

Table of Contents

Preface

Heat Exchange in Unsaturated Porous Media with Heat Dependent Water Flow J. Kačur and P. Mihalá	1
The Speedup of the Calculation of Heat Transfer Parameters in Thermal Insulation Coating Experiments M. Kopčok, M. Jurči, G. Pavlendová and P. Šín	11
Permeation Data Analysis Considering a Nonzero Hydrogen Concentration on the Low Pressure Detector Side for a Purged Permeation Experiment A. von der Weth, F. Arbeiter, D. Klimenko, V. Pasler and G. Schlindwein	18
CaCO₃ Particle-Filled Polymer Composite Manufacturing via RTM Process: An Experimental Investigation I. Rodrigues, J.V. da Silva, E.M.A. Pereira, S.C. Amico, A.G. Barbosa de Lima and D.C.M. Cavalcante	30
Drying of Sisal Fiber: A Theoretical and Experimental Investigation J.F. de Brito Diniz, H.G.G.M. Lima, A.G. Barbosa de Lima, J.J.S. Nascimento and A.D.O. Ramos	36
Drying of Banana Slices: Lumped Model Application and Experiments R.P. de Farias, V.A.B. de Oliveira, V.A.A. Brandão, W. Pereira da Silva, A.G. Barbosa de Lima and J.J.S. Nascimento	42
Drying of Industrial Hollow Ceramic Brick: A Numerical Analysis Using CFD M.V. Araújo, R.S. Santos, R.M. da Silva, J.B.S. do Nascimento, W.R. Gomes dos Santos and A.G. Barbosa de Lima	48
Heat Transfer in Packed Bed Elliptic-Cylindrical Reactor: The Geometry Effect R.M. da Silva, A.S. Pereira, A.G. Barbosa de Lima, M.V. Araújo and R.S. Santos	54
Synthesis and Characterization of Double-Promoted Copper-Based Catalysts for CO₂ Hydrogenation into Fuels T.S. Tuan Sulong, N.S.A. Halim and N.A.M. Zabidi	60
Effect of Vanadium Addition on the Surface Roughness and Fatigue Crack Propagation in a Railroad Wheel Using Twin Disc Wear Test A.B. Rezende, G.A. Amorim, D.J. Minicucci, S.T. Fonseca and P.R. Mei	66
Synthesis and Characterization of Titanium Dioxide Nanoparticles for Application in Enhanced Oil Recovery H.M. Zaid, H. Fakhruddi, F.Y. Yow, N. Razali and Y.K. Dasan	74
Dissolution of Al 6%wt c Mixture Using Mechanical Alloying R. Dabouz, M. Bendoumia, L. Belaid and M. Azzaz	82
Lithium Diffusion in Amorphous Li_xSi (x ≤ 0.4) Materials F. Strauß and H. Schmidt	88
Relaxation Effects in Nonstoichiometric NBT-Based Ceramics E.D. Politova, D.A. Strebkov, D.A. Belkova, G.M. Kaleva, N.V. Golubko, A.V. Mosunov, N.V. Sadovskaya and P.K. Panda	95
Application of Reverse Logistics for the Recycling of Polypropylene Waste and Oyster Shell M.F.S. Gonçalves, N.C. Pereira and M.C. Terence	101
Measurements of Surface Tension for Mineral and Crude Oil Systems B. Busahmin and B.B. Maini	106
Fabrication and Characterization of Cu Doped CeO₂ by Hydrothermal Process for Antimicrobial Activity Y.B. Choi, J.H. Son and D.S. Bae	114
Tnr Dependent Hot Rolling Microstructure and Texture Development in C-Mn Dual Phase and HSLA Steels J.P. Gautam, A. Miroux, J. Moerman and L.A.I. Kestens	120
Evolution of Microstructural and Mechanical Properties of Fiber Laser Welded Dual Phase Steels P.V.S. Lakshminarayana, J.P. Gautam, P. Mastanaiah, G.M. Reddy and K. Bhanu Sankara Rao	128

Solidification of Ni-Ti Shape Memory Alloy: Modeling and Simulation L.C. Carvalho, A.G. Barbosa de Lima, R.N.C. Duarte, G. Moreira, M.K.T. de Brito and R. Araújo de Queiroz	136
Study on Flame Propagation Characteristics According to New Ignition- Source in a Constant Volume Combustion Chamber M.S. Choe, K.S. Kim and D.S. Choi	142
Fluid Structure Interaction Analysis of Liquid Tanks by the Coupled SPH - FEM Method with Experimental Verification M.S. Kusić, J. Radnić, N. Grgić and A. Harapin	152
Large versus Small Grain Sizes on Fatigue Life of Aluminum Aircraft Wheels F. Alzubi, M. Timko, Y.J. Li, R. Toal, K. Tovalin and O.S. Es-Said	174
Graphene Utilization for Water Desalination Process M. Sabet, H. Soleimani, E. Mohammadian and S. Hosseini	195
Application of Nuclear Gamma-Resonance Spectroscopy for Determination of Grain-Boundary Diffusion Characteristics and the State of Grain Boundaries V.V. Popov	201
Reduction Roasting of Titaniferous Ores A.N. Dmitriev, R.V. Petukhov, G.Y. Vitkina and E.A. Vyaznikova	215
Research of Titaniferous Ores Melting and Properties of Cast Iron and Slag A.N. Dmitriev, R.V. Petukhov, G.Y. Vitkina and E.A. Vyaznikova	221
The Quantum Effect on Mass Transfer in the Surface Layer in Stressed Solids Y.A. Khon, H. Zapolsky, S.E. Kulkova, A.V. Bakulin, A.N. Ponomarev and N.G. Bobenko	226
Convective and Microwave Drying of Prolate Spheroidal Solids: Modeling and Simulation E.G. da Silva, E.S. de Lima, W.M.P.B. de Lima, A.G. Barbosa de Lima, J.J.S. Nascimento and F.J. Simões	233
Effect of Intermediate Heat Treatment on the Formation and Structure of Superconducting Layers in Multifilamentary Nb₃Sn- Based Wires E.N. Popova, I.L. Deryagina and E.G. Valova-Zaharevskaya	239
On the Physics of Anomalies of Boron Nanosegregation at Dislocations in FeAl Y.S. Nechaev and A. Öchsner	246