

Table of Contents

Preface

Chapter 1: Numerical Investigation of Transfer Phenomena in Heat and Fluid Flow in the Technical Systems

Study of Natural Convection Melting of Phase Change Material inside a Rectangular Cavity with Non-Uniformly Heated Wall A. Laouer, N. Boulaktout, E.H. Mezaache and S. Laouar	3
Heat Transfer Enhancement of Heat Sources at its Optimum Position in a Square Enclosure with Ventilation Ports F.Z. Benouis and O.A. Yacine	12
Forced Convection inside a Vertical Circular Cylinder with an Inner Coaxial Rectangular Cylinder H.A. Boughezala, S. Bouabdallah and A. Boukhari	25
Effects of Important Parameters on the Transition from Forced to Mixed Convection Flow in a Square Cavity S. Boulkroune, O. Kholai and B. Mahfoud	36
Conjugate Heat and Mass Transfer on Steady MHD Mixed Convection Flow along a Vertical Slender Hollow Cylinder with Heat Generation and Chemical Reaction Effects F. Saidoune, M.N. Bouaziz and A. Aziz	53
Heat Transfer Mode and Effect of Fluid Flow on the Morphology of the Weld Pool A.H. Zitouni, P. Spitéri, M. Aissani and Y. Benkheda	66
Prandtl and Richardson Number Effects on Mixed Convection in a Vented Enclosure on Application to the Cooling of the Fins M. Chaour and S. Boudebous	78
Heat and Mass Transfer in an Inclined Bi-L-Shaped Layered Porous Media: Effect of Buoyancy Ration L. Abdelkrim and D. Mahfoud	87
Numerical Simulation of Boundary Conditions Effect on Heat Transfer and Entropy Generation in a Square Cavity Filled with Al_2O_3-Cu -Water Hybrid Nanofluid I. Zeghibid and R. Bessaih	98
Numerical Study in Three Dimensions of Influence of the Fluids Nature and Obstacle Position on the Electronic Component Cooling K. Chadi, N. Belghar, B. Guerira and Z. Driss	110
Numerical Investigation of Orifice Shape Effect on the Flow Behavior of the Jet-Cavity Interaction K. Boualem	122
Numerical Assessment of Turbulent Flow Driving in a Two-Sided Lid-Driven Cavity with Antiparallel Wall Motion E.A. Azzouz, S. Houat and A.Z. Dellil	133
Ventilation of Square Cavity Containing a Heat Source D. Chati, S. Bouabdallah and B. Ghernaout	149
Upper Openings Ventilation System Study of the Building by the Lattice Boltzmann Model Z.E. Bouayed and S. Houat	164

Chapter 2: Heat and Mass Transfer Processes in Technologies of Food Industry

Drying Kinetics, Desorption Isotherms and Apparent Diffusivity of Sage Leaves B. Ouahida	173
Food's Conservation into 03 Dimension's Models of Cold Stores Operated by 03 Refrigeration Systems in Biskra Region (Classic, Absorption, Adsorption) K. Benlouanas and L. Serir	182

Realization of a Solar Dryer Assisted by a Parabolic Dish Concentrator A. Laouini, B. Benhaoua, K. Aoues and A. Atia	192
--	-----

Chapter 3: Materials Structure and Processing

Corrosion Behavior of Electrodeposited Nickel Coating Reinforced by Cr₂O₃ Particles S. Marmi, S. Siad, A. Chala and H. Marmi	203
Electrodeposited Ni-Co Films from Electrolytes with Different Co Contents O. Herzallah, H.B. Temam, A. Ababsa and A. Gana	219
A Comparative Study of Microstructure, Coefficient of Friction and Wear Rate of Alloy Ni-Cr-B-Si-C-W M.N. Bachirbey, M.S.E. Bougoffa, C. Benouali and T. Sayah	229
Effect of Lanthanum Substitution on Structure and Modulation in Bi₂Sr_{2-x}La_xCaCu₂O_{8+d} (0≤x≤0.3) Superconducting Compound M. Mimouni, M.S. Mahboub, M.F. Mosbah, G. Rihia, S. Zeroual, M. Ghougali and A. Beggas	240
Study of the Structural, Dynamic and Thermodynamic Properties of the III- Antimonides Semiconductors S. Bounab, A. Bentabet and Y. Bouahadda	250
The Calcination Temperature Effect on the Phase Formation of the PZT Ceramic: How the same Calcination Temperature, Result in Different Phase's Formation M. Mahdi and M. Kadri	256
Propolis Extract as Corrosion Inhibitor of Iron Alloy Immersed in an Ethylene Glycol / Water, 0.1 M NaCl Solution H. Hachelef, A. Khelifa and B. Abderrahim	265
Optical, Structural and Spectroscopic Characterization of ZnS Nanocrystals Embedded in KBr Single Crystal Matrix Grown by Czochralski Method S. Zeroual, M.S. Mahboub, G. Rihia, M. Mimouni, G. Mebrouk and M. Sebais	274
Investigation of the Structural, Optical and Electrical Properties of Zinc Oxide Co-Doped with Fluorine and Cobalt A. Diha, L. Fellah, S. Benramache and O. Belahssen	285
Effect of Pulse Current Electrodeposition on Structural, Mechanical and Corrosion Resistance Properties of Ni- TiO₂ Nanocomposite Coatings S. Siad, S. Marmi, A. Chala and A. Mekkaoui	292
Microstructural and Mechanical Properties of Welding and Thermal Spraying Coatings on Ductile Cast Iron A. Kellai, S. Kahla, S. Dehimi and B. Babes	300
Mechanical and Tribological Behaviors of Nanocomposite Titanium Nitrides Coatings A. Belgroune, L. Aissani, F. Salhi, C. Nouveau and A. Alhussein	312
Optimization of Automatic TIG Welding Parameters of AISI 304L ASS Welds Using Response Surface Methodology T. Saadi, M.F. Benlamnouar, N. Bensaid, A. Boutaghane, M.A. Soualili and H. Hachemi	319
Microstructural Characterization, Tribological and Corrosion Behaviour of Forged and Cast Grinding Balls a Comparative Study K. Bouhamla, A. Gharbi, O. Ghelloudj, A. Hadji, M. Hichem, S. Remili and S. Chettouh	334
Thermo-Kinetic Study of Adsorption of Methylene Blue in Aqueous Solutions Using Algerian Illite Natural and Activated Mineral Clay L. Haddad, A. Hima, B. Dadamoussa and A.M. Aoun	348
Realization and Characterization of CH₃NH₃PbI₃ /c-Si Heterojunction F. Khelfaoui, I. Belaidi, N. Attaf, M.S. Aida and J. Bougdira	364
Effect of Rolling Deformation on Corrosion Behaviour of AISI 304L in 3% NaCl Solution L. Yahia, E. Nouicer and F.Z. Benlahreche	375
Improving Microhardness of AISI 316L Stainless Steel by Ball Burnishing- Optimization by BOX-BEHNKEN Model S. Attabi, L. Laouar, M. Mokhtari, A. Himour and H. Elmsellem	385
Experimental Study of Tool Wear Evolution during Turning Operation Based on DWT and RMS H. Zaida, A.M. Bouchelaghem and S.E. Chehaidia	392

Electrochemical and Theoretical Studies of <i>Inula viscosa</i> Extract as Green Corrosion Inhibitor for Mild Steel in Hydrochloric Acid Solution S. Elhassasna, H. Brahim and H. Samah	406
Heat Treatment Effect on the Microstructural, Hardness and Tribological Behavior of A105 Medium Carbon Steel A. Gharbi, K. Bouhamla, O. Ghelloudj, C.E. Ramoul, D. Berdjane, S. Chettouh and S. Remili	419
Characterization of Concrete by Using Bulk Longitudinal Ultrasonic Waves at Low Frequencies- Correlation with Compressive Strength Testing H. Slimani, N. Cheniti, K. Abdelli and T. Boutkedjirt	430
Optical Properties of Lithium Borate Glass Containing Barite K. Abdellaoui	441
Effect of Heat Treatment on the Structure, Wear and Corrosion of AISI L6 Tool Steel O. Ghelloudj, A. Gharbi, D. Zelmati, K. Bouhamla, C.E. Ramoul and D. Berdjane	448
Tamanrasset's Clay Characterization and Use as Low Cost, Ecofriendly and Sustainable Material for Water Treatment: Progress and Challenge in Copper Cu (II) A. Kourim, M.A. Malouki, A. Ziouche, M. Boulahbal and M. Mokhtari	457
Application of Associated and Non-Associated Flow Metal Plasticity for F.S.S Sheet O. Chahaoui, H. Soltani and N. Matougui	473
Study of Chemical and Physical Characterization of the Natural Dolomite of Ain Mlila-Algeria K. Abdellaoui, A. Boumaza and N. Kamoun	481
Contribution of the Tribal Study to the Effectiveness of the Wool Fiber Composite Compared to Fiberglass Composite Materials N. Kacimi and A. TAFRAOUI	492
Wire Drawing Effect on Microstructural and Textural Evolution in Medium Carbon Steel Wires M.C. Nebbar, M. Zidani, S. Messaoudi, T. Abid, A. Kirsane-Bouzidi and T. Baudin	505
Effect of Fibers Orientation on the Fracture of Polymer Concrete Based on Quartz, Polyester and Jute Fabrics H. Benkharbeche, M. Rokbi, Z.E.A. Rahmouni, M. Ghebouli, M. Grine and B. Baali	511
Use of Glass Powder and Sand Dune in Concrete: Characterization and Performance S. Saggai, W. Bouaka, A. Benhaddou and I. Belaid	521