

Table of Contents

Preface and Committees

Nanometric AlNi Precipitation in a 84.68 wt.% Cu-11.25 wt.%Al-4.07 Wt%Ni Shape Memory Alloy	
K. Hamouda, S.M. Chentouf, M. Bouabdallah, H. Cheniti and N. Amimer	1
Transportation and Manufacturing Technology System (TMTS) Vibro-Impact Treatment of Large Pieces	
D. Saidi, M. Bouaziz, A.P. Babichev, K. Hamouda, M.A. Djema and H. Siguerdjidjene	7
Evaluation of the Impact of Temperature and Type of Catalyst on the Bio-Oil Quality Obtained by Biomass Catalytic Pyrolysis Process	
F.L. Mendes, A.R. Pinho and M.A.G. Figueiredo	13
Preparation of Ferromagnetic Manganese Doped Cobalt Ferrite-Silica Core Shell Nanoparticles for Possible Biological Application	
S. Rostamzadehmansoor, M.S. Sadjadi, K. Zare and N. Farhadyar	19
Customer Satisfaction Model in Nano Food Products Using by Customer Knowledge Management (CKM) Approach	
A. Farhadyar, K. Griguryan, N. Farhadyar and F. Farhadyar	26
Degradation Control of Walls with Rising Damp Problems	
A.S. Guimarães, J.M.P.Q. Delgado and V.P. de Freitas	31
The Influence of some Physical Variables in the Capillarity Rise of Different Monolithic Walls	
J.M.P.Q. Delgado, A.S. Guimarães and V.P. de Freitas	37
Chemical Kinetics between Brine and Rock Salt Transitions	
S. Promkotra	43
Quality Improvement and Characteristics of Polyhydroxyalkanoates (PHAs) and Natural Latex Rubber Blends	
P. Kaewkannetra and S. Promkotra	49
Thermal Expansion of Copper and Nickel Sulfides and their Alloys	
E.N. Selivanov, O.V. Nechvoglod and R.I. Gulyaeva	55
Synthesis and Thermal Stability of Nontransformable Tetragonal $(\text{ZrO}_2)_{0.96}(\text{REO}_{1.5})_{0.04}$ ($\text{Re}=\text{Sc}^{3+}, \text{Y}^{3+}$) Nanocrystals	
M.R. Loghman-Estark, R.S. Razavi and H. Edris	60
A New Approach to Surface Tension According to the Surface Topographical Features in Laser Cutting Technology	
M. Harničárová, J. Valíček, J. Müllerová, M. Kušnerová, R. Grznárik and P. Koštial	65
Identification of Surface Quality of Plastic Electrodes after Blasting	
B. Haluzíková, J. Valíček, P. Škubala, M. Harničárová, D. Bražina, V. Szarková, P. Koštial, M. Kušnerová, K. Rokosz, R. Tomkowski and W. Kapłonek	71
Diffusion of Palm Biodiesel in Elastomers Undergoing Multiaxial Large Deformations	
C.S. Ying, A. Andriyana, E. Verron and R. Ahmad	77
Secondary Oil Recovery by Water Injection: A Numerical Study	
A. de Lima Cunha, S.R. de Farias Neto, A.G.B. de Lima and E.S. Barbosa	83
Assessment of Energy Consumption and Internal Stresses in Surface Layer in the Abrasive Electro-Discharge Grinding (AEDG) Process	
A. Golabczak and R. Swiecik	89
Tribological Investigations of TiC+a-C:H Coatings Manufactured on X38CrMoV5-1 Steel Using PVD Technology	
M. Golabczak, P. Jacquet, C. Nouveau and R. Fliti	97
Microstructure and Properties of Heat-Treated 440C Martensitic Stainless Steel	
S.H. Salleh, M.N.B. Derman, M.Z. Omar, J. Syarif and S. Abdullah	105
Diffusion of Biodiesel in Rubber and the Resulting Mechanical Response under Cyclic Loading	
C.A. Bao, A. Andriyana, E. Verron and M.R. Johan	111
Thermochemical Nitriding of Commercial Purity Titanium	
M. İpekçi, F. Seahjani and H. Çimenoglu	117

Numerical Modelling of Metal Foams with Weaire-Phelan Cell	122
S.A. Kaoua, H. Meriem, D. Djaffar and M. Azzaz	
Elaboration and Characterization of Zinc-Based Foams	127
H. Azzaz, K. Sid-Ali, D. Djaffar and M. Azzaz	
Drying of Rough Rice: A Numerical Investigation	131
J.V. da Silva, F.N. Silva, T.H.F. de Andrade and A.G.B. de Lima	
Ionic Conductivity, Morphology and Transport Number of Lithium Ions in PMMA Based Gel Polymer Electrolytes	137
L. Othman, K.B.M. Isa, Z. Osman and R. Yahya	
Description of Whole Banana Drying through a Diffusion Model Using Numerical Solution via Generalized Coordinates	143
C.M.D.P. Silva e Silva, W. Pereira Silva, J.P. Gomes, V.S.O. Farias, L.D. Silva and F.J.A. Gama	
Numerical Solution of the Three-Dimensional Diffusion Equation in Solids with Arbitrary Geometry for the Convective Boundary Condition: Application in Drying	149
V.S.O. Farias, W. Pereira Silva, C.M.D.P. Silva e Silva, L.D. Silva, F.J.A. Gama and A.G.B. de Lima	
Precipitation Processes in Mg-Y-Nd Alloys	155
M. Vlach, B. Smola, H. Císařová and I. Stulíková	
Response of Hot-Extruded Al-Mn-Sc-Zr Alloy to Annealing with Constant Heating Rate	161
M. Vlach, I. Stulíková, B. Smola, H. Císařová, T. Kekule, J. Málek, D. Tanprayoon and V. Neubert	
Experimental and Analytical Investigation of Ammonia Absorption into Ammonia-Water Solution: Free Absorption	167
H. Mustafa	
An Insight into the Effect of Deformation on Carbide Dissolution in the Band Structure of Bearing Steel	171
M. Basirat and H. Fredriksson	
Analysis of Substructure of High-Mn Steels in the Context of Dominant Stress Mechanism	177
M. Jabłońska and A. Śmiglewicz	
Neuro-Fuzzy Adaptive PID Control of Thermoelectric Module for Metal Hydride Reactor	182
T. Nuchkrua and T. Leephakpreeda	
Effect of CaCO₃ Content in Resin Transfer Molding Process	188
I. Rodrigues, S.C. Amico, F. Ferreira Luz, R. Barcella, V.M.F. Bezerra and A.G.B. de Lima	
Resin Transfer Molding Process: A Numerical Investigation	193
I. Rodrigues, S.C. Amico, J.A. Souza, F. Ferreira Luz, R. Barcella and A.G.B. de Lima	
Mechanical Properties and Fracture Behavior of Hot Extruded Mg-5Al-3Ca-xNd Alloys at Elevated Temperature	199
H.T. Son, K.J. Lee and Y.H. Kim	
On the Diffusion Profile at the Brazed Interface between Active Filler Metal and CVD Diamond Plates	203
O.R. Bagnato, F.R. Francisco, E.J. Corat, J.R. Moro and D. Llopes	
Numerical Investigation of Rectified Diffusion for an Acoustically Induced CO₂ Gas Bubble	207
K. Czáder and G.K. Szabó	
Corrosion Resistance of Mg-xAl-3Ca-0.8Sr Magnesium Alloys	213
T. Rzychoń and M. Stopryra	
Analysis of Impact of Selected Structure Parameters of Reinforcing Preforms for Metal-Matrix Composites on their Saturation Process	219
D. Nagolska and K. Gawdzińska	
Forced Convection Mechanism Failure in the Eye Can Cause Cataract	225
H. Dória Silva, E. 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	
Forced Convection Mechanism Failure in the Eye Can Cause Macular Degeneration	230
H. Dória Silva, E. 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	
Fluorescence Study of Ionic Intercalation/De-Intercalation in the Reaction-Diffusion Mediated Polymorphic Transition of a Class of Nanolayered Material	235
J. Rahbani and M. Al-Ghoul	
Effect of Interfaces and Cr Diffusion on Stabilizing Cu Conductivity in Nb₃Sn-Strands	241
E.N. Popova, I.L. Deryagina, M.V. Polikarpova, D.C. Novosilova and A.E. Vorobyova	

Cold-Metal-Transfer Arc Joining of Al 6K32 Alloy to Steel Sheets	247
M.J. Kang and C.H. Kim	
Influence of Heat Treatment on Corrosion Resistance of the ZnAl₂₂Cu₃ Alloy	252
R. Michalik and H. Woźnica	
The Effects of CaF₂ in Mica Glass-Ceramics	258
M. Ghasemzadeh and A. Nematí	
Design of Biogas Pipeline Energy and Sanitation	
E.G. Junior, J.R. Camargo, R.R. Santos, F.S. Rezende, A.M. Cassula, E.M. Trindade and J.R. Bertoncello Danieleotto	264
Investigation of Salt Diffusion in Soil by Using Radiotracing Technique	
A.F. Baytaş, A.B. Tugrul, F. Gökbüyük, N. Baydogan, N. Altınsoy, S. Hacıyakupoğlu, N. Karatepe, S. Erentürk, B. Büyük, E. Demir and Z. Camtakan	274
Mass Transfer with Chemical Reactions in Porous Catalysts: A Discussion on the Criteria for the Internal and External Diffusion Limitations	
S. Gültekin	279
The Process of Tungsten-Nitride Precipitation upon Nitriding Ferritic Fe-0.5 at.% W Alloy	
B. Schwarz, R.E. Hörrth, E. Bischoff, R.E. Schacherl and E.J. Mittemeijer	284
Refractive Index and Extinction Coefficient of ZnO:Al Thin Films Derived by Sol-Gel Dip Coating Technique	
N. Baydogan, T. Ozdurmusoglu, H. Çimenoglu and A.B. Tugrul	290
Surface Characterization of Irradiated ZnO:Al Thin Film by Reactor Neutrons	
N. Baydogan, K. Çilingiryan, A.B. Tugrul, H. Çimenoglu and S.S. Yeşilkaya	294
Growth of Calcium Phosphate Coating on Ti-7.5Mo Alloy after Anodic Oxidation	
A.L.A. Escada, J.P.B. Machado, R.Z. Nakazato and A.P. Rosifini Alves Claro	297
A Contaminant Transport in Partially Saturated Porous Media	
J. Kačur and J. Minár	303
Infiltration in Porous Media Using Centrifuge with Moving Arm	
J. Kačur, J. Minár and H. Budáčová	309
Mechanical Properties Gradient Existing in Real Castings Taken into Account during Design of Cast Components	
Z. Ignaszak, J. Hajkowski and P. Popielarski	314
Accessing the Influence of Hess-Murray Law on Suspension Flow through Ramified Structures	
A. Serrenho and A.F. Miguel	322
Ammonia Synthesis Using Magnetically Induced Reaction	
N. Yahya, P. Puspitasari and N.H. Noordin	329
Salt Degradation in Stone of Old Buildings	
J.M.P.Q. Delgado and V.P. de Freitas	337
Wetting and Drying of External Surfaces with ETICS Systems	
E. Barreira, J.M.P.Q. Delgado and V.P. de Freitas	343
Capacitance-Voltage (C-V) Properties of ZnO:Al/p-Si Heterojunctions	
N. Baydogan, Y. Gokce, M. Baydogan and H. Çimenoglu	349
Jahn-Teller Phase Transitions in Non-Stoichiometric Oxides with Perovskite Structure: Effect of Mechanical Activation	
A.Y. Fishman and N. Tkachev	353
2D Flow in a Wall-Bounded Porous Medium	
P.J.S.A. Ferreira de Sousa, I. Malico and G. Fernandes	359
Sewage Sludge Flow and Drying Characteristics in Paddle Dryers	
H.L. Zhang, X.Z. Liu, S.G. Zhu and B. Li	365
Effect of Mechanical Activation on the Electrochemical Behavior of MnO₂	
G.A. Kozhina, A.N. Ermakov, V.B. Fetisov, A.V. Fetisov, K.Y. Shunyaev, A.N. Dmitriev, S.A. Petrova and R.G. Zakharov	369
The Reducibility of the Iron Ore Materials as Instrument of the Coke Consumption Decrease in the Blast Furnace Smelting	
A.N. Dmitriev, Y.A. Chesnokov and G.Y. Vitkina	375
Nanozirconium Carbide Powder Synthesis via Carbothermal Route	
F. Arianpour, F. Kazemi, H.R. Rezaie, A. Asjodi and J. Liu	381

