

Table of Contents

Preface

Chapter 1: Alternative Energy

Solar Light Bulbs: Effect of the Volume and Shape of the Pet Bottles on the Luminous Flux V. Velazquez-Martínez, L.Y. Villagrán-Villegas, M. Patiño-Ortiz, J. Patiño-Ortiz, D. Valles-Rosales and A. Marquina-Chavez	3
Numerical and Geometrical Analysis of the Onshore Oscillating Water Column Wave Energy with a Ramp M.R. Oliveira, E.D. Santos, L.A. Isoldi, L.A.O. Rocha and M.d.N. Gomes	11
Numerical Research of a Solar Driven Bubble Pump for Diffusion Absorption Refrigeration Systems B. Gurevich and A. Zohar	27

Chapter 2: Basics of Heat Transfer and Fluid Flow

Heat Dissipation by Streams of Bifurcated Tubes D. Nitesh, M. Aydin, E. Aydin and A.F. Miguel	39
Evaluation of Secondary Flow between Rotating Concentric Spheres Using a Perturbation Method R.L.C. Bustamante, A.H. Pérez and A.L. Márquez	49
Simulation of Multi-Gas Jet Flows by Use of Quasi Gas Dynamic Equation System E.V. Shilnikov and T.G. Elizarova	73
Application of the Complex Variable Step Method and the Boundary Element Method for Sensitivity Analysis of Steady Heat Conduction Problems G. Dziatkiewicz, E. Majchrzak and B. Mochnacki	83

Chapter 3: Industrial Research and Applications

Thermal and Environmental Benefits of 3D Printing on Building Construction A.S. Guimarães, J.M.P.Q. Delgado and S.S. Lucas	99
The Marangoni Convection Effect on Melt Pool Formation during Selective Laser Melting Process S. Aggoune, F. Hamadi, K. Kheloufi, T. Tamsaout, E. Amara, K. Boughrara and C. Abid	107
Analysis of the Cooling Concept of the Braking System of a Formula Student Racing Car Using CFD Simulation and 1D Simulation R. Stauch, J. Bög, S. Grabant, R. König and D. Traub	115
Combustion Characteristics According to the Chemical Composition of Land Fill Gas M. Choe, Y. Jeon and D. Choi	131
Analytical Study of Insulation Characteristics of Thermal Batteries with Vacuum Insulation C.H. Kim, J.H. Choi, S.Y. Park, H.C. Lee, S.J. Lee and G. Kim	141
Mathematical Modelling of Electrophysical Water Treatment T.A. Kudryashova, S.V. Polyakov and N.I. Tarasov	149
Application of Population-Based Techniques to Identification of Diffusive and Convective Parameters in Timber Drying K.L. Holek, P.S.B. Zdanski and M. Vaz Jr.	163
Elaboration and Characterization of Cu Based Nanocomposites for Electromagnetic Interferences Shielding F. Kara, F. Otmane, S. Bellal, A.D. Guerfi and S. Triaa	177
Analysis of the Influence of Continuous-Drive Friction Welding on the Microstructure and Mechanical Properties of the UNS C64200 Bronze-Aluminum-Silicon Alloy P.S.P. Monteiro, G.A. dos Santos, F.Y. Nakamoto, M.S. Nascimento, R. Teram, V.T. dos Santos, M.R. da Silva, A.A. Couto, I.F. Machado and S. Brandi	185

Evaluation of the Environmental Fatigue at a Long Radius Elbow of a Piping System under Transient Thermo Mechanical Stresses

L. Ramos-Cantú, L.H. Hernández-Gómez, R. García-Illescas, T.N. Arreola-Valles, J.J. Moctezuma-Reyes, L.G. Carbajal-Figueroa, A. Armenta-Molina and J.A. Beltrán-Fernández

197

Additive Manufacturing on Building Construction

A.S. Guimarães, J.M.P.Q. Delgado and S.S. Lucas

207