

Table of Contents

Preface and Organizing Committee

Chapter 1: Engineering Materials

Alternate Materials for Glass Fibre R. Kendre	3
Development of Mica-Based Glass-Ceramic with 4 Mol% of Fluorapatite B. Jia and C. Duangrudee	8
A Study on Nanosilver Adhesive for LED Light Application H.B. Park	14
Preparation and Adsorption Study of Gelatin/Activated Carbon Composite Bead Form F. Hayeeye, M. Sattar, W. Chinpa and O. Sirichote	18
Precipitation Behavior and Magnetic Properties of Nanoscale Particles in a Cu–10 at% Ni–5 at% Co Alloy D.H. Lee, M. Takeda, M. Takeguchi and D.S. Bae	23

Chapter 2: Technologies and Systems of Materials Processing

The Experimental Analysis of Cold Pressed Joint Technology for Selected Sheet Metals Used in an Automotive Industry J. Mucha, L. Kaščák and E. Spišák	33
Analysis of Fracture Process and Common Defects in Casting Alloys EN43100 Manufactured by Die Casting Technology S. Gaspar and J. Pasko	39
Fabrication of the Electroplated CBN Wheel for Cylindrical Grinding with Abrasive Phyllotactic Pattern Z.Z. Liu, J. Wang, Y.S. Lu, F. Ma, L. Xiang and S. Zhang	44
Investigation on Work Hardening Behavior of Nickel-Base Superalloy during Hot Working Process by EBSD S. Fang, M.C. Zhang, Q.Y. Yu, S.Y. Wang and C.X. Cao	50
Cutting Performance of Coated High Speed Steel Hobs in Dry Hobbing A. Kubo, H. Qiu and H. Matsuoka	56
Preliminary Experimental Study on Effect of Cutting Fluid on Milled Surface Quality of Iron-Base Superalloy P. Yan, X. Su, G. Wang and Y.M. Rong	61
Experiment Research of Coal's Spontaneous Combustion Characters Y.M. Zheng and J.F. Zhang	66
Disk Laser Welding of ZE 41 Magnesium Alloy M. Sahul, M. Sahul, M. Turňa and P. Zacková	71
Disk Laser Welding of Copper to Stainless Steel M. Sahul, M. Sahul, M. Turňa and P. Zacková	76
Application of a Ternary Zn-Based Solder Alloy for Joining of AZ31B Magnesium Alloy with Ultrasonic Support M. Jáňa, M. Turňa, M. Marônek, M. Kuruc and P. Bílek	82
Influence of Tool Design and Process Parameters on Friction Stir Weldability of AZ31B Magnesium Alloy M. Jáňa, M. Turňa, J. Urminský, M. Kuruc and P. Zifčák	89
Optimization of Drilling Process Parameters for Minimizing Surface Roughness in Carbon-Carbon Composite Materials K.V. Krishna Sastry and V. Seshagirirao	96

Chapter 3: Building Materials and Technologies

Evaluation of Durability of Mineral Wool Products A.D. Zhukov, E.Y. Bobrova and T. Smirnova	109
Development of Mechanical Properties of Steel Fibers Reinforced High Strength Concrete F. Vogel, O. Holčápek, M. Jogl, K. Kolář and P. Konvalinka	113
Parallel Heat Transfer Model of a Panel with Phase Change Material for Thermal Storage Applications Computed on Graphics Processing Units L. Klimeš, P. Charvát, M. Ostrý and J. Stetina	118
Latent Heat Storage Plaster: Lab-Scale Experiment and Simulation M. Ostrý, P. Charvát, T. Klubal and L. Klimeš	124
Analysis of Mechanical Properties of a Fibre Composite Containing Secondary Raw Materials M. Jogl, P. Reiterman, O. Holčápek, F. Vogel, K. Kolář and J. Kořátková	129
Quality Characterization of Iron Dust Exhaust Thermal as Alternative Ceramic Coating Raw Materials in a Brazilian Company L.O.V. dalla Valentina, M.V. Folgueras, W.R. Knop, M.C.P. do Nascimento and G.A. Prates	135
Accelerated and Natural Weathering of Wood-Polypropylene Composites Containing Pigments M. Hyvärinen, S. Butylina and T. Kärki	139

Chapter 4: Designing and Researching of Machines and Mechanisms, Control and Automation

Eccentric Loading Condition Analysis of 1MN Dead Weight Force Standard Machine L.J. Yu, G.F. Li, T. Lei and X.B. Chen	149
Research on Wheel Loader Duty Cycle Test and Numerical Expression N.W. Zou, Y.T. Wei, D.S. Zhou and Y.F. Miao	154
A Comparing Study on Voltage Support Ability between STATCOM and Generator Y.G. Yang, Z.C. Yuan, R. Chen, J.X. Lin and W. Tan	160
Piezoelectric Optimum Placement via LQR Controller A.S. de Oliveira, D. da Costa Ferreira, F.R. Chavarette, N.J. Peruzzi and V.C. Marques	166
Taihe Circuit, a Novel Circuit Topology for Conversion from Single-Phase to Three-Phase Y.Q. Zhu, W.R. Guo, G.J. Wang, G.Q. He and Y.F. Wen	172
Characteristics Analysis and Optimization of Flying-Wing Vehicle Structure H.X. Zhou and B. Liu	177
Eco Hybrid Scooter G. Bansal, S. Chadha, S. Gupta and R. Gupta	185
Static and Dynamic Characteristics Analysis of HTM125 Milling Complex Machining Center Column Y.H. Wu, Y.H. Ren, D.H. Zhao and F. Lu	191
Design and Construction of a Small Reverberation Chamber Applied to Absorption and Scattering Acoustic Measurements D. Hernandez, E.J. Liu, J.H. Huang and Y.C. Liu	197
Static Characteristic Analysis of Pneumatic Planar Flexible Bending Joint H.B. Liu, D.X. Geng, Y.W. Zhao, X.M. Liu and G.B. Wu	203
Numerical Study of Flow over Sphere at Supercritical Reynolds Numbers Y.F. Wang, G.Q. Tao, D.X. Liu, J.Z. Hu and Z. Wu	207
Telescopic Boom Design and Finite Element Analysis Based on ABAQUS H.L. Guo, X.H. Mu, K. Lv and F.P. Du	215
Robotic System Used for Navigation and Tracking, in Real Time, with the Obstacle Avoidance D. Popescu, L. Ichim, R. Fratila and D. Gornea	221
Application of Multi-CPU224 and Touch-Screen Communication on Silk Cake Transport Production Line J.G. Zhang, M.H. Li, Y.Y. Ning and Y.T. Li	227

Chapter 5: Signal and Data Processing, Computer Algorithms

Efficient CPS Method for Improving the Sampling Resolution of Periodic Signals Y.C. Yeh, L.C. Lin and Y.D. Chen	235
Multi-Objective Optimal Power Flow Solutions Using Differential Search Algorithm I. Srikun	241
Emotional Classification Algorithm of Micro-Blog Text Based on the Combination of Emotional Characteristics B. Yuan, T. Jiang and H.Z. Yu	246
A Weighted Centroid Localization Algorithm Based on RSSI and Virtual Static Beacon Nodes Y.K. Li, H.G. Shao and S.Z. Ni	252
Research on Semantic Workflow Establishment of Vessel Survey Field Operation W. Lu, S.D. Fan, J.Y. Cao, C.P. Wang and P.L. Dong	257

Chapter 6: Engineering Management in Industry

Diagnosis of Wood Waste Generated by Wooden-Houses Manufacturers in the Brazilian State of Parana V.A. de Araujo, J.N. Garcia, M. Gava, E.A.M. Morales, J. Cortez-Barbosa, A.F. Savi and J.S. Vasconcelos	265
Improvement of Paint Thickness in Electro Deposition Painting Process of Truck Manufacturing S. Khumgorn and N. Osothsilp	270
Improve Urban River Water Quality by Integrating Water Resource Management into Urban Construction Z.Z. Meng, D.S. Tang, Y.H. Wei and Y.F. Ding	276