

Table of Contents

Preface and Organizing Committees

Effect of Catalyst Diffusion Coefficient on Ethylbenzene Dehydrogenation M.E. Zeynali and F. Mohammadi	1
Investigation of the Effect of Diffusion Process in the Catalyst Pellet on Overall Reaction Rate of Dehydrogenation of Diethylbenzene to Divinylbenzene M.E. Zeynali	7
Diffusion Layers with Ti and Ti+Al Formed on 316L Austenitic Steel by a Pack Cementation Procedure I.M. Britchi, M. Olteanu, N. Ene and P. Nita	13
Influence of Important Nanoemulsions pH on Performance of Nanostructures Catalysts for H₂ Production in Syngas Reactions Z. Fakhroueian, P. Esmailzadeh, N. Afroukhteh Langroudi, H. Varmazyar, M. Ahmadi, P.E. Zadeh, M. Yousefi, M. Karami, A. Shafiekhani and S. Sepehriseresht	20
Cosmic Censorship!: Thermal Transport in a ‘Naked’ Black Hole R.L. Corral Bustamante, A.R. Rodríguez-Corral, T.J. Amador-Parra and E.A. Vázquez-Tapia	27
Assessment of Thermal Non-Equilibrium Condition on Heat Transfer through a Channel Lined with Porous Media – Constant Wall Temperature M. Abkar, P. Forooghi and A. Abbassi	33
Computational Algorithms for Topological Cycle Indices of Tert-Butyl Alcohol by Computational Science N. Ghafooriadi, S. Asadzadeh Olghi and A. Moghani	39
Comparison of the Breakthrough Curves Obtained by ASTM D2007-03 Annex 1 and on a Bench Unit for the Selection of Adsorbents for the Removal of Nitrogen and Sulfur Contaminants from Fuels M.A.G. Figueiredo, G.V. Estrela, W.C. Souza and S.S.X. Chiaro	45
Application of Thermo-Mechanical Process to Achieve Nanostructure in 301 Austenitic Stainless Steels A. Shokohfar, S.M. Abbasi, A. Yazdani and B. Rabiee	51
Phase Transformations on ASTM a 744 Gr. CN3MN Superaustenitic Stainless Steel after Heat Treatment M. Ritoni, M. Martins, F.C. Nascimento and P.R. Mei	56
Calculation of the Diffusion Coefficient of Uranium in Compacted Clay: Effect of the Temperature S. Korichi, M. Keddami and A. Bensmaili	64
Surface Characterization of a Nitrided Low Alloy Steel M. Keddami, R. Kouba, R. Chegroune and B. Bouarour	70
Formation of Zirconia and Titania Nanotubes in Fluorine Contained Glycerol Electrochemical Bath Z. Lockman, S. Ismail, G. Kawamura and A. Matsuda	76
Grain Boundary Parameters in Sandstone and Limestone V. Palchik	82
Electrochemical Mass Transfer Measurements of CO₂ in MDEA Solutions R. Maceiras, X.R. Nóvoa, A. Cancela and E. Álvarez	87
Simulation of VOCs Recovery Process by Absorption R. Maceiras, S. Urrejola, A. Cancela, A. Sanchez and J. Díaz	93
The Effect of Stabiliser’s Molarity to the Growth of ZnO Nanorods Z. Khusaimi, M.H. Mamat, M.Z. Sahdan, N. Abdullah and M. Rusop	99
Aligned Growth of Zinc Oxide Nanorods on Catalyst-Seeded Si Substrate by Aqueous-Solution Immersion Method Z. Khusaimi, M.H. Mamat, M.Z. Sahdan, N. Abdullah and M. Rusop	104
Microstructure-Toughness Relationship in AISI4340 Steel N. Saeidi and A. Ekrami	110
Studies of Ionic Conductivity and Dielectric Behavior in Polyacrylonitrile Based Solid Polymer Electrolytes Z. Osman, K.B.M. Isa, L. Othman and N. Kamarulzaman	116

Hydrodynamic Simulation of Drift Mobility in N-Hg_{0.8}Cd_{0.2}Te M. Daoudi, A. Belghachi, L. Varani and C. Palermo	122
Composition Dependent Diffusivities in Multi-Component Systems B. Wierzba and M. Danielewski	127
<i>In Situ</i> Simulation by RHEED and Photoemission of GaAs (001) $\beta_2(2 \times 4)$ Reconstructed Surface H. Khachab, Y. Abdelkafi and A. Belghachi	132
Determination of PBP by Using a Nano SiO₂/GC Modified Electrode A. Shokuhi Rad	138
Molecular Dynamics Simulation of Solidification of Ag-x%Au Nanoalloy J. Davoodi and L. Mehri	143
Diffusion of Hydrogen in Amorphous Ni-Zr Alloys E.A. Pastukhov, N.I. Sidorov, A.A. Vostrjakov and V.P. Chentsov	149
Effect of the Latent Heat on Wax Deposit in Pipelines R. Boucetta and M. Kessal	154
Polyol-Mediated Synthesis of TiO₂ Nanoparticles J.W. Kang, D.H. Kim, V. Mathew, J.H. Gim, I. Yu, C.H. Woo, E.J. Kim, C.H. Choi and J.K. Kim	160
Study of Semisolid and ECAP Processes on Al-Fe-Si Alloy - Microstructure and Kinetic Grain Growth D. Azimi-Yancheshmeh and M. Aghaie-Khafri	166
Phase and Amplitude Control of Optical Properties of Quantum Dot Molecules M. Mahmoudi and S. Goharshenasan	172
Heat Transfer in Nanocomposites with Monte-Carlo Simulations K. Bui and D.V. Papavassiliou	177
The Influence of Rubber Blend Aging and Sample Homogeneity on Heat Transport Phenomena P. Košťál, Z. Jančíková, I. Ružiak, I. Kopal and P. Jonšta	183
Experimental and Theoretical Research of the Shell Side Heat Transfer Coefficient and Pressure Drop in a Plastic Shell and Tube Heat Exchanger R. Aguilar Osorio and K. Clifflie	187
Raman Spectroscopy: Mutual Diffusion Coefficient in Hydrogels A.A. Naddaf and H.J. Bart	193
Characterization of Nickel Based Alloys (Hard Facing Alloys) with Additions of Ti and Mo K. Khenfer, S. Lebailly and S. Hamar-Thibault	199
Effectiveness Parameters for the Heat and Mass Transfer in a Desiccant Wheel C.R. Ruivo, J.J. Costa and A.R. Figueiredo	205
Thin Scandium Layer on Solid Aluminium: Thermodynamic Investigation A.B. Shubin, K.Y. Shunyaev and L.F. Yamshchikov	211
Dynamic Thermal Diffusivity Measurements – A Tool for Studying Gas-Solid Reactions H.M. Ahmed, N.N. Viswanathan and S. Seetharaman	217
Phase Transformation and Thermoelectric Properties of Sn-Filled/Fe-Doped CoSb₃ Skutterudites I.H. Kim	223
A Study on the Coupled Thermal and Damage Effects in Deforming Solids M. Vaz, P.A. Muñoz-Rojas and M.R. Lange	229
Pulse Electrolysis for the Production of Hard Ni/ZrO₂ Composite Coatings M.M. Dardavila and C. Kollia	235
Finite Element Modeling of Silicon Transport into Germanium Using a Simplified Crystal Growth Technique F. Mechighel, M. El Ganaoui, B. Pateyron, M. Kadja and S. Dost	240
Effects of Mechanical Activation during the Synthesis of Tungsten Carbide Powders by Carbothermic Reduction of Tungsten Oxide J. Ma, S.G. Zhu, H. Ding and W.S. Gu	248
Numerical Analysis of Solute Segregation in Directional Solidification under Static Magnetic Field S. Nouri, M. Benzeghiba and A. Benzaoui	253

Effect of Quincke Rotation and Taylor Circulation on Mass Transfer from a Fluid Drop in a Constant Electric Field T. Elperin and A. Fominykh	259
Quantitative Evaluation of the Raman Spectra of Carbon Layers M. Golabczak and A. Konstantynowicz	265
Grain Structure Evolution of Mg Alloy AM60 Influenced by Ca Addition H. Hu, Q. Zhang and X.P. Niu	271
Solidification of Discontinuous Al₂O₃ Fiber Reinforced Magnesium (AM60) Matrix Composite Q. Zhang, H. Hu and J. Lo	277
The Influence of Acetic Acid on High Temperature Corrosion of Selected Steels Utilized in Automobile Industry Z. Grzesik, M. Migdalska and S. Mrowec	283
Effect of Multifilamentary Nb/Cu-Sn Wire Diameter on the Nb₃Sn Diffusion Layers Structure E.N. Popova, E.P. Romanov, I.L. Deryagina, S.V. Sudareva, E.A. Dergunova, A.E. Vorobyova and S.M. Balaev	289
Origin of “Inverse Isotope Effect” of Hydrogen Diffusion in Palladium O. Yoshinari	295
Physical Properties of Diffusive-Hardening Alloys of Copper with Gallium and Tin A.B. Shubin, K.Y. Shunyaev, V.A. Bykov and S.I. Noritsin	301
The Effect of the Microstructure on Oxidation of Sulfide-Metal Alloys of Copper and Nickel E.N. Selivanov, R.I. Gulyaeva, L.Y. Udoeva and A.D. Verchinin	306
Synthesis of W- Cu- Ag Nanopowders Produced by a Co-Precipitation Process G. Taghavi, H.R. Rezaie and H. Razavizadeh	312
Production of Cu/SiC Nanocomposite Layers by Friction Stir Processing M. Barmouz, M.K.B. Givi and P. Asadi	319
Comparison of Corrosion Performance of Zn and Zn/Al 85/15 Coatings Produced by TWEA A. Güleç, F. Yilmaz, A. Türk and F. Üstel	325
Thermo-Mechanical Behaviour of Ultrahigh Molecular Weight Polyethylene-Carbon Nanotubes Composites under Different Cooling Techniques S. Kanagaraj, A. Fonseca, R.M. Guedes, M.S.A. Oliveira and J.A.O. Simões	331
Carbon Fiber-Reinforced Composites in Automotive Engine R.E. Farsani and A. Shokuhfar	341
The Effect of the Pyrolysis Furnace Type on the Yield of Silicon Carbide Whiskers Produced from Rice Husks R.E. Farsani, F. Akhlaghi and A. Sedghi	346
Experimental Study of Enhanced Pool Boiling Heat Transfer Using Graphite Foam Inserts K.C. Leong, L.W. Jin, I. Pranoto, H.Y. Li and J.C. Chai	352
Acoustical Parameters: Aqueous Solution of Borassus Flabellifer Fruit Pulp by Non Destructive Method B. Shrivastava, A. Mishra and S. Phadke	358
Estimation of Effective Moisture Diffusivity in Starchy Materials Following Hydrothermal Treatments S.A. Bahrani, C. Loisel, J.Y. Monteau, S.A. Rezzoug and Z. Maache-Rezzoug	364
Synthesis of Cobalt Nano Particles on Silica Support Using the Strong Electrostatic Adsorption (SEA) Method K.L. Chee, N.A. Mohd Zabidi and M.S. Chandra	370
Corrosion Behavior of Laser Nitrided Ti-6Al-4V Alloy: A Review R.S. Razavi, G.R. Gordani and H.C. Man	376
Mathematical Modeling of Heat Transfer in Laser Surface Hardening of AISI 1050 Steel R.S. Razavi, G.R. Gordani and S. Tabatabaee	381
Reactive Diffusion at the Cylindrical Dissolving of Copper in the Solder Melt J. Drápala, A. Struhařová, D. Petlák, V. Vodárek and P. Kubíček	387
Electron Diffusion in ZnO Nanomaterial: An Ac Impedance Investigation R. Rusdi, N. Kamarulzaman, M. Nor Sabirin, Z. Osman and A.A. Rahman	393
Microstructural Changes of FSX-414 Superalloy during TLP Bonding R. Bakhtiari and A. Ekrami	399

Macrosegregation and Porosity during Directional Solidification of a Ternary Al-9wt%Si-3wt%Cu Alloy	
L.G. Gomes, P.D. Jácome, I.L. Ferreira, D.J. Moutinho, O.L. Rocha and A. Garcia	405
Diffusion Paths in the Ternarysystem Fe-Co-Ni: An Empirical Approach	
J. Priimets and Ü. Ugaste	411
Self-Diffusion Coefficient of Molecular Fluid in Porous Media	
V. Andryuschenko and V. Rudyak	417
Sonochemical Synthesis and Characterization of Hydroxyapatite Nanoparticles	
M. Mohebbali and A. Shokuhfar	423
Numerical Comparison of Two and Three Dimensional Flow Regimes in Porous Media	
A.A. Abbasian Arani and M. Dehghani	427
Free Convection in a Nanofluid Filled Square Cavity with an Horizontal Heated Plate	
A.A. Abbasian Arani, M. Mahmoodi and M. Amini	433
Microstructure Characterization of TBC Layers of Gd₂Zr₂O₇ Type	
G. Moskal	439
Thermal Diffusivity of TBC Layers of RE₂Zr₂O₇ Type	
G. Moskal	445
High Temperature SO₂-Gas Corrosion of Ni-Cr-Co Base Superalloy between 800 and 1000°C	
S.H. Bak and D.B. Lee	451
Modeling of Transient Moisture Diffusion in Wood below the Fiber Saturation Point	
J. Eitelberger and K. Hofstetter	455
Fabrication of Multi-Walled Carbon Nanotube/Vinyl Ester Nanocomposites: Dispersion and Stabilization	
M. Chitsazadeh, H. Shahverdi and M.M. Shokrieh	460
Diffusion in Co-Ni System Studied by Multifoil Technique	
V.D. Divya, U. Ramamurty and A. Paul	466
Microstructure and Hydrogenation Property of Hyper-Eutectic Mg-Ni Alloys	
H. Saitoh, M. Kondo and H. Nakamura	472
Numerical Investigation of Impingement Heat Transfer Enhancement on a Flat Plate with an Attached Porous Medium	
P.S. Wu, Y.W. Lo and F.C. Cheng	477
Oxidation Behaviour of WE54 and Elektron 21 Magnesium Alloys	
A. Kielbus, T. Rzychoń and R. Przeliorz	483
The Influence of Heat Treatment Parameters on the Thermal Diffusivity of WE54 and Elektron 21 Magnesium Alloys	
A. Kielbus, T. Rzychoń and G. Moskal	489
Analytical Solution for Solute Transport in Semi-Infinite Heterogeneous Porous Media	
B.Q. Deng, Y.F. Qiu and C.N. Kim	495
Effect of SiC Volume Fraction on the Microstructural and Mechanical Properties of Cu/SiC Composite Layer Fabricated by FSP	
P. Asadi, M.K.B. Givi and M. Barmouz	500
<i>In Situ</i> Analysis of Hydrogen Mobility during Hydrogen Permeation through Nb-Based Hydrogen Permeable Membranes	
H. Yukawa, T. Nambu and Y. Matsumoto	506
Characterization of Hydrophilic Membranes Based on PVP and Carboxymethylcellulose Staple Fibers Infused with Calcium Alginate	
L.F. de Miranda, M.C. Terence, I.T. Ferro Barbosa, I. Martins Rubin and J.F. Alves	513
Investigation of a New Sn-Cu-Ga Alloy Solder	
M. Matsushita, Y. Sasaki and Y. Ikuta	518
Gas Nitriding of Sintered Austenitic Stainless Steel	
J. Baranowska and V. Amigó	524
Kinetics of Low Temperature Nitriding of Precipitation Hardened Stainless Steel	
P. Kochmański and J. Baranowska	530
Numerical Study of Magnetic Field Effects on Buoyancy Driven Convection in a Non-Isothermally Heated Square Enclosure	
G.A. Sheikhzadeh, M. Pirmohammadi, A. Fattahi and M.A. Mehrabian	536

Microstructure and Properties of CBN Diffusion Coating on High-Speed Steel A.S. Chaus, L. Čaplovič and J. Porubský	542
Confined Bubble and Heat Transfer during Flow Boiling in a High Aspect Ratio Mini-Channel Y. Wang and K. Sefiane	548
Partition of Free Fatty Acids in Deacidification of Macaúba Pulp Oil by Liquid-Liquid Extraction Using Ethanol/Water as Solvent R.G. Brito Mariano, C.M. Da Silva, S. Couri, R.I. Nogueira and S.P. Freitas	554
Reducing Hydrogen Permeation through Metals M. Dapor and A. Miotello	560
Influence of Measurement Results of Thermal Conductivity and Heat Transfer Coefficients on the Simulation Results of Casting Process of Aircraft Engine Elements G. Moskal, J. Cwajna, B. Witala and R. Cygan	566
Characterization of Microstructure and Properties of Plasma Sprayed Ceramic Coatings on AZ91 Magnesium Alloy G. Moskal, A. Iwaniak and B. Witala	571
Characteristics of Thermal Properties of $Gd_2Zr_2O_7 - ZrO_2XY_2O_3$ Powder Mixtures Intended for Deposition of Gradient Layers of TBC Type G. Moskal, L. Swadźba and B. Witala	577
Characteristics of Phenomena in Powders Type $RE_2Zr_2O_7-Al_2O_3$ in High Temperature Annealing Conditions G. Moskal, L. Swadźba, M. Hetmańczyk and B. Witala	583
The Impact of Diffusion Process on the Interface Microstructure in AZ91 Magnesium Matrix Composites Reinforced with TiN Nanolayer Modified Carbon Fibres A. Olszówka-Myalska	589
High-Temperature Diffusion Barrier for Ni-Cr Cast Steel A. Kochmańska and M. Garbiak	595
Real Time Prognostic Strategies: Application to Gas Turbines M. Yadegari	601
Investigation of the Effect of Electrospun Polyethersulfone Nanofibers in Membrane S. Shahgaldi, Z. Yaakob, M. Ghasemi, W.R. Wan Daud and D.J. Khadem	607
Synthesis and Characterization of PES/TiO₂ Nanofibers Membrane D.J. Khadem, Z. Yaakob, S. Shahgaldi, M. Ghasemi and W.R. Wan Daud	613
Weight Analysis in a Quantum Mechanical Transport Model for Nano and Bio Materials P. Di Sia and V. Dallacasa	620
A New Approach for the Diffusion Coefficient Evaluation of Sulfur in $CaO-SiO_2-Al_2O_3$ Slag L. Muhmood, N.N. Viswanathan and S. Seetharaman	626
Experimental Results on Evaporation Waves J.C. Graña-Otero and I.E. Parra	635
Modeling of Heat and Mass Transfer in an Annular Adsorber for Solar Cooling Machine: Performance Coefficients N. Allouache, R. Bennacer, S. Chikh, A. Al Mers and N. Mimouni	641
Characteristics of Liquid–Solid Mass Transfer in a Bubble Column Equipped with a Vertical Tube of Circular Fins H.S. Bamufleh, S.A. Nosier and M.A. Daous	647
Effect of Ti and Fe Alloying on Kirkendall Voids Feature in Ni/Ni₃Al Welded Joints after the High Temperature Annealing M. Losertová, J. Drápala and J. Vrbický	653
Influence of the Thermo-Piezo-Viscous Effect on the THD Lubrication in Porous Self-Lubricating Bearings S. Boubendir, R. Bennacer and S. Larbi	659
Simplified Convective Heat Transfer in Vertical Airflow Regimes with Shading Device M. Haase and A. Amato	665
Numerical Simulations of Heat Transfer in Plane Channel Flow N. El Gharbi, R. Absi and A. Benzaoui	671
Thermal Properties of Zirconium Oxide-Based Ceramic Targets Modified with Oxides of Rare Earth Elements M. Kostecki and A.R. Olszyna	676

Mechanisms of Microstructural Rearrangement on Two-Dimensional Aggregates under Compressive Stress S. Promkotra	682
Microstructural Evolution of Synthesized Polyhydroxyalkanoates (PHAs) Corresponding to their Blends P. Kaewkannetra and S. Promkotra	688
Improving the Diffusion Controlled Cementation of Cadmium Ions Using Reciprocating Fixed Bed of Zinc Rings A.H. El Shazly, A.A. Mubarak and H.S. Bamufleh	694
Augmentation of the Performance of Batch Electrocoagulation Unit by Using Gas Sparging A.H. El Shazly	700
Structure and Thermal Transformations of Hydrated Magnesium Silicates E.N. Selivanov, S.V. Lazareva, L.U. Udoeva and R.I. Gulyaeva	708
Heat and Mass Transfer Made Visible M.F.M. Speetjens and A.A. Van Steenhoven	713
The Influence of Phase Dispersion of Sulfide Alloys on their Electrochemical Properties E.N. Selivanov, O.V. Nechvoglod and S.V. Mamyachenkov	719
Influence of Geometry on the Position and the Intensity of Maximum Kinetic Energy in a Combustion Chamber A.C. Stuparu and S. Holotescu	725
An Overview of the Diffusion Studies in the V-Si System S. Prasad and A. Paul	731
Nutrients and Metabolic Secretions Transfer in Cornea H. Dória Silva, L.C. Pereira Dória, C. Pereira Dória, C. Pereira Dória, M.d.C.T. Dória Silva, H. Dória Silva Júnior and M.T. Dória Silva	737
Structural, Mechanical and Magnetic Properties of Mechanically Alloyed Fe₄₀Co₆₀ Powders F. Otmane, S. Bergheul, M. Zergoug and M. Azzaz	743
New Use Heat Transfer Theories for the Design of Heat Setting Machines for Precise Post-Treatment of Dyed Fabrics R.W.L. Ip and E.I.C. Wan	748
Diffusion of Particles Adsorbed on a Dynamically Disordered Reconstructive Surface A. Tarasenko and L. Jastrabik	752
Sensitivity Tests of Simulation Models Used in Chosen Calculation Codes on Uncertainty of Thermo-Mechanical Parameters during Virtual Mechanical Stress Estimation for Ferrous Alloy Castings Z. Ignaszak and P. Popielarski	758
Estimation of Coupled Thermo-Physical and Thermo-Mechanical Properties of Porous Thermolabile Ceramic Material Using Hot Distortion Plus[®] Test Z. Ignaszak, P. Popielarski and T. Strek	764
Uncertainty of the Diffusion Measurements on Scaffolds for Cell Growth G. Sassi, M. Bernocco and M. Sassi	770
Effect of Co-Doping of Nano Silver, Carbon and Nitrogen on Titania on the Visible Light Activity for Methylorange Degradation N.N. Binitha, Z. Yaakob, P.P. Silija, P.V. Suraja and S.M. Tasirin	776
Modeling of Non-Uniform Thermoelement Devices Subject to Lateral Heat Convection R. Kafafy and A. Hameed	782
Microstructure and Properties of Diffusion Boride Layer on Die Steel M. Beznák, A.S. Chaus and L. Čaplovič	788
Turbulent Diffusion of Suspended Particles: Analysis of the Turbulent Schmidt Number R. Absi, S. Marchandon and M. Lavarde	794
Polymorphic and Morphological Transformation during the Transition from a Propagating Band to Static Bands in the Nickel Hydroxide/Ammonia Liesegang System M. Al-Ghoul and M. Ammar	800
Oxidation and Mechanical Behaviour of Iron Based Alloys and Nickel Based Alloy for Spring Like Interconnects of the PRODHYGE High Temperature Electrolyser M. Lamazouade-Tarek, I. Aubert and J. Jumel	806
Determination of the Pore Sizes and their Influence on the Capillary Imbibition into Glass Wool L. Marmoret, H. Beji and A. Perwuelz	812

Sorptivity and Hydraulic Diffusivity of Coating Gypsum and Impact of Hemp Fibers Addition	
S. Gassita, L. Marmoret, H. Ben Hamed and H. Beji	818
The Influence of Rare Earth, Strontium and Calcium on the Thermal Diffusivity of Mg-Al Alloys	
T. Rzychoń and A. Kielbus	824
Determination of Gamma Transmittance and Density Assessment for Al Doped ZnO Thin Films by Using Gamma Transmission Technique	
B. Karagoz, O. Ozdemir, O. Karacasu, N. Baydogan, H. Çimenoglu, E.S. Kayali, A.B. Tugrul, N. Altinsoy, S. Haciyakupoğlu, S. Kiziltas, M. Okka, G. Albayrak, H. Sengel, F. Akmaz and A. Parlar	830
Electromagnetic Radiation Effect on ZnO Nanocrystallites	
L. Sepet, N. Baydogan, H. Çimenoglu, E.S. Kayali, A.B. Tugrul, N. Altinsoy, G. Albayrak, H. Sengel, F. Akmaz and A. Parlar	836
Single Layer Drying Behavior of Apple Slices in a Microwave Dryer	
S. Çelen, K. Kahveci and U. Akyol	842
Drying Behavior of Polyester Based Yarn Bobbins in a Hot-Air Bobbin Dryer	
A. Cihan, K. Kahveci, U. Akyol and D. Akal	848
Simulation of Drying Behavior of Cotton Bobbins by a Simultaneous Heat and Mass Transfer Model	
U. Akyol, K. Kahveci, A. Cihan and D. Akal	854
Finite Element Simulation of Drying of Rough Rice	
O. Hacıhafızoglu, A. Cihan and K. Kahveci	860
Airborne Pathogens Transport in an Aircraft Cabin	
M.B. Acikgoz, B. Akay, A.F. Miguel and M. Aydın	865
Fluid Flow and Solid/Fluid Suspensions Flow in 3-D Packed Beds of Spheres: The Effect of Periodicity of Fixed Beds	
A. Serrenho and A.F. Miguel	871
Micro Arc Oxidation of AZ91 Mg Alloy for Improved Corrosion Resistance	
H.G. Yavuz, M. Gunyuz, I.M. Ozkara, M. Baydogan and H. Çimenoglu	877
Electrochemical Hydriding of Mg-Based Alloys	
D. Vojtěch, V. Knotek and P. Novák	882
Suppression of Iron Silicide Formation in the Reaction Layer of Sialon – 7.5% Cr Ferritic Steel Joint	
F. Hudiyo, P. Hussain and O. Mamat	888
Elaboration of Sol-Gel Derived Hydroxyapatite / Yttria Stabilized Zirconia Composite Coatings Obtained for Biomedical Application	
S. Salehi and M.H. Fathi	894
Effect of Temperature on the Growth of Vertically Aligned Carbon Nanotubes from Palm Oil	
S. Abu Bakar, S. Muhamad, P.S. Mohamad Saad, R. Md Nor, Y. Mohd Siran, S.A.M. Rejab, A.J. Asis, S. Tahiruddin, S. Abdullah and M.M. Rusop	900
The Effect of Precursor Vaporization Temperature on the Growth of Vertically Aligned Carbon Nanotubes Using Palm Oil	
S. Abu Bakar, S. Muhamad, P.S. Mohamad Saad, S. Afif Mohd Zobir, R. Md Nor, Y. Mohd Siran, S.A.M. Rejab, A.J. Asis, S. Tahiruddin, S. Abdullah and M.M. Rusop	906
Speckle-Based Deflection Techniques in Diffusivity Measurements	
D. Ambrosini, D. Paoletti, R. Di Biase and G. Galli	912
Role of Forming Gas Annealing Characteristics on the Selective Surface Oxidation of Fe-Mn-Si-Cr Model Alloy	
S. Swaminathan and M. Rohwerder	918
Effect of Impinging Jet on Heat Conduction in Workpieces Irradiated by a Moving Heat Source	
N. Bianco, O. Manca, S. Nardini and S. Tamburrino	924
Dispersion of Twin Inclined Fume Jets of a Variable Height within a CrossFlow	
A. Radhouane, N. Mahjoub Said, H. Mhiri, G. Le Palec and P. Bournot	929
Non-Isothermal Enhanced Recovery of Heavy Oils by Numerical Simulation	
A. de Lima Cunha, S.R.F. Neto, A.G.B. de Lima and E.S. Barbosa	935

Numerical Investigation of the Thermal Properties of Irregular Foam Structures S.M. Hossein Hosseini, A. Kharaghani, C. Kirsch and A. Öchsner	941
Performance of a Water Ammonia Absorption System Operating at Three Pressure Levels N. Bouaziz, R. Ben Iffa, L. Kairouani, S. Chikh and R. Bennacer	947
3-D Finite Element Simulation of Friction Stir Welding Process of Non Similar Aluminum-Copper Sheets A. Alimoradi, M. Loh-Mousavi and R. Salekrostan	953
Numerical Simulation of Transient Temperature Fields in Solids Irradiated by Moving Gaussian and Donut Sources O. Manca, S. Nardini, D. Ricci and S. Tamburrino	959
Flow Structure Issued from a Bent Chimney around a Cylindrical Obstacle: Effect of the Aspect Ratio I. Bhouri Baouab, N. Mahjoub Said, H. Mhiri, G. Le Palec and P. Bournot	965
Heat and Mass Diffusion Including Shrinkage and Hygrothermal Stress during Drying of Holed Ceramics Bricks J. Barbosa da Silva, G.S. Almeida, W.C.P. Barbosa de Lima, G.A. Neves and A.G.B. de Lima	971
Effect of Tool Nose Radius on Nano-Machining Process by Molecular Dynamics Simulation S. Vahid Hosseini, M. Vahdati and A. Shokuhfar	977
Investigation of Interatomic Potential on Chip Formation Mechanism in Nanometric Cutting Using MD Simulation S. Vahid Hosseini, M. Vahdati and A. Shokuhfar	983
Oxygen Diffusion in Yttria-Stabilized Zirconia Subjected to Mechanical Stress W. Araki and Y. Arai	989
Low Temperature Nitriding of a Martensitic Stainless Steel R. Karadas, O. Celik and H. Çimenoglu	994
The Effect of Micro Arc Oxidation Process Parameters on Surface Properties of Ti6Al4v Alloy M. Gunyuz, M. Baydogan, H. Çimenoglu and E.S. Kayali	1000
Friction and Wear Behaviour of Borided Ti6Al4v Alloy Sliding Against Al₂O₃ and Si₃N₄ Balls in Water E. Atar, E.S. Kayali and H. Çimenoglu	1004
Nitriding of Cp Titanium F. Seahjani and H. Çimenoglu	1010
Effect of Tube Bending on Heat Transfer Characteristics of Miniature Heat Pipe with Sintered Porous Media P. Sakulchangsatjatai, N. Thuchayapong, P. Terdtoon and N. Sangsirakoup	1015
Thermomechanical Response of LNG Concrete Tank to Cryogenic Temperatures L. Dahmani and R. MEHADDENE	1021
Electrical Properties of Nanostructured Titanium Dioxide Thin Films Prepared by Sol-Gel Spin-Coating Method M.N. Asiah, M.Z. Basri and M. Rusop	1027
Thermal Shock Damage Evaluation of Porous Refractory by Finite Element Method C. Wang and Y.S. Jiand	1032
The Synthesis of VACNTs Grown on Mg_xZn_{1-x}O (0 S. Muhamad, S. Abu Bakar, R. Ahmad, A. Ahmad, Y.M. Siran, S.A.M. Rejab, A.J. Asis, S. Tahirruddin, S. Abdullah and M. Rusop	1038
Synthesis of Supergrowth VACNTs and Nanostructured ZnO by Immerse Method S. Muhamad, S. Abu Bakar, M. Zainizan Sahdan, A. Ahmad, Y.M. Siran, S.A.M. Rejab, A.J. Asis, S. Tahirruddin, S. Abdullah and M. Rusop	1044
Experimental Investigation of Gas-Heavy Oil Molecular Diffusion Coefficient in Porous Media: Experimental Results for CO₂ in Iranian Crudes N. Mirjordavi, M. Kazemeini, R. Kharrat, M.H. Ghazanfari and A. Salehi	1049
Characterization of Interaction Layer in U-Mo-X (X = Nb, Zr) and U-Nb-Zr vs. Al Diffusion Couples Annealed at 600°C for 10 Hours A. Ewh, E. Perez, D.D. Keiser and Y.H. Sohn	1055
Cocoa Husk Waste Mucilage as New Flow Improver in Pipelines H.A. Abdulbari, K.H. Hamad and R.B. Mohd Yunus	1063
Optimization of Dry and Wet Heat Transfer through Textile Structures M.J. Gerales, L. Hes, M. de Araújo, N. Belino and M. Nunes	1068

Design of Multifunctional Truss-Like Periodic Materials Using a Global-Local Optimization Method	
P.A. Muñoz-Rojas, M.A. Luersen, T.A. Carniel and E. Bertoti	1073
Two Phase Dynamic Model for Gas Phase Propylene Copolymerization in Fluidized Bed Reactor	
A. Shamiri, M.A. Hussain and F.S. Mjalli	1079
Rational Design of TiO₂-Based Anode Materials Using Computer Modelling	
M.V. Koudriachova	1085
Diffusion and Electrophoretic Transport of DNA Polymers in Microfluidic Channels Made of PDMS	
R. Sczech, S. Howitz and M. Mertig	1091
Review of Several Studies on High Temperature Oxidation Behaviour and Mechanism of Austenitic Stainless Steels	
H. Fujikawa	1097
Hydrogen-Induced Superabundant Vacancies in Metals: Implication for Electrodeposition	
Y. Fukai	1106
Modern Models of Grain Boundary Diffusion	
V.V. Popov	1116
Growth of Multi-Shaped Zinc Oxide Nanostructures Using C-Axis Oriented Zinc Oxide Thin Film as a Seeded Catalyst via Hydrothermal Aqueous Chemical Growth Method	
M.H. Mamat, Z. Khusaimi and M.M. Rusop	1126
Optical Properties of Nanostructured Zinc Oxides Deposited on Silicon Substrates	
M.H. Mamat, Z. Khusaimi and M.M. Rusop	1132
Optimisation of Envelope Insulation for the Retrofit of an Educational Building	
N.M.M. Ramos, I.M. Ribeiro, P. Santos, J.M.P.Q. Delgado and V.P. de Freitas	1137
Cold-Set Whey Protein Isolate Gels: The Influence of Aggregates Concentration on Viscoelastic Properties	
M. Vázquez da Silva and J.M.P.Q. Delgado	1143
Water Vapour Adsorption Study in Spherical Particles Packed in a Cylindrical Container	
J.M.P.Q. Delgado and M. Vázquez da Silva	1149
Performance and Modelling of Water Vapour Adsorption in Piles of Granules Using a Cylindrical Pore Model	
J.M.P.Q. Delgado and M. Vázquez da Silva	1155
Extraction of Useful Food and Cosmetic Ingredients of Vegetable Origin	
M. Vázquez da Silva and J.M.P.Q. Delgado	1161
Simulation and Modeling of Turbulent Plasma Jet Based on Axisymmetric LBGK Model	
R. Djebali, M. El Ganaoui, B. Pateyron and H. Sammouda	1167
Soil Water Characteristic Curve for a Granite Residual Soil: Experimental and Numerical Results	
A. Topa Gomes, A. Viana Da Fonseca and A. Silva Cardoso	1172
Experimental Investigation of the Evaporation and Stability of a Meniscus in a Flat Microchannel	
S. Harmand, K. Sefiane, R. Bennacer and N. Lancial	1178
Diffusion and Ionic Conduction in Soda-Lime Silicate Glasses and in Alkali Borate Glasses	
H. Mehrer	1184
Mathematical Model of Forecasting the Iron Ore Materials and Coke Quality Indicators	
A.N. Dmitriev, Y.A. Chesnokov, G.Y. Arzhadeeva and Y.P. Lazebnaya	1198
Mathematical Model of Powder Sintering with Nano- and Microadditives	
I.E. Ignatiev, V.I. Bulanov and A.N. Dmitriev	1204
Investigation of Grain Boundary Diffusion in Thin Films by SNMS Technique	
D.L. Beke, A. Lakatos, G. Erdélyi, A. Makovecz, G.A. Langer, L. Daróczy, K. Vad and A. Csik	1208
Diffusion of Charged Species in Metal Oxides and Polymeric Solids Using AC Impedance Technique	
N. Kamarulzaman, R. Rusdi, N.D.A. Aziz, L. Widarti Zainudin and Z. Osman	1216
Comparison of Ionic Diffusion in Sol-Gel Derived Micron and Nano LiTaO₃	
N. Kamarulzaman, L. Widarti Zainudin, R. Yahaya Subban and Z. Osman	1222
Oxygen Diffusion in an Nb-Ta Alloy Measured by Mechanical Spectroscopy	
C.R. Grandini, L.H. de Almeida and D. Rodrigues Júnior	1228

Mechanical Spectroscopy Study on Cu_{53.5}Zr₄₂Al_{4.5} Alloy

O. Florêncio, P.S. Silva, F.H. De Sá, P.W.B. Marques, J.A. Muñoz Chaves, M. Martins Garcia,
L.C. Rodriguez Aliaga and W.J. Botta Filho

1233

Enhanced UHMWPE Reinforced with MWCNT through Mechanical Ball-Milling

A. Fonseca, S. Kanagaraj, M.S.A. Oliveira and J.A.O. Simões

1238