ISBN(softcover): 978-3-03835-385-0 ISBN(eBook): 978-3-03826-770-6

Table of Contents

Preface and Committee

Chapter 1: Materials Science and Materials Engineering

Lightweight Gypsum-Based Material, Foamed by Lime Dust and Acid Agent
M. Nazmunnahar and A. Vimmrova 3

Experimental Researches of Fe-Cr Alloys and Cu-Zn Alloys Used for Microsurgical Instruments Manufacturing
D.I. Băilă and M. Gheorghe 9

First-Principle Study on the Structural Phase Transition, and Electronic Structures of Cobalt under Pressure
H.B. Zhu, D.Q. Tan and Z.H. Xiong 15

A New Pre-Treatment with Phosphoric Acid and Hydrofluoric Acid of Electroless Ni-P Plating on Mg Alloy
Z.H. Xie, J.L. Zhou, S.R. Xiang and F. Chen 21

SEM-EDS Analysis of Composite Al_2O_3-ZrO_2 Ceramics Eroded with SiC Particles
K. Grilec, L. Curkovic, M. Majic Renjo, S. Jakovljevic, M. Sakoman and M. Sladojevic 27

Research of Soldering Silicon Substrate with Solder Type Sn-Ag-Ti
R. Koleňák and M. Prach 32

Surface-Crosslinked Guar Gum-g-Sodium Polyacrylate Superabsorbents: Swelling Characteristics and Mechanics Performance
Y. Xiong, X. Zhang and M.Z. Liu 39

The Study of Cement Composites with Inbuilt Hazardous Waste
B. Dohnalkova, R. Drochytka, J. Hodul and J. Hodna 47

Selected Properties of Fiber Concrete after Heat Loading
J. Válek and P. Novosad 52

Verification of the Possibility of the Use of Secondary Raw Materials of Tubular Solar Panels as Fillers of Polymer Industrial Floors
J. Hodná, V. Petranek and B. Dohnalkova 58

Heat Resistance Increase of Chromium Cast Iron by Modifying
M. Levin and E. Ten 64

An Investigation about Welding Parameters of Polypropylene Matrix Composite
U. Huner and E.S. Erdogan 67

Review the Research Trends and Application in Car Body of Aluminum Foam
C.C. Ma and F.C. Lan 73

L-Proline-Catalyzed Synthesis of Amino Thiazoles
Z.J. Li, D.M. Lu, L. Guo and Q.L. Zeng 79

Synthesis of α-Hydroxy Amides
D.M. Lu, Z.J. Li, F.J. Li and Q.L. Zeng 83

Chapter 2: Applied Mechanics

Multi-Objective Optimization of Stacking Sequences for Laminated Composite Beams by Genetic Algorithm
F. Karaçam and T. Timarci 89

Research Progress and Prospects for Vehicle Dynamic Stability Parameters
X. Liu, W. Liu and Y.F. Zhao 95

Review of Research Progresses in Unsteady Aerodynamic Model
X. Liu, W. Liu and Y.F. Zhao 101

Increase Pressure and Homogeneity of Die Castings from EN AC 47100 Alloy
S. Gaspar and J. Pasko 108

Measurement of Physical and Mechanical Properties of High-Speed Heated Casting Cores
I.N. Erdakov, V.V. Novokreshchenov, V.M. Tkachev and R.D. Gabbasov 114

The Formation of Cracks in Cast-Iron Molds during the Casting of Zinc Blocks
M.A. Ivanov 119

Experimental Determination of Thermal Kinetic Parameters in Case Study of Tubes with Smooth and Structured Surface
M. Kubín and J. Hirš 125

Carrying Capacity Analysis and Numerical Simulation of Steel Reinforced Concrete Based on ANSYS
X.S. Luo, C. Gan and M. Xu 129

The Current State-of-the-Art in the Field of Material Models of Concrete and other Cementitious Composites
F. Hokes 134

Chapter 3: Manufacturing and Mechanical Engineering

The Research on Thermal-Mechanical Coupled Analysis and the Lightweight Design of Engine Exhaust Valve
Z.Y. Deng, F.C. Lan, W. Huang, H. Guo and P.H. Chen 143

Simulation of Lateral Extrusion of Spline Form Based on the Software DEFORM-3D
T. Altinbalik, S. Bingöl and Ö. Ayer 149

Artificial Neural Network Modeling of Injection Upsetting Load Prediction
Ö. Ayer, S. Bingöl and T. Altinbalik 155

Study on Energy Balance of Three-Cylinder HCPE
H.X. Zhang, F.S. Han, P. Shu and Y.Z. Ma 161

Structure Principle and Property of Internal Combustion Stove
H.X. Zhang, F.S. Han, P. Shu and Y.Z. Ma 165

Simulation Analysis and Experiment Research on Vehicle Interior Adaptive Active Noise Control System
J.G. Jiang and Y. Zeng 169

A New Steering-by-Wire System Driving by Electric Wheels
P.X. Zhang, L. Gao and Y.Q. Zhu 175

Failure Investigation of the Disc Harrow Profiles and Redesigning by CATIA Analysis
G. İrsel, T. Altinbalik and Y. Can 181

The Research Progress of Intra-Row Mechanical Weeding Technology of Dry-Land
H.C. Wang and J. Tong 187

Chapter 4: Computational Methods and Information Technologies

The Cloud Computing and the Application of Cloud Computing in the Telecommunication Enterprise
J.N. Yang, J.K. Yang and K. Lin 195

Signal Processing and Engineering Application of Ground Penetrating Radar (GPR) Based on Multi-Wavelet Transformation
Z.L. Shu, S. Huang, B.X. Liu and K. Xu 199

A Complicated Transfer Design Method Based on Particle Swarm Optimization
X.L. Yao and Y.N. Wang 208

Numerical Solution of the Nonlinear Wave Equation via Fourth-Order Time Stepping
M.A. Lahiji and Z.A. Aziz 213

Solutions for a Class of the Higher Diophantine Equation
X.F. Kang 220

Decreasing of Thermal Losses of the Light-Weight Building Envelope
T. Zhilina 224

Research on Scales Reflecting Cup Based on Scheme Macro Language Programming
Z.Q. Huang, L.P. Huang and L.D. Zhao 228

The Cooling Principle of the LED Finned Radiator and its Heat Dissipation Theory Analysis
K. Li, J.M. Liu and X. Zhang 234