderi	1205
Numerical Prediction of the Effective Thermal Conductivity of Open- and Closed-Cell Foam Structures	
S.M. Hossein Hosseini, A. Öchsner and T. Fiedler	1210
The Nature of the Vacancy-Wind Effect Occurring in Diffusion via Six-Jump-Cycles in B2 Intermetallics	
I.V. Belova and G.E. Murch	1218
Parametric Analysis of the Classification of Harrison Kinetics Regimes in Grain Boundary Diffusion	
I.V. Belova, G.E. Murch and T. Fiedler	1226
Study of Moisture Buffering in Building Materials with Application of Sorption Kinetics Models	
N.M.M. Ramos, J.M.P.Q. Delgado and V.P. de Freitas	1232
Experimental and Analytical Study of Contaminant Transport Resulting from Dissolution of a Flat Surface Buried in a Packed Bed	
J.M.P.Q. Delgado and M. Vázquez da Silva	1238
Experimental Values of Solubility of Organic Compounds in Water for a Wide Range of Temperature Values – A New Experimental Technique	
J.M.P.Q. Delgado and M. Vázquez da Silva	1244
A Mathematical Model to Predict Moisture Uptake of Dry Products Packaged Individually in Flexible Films	
J.M.P.Q. Delgado and M. Vázquez da Silva	1250
Modelling Moisture Uptake by Binary Mixtures of Products Packaged in Polymeric Films	
J.M.P.Q. Delgado and M. Vázquez da Silva	1256
Effects of Milling Time and Impact Force on the Mutual Diffusion of Cu and Fe during Synthesis of Nanostructured Fe-50%Cu Alloy via Mechanical Alloying Process	
H. Kaffash, A. Shokuhfar, H.R. Rezaie, E. Mostaed and A. Mostaed	1262
Diffusion at Short Circuits: State of the Art	
B.S. Bokstein	1267

Properties and Characterization of Hard Coatings Obtained by Boriding: An Overview I. Campos-Silva, M. Ortiz-Domínguez, J. Martínez-Trinidad, N. López-Perrusquia, E. Hernández-Sánchez, G. Ramírez-Sandoval and R. Escobar-Galindo	1284
Mathematical Model of Forecasting the Coke Quality Indicators A.N. Dmitriev, Y.A. Chesnokov and G.Y. Arzhadeeva	1290
Influence of Elements Oxides Microadditives with Major Cationic Radius on Properties of Silicate Bundle A.N. Dmitriev, V.P. Perepechaev and Y.A. Chesnokov	1295
Isotope Exchange of Gaseous Oxygen with Oxide $\text{LaMnO}_{3+\delta}$ Nanograins Boundary A.Y. Fishman, T.E. Kurennykh, V.B. Vykhodets and V.B. Vykhodets	1301
Structural Phase Transitions in Mechanoactivated Manganese Oxides A.Y. Fishman, M.A. Ivanov, S.A. Petrova and R.G. Zakharov	1306
Structure and Thermal Stability of Cu after Severe Plastic Deformation V.V. Popov, A.V. Stolbovkiy, E.N. Popova and V.P. Pilyugin	1312
Site Preference and Diffusion in Ni_3Al Alloyed with Ir, Ta or Re at 1200°C N. Garimella, H.J. Choi and Y.H. Sohn	1322
Determination of Average Ternary Interdiffusion Coefficients Using Moments of Interdiffusion Flux and Concentration Profiles N. Garimella, H.J. Choi and Y.H. Sohn	1328
Effects of Combined Surface Modification on Adhesion Strength of CrN Coatings for STS420 G.C. Jeong, H.J. Choi, Y.H. Sohn and S.I. Kwun	1334
Diffusion in SC Ni-Base Superalloy under Viscoplastic Deformation L.A. Kommel and B.B. Straumal	1340
Diffusion Phenomena of the Oxygen and Nitrogen in Niobium by Mechanical Spectroscopy O. Florêncio, P.S. Silva and C.R. Grandini	1346
Effect of Reactive Elements and Microstructure of Steel on High Temperature Oxidation Behaviour of Ferritic Stainless Steels H. Fujikawa	1354
On the Grain-Boundary Diffusion in Polycrystalline Materials and Thin Films D.L. Beke and J. Bernardini	1362
Composition and Pressure Dependence of the Diffusion Coefficients in Binary Liquid Alloys D.L. Beke	1371
Diffusion in Binary Silicides of Iron and Molybdenum H. Mehrer	1377
Air Oxidation Behaviour of a Ti-6Al-7Nb Alloy M.D. Unlu, O. Meydanoglu and H. Çimenoglu	1389
The Effect of Oxidation on The Structure and Hardness of (Zr, Hf)N Coatings E. Atar, E.S. Kayali and H. Çimenoglu	1395
Molecular Dynamics Calculations of InSb Thermal Conductivity G. de Oliveira Cardozo and J.P. Rino	1400
The Influence of Stress on Interstitial Diffusion - Carbon Diffusion Data in Austenite Revisited T.L. Christiansen and M.A.J. Somers	1408
A Mathematical Model for the Estimation of the Energetic Potential for Several Renewable Energy Sources: Application on the Design of a Modern Power Plant I. Tsikis and F.A. Coutelieres	1414
On the Significance of Flow Regime for the Heat Transfer in Solid Oxide Fuel Cells F.A. Coutelieres	1420
Diffusion and Reaction in Hierarchical Structured Metal Oxides – A Transient TAP Study M. Galinsky, M. Lutecki and C. Bretkopf	1426
Natural Convection in Vertical Channels with Porous Media and Adiabatic Extensions A. Andreozzi, B. Buonomo, O. Manca and S. Nardini	1432
Numerical Investigation on Transient Conjugate Optical-Thermal Fields in Thin Films Irradiated by Moving Sources for Front Treatments N. Bianco, O. Manca and D. Ricci	1439

Effect of Solid Thickness on Transient Heat Conduction in Workpieces Irradiated by a Moving Heat Source	
N. Bianco, O. Manca, S. Nardini and S. Tamburrino	1445
Selected Analyses and Observations in Multicomponent Diffusion	
M.A. Dayananda	1451
Bi-Velocity Method and Linear Nonreversible Thermodynamics, Interdiffusion in R2	
M. Danielewski and B. Wierzba	1461
Molecular Ion Channels; Electrodiffusion in R3	
B. Bożek, B. Wierzba and M. Danielewski	1469
Investigation of a Mathematical Model of High-Temperature Diffusion Controlled Heterogeneous Reaction between Metal and Oxide Melts	
M. Radune, A. Radune, F. Assous and M. Zinigrad	1475
Anomalous Diffusion Coefficients for W(IV) Ion Diffusion in NaCl-KCl Melt at 700-750°C	
A. Lugovskoy, Z. Unger, M. Zinigrad and D. Aurbach	1481
A Limited Condition for Bifurcate or Trifurcate Kirkendall Planes in Multiple Phase Diffusion Couples	
T. Shimozaki, T. Okino, C.G. Lee and O. Taguchi	1487
Comparison of Four Thermo-Mechanical Models for Simulating Reactive Flow in Porous Materials	
M.J.S. de Lemos and M.S. Mesquita	1493