

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Development and Processing of Innovative Materials

Structural Evolution of Fe-50Al/WC Composite Powder During Mechanical Alloyed Process

H.T. Wang, R.Y. Wang, X. Chen, X.B. Bai, Z.X. Dong and G.C. Ji 3

EDM Characteristics of Inconel 718 and Using Control Chart for Process Stable

S.H. Tai, C.Y. Hsu, C.H. Su and C.I. Lin 7

Effects of Rapid Thermal Process on the Microstructural, Electrical and Optical Properties of AZO Thin Films

R.B. Liu, K.L. Zhang, Y.J. Yuan, F. Wang and J. Xu 11

The Wear Mechanisms of Diamond Impregnated Bit Matrix

S.B. Li, Q. Xiang and L.G. Zhang 15

Study of the Interfacial Reaction between the Sn-3.5Ag Solder and Electroless Ni-P Metallization

G.Y. Yang 19

The Influence of Cutting Parameters on Pump Thin-Walled Parts Cutting Force

T.R. Zhang, L.P. Zhou and D.D. Duan 22

The Study of the Architectural Beam Construction Cracks' Condition on the Features of the Force-Electricity Functional Conversion Composite Materials

X.Y. Gao, X. Ma and Q.S. Liu 26

Determination of Technological Parameters of Vibratory Stress Relief for Radial Steel Gate Structure Based on Finite Element Method

J.K. Fu, J. Jin and X. Zhou 31

Impact Analysis of Electrode Material on Electrical Discharge Machining Polycrystalline Diamond Processing

Y.H. Jia 36

The Simulation Experimental Research on Large Diameter Fresnel Lens Mold Machining

J.L. Guan, Z.W. Wang, C.G. Cao and X.H. Zhang 40

Discussion on Compensation Factor for Large-Radius Bending Die

X.L. Qian, Y. Liu, R. Guo, Y.Q. Zhang and G.Q. Wang 44

Corrosion Rate and Mechanical Properties of 316L Stainless Steel Wires in Different Corrosive Conditions

J.B. Ji and J. Tong 48

Experiment Study on the Influential Factors and Laws of KDP Crystal Surface Quality by Horizontal Fly Cutting

J.L. Guan, L.L. Zhu, S.G. Zhu and X.Q. Ma 53

Aluminum-Clad Invar Super Heat-Resistant Aluminium Alloy Stranded Wire Sag Calculation

G.J. Han 58

Experiment on Yield Strength of PZT-4 Piezoelectric Generating Column

Y.H. Zheng, Y.F. Li, S.W. Wang and Y. Zhao 62

The Design of Water Dispenser Remote Wireless Control System

S. Juan, S.X. Zeng, Z.D. Zhao and H.Y. Wang 66

Non-Fragile Mixed H_2/H_∞ Full-Order Filter for a Class of Linear Discrete-Time Systems with Filter Parameters Uncertainty

R.Q. Lin, Q.L. Ma and Y. Zhang 70

Flotation Reagent Progress and Application Overview

S. Yan, J.Q. Zhang and W.Z. Diao 76

Select Axial-Symmetry Cylinder-Segments as Basic Scattering Units in 2D Photonic Crystals

Y. Wan, H. Zhang, W.Q. Yang, C. Li and M.H. Jia 80

Analysis for Equivalent In-Plane Elastic Parameters of the Honeycomb Core Y.X. Wu and F. Wang	84
Thermal Analysis and Failure Behavior of 8YSZ Thermal Barrier Coatings under Thermal Cycling Tests G.X. Lu, L.J. Hao and F.X. Ye	91

Chapter 2: Electronic and Semiconductor Devices

Design of Sound Bird-Scared Device Based on MP3 Z.X. Niu, H. Liu, R.K. Chang, X.F. Jin, Y. Yuan, W. Li and Y. Wang	99
Design and Implementation of a MCU Based Electronic Piano Performance System A.M. Cao, L. Pang, Z.J. Li and F. Miao	103
A Versatile Signal Generator Based on ARM for GPS Jamming J. Xu, Z.M. Gan and X. Shi	108
Study on the Effect of the Evaporator Area on the Heat Transfer Performance in the Gravity Feed Liquid Refrigeration System Q.J. Liu and F. Han	112
Application of General Regression Neural Network in Characteristic Curve Fitting of Optical Fiber Micro-Bend Sensor S. Ding, X.H. Chang and Q.H. Wu	116
Design of the Time Keeping System Based on FPGA and SCM Y.F. Zeng and S.Q. Wu	120
A 36 GHz ClFF-TFF Dynamic Frequency Divider Using GaAs HBTs L.F. Wu	125
A Bluetooth-Based Portable Design Device with Wireless Power Module for Electrocardiogram and Respiration Measurement R. Ren, X.X. Chen, X.Y. Hu, B. Zhou, X. Tan, Y. Wang and S.H. Xia	129
Design and Simulation of a 5.8GHz Low Noise Amplifier Used in RFID Y. Zhang, S.H. Yang and Y.C. Chen	133
8-Way Substrate Integrated Waveguide Power Divider W. Li, L.Q. Wang, L.J. Chen and X.W. Liu	137
Arbitrary Integer Frequency Divider Based on Single Chip Microcomputer J.J. Lin, C.Y. Wang and D.S. Wang	141
Transmission Characteristic Analysis of PD Signal in Power Cable Y.C. Liang, Z.P. Ge and Y.T. Hu	146
Heat Pipe Cooling Scheme Analysis of Injection Molding Machine Controller J. Long, B.B. Chen, C.L. Zhang and L.L. Zhang	150
A Novel Triple-Band Monopole Antenna for WLAN/WiMAX/RFID Applications Y. Pan, Z.Y. Hou, J. Xiong and K.H. Liu	154
Research on Plasma Monopole Antenna and its Wideband Design W. Li, Y. Suo, J.H. Qiu and X.W. Liu	158
Research on Ultra-Wideband TEM Horn Antenna and its Miniaturization Y. Suo, W. Li, L.Q. Wang and Q. Wu	162

Chapter 3: Power Systems and Applied Electronics

Voltage Sag Assessment of Distribution Network with Distributed Generations S.Y. Dai, Q.L. Li and S.M. Liu	169
Performance Analysis of a Solid State Transformer for Smart Grid Y. Liu, D.H. Zhang and D.D. Sun	174
A Power System Stabilizer for Wind Power Generation H.H. Song, D. Tian and W.L. Wang	178
A Variable Multiple-Output DC-DC Buck Converter with Time-Multiplexing J.H. Weng	182
Optimizing Design of Accessories for High-Voltage XPLE Power Cables C.J. Yang, J. Chen, Z.S. Xie, Y.H. Zeng, D.L. Wang, J.M. Liang and Y.P. Fan	189

Transient and Permanent Faults Identification on Parallel Transmission Lines Y.F. Rao, L.L. Yu and W. Liu	195
Identification of Transformer Sympathetic Inrush Based on W-DHNN L.B. Li, M.F. Gong, L. Li, J.Y. Zhang and H.T. Ge	200
Power System Risk Assessment Software Design under Impact of Disaster Conditions X.L. Zhao and J.H. Zhang	204
Solar Energy Intelligent Water Pumping System Design P. Li, X.F. Bai, X.X. Hou, X.N. Song and D. Li	208
Calculation of Power Frequency Electric Field under Overhead Lines with Complex Ground Z.G. Liang, Y.Z. Jiang, D.W. Jiang and Z.J. Liu	212
Field DC Voltage Withstand Test of Submarine Cable in Hainan Grid Connection Project X.L. Luo, R. Bie, L. Zhang, W. Chen and Y.P. Fan	217
Application of SVPWM Converter in the Distributed Wind Power System H. Li, J.H. Zhang, Z.K. Wu and H.S. Li	223
Recognition of the Transformer Sympathetic Inrush Current Based on Hilbert-Huang Transform B.Q. Zhang and W.W. Yao	227
Operation Analysis of Distribution Network with Distributed Generation J.T. Yang, X.F. Ma and P.P. Yang	231
Application of Smart Grid Technology in the Coalmine Power System Z.J. Gao and J.S. Wang	236
The Study of Control Strategy of Multi-Microgrid Based on AC Bus J.H. Shi, K. Xia, R.J. Zhu and J. Yu	240
A Droop Control Strategy with Impedance Compensation for Low Voltage Microgrid Z.Y. Yu, M. Lu, Z.N. Wang and Y.G. Zhang	245
Parameter Analysis on Exploding Magnetic Generator of Frequency Y. Suo and W. Li	249
Study on a Permanent Magnet Bias Axial Magnetic Bearing X.S. Zhao and J. Li	253
Small Signal Stability Analysis Based on Multi-Band Parallel Technology in Henan Power Grid L.L. Yu, Y.F. Rao and S.Q. Wang	258
Economic Dispatch for Power Generation System Incorporating Wind and Photovoltaic Power J. Meng, G.Y. Li and S.J. Cheng	263
Research of MPPT Using Support Vector Machine for PV System D.D. Sun, D.H. Zhang and Y. Liu	268
Research on Filter of Photovoltaic Grid-Connected System H. Zhao, Z. Liang, H.J. Wang and Y.J. Yue	272
The Study on the Post-Evaluation of Benefits of the Abandon Hydropower X.L. Tao, Y.F. Zhang and S. Wang	277
Research on Low Voltage Ride through of Coal-Fired Power Unit Auxiliary in Henan K. Gao, Z.N. Zhang, Q.S. Zhu and L. Yuan	281
Analysis for the Seepage Stability of the Upstream Cofferdam of One Hydropower Station Y.L. Yuan and Y.F. Peng	286
Analysis of Power-Split for the Transmission System Based on Deformation Compatibility X.F. Yang, Z.D. Fang, Y.Z. Zhang and Y.F. Han	291
Stress Corrosion Analysis of Steam Generator Tube of Nuclear Power Plant by Finite Elements S. Jiang, J. Cai, J.W. Zhang and Y.D. Wang	295
The Calculation of Line Fault Probability in Ice Storm W.M. Feng, S.Q. Zhou, T.S. Xu, Q. Liu and J.L. Yu	300
Time-Domain Simulation of Power System Frequency Fluctuations Caused by Intermittent Wind Power H.M. Liu, F.F. Zhu and K.L. Yang	304

Fault Prediction Based on Dissolved Gas Concentration from Insulating Oil in Power Transformer Using Neural Network	
F.M. Yang, C. Liu, Y. Sun, Q. Long and Y.P. Fan	312
Research of Lightning Over-Voltage and Simulation Program of Substation Based on EMTP	
W. Chen, S.P. Zhou, H. Chen, X.L. Luo and Y.P. Fan	318
An Improved FTU-Based Matrix Algorithm for Fault Locating in Distribution Network	
T.T. Shi, M. Sun and L. Wang	324
A Study on Modified Model Predictive DPC of Rectifiers	
H. Zhao, B. Wang, H.J. Wang and Y.J. Yue	328

Chapter 4: Measurement and Monitoring of Systems

A Technique of NC Machine Tool Remote Monitoring Based on Internet	
D.Z. Zhuang and Y.H. Zhu	335
Design of Anti-Earthquake Gas Valves Wireless Monitoring System in Urban Community	
Z.Y. Sun, X. Zheng and Z. Wang	339
Coal Mine Disaster Warning Internet of Things Intrusion Detection System Based on Back Propagation Neural Network Improved by Genetic Algorithms	
Y. Hu, L.M. Sun, S.C. Yu, J.L. Huang, X.J. Wang and H. Guo	343
Development of a High Precision Time-Difference Ultrasonic Heat Meter Based on TDC-GP21	
Y.L. Wu, J. Zhao, Y.N. Huang and F. Wang	347
Research on Downhole Pressure and Temperature Tester for Hydraulic Fracturing	
H. Wu, Y. Peng, L.P. Wang and W.H. Yan	351
Real-Time System for Liquid Level Measurement	
W. Wei, H.Y. Jiang, Q.J. Sun, Q. Huang and Z.W. Wang	356
Ultrasonic Ranging System Based on Single Chip Microprocessor	
X.C. Fu, L. Zhou and G.J. Wen	360
Sensitivity Analysis of Sensor Probe for Low Thermal Diffusivity Properties Measurement	
C. Sun, Y. Zhao, X.D. Yue and X.L. Xia	364
The Indirect Monitoring Method of Oxygen in Heating Furnace Sampling Switch Process	
Z.P. Chen, F. Liu and Q.S. Sun	368
The Design of Temperature Field Monitoring Based on Fluent and Kingview	
Z.P. Chen and F. Zhang	372
Fault Diagnosis Method for the Train Axle Box Bearing Based on KPCA and GA-SVM	
C. Wang, L.M. Jia and X.F. Li	376
Design of Multiuser Temperature Real-Time Monitoring System with Function of Remote Communication	
Y.M. Wang and J.W. Feng	380
The Test Method Research of Residual Voltage for Electrical Products	
W. Sun, Z.J. Tong and X.L. Wang	384
Internal Wave Parameter Inversion at Malin Shelf Edge Based on the Nonlinear Schrodinger Equation	
X.Y. Li, J. Wang, M.L. Sun, R.L. Ma and J.M. Meng	388
The Design and Implementation of Adaptive Noise Cancellation for Magnetic Flux Leakage Test Signal	
X.G. Han, M.Q. Liu and Q.L. Sun	393
Monitoring System of City Water Supply Pipe Network Based on Zigbee and GPRS	
H.W. Gao, S.X. Zhu and X.L. Zhu	397
High Energy Pulses Cold Patch Repair Droplet Transfer Analysis Based on High-Speed Camera	
J.X. Teng, J.W. Yang, F.L. Yin, P. Zhang and X.J. Huo	401
Research of Computer Virus Detection Technology Based on the Virtualization Platform	
Q.L. Li, Z.Q. Zhao and J.F. Wang	405
Measurement and Analysis of the Polarization Curves of Laser Cladding Layer or Cold Welding Layer on FV520B	
S. Li, F.Y. Li, B.L. Gong and Q.D. Hao	409

Application of Support Vector Machine in the Mixed Circuit Fault Diagnosis Q. Pan and H.L. Wang	413
On-Site Identification of Zero Resistance Insulator Based on Infrared Thermal Image and Weights-Direct-Determination Neural Network T.B. Li, L. Gong, J.G. Yao, Y.J. Kuang and B.B. Rao	417
Monitoring on Temperature Strain and Numerical Simulation of Mass Concrete W. Han, J.H. Liu and S.X. Zhang	421

Chapter 5: Modelling, Simulation and Optimization

Modeling and Simulation for Lifting System of the Gear and Rack Drilling Rig F.S. Ren, S.L. Chen and F. Zhang	427
CGF-SDP: Development of Simulation Scenario and Scenario Editor N. Li, M. He, Z.M. Ren and G.H. Gong	431
Application of Numerical Simulation in Closed-Die Forging Forming for Universal Joint Fork J. Yang and P. Wang	435
Dynamics Analysis and Simulation of Drum Washing Machine Vibration Isolation System R.Y. Shao, H.J. Wang, J. Song and H.Y. Wang	439
Numerical Simulation of Rock Bolt Deformation under Dynamic Load Z.W. Li	443
Study of Reconstruction of Vehicle-Pedestrian Collision Accident Based on Computer Simulation G.Y. Pan, S. Zhang and L.S. Zhu	448
Research on Tube Bending Simulation of the Head Rotating Bending Machine C.F. Kang, C. Zhang, C.M. Ma and Z.W. Lu	452
Numerical Simulation of the Interaction between Surface Waves and Horizontal Plates at Free Surface J.P. Wu, L. Xu, T.L. Mei, S. Yi and L.Q. Wang	456
The Critical Velocity for an Infinite Cylindrical Shell under a Moving Load J.D. Zhang, B. Zhen and X. Li	461
Marine Engine Simulation System for Crew Operation Examination Based on Virtual Reality Q.F. Zhang, J.B. Sun, C.Q. Sun and C.J. Shi	465
Modeling Study of a Linear Ultrasonic Phased Array Transducer D.X. Zhou, X.Q. Tang and X.L. Zhan	470
On the Parameter Determination of a Stress Relaxation Model Based on Creep Equations Using Differential Evolution Algorithm W.W. Zhang and H. Xu	476
Numerical Simulation about Stretching Process in Different Layers of Cartilage X. Li, J.D. Ye, C.Q. Zhang, Q.Q. Tian, X.K. Wang and L.M. Dong	480
The Simulation Study of Asynchronous Motor Based on dq Coordinate System Y.M. Li and J. Rong	484
Simulation Research on Movement Precision of Mould-Cut Main Mechanism Considering Three Factors X.Z. Wang, L.H. Shi and S.Z. Chai	488
Optimization Method for Trajectory Correction Accuracy of Target Measurement Based on Monte-Carlo H.J. Yang, Z. Huang, P.F. Huo and J.W. Wang	493
Research on the Simulation for Sheet Metal NC Incremental Forming H. Zhu, N. Li and J. Ju	498
A Simulator for Power Battery Characteristics Based on Bi-Directional DC/DC Converter S. Li, S.X. Liu and B. Wu	502
A Reasonable Stretching Mode for Pressure-Dispersive Grout Anchor with U-Shaped Load-Bearing Bodies in Soil Ground X.Y. Sun, C.Y. Heng and Z. Zhou	506

The Effect of Air Change Rate and Cleanroom Garment on Cleanliness in Grade B Cleanroom	
H. Li, Z.J. Zou and F. Wang	514
The Application of ANSYS to Ultrasonic Cleaner Design	
G.H. Zhang, S.X. Liu and Y. Qi	518
The Research of Auger-Type Heat Exchanger Fluid Characteristic Based on FLUENT	
H.Y. Wang, N. Wang, J. Song and R.Y. Shao	522
Research of the Steady-State Modeling Method Based on Neural Network	
Y.H. Zhu and D.Z. Zhuang	526
A Predictor of How Many Books a University Library will Purchase Using Regression Control	
B. Sun	530
Establishment and Analysis of the SPSS Based Regression Model on Aerobics Regarding Mid-Aged and Young Women	
L.S. Li	534

Chapter 6: Analysis and Design of Structures and Machines

Dimensional Synthesis of a 4-DOF Hybrid Driving Platform	
Z.Y. Hong, Z.X. Zhang and Z.H. Xu	543
Design of a Rack and Pinion Drilling Rig Similar Prototype	
F.S. Ren, S.L. Chen and N.B. Wang	548
Radiation Disturbance of Variable Frequency Winch Drive System in Underground Coal Mines	
H. Chen, W.B. Tang, Z.G. Cao and H.P. Zhou	552
The Structure Design and Parametric Study of Dynamic and Static Grinding Head	
J.Y. He, H. He, Q. Wang, X.Y. Zhu and Y. Yu	557
Tooth Profile Generation of Point-Contact Involute Planetary Gear Drive with Small Teeth Difference	
W.C. Yi, B.Y. Wang and S. He	561
Kinematics and Singularity Analyses of a 2-RPU&SPR Parallel Manipulator	
J.H. Fan, B. Li and X.H. Zhao	568
The Security Design of Child Seat of Electric Bicycle	
F.P. Wang, Q.H. Yang, L.C. Zheng and H.L. Chen	572
Study on Thermal Deformation of Machine Tool under Different Environment Temperature	
F.J. Luo, D.L. Song, Z.W. Li and Q.Y. Jian	576
Optimization of Vehicle Powertrain Mounting System and its Performance	
G.Y. Pan, X. Yang and Y. Yan	580
Design and Development of a Evaporative Cooling System for Desktop Computers	
C. Rui, R. Lin and X. Bin	584
Prediction of Tank Bottom Corrosion Classification Based on FSVM	
Z.P. Chen and J. Lv	590
Impact Experiment and Analysis of Cantilever-Type Piezoelectric Generator	
X.L. Wang, X.D. Sun, Z.G. Yang, Y.G. Song, A.J. Quan and H. Cai	594
Numerical Study on Mechanical Behavior of Tissue-Engineering Repaired Cartilage in Sliding Load Condition	
Y. Zhou, H.Y. Liu, Y.T. Men, L.L. Gao, B.S. Xu and C.Q. Zhang	598
Flight Flow Balanced Allocation in Terminal Airspace	
W.J. Pan, W.B. Qiu and R. Kang	602
Analysis of Positioning Accuracy Based on Focused Beam Forming	
F. Niu, J. Hui, F. Li and F.Y. Zhang	607
Effect of Medium Parameters on Pressure Oscillation in Combustion Chamber	
T.W. Xu, W.P. Tian, M. Lin and J.R. Wang	611
Analysis of Affecting Factors of Ground Deformation Based on Shield Tunnel Excavation	
L.X. Li, Q.Y. Zou and J.J. Wang	615
Optimized Processing Scheme for Abrasive Fault of Steam Turbine Shaft	
Y.J. Gu, J. Xu and X. He	619

Simulation on Vertical Vibration of Six-Roller Cold Rolling Mill X. Ma, X.H. Zhu, J.W. Li, J.H. Yang, Q.L. Yang, L.S. Lv, J.D. Ye and Y.H. Ding	623
Optimizing Flow for the Two Color Injection Mould Design Y.F. Yin and Z.H. Tian	627
lang Structural Design of Hydraulic Manipulator in Nuclear Radiation Environment Y.X. Liu, S.L. Zou, Z.F. He and L. Yan	631
Virtual Prototyping Analysis on Gear Assembly of the Power Train for a Large-Scale Combine Harvester Z.X. Zhu, Z. Li, B. Xie and E.R. Mao	635
Study of Commercial Vehicle Active Seat Suspension G.Y. Pan, H. Yang and Y.T. Liu	641

Chapter 7: Data and Signal Processing

Query Expansion Associated with Clustering J. Yin and W.R. Xu	647
Rapid Location of LED Die Array Based on Cross Correlation in Frequency Domain H.X. Li	651
Extraction of License Plate Region in License Plate Recognition System Y. Ning, Y.W. Liu, Y.B. Zhang and H. Yuan	655
Windows High-Speed Drawing Technology Research Z.D. Chou	660
BOF Endpoint Prediction Based on Multi-Neural Network Model Y.J. Yue, Y.D. Yao, H. Zhao and H.J. Wang	666
Interference Image Edge Detection Based on Wavelet Packet for Laser Interferometer Hydrophone Z.H. Zhou, J. Yuan and J.X. Li	670
A Non-Uniform Regional Partition Coding of One Dimension Signal and its Application U. Kintak, G.Q. Xiong and Z.S. Tang	674
An Extended Knapsack Public Key Cryptosystem X.P. Ji, H.B. Zhang, B.Y. Wu and G.Y. Li	678
Boundary Detection for Non-Ideal Iris Based on Gray Transform H.L. Wan, B.S. Li and H.S. Li	682
Comparison of Rapid Extraction Algorithms of Major Colors Q. Jia, X.L. Lü, W.D. Xu, J.H. Hu and X.H. Rong	687
Efficient Indexing RDF Query Algorithm for Big Data Y.Q. Zeng and J.B. Wang	691
Method for CCD Edge Signal Processing G.S. Xu	695
Recent Advances in High Dynamic Range Imaging B.D. Bai, W.H. Liu, Y. Liu and J.L. Fan	699
Personal Identification Using Finger-Knuckle-Print Based on Local Binary Pattern P.F. Yu, H. Zhou and H.Y. Li	703
Color and Texture Features Based Image Retrieval C.I. Lin, C.H. Su and S.H. Tai	707

Chapter 8: Neural Network and Applied Algorithms

A Study on Approximation Performances of General Regression Neural Network S. Ding, X.H. Chang and Q.H. Wu	713
The Research of Data Stream Classification Based on Rough Set Theory-Neural Network Integration Z.B. Ren, C.M. Yan, Y.Z. Wei and L. Sun	717
Improve the Search and Ranking with Neural Networks Y.W. Chen, J. Zhang, K.H. Zhong, L.F. Liu and Y. Yao	721

Design Method of Beam Forming Using Genetic Algorithm T. Gan and Y.M. Wang	727
Decision Tree Generation Algorithm without Pruning J. Gao	731
Application of Probabilistic Neural Network in Pattern Classification S. Ding, X.H. Chang and Q.H. Wu	738
Complete Convergence of Generalized Pairwise NQD Sequences H. Wang and X.L. Tan	742
Application of Neural Network in Creating Modeling of System Y.H. Zhu and D.Z. Zhuang	746
Parallel Dijkstra's Algorithm Based on Multi-Core and MPI X.G. Han, Q.L. Sun and J.W. Fan	750
Meshless-Finite Element Coupling Method Y.J. Gao, D.H. Wang and G.P. Shi	754
Improving Forecasting Performance of Back Propagation to Wind Speed by Square Root Transformation Y.J. Gao and Q.M. Gao	758
An Improved Tabu Search Algorithm for Global Optimization of Engineering Design Problems N. Wang and S.Y. Yang	762
A Novel Knowledge Diffusion Efficiency Prediction Arithmetic in Equipment Manufacturing Industry Based on Simulated Annealing Arithmetic X.S. Chen, W.J. Yue and H.Q. Wang	768
A Combined Neural Network and Genetic Algorithm Optimization of Operational Parameter in Nitric Acid Process Y.H. Zhu, D.Z. Zhuang, P. Li and W.Y. Tong	772
Equipment Manufacturing Industry Knowledge Chain Efficiency Prediction Algorithm Based on Improved RBFNN X.S. Chen, C.P. Xu and H.Q. Wang	776

Chapter 9: Control Systems

Application and Research of Agricultural Irrigation Fertilization Intelligent Control System Based on GPRS DTU Y.T. Wang, H.X. Zhang, J.C. Li and Y.Y. Wu	783
Design of Pulse Magnetron Sputtering Deposition Control System Based on Multifunction Controller Y. Liang, Y. Qin, M.X. Wang and C.C. Zhu	788
Design of Loading Robot Control System Based on PLC Y.L. Han, Z.G. Jiao, Y.F. Tian, H.J. Yan and Y.L. Cui	792
Odor Source Localization Research of Mobile Robots in Indoor Environments C.S. Li, Z.H. Yang, G.Q. Cui and B. Jin	796
Design of Automatic Spot Welding Control System about the Vehicle Compartment Side Plate Based on PLC Y.L. Han, J. Wang, Z.B. Zhang and M. Zhang	801
Controlling Software Design of 2D Scanning Mirror in Infrared Detecting and Tracking System X.Y. Liu, X.B. Dai and X.D. He	805
An Optimal Control Strategy of Energy Storage System for Wind Farms S.J. Cheng and L.Z. Zhang	809
Research of Fixed-Point SVG Algorithm Research Based on Deadbeat SVPWM Control M.K. Zhang, Y. Zhang and X.M. Zhang	813
Intelligent Circuit Breaker Switch Controller Design Based on Micro-Grid Operation H.B. Luo, W. Wang and W.M. Chen	817
Fuzzy Logic Controller for Truck Active Suspension and Related Optimal Control Methods G.Y. Pan, T.Y. Xu and Y. Chen	821
Ball Mill Automatic Control System Design Based on Fuzzy PID Control S. Yan, J.Q. Zhang and W.Z. Diao	825

Adaptive Weighting Decoupling Design for Constrained Generalized Predictive Control Using Improved Genetic Algorithm Y.B. Dai	829
Research on Networked Control Systems Based on Adaptive Predictive Control Z.P. Chen and X. Wang	833
Research on Flower Room Temperature and Illumination Control System H.Y. Wen, E.L. Jing and P. Zhang	837
The Rough Set Research on Public Buildings Heating Control W.B. Wang, Y. Hao, S.Y. Wang and B.Y. Yin	841
Hydraulic Transmission and Control Technology Based on Energy-Saving Z.X. Zhang and L. Liang	845
Design of Track-Mounted Drilling Rig Based on Wireless Remote Control System H.L. Tian, H.J. Wang, Y.S. Weng, L.P. Wang and D.M. Sun	850
Research on Transient Force Decoupling Control of Hydraulic Shaking Table Based on Rapid Prototyping of DSP Algorithms Using SIMULINK Y. Sun, S. Li and Z.R. Fan	854
FDD of the Attitude Control System of Satellite with Actuator Fault and Time Delay via Two-Stage Kalman Filter C.L. Li, X.Q. Chen, Q.X. Jia and Y.H. Geng	859
A Novel Design of a Hybrid Electronic Vehicle Based on Programmable Logic Controller Y.Y. Li	864
Design of Task System for Live Working Robot Based on Task-Flow S.Y. Lu, Z.N. Liu and J.C. Liu	871
Based on MCU AT89S52 Temperature Control System C.Q. Yue	875
Research on Control System of Steam Scallop Shelling Machine J. Zhang, J.G. Yi, H.Y. Jiang, J.Z. Wang and J.T. Liu	879
Research on the Material Transportation Automation Technology Based on SEMI Standard C.X. Wang, M.Z. Liu and A.D. Xu	883
Adaptive Robust Control for Driving and Regenerative Braking of Electric Vehicle L. Xu, J.P. Wang, Y. Bai and G.L. Hu	887
Study on the Control Decision Technology of Intelligent Vehicle Y.W. Yan and Y. Du	892
The Research and Application of Automatic Fare Collection System in Tianjin Metro H. Yu	896
An Optimizing Algorithm of Control Cycle of DVSC in NCS W.J. Yang and X.S. Guo	900
The Simulation Study of Fuzzy PID-Smith Controller of Indoor Temperature Control System S.Y. Zhang, W.P. Shi, J.J. Zhang, S.J. Xu and B.H. Li	904

Chapter 10: Communication Systems, Network and Information Technologies

Research on Timing Synchronization Method for DC-Biased Optical OFDM Communication System Y. Wang and Y.L. Jing	911
Gradual Compressive Spectrum Sensing for Wideband Cognitive Radio Network B.B. Xu	915
Performance Analysis of Ultraviolet Communication System in Fog Environment Y. Wang and X.M. Bi	920
Research and Design of Vehicle Mobile Terminal Based on Android J.H. Zheng and T. Wei	924
A Cloud-Based Real-Time Mobile Collaboration Wiki System W.H. Wang, Y.M. Hao, Y.H. Cao and L. Li	928
Absolute Value Encoder Communication Interface Design Based on SSI Protocol Z.P. Chen and Z.T. Chen	932

Passive Distributed Clustering Scheme in Wireless Sensor Networks H. Gao	936
Energy Efficient Relay Assisted Wireless Multicast System T.S. Jiang, X. Luan, X.Y. Xu and J.J. Wu	941
Research on Network NC Manufacturing Based on Internet D.Z. Zhuang and Y.H. Zhu	947
Physical Layer Security of D2D Communications Underlying Cellular Networks J.J. Wang, C.M. Li and J.J. Wu	951
Design of Automation Calibration for RF Unit of Wireless Transceiver System B.W. Huang and Y. Jiao	955
Design of Wireless Microwave Transmission System B.W. Huang and Y. Jiao	959
Study on the Algorithm for Evaluation of Converged Network Performance Based on QoE Y. Du and Y.W. Yan	963
Query Optimization of Distributed RDF Data Based on MapReduce Y.Q. Zhang and J.B. Wang	970
A Dynamic Resource Allocation Framework in the Cloud H.R. Zhang, Y. Yang, L. Li, W.Z. Cheng and C. Ding	974
Study on Access Control Based on Trusted Computing X.Q. Ma, Y. Huang and B. Lv	980
Constructing an University Scientific Research Management Information System of NET Platform J.H. Xie and J.H. Xiao	984
A Mobile Collaboration Resource Framework Based on Multiple Resource Semantic Granule W.H. Wang, Y.M. Hao and Y.H. Cao	989
Research on the System of Radio Frequency Identification and Localization Works in Microwave Y. Pan, Z.Y. Hou, J. Xiong and K.H. Liu	993
The Design and Implementation of Remote Experiment System Based on Virtual Instrument G.S. Ma, Z.G. Wu and J. Wang	997
An Energy-Saving Routing Algorithm for Opportunistic Networks Based on Asynchronous Sleep Approach Y.K. Yao, W.H. Liu, W.X. Zheng and Z. Ren	1001
A Farmland Wireless Sensor Network Optimization Topology Control Algorithm F.F. Li, H.R. Wu, L. Yuan, Y.S. Miao and L. Zhu	1005
Optimization of Energy Heterogeneous Cluster-Head Selection in Farmland WSN Y.S. Miao, L. Yuan, H.R. Wu and Q.X. Li	1010
A Survey of Cloud Computing Data Virtualization Service L. Xiao, W. Jiang, F.X. Chen, L.J. Guo and Y.H. Hu	1016
On the Study of Half-Duplex Two-Way Relaying Based on Network Coding J.H. Fan	1020
Research on Compression Storage of Massive Agricultural Data Based on Cloud Environment R.H. Gao and H.R. Wu	1025
The Research on the Internet of Things Industry Chain for Barriers and Solutions P.F. Fan, L.L. Wang, S.Y. Zhang and T.T. Lin	1030
Time Triggered and Event Triggered Codesign in CAN Bus Network W.J. Yang and X.S. Guo	1036
The Design and Implement of Marine MF/HF Radio Simulator W. Wei	1040
Fast Elliptic Curve Point Multiplication Algorithm Optimization H.B. Zhang, X.P. Ji, B.Y. Wu and G.Y. Li	1044
Study on Simulation Cloud Computing of Power System Q.S. Zhu, W. Liu and K. Gao	1049

Chapter 11: Technologies in Manufacture and Engineering Management

The Study of the Apple Juice Evaporation Characteristics on a Heat Pipe Evaporator J.T. Song, J.B. Liu, Z. Zhao, X.F. Xu and S.Y. Wang	1055
TRIZ Evolution Theory Applied to Man-Made Boards H.L. Yu, H. Liang and D.L. Fan	1060
Integrated TRIZ and MEMS in Eco-Innovative Design H.L. Yu, J. Guo and D.L. Fan	1064
Virtual Manufacturing Technology Application in Calculation of Man-Hour in Manufacturing P.H. Zhang, Z.L. Liu and Y.B. Ding	1068
A New Method for Determining Pulverized Coal Economic Fineness X.B. Huang, P.C. Zhang and L.F. Liang	1072
An Estimation of Distribution Algorithm for Energy-Aware Steelmaking Continuous Casting Scheduling G.R. Wang, Q.Q. Li and M.R. Yuan	1077
Profits Distribution Optimizing Model of Multi-Type Generation Resources Joint Scheduling H. Xu, Z.F. Tan, H.H. Li and Z.H. Chen	1081
Generators Bidding Equilibrium Optimization Models in Economic Dispatch with CO₂ Emission Constraints-Model Construction Z.F. Tan, W.Y. Liu, L.W. Ju and H.B. Liu	1085
A Method of Defining the Optimal Ratio Scheme in Coal Blending Combustion X.B. Huang, L.F. Liang and P.C. Zhang	1089
Risk Analysis Model for Water Pipeline Leakage Based on FAHP and BPNN W. Zeng, Y.T. Pan and H.M. Huang	1093