

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. Košťál	65
Identification of Surface Quality of Plastic Electrodes after Blasting B. Haluzíková, J. Valíček, P. Škubala, M. Harničárová, D. Bražina, V. Szarková, P. Košťál, 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. Ipekci, F. Seahjani and H. Çimenoglu	117

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

Cold-Metal-Transfer Arc Joining of Al 6K32 Alloy to Steel Sheets M.J. Kang and C.H. Kim	247
Influence of Heat Treatment on Corrosion Resistance of the $\text{ZnAl}_{22}\text{Cu}_3$ Alloy R. Michalik and H. Woźnica	252
The Effects of CaF_2 in Mica Glass-Ceramics M. Ghasemzadeh and A. Nemati	258
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 Danieleto	264
Investigation of Salt Diffusion in Soil by Using Radiotracing Technique A.F. Baytaş, A.B. Tugrul, F. Gökbülak, N. Baydogan, N. Altinsoy, S. Hacıyakupoğlu, N. Karatepe, S. Erentürk, B. Büyükt, 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. Hörth, 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 MnO_2 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

