

Table of Contents

Preface and Committee

Chapter 1: Materials Science, Processing and Application

Lamb-Wave-Based Damage Identification in Laminated Composite Plates Z.L. Yang, H.M. Elgamal and J.W. Zhang	3
Eutecticum Morphology in Al-Si Alloys J. Pasko and S. Gaspar	9
Research on Protective Materials with Analysis of the Influence of Bulletproof Helmet Surface Curve on Bulletproof Performance J.H. Qian, X.X. Guo, Y. Yang and H. Rong	13
The Microorganism Mechanism: Test Evaluating of Microbial De-Oiling Efficiency T.Y. Li, S.H. Li, H.Q. Dong, Y.B. Li and A.Q. Liu	17
The Synthesis and Photocatalytic Properties of ZnO-SnO₂ Nanorods Using Bamboo Charcoal as the Template W. Liu, J.F. Ou, Q.Y. Pan and W.Y. Zhou	21
Austenite Recrystallization Model of High Ti Microalloyed Steels X.G. Xiong	25
Investigation on Characteristics of Ni-Base Self-Fluxing Alloy Powders C.L. Hu	33
Experimental Research on Mechanical Properties of SPS Composite Plate G.P. Zou and Y. Wu	37
Overview of Research Methods of Microscopic Pore Structure with Material Properties in Reservoir Rocks X.J. Guo and S.L. He	41
Application and Realization of Liquid Automatic Drip System with Metallographic Polishing S.L. Huang and J.Z. Cui	45
Comparison Analysis on the Mechanical Properties of HSC and NSC after the Action of High Temperatures X.P. Su	49
Studies on Theory with Experiments of Materials Testing Technology Based on Teaching D. Xiang, Z.G. Wang and K.G. Liu	53
The Method and Evaluation of Biological Materials to Functional Reconstruction of Ligament Defects in Exercise-Induced Ligament Injury B. Peng, Q. Xiao and X. Dang	57
Research on Biochemical Materials with Optimization of Microwave Extraction Process by Response Surface Methodology of Flavonoids from <i>Platycarya strobilacea</i> sieb.et zucc. X. Song, P. Zhao, Q.H. Meng, Z.S. Tang and C.L. Wang	61

Chapter 2: Mechanical Engineering and Applied Mechanics

Design on Operation Panel of Numerical Control Machine Tools J.J. Ding	67
FEA on Ramp Plate of Scraper Conveyor Based on ABAQUS Z.Q. Ren, J.L. Zhang and X. Liang	71
Application of Steer-by-Wire Technologies on Wheel Loader Y.P. Zhang, S.J. Luo, Z. Fan and Z.G. Shi	76
Research on Mechanical Manufacturing with Posture Optimization of Installation of the Bolts in Large Component Assembly P. Huang	81

Research and Application of Parametric Design in Traditional Plug-Flow Aeration Tank with Drawing Methods	
S.J. Yin, M.Q. Sun, X. Li, X.F. Sun, L.N. Tian, L. Liu and Y.Y. Shang	86
Research on the Elevator System with Fault Diagnosis Method Based on Fuzzy Fault Tree	
Y.C. Xu, X.S. Li, R. Tao, S. Guo, M. Gou and K. Li	90
The Advances of the Prediction of the Performance and Reliability of Rolling Bearings with Poor Information	
X.T. Xia, B.J. Shi, Y.Y. Meng and M. Qiu	94
The Review of Nonlinear Dynamic Characteristics of Rolling Bearing Performances Based on Poor Information Theory	
X.T. Xia, Y.F. Li, Y.Y. Qin and M. Qiu	98
Analysis on the Effects of Atmospheric Turbulence on Line-of-Sight Ultraviolet Communication System Performance	
Y. Wang and M.Y. Su	102
Mechanics Analysis of Long Jump by Means of the Theory of Artificial Neural Networks	
Q.L. Wang	106
Research on Flow Sensor and the Pressure Sensor with Digital Asthma Diagnosis Technology	
P. Yin, M. Cao and Y. Lin	110
Aerodynamic Performance Evaluation with a New Method for Darrieus Wind Turbine	
Y. Mei and J.J. Qu	115
Research on Stress and Load with the Effect of Number of Teeth Planetary Gears Matching	
Z.Q. Xu and J. Huang	120
Research on Wind Turbine Blade Loads and Dynamics Factors	
Z.Q. Xu and J. Huang	124
Research on a Multi-Axis Wrist Force Sensor with Double Bending Beams	
G. Shi and L.Z. Ji	128
Research of Control Cooling Heat Treatment Process in the Ductile Iron Gear	
Z.G. Wang, D. Xiang, K.G. Liu and M. Jing	134
Gaseous Mechanics and Effect Evaluation Method of Wellhead Deliverability Equation in Puguang Gas Field	
Y. Xiao, Y.K. Han, P. Zhao, T. Zhang, H. Gou and H.Y. Zhang	138
Vibration Characteristic Analysis of the Barrel	
S. Chen and C.G. Yu	143
A Study on Geomechanics in Improving the Core Recovery of Fracture Formation	
X.D. Si	147
Hydromechanics Research with Influence of Pipe Shape on Water Hammer Based on CFX	
Q.Z. Meng, C. Yang, L.S. Liu and Z. Wang	151
Kinematic Mechanics Analysis of Takeoff in Pre-Jumping for Sports Aerobics	
Z.X. Zhu	157
Kinetics Analysis of Instep Soccer Kick in Three Heights	
P. Li	161
Aerodynamic Characteristics of Unguided Artillery Projectile	
M.E. Wessam and Z.H. Chen	165
Nonlinear Aeroelastic Analysis for a Rudder with a Hydraulic Booster	
X.Z. Xu, Y.K. Gao and W.G. Zhang	169
The Effect of Tube Materials on Metal Jet Initiating the Confined Composition B	
H.N. Liu, Y. Zheng, J.B. Liu and W.B. Li	175
Research on Influence Factors of Hydraulic Support Moving Velocity in Coal Mining Based on AMESim	
H.N. Li and D.A. Deng	180
Effect of Wall Roughness and Flow Velocity on Water Hammer	
Q.Z. Meng, C. Yang, L.S. Liu and Z. Wang	185
Computer Simulation of a Certain Heavy Vehicle Part	
S.L. Feng, G.Y. Zhang and Z.G. Tian	192
Finite Element Analysis of ROPS with Energy-Absorbing Structure for Engineering Vehicles	
S.L. Feng, Q.J. Zhang and Z.G. Tian	196

Research on Applied Technology in the Optimization of the Naval Gun Bracket with Mechanical Properties	
S. Chen	199
Mechanics Impact on Deck and Thermal Analysis of Gas Jet	
J. Deng, S.H. Bi and Z. Chen	203

Chapter 3: Energy, Power and Heat Engineering

Research on Power Industry with Application of Improved Hill-Climbing Algorithm in Wind Power Generation System	
D.D. Luo, S.A. Chen and Y.P. Lin	211
Heteroepitaxial Growth of Ge-Rich SiGe Films on Si for Solar Cells	
J. Wang, K. Tao and G.F. Li	216
Automatic Battery Testing Platform for Series-Connected Lead Acid Batteries	
C.M. Chen, H.W. Hsieh, Y.L. Juan, T.R. Chen and P.L. Chen	220
Application and Realization of Electromagnetic Induction Heating in the Production of Fused Cast	
S.L. Huang and J.Z. Cui	224
Prospect Analysis of Shale Gas Resource Exploration in the Lower Silurian Longmaxi Formation, Southeastern Margin of the Sichuan Basin, China	
C.L. Hu, Y.F. Zhang, Z.F. Wang and H.B. Zhang	228
Modeling and Simulation of Elevator as Energy Saving System Based on Isolation Bidirectional DC/DC Converter	
W.W. Han, J.R. Wan, S.L. Huang and Q.Y. Dai	233
A Low Cost MCU Based Single Phase Sinusoidal Pulse-Width-Modulated Inverter	
P.L. Chen, C.Y. Lin, Y.L. Juan, T.C. Chen and C.S. Lin	241
A Series-Connected Lead Acid Batteries Analyzer with MCU-Controlled Charging/Discharging Processes	
C.S. Wu, B.S. Chen, T.R. Chen, Y.L. Juan and C.F. Chang	245
Single Phase DC to AC Inverter with Low Cost MOSFET Driver Circuit	
S.T. Feng, P.C. Li, T.R. Chen, C.H. Hu and Y.L. Lee	249

Chapter 4: Construction and Civil Engineering

Research on a Novel Method for Road Edge Detection Based on Road Environment	
Y.Q. Wang, L.L. Zhuang, D.Y. Chen and Z.W. Zhang	255
Applied Technology in Unstructured Road Detection with Road Environment Based on SIFT-HARRIS	
Y.Q. Wang, B. Liang and L.L. Zhuang	259
Study on Building Materials and Building Color Attribute Changes in Cold Regional for Weather Factors and Distance	
J. Liu and Q. Wang	263
Research on Architecture Materials in the Lu Garden of the Northern Wei Dynasty	
Z.Y. Xue and J. Gao	267
The Applications of BIM in the Building Water Supply and Drainage Engineering Design	
S.J. Yin, X.F. Sun, L.N. Tian, M.Q. Sun, X. Li, Y.Y. Shang and M. Zhang	271
Applied Technology in Asphalt Low Temperature Performance Evaluation	
D. Xu	276

Chapter 5: Environmental Engineering

Research on Material Application with Contrast of City Lighting and Light Pollution	
Z.Q. Xu and J. Huang	283
Study on COD Emission Reductions Assignment of Basin Based on Information Entropy Method and Gini Coefficient Method	
Y.L. Tang, Y.N. Li, X. Dong and R. Yan	287

Research on Environmental Materials with Interference Mechanism on Flue Gas SO₂ Concentration Measurement by the Multidispersion Soot Y.H. Gong, B.H. Chen, Y.J. Zhao and S.G. Cheng	291
Research on Environmental Materials with Monodispersion Soot Particle Interference on SO₂ Concentration Measurement Accuracy B.H. Chen, Y.J. Zhao, C.H. Wang and S.G. Cheng	295
Analysis of the Environmental Degradation and Ecological Water Requirement Process of the Typical Wetlands in Northeast China P.L. Xie, Y.L. Chen, S.C. Chang, J.C. Li, J.L. Zhou, H.Y. Duan, X.E. Wang and Y. Wang	299
Anaerobic Biological Filter - Biological Contact Oxidation Process of High Salt Wastewater Treatment Process Coupling and Influencing Factors Y.S. Yuan, X. Yuan, X. Cao, P.F. Yu and C.L. Liu	303
Research on Influences of "A Test of Different Initial pH from the Reaction" with Properties of Environment Materials on Distribution of Arsenic Speciation Arsenic-Ferric Precipitation X.G. Ma and M.Q. Wang	307
Applied-Information Technology and Low-Carbon Industry in Research on the Developmental Path and Evaluation System of Hengyang Low-Carbon Community Y. Wu and Z.X. Dong	311

Chapter 6: Robotics, Control and Automation

Simultaneous Localization, Mapping and Detection of Objects for Mobile Robot Based on Information Fusion in Dynamic Environment M. Wu, L.L. Li, C.J. Li, H.Q. Wang and Z.H. Wei	319
Motor Measure and Control Software Design Based on LabVIEW W. Yan and W. Yao	323
Research on Intelligent Control Technology with Building Energy Control Model Based on Intelligent Control Algorithm W.P. Wang and L. Zhou	329
Design and Implementation of an Integrated Wireless Communication, Localization and Monitoring System for Coal Mines X.D. Li, G.G. Rong and Y.X. Zhu	333
Nonlinear Feedforward-Feedback Control of an Electric Clutch Actuator X. Li, H. Zhou, H. Li and X.S. Li	339
The Research of PWR Steam Generator with Water Level Control Based on RBF Neural Network X.H. Yang, Y. Jian, C.C. Feng and Y. Xue	344
Delay Analysis of Underground Communication Using Network Coding M. Liang and C. Wang	351
Applied-Information Technology in Robust Synchronization of Uncertain Fractional-Order Complex Networks J.G. Liu	355
RETRACTED: Applied-Information Technology with a New Approach for Communication between AB SLC500 and Profibus-DP Network Z.G. Shi, L.R. Zou and D.P. Tong	359

Chapter 7: Applied Information Technologies, Data Processing and Computational Methods

Automatic Splicing Technology in Image Splicing Processing X.B. Yu, Y.F. Zhang and Y.G. Fu	367
Research on Electronic Measuring Technology with Development of Total Station Coordinate Traverse Adjustment Program D.W. Liu, Y.K. Chen, Z.Y. Qiao, S. Jiang, J.J. Zhang and T.T. Wang	371
Information Technology in an Improved Supervised Locally Linear Embedding for Recognizing Speech Emotion R.S. Huang	375

Analysis and Design of the Cloud System of Inner Mongolia National Cinema Line H.H. Xu, L.P. Liu and B.C. Liu	379
Research of Digital TV Public Cultural Information Service System Based on DBS H.H. Xu, L.P. Liu and B.C. Liu	383
Information Technology in Environment Digital Design Based on CAD W. Xiao	387
The Model Design of the Security of Electronic Records under Digital Office Environment D.P. Tong, L.R. Zou, Z.G. Shi and N. Huang	391
Research on Applied Technology in Storing and Transmitting Medical Image Based on DICOM Y. Miao, H.M. Yang, W.L. Shi, Y.N. Cao and L.Y. Zhang	395
Applied-Information Technology in the Internet of Things in the Construction of File Security System in Colleges and Universities Y. Zhao	399
Data processing with an Improved Hybrid Optimization Algorithm Base on PSO-GA F.K. Zhang, S.W. Zhang and G.Z. Ba	404
Digital Signal Modulation with Recognition Algorithm to Identify the Ability to Optimize the Wavelet S.M. Yan and H. Fang	413
Hidden Information Technology and Data Processing in Drowsiness Detection in Normal Adults Based on Pulse Signal and ECG Detection in Normal Adults Based on Pulse Signal and ECG Q. Wang	417
Data Processing and Information Technology with an Optimal Matching Model Used to Reconstruct Broken Pieces W. Gu	421
Research on Applied Technology with Variable Parameter Iteration Method Research of Two-Dimensional NMR Inversion Y.F. Gu and Y.N. Zhang	424
Research on Information Technology with the Consideration of Computer Professional Education in Big Data Era Z.L. He, X.H. Xiao and Y.H. He	429
Exploitation and Application of Information System in Interpretation Training X.Z. Tian	434
Empirical Study on the Marketing Strategy and Effect on the Platform of Social Media: Taking Tencent Microblog as Example C.C. Chen	438
Research on Applied Technology with Optimization Methodology of Bottom Dead Center Accuracy Evaluation Q.S. Yao and G.P. Li	443
Research on Applied-Information Technology in Digital Speech Based on LMD Algorithm D.K. He, Y.C. Xu, X.S. Li, R. Tao, S. Guo, M. Gou and K. Li	447
Applied Technology in an Adaptive Particle Filter Based on Interval Estimation and KLD-Resampling J. Zhang and L. Shen	452
Research on Applied-Technology for Capacity with Variable Parameter Iteration Method Y.F. Gu, P.J. Li and Y.N. Ya	459
Application of Improved ASM and AAM Fusion in Face Tracking X.J. Gu, Y.H. Zhang and B.B. Gao	463
Research on Air Transportation Network with Information Technology for Express Logistics Enterprise J.P. Wu	467
Information Retrieval in Design and Application of Farmed <i>Tilapia</i> Breeding Database S.Y. Hu, J.T. Zhang, H.Z. Yang and Y. Lin	471
Fundamental Framework of Supporting M-Learning in RFID System C.C. Lin and H.M. Chuang	476
Data Processing in Attributes Reduction Based on Rough Sets and FCA Z.H. Peng, W. Luo and A.S. Deng	480

Data Processing in Static Classifier Ensemble for Positive and Unlabeled Data Stream Classification Based Invasion Detection Y. Li	484
Grey Relation Analysis Method for Material Selection Problem with Interval Numbers L.W. Yang	492
Research on General Design of Virtual Maintenance Training Platform for Large Equipment Based on 3D Simulation G. Chen and F.Y. Yang	497
Research on Roller Bearing with Fault Diagnosis Method Based on EMD and BP Neural Network S. Guo, Y.C. Xu, X.S. Li, R. Tao, K. Li and M. Gou	501
The Research of Fault Diagnosis Method of Roller Bearing Based on EMD and VPMCD R. Tao, Y.C. Xu, X.S. Li, S. Guo, K. Li and M. Gou	505
The Application of Local Mean Decomposition and Variable Predictive Model-Based Class Discriminate in Gear Fault Diagnosis Y.C. Xu, X.S. Li, R. Tao, S. Guo, M. Gou and K. Li	510
A Privacy Preserving Scheme for Vehicle to Grid Networks Based on Homomorphic Cryptography Z.W. Sun and W.X. Yan	516
Research on Industry Image Technology with the Integration Algorithm of Color Features and Feedback of Image Retrieval S.L. Zhang	520
A Remote Monitoring System Based on Measuring Instrument Cloud J. Zhang, Y.S. Liu and L. Xue	525

Chapter 8: Industrial Engineering and Engineering Education

An Empirical Study about the Effect of Industrial Agglomeration on Export - Based on Manufacturing Panel Data in Jiangsu Province Q.Z. Wang and Y.M. Zhu	533
Research on Medicine Industry and Manufacturing with North Schisandra Quality Assessment Based on Knowledge Reduction and Defuzzification Normal-Weibull Distribution J.Y. Lin, H. Zhou and Z.M. Kan	539
The Impact of Ingredient Manufacturer's Procedure Adaptability on Ingredient Brand Value: The Case of a Computer Manufacturer L. Huang	543
Applied-Information Technology in the Relationship Research between Industry Structure and Discipline Structure of Higher Education in Fujian Province of China L.J. Liu	547
The Application of Fuzzy Analytic Hierarchy Process Method and Artificial Neural Network Model in the Elevator Risk Assessment X.S. Li, Y.C. Xu, R. Tao, S. Guo, K. Li and M. Gou	552
Promoting Scientific Research in Materials Professional with Material Properties and Production for Strengthening the Graduation Design D. Xiang, Z.G. Wang and K.G. Liu	556
Prerequisite for Converting High Occupancy Vehicle (HOV) Lanes to High-Occupancy/Toll (HOT) Lanes Q.X. Huang and S.J. Qiang	560