

Table of Contents

Preface and Committee

Chapter 1: Engineering Materials, Energy Science and Dynamic System in Mechanical Engineering

A Numerical Simulation of Surface Deformation due to Ore Drawing Perturbation H.S. Li, J.H. Du and C.F. Du	3
Performance Investigate of Fine Aggregate Size and Content on Asphalt Mastic Z.R. Zhu and Y. Ye	7
Description of Process Automation System for the Plate Mill Shearing Line D.Y. Cui and Z.X. Xie	11
Fluorescent Properties of Mg (II) Complex with 1-Acetyl-2-Naphthol-4, 4'-Diaminodiphenylmethane L.H. Wang	14
Application of Dynamic and Reusable Report Generation System in Urban Environmental Remote Sensing Monitoring S.W. Li, X. Yang, J. Ma, T. Yu, J.B. Lai and J.G. Li	18
Hydrothermal Synthesis and Luminescent Characterization of Zn (II) Complex with 1,4-Bis(2'-formylphenyl)-1,4-dioxabutane Isonicotinoylhydrazone L.H. Wang	23
Wavelet Analysis on Vibration Signal during Unsteady Process Y. Liu and C.Q. Yin	27
Synthesis and Photoluminescent Properties of 1-Acetyl-2-naphthol -4, 4'-diaminodiphenylmethane and its Cd (II) Complex L.H. Wang	31
Design of Industrial LCD Terminal System for Intelligent Image Display X.C. Fu, R. Song and G.J. Wen	35
Key Anti-Friction Technology Breakthrough in Steel Collars: First Using Electro Slag Remelting in the Second Remelting of HSS Collars Y.T. Liao, T.C. Wu and T.C. Chou	39
Evaluation of Liuli Expressway Landscape Quality Based on Rough Set Theory S.F. Tan	43
Traditional Chinese Medicine Epimedium Release from PLGA/HA Scaffolds Prepared in Supercritical CO₂ J.S. Liu, L.H. Xu, Z.N. Deng, S.Q. Wang and X.L. Ji	48
Optimizing Build Parameters for Integral Stereolithography System G.S. Xu, G. Yang and J. Gong	52
Research on Warning Model about Drug Shortage in Hospital Based on RS-SVM D.F. Wu	56
Application of Electrohydrodynamic Drying Technology in Sludge Y.X. Bai, H. Shi and Y.X. Yang	61
Effects of Initiator and Catalyst on Properties of Dental Zirconia-Toughened Alumina Ceramic Base Crown Prepared by Gelcasting Z.N. Deng, L.L. Wang, J.S. Liu and J.F. Ma	69
The Research of Dynamic Path Planning Based on Improving Fuzzy Genetic Algorithm in the Vehicle Navigation P. Feng	73
Effect of Eutectic Reaction Induced by La on Microstructure in Semisolid A356 Alloy Z. Liu, M.Y. Huang, K. Cao and H.B. Xu	77
Learning Machine Design for Mechanic Fault Diagnosis Expert System Y.F. Yu, X.L. Liu and W.B. Chen	81
Hydroxyapatite–Carbon Nanotubes Composite Coatings on Ti Substrate J.S. Liu and X.L. Ji	86

The Finite Element Analysis and Topology Optimization of Semi-Trailer Frame W.C. Zhang, X.B. Du, B.B. Ma, B.H. Pei, J. Chen and Z.X. Liu	90
The Thinking on Premise of Constructing the System of Carbon Finance in Heilongjiang Province Y.L. Huang and H.R. Xin	94
Remote Monitoring System for Aquaculture Based on Ethernet X.Q. Liu and Z. Liu	98
Summary of Carbon Sequestration Methods Q. Zhang and Y.L. Huang	102
The Features of Multiscale Pseudoframes and Gabor Frames According to Bivariate Filter Functions Z.Y. Chen and J.S. Feng	106
Study on Mechanism of Separate Type Boundary Lubrication in Low Frequency Torsional Vibration Tapping F.Q. Han, Z.Z. Li and D.Y. Zhang	111
Research of a ZVZCS Full-Bridge PWM DC/DC Converter Based on Parallel Current-Mode Control X.Q. Liu and Y. Zhang	115
Partner Choice of Iron and Steel Logistics Alliance Based on Fuzzy Analytic Hierarchy Process Y.R. Jin, Y.Y. Zou, Y.D. Wang and S. Gao	119
A Portable JPEG Image Application System Base on SOPC Technology G.M. Hu and Z.J. Xu	123
On the Basis of Forest Volume Expansion Method to Predict the Carbon Sink Potentiality in Daxing'anling Y.L. Huang, L.H. Cheng and X.Q. Li	128
Experimental Study on Wear Monitoring of Marine Diesel Engine's Piston Ring by Magnetostrictive Sensor G.J. Chen, Z.M. Peng, J.G. Yang and Q.Y. Huang	132
Effect of Replacement of Fe^{2+} by Co^{2+} in W-Type Hexagonal Ferrite $\text{BaFe}_{18}\text{O}_{27}$ to its Electronic Properties from First Principles C.H. Ri, L. Li, Y. Qi and S.N. Kim	137
Culture Conditions Optimization of Hyaluronic Acid Production Based on GP and QPSO Algorithms H.X. Long, X.H. Zhang and Z.J. Mo	141
Modeling the Spread of Electric Vehicles Based on Life-Cycle Cost W.B. Xiao, Y.H. Lin, X. Zheng and S.Q. Ye	146
Video Image Segmentation and Understanding S.L. Zhang, H.P. Li and S.W. Zhang	151
Electron Spin Relaxation in Semiconductor Quantum Wells Y. Wu and Q. Shou	155
Simulation and Research of Heating Load about Residential Construction Based on Zhengzhou H.F. Zheng, J.B. Wu and L.Y. Huang	159
Design and Implementation of a File Transfer System Based on .NET Remoting Q.M. Lou, J.H. Sun, H.C. Xu and J.W. Fu	162
Hardware Design of Precision Injection Molding Machine Temperature Control Circuit A.A. Fang and Z.H. Chen	166
Modeling and Simulation of a Grid with a Doubly Fed Induction Generator H.S. Zhang, G.X. Zhang and D.L. Wang	170
Hybrid Evolution Strategies Algorithm Based on Dynamic Demes M. Zhang and J.H. Sui	174
Literature Review of the Domestic Research on Emission Trade L.P. Zhou	179
Analysis of Necessity of the Acceleration of Solid Waste Management in China in "Twelfth Five-Year Plan" Period and Suggestions L.P. Zhou	184
Application Research of Information Technology in Vehicle Y. Fu, F. Li, R.L. Zeng, Y.K. Xiao and L.L. Zhang	188

Study on Product Design Management based on Product Resources H.M. Jin and W.L. Peng	193
Methods of Shoes Style Creation Design W.L. Peng, H.M. Jin and X.W. Dong	197
Based on the Supply Chain Integrator for the High-End Logistics System of Dangerous Goods H.Q. Liu, Y.J. Lv and H.N. Wang	201
The Analysis of the Influence of Highway Construction and Operation on Industrial Structure Adjustment in Heilongjiang Province - Co-Integration Test and Causality Test Based on Data from 1995 to 2009 Y. Jin	205
The Quest into China Engineering Materials Personnel Training Mode J.L. Qiu	210

Chapter 2: Energy Materials and Mechanical Engineering Application

The Relationship between Freeway Safety and Geometric Design Elements Y.Q. Guo	215
Optimization Research on Cyclic Waterflooding in Low Permeability Fractured Reservoir W.H. Yan, L.M. Wang, D.Z. Wang and X.B. Shi	220
A Novel Fusion Algorithm of Visible Image and Infrared Image Based on NSCT Z.H. Cao, Y.D. Guan, P. Wang and C.L. Ti	223
Traffic Throttling to Improve TCP Incast Throughput D.A. Huo and Q. Cao	227
Mine Gas Wireless Monitoring and Forecasting Network Based on Support Vector Machine Z.B. Li, Y.Y. Jiang and W. Zhu	232
Design of Multi-Sensor Communication System of Wheelchair Robot Base on the CANopen W. Wu, Z.D. Pan and P. Cao	236
Analysis to Effective Elastic Modulus and Porosity for Artificial Bone Scaffold with Hydroxyapatite Microspheres Y.E. Wang, Q. Han, S.M. Wei, P.L. Li, M.M. Yang, Y.L. Qin, Y.B. Wang and J.H. Zhou	241
Protein Folding Simulation Based on Improved Simulated Annealing Algorithm J.F. Liu, Z.L. Zhou, Z.X. Gao and G.J. Zhang	246
Modeling and Analysis of Metabolism Process with Finite State Machine R. Gao, W.S. Hu and C.Q. Zhang	250
Parametric Modeling of Five Typical Cylindrical Shells X.Y. Lu, X.W. Zhao, L.L. Huang, Z.H. Li, Z.D. Wang and C. Wang	255
Research and Design on the High-Voltage Line Harmonic Detection Based on a New Method J.B. Zhang, F. Zhou and P. Hao	260
The DGPS Maximum Speed Prediction Based on AR Model in Full-Scale Speed and Power Trial M.Y. Gu and Y.Y. Wang	265
Parametric Modeling of Six Typical Reticulated Dome X.Y. Lu, X.W. Zhao, L.L. Huang, L.B. Kong and C. Wang	270
Effect of Ambient Temperature on Three-Shaft Gas Turbine Performance under Different Control Strategy J.H. Gao and Y.Y. Huang	276
Modeling, Simulation and Analysis of Mechanical Ruling of Echelle Grating G.F. Shi, G.Q. Shi and L.S. Song	281
Analysis on Vibration Conductivity in Walls of Hydropower House Based on Power Flow Theory W. Xu, X.Y. Xu and Z.Y. Ma	285
Feature Extraction of Acoustic Emission Signals for Rotor Fault Based on Daubechies Wavelet Analysis Y. Yu, P. Yang and L.J. Yang	290
Simulation and Analysis of Deep Excavation and Loading by Using FLAC3D K. Cui, X.K. Pan and Z.C. Ling	295

Optimum Design of a Parabolic Flexure Hinge Based on Compliance Closed-Form Equations	
J.F. Hu, P. Li and X.F. Cui	299
A Wavelet-Based Watermarking Algorithm Using the Human Visual System	
Y.F. Chen and G. Yin	304
A Method of License Plate Chinese Character Recognition Based on Image Quality	
Y.F. Chen and G. Yin	309
Application of SLP in Plant Layout Based on Low Carbon Logistics	
Y. Xiao, Y.K. Cheng and Q.H. Jia	314
Chaos, Sliding Mode Control between Two Different Fractional-Order Hyperchaotic Systems with Uncertain Parameters	
H. Zhang and D.Y. Qiu	318
Shape Optimizing Design of Kiewiti Spherical Reticulated Shell	
X.Y. Lu, X.W. Zhao, L.L. Huang, Q. Wang and C. Wang	324
Study on Carrying out Kanban Production System in a Engine Assembly Workshop	
Y. Xiao, Y.Y. Li and Q.H. Jia	330
Optimal Design of Basic Parameter of Disconnected Steering Trapezoid	
C.X. Guo, K. Liu and W.L. Xie	334
Evaluation of Rolling Bearing Vibration Using Fuzzy Set Theory and Chaos Theory	
X.C. Sun, X.T. Xia, Y.B. Liu and L.L. Gao	338
Kolmogorov Entropy Optimization in the Aeroengine Health Monitoring	
Y.S. Shi, J. Ma and Y.X. Song	342
Application of the Regularization Chaos Prediction Model in Aero-Engine Performance Parameters	
Y.S. Shi, J.J. Yue and Y.X. Song	347
Frequency Balance Influence to Signal-to-Noise Ratio of Bistable Stochastic Resonance in Signal Smart Regression Recognition Procedure	
Z.K. Zhao, G.H. Hui and Y.Q. Chen	352
Calculation and Analysis Techniques of Foundation Pit Engineering Based on FLAC3D	
Y.L. Qiu, X.Y. Hu, Z. Wang and M.Y. Zhou	355
Study on the Network System of City Earthquake Prevention and Emergency Centers with the Community Public Facilities as the Nodes	
B.X. Xue	359
Mathematical Relationship between Solar Radiation Intensity and Exterior Wall Temperature	
Y.A. Ao, L. Peng, D. Che, Q. Zhang, Y.W. Li and X. Jia	364
Motion Trajectory Planning of 3-Dof Wire-Driven Parallel Robot	
J.P. Zhou, Z.D. Zhong and Z.Z. Wang	369
The Design and Calculation of an Underwater Carrier's Hood Separation	
T. Li and B.W. Song	373
An Inverse Problem of Eigenvalue for Generalized Anti-Tridiagonal Matrices	
H. Wang and Z.B. Li	377
Distributed Fieldbus Technology for Generator Excitation System Data Storage Design	
J.T. Yin, Z.Q. Du and L.P. Liu	381
Rotor Current Method of Directional Control of Doubly-Fed Motor Without Speed Sensor Based on Vector Control	
L.P. Liu, Z.Q. Du and J.T. Yin	385
Environmental Risk Assessment of General Contractor's EPC Project	
W.Q. Li and L. Song	389
Train Monitoring System Design Based on ARM-Linux Embedded Syetem	
C.Z. Wen	395
Construction of Luciferase Reporter Plasmid with Human AQP1 Gene Promoter	
Z. Sun, T.C. Zhang and Y. Jiang	399
Quantitative Study on the Relation between Water Disaster and Grain Production of Hubei Province	
T. Li, X.L. Wang, W. Wen and E.H. Li	403
New Nash Equilibrium Based on Generic Risk Element Transmission Theory	
G.S. Lu, C.B. Li and X. Li	410

Application of Fuzzy Closeness in Siberian Tiger Skin Texture Recognition J. Chen, D.W. Qi and X.J. Zhang	415
The Metabolic Capabilities of Two Cells in Enterobacteria Q.H. Zhou, X.D. Sun and Y. Li	420
An Anti-Jamming Algorithm of SDM Based on the Cyclostationarity of the Signals X.H. Shang, Y.H. Shen, X.S. Ren and J. Wang	424
Removal of Gas-Phase Elemental Mercury by Photocatalytic with Liquid Absorption J.H. Chen, M.Y. Sun, J. Wu, P. He, W.G. Pan, J.X. Ren, W. Gao, H.Y. Luo, X.Y. Zhang and J.H. Fang	430
Discrete Spatial Solitons in the Two-Dimensional Optical Waveguide Arrays H.Y. Chen, T. Lv, A.S. Zheng and Y.L. Han	435
Microscopic Numerical Simulation of Reinforced Concrete Damage Evolution under Uniaxial Tension and Compression J.Y. Chen, M. Zhang and Z.G. Liu	439

Chapter 3: Material Science, Manufacturing Engineering and Production System

Tuning Algorithm for Modeling and Controllability of Fractional-Order Control Systems Z. Yan, S.T. Che, X.M. Cui, Z.Q. Zhang and C. Zhang	445
Study on Melt Adhesive Used in Aluminium-Plastics Composite Board J.S. Chen, J.H. Wang, S.G. Wen and Y. Shen	448
Review on Singular-Value-Decomposition-Based Digital Watermarking Algorithm in Combination with Image Features T.T. Liu and C. Yang	452
Study on the Firing Table Compiling of a New Type of the Very Low Altitude Interception Device Z. Zhong, Y. Jiang, Y.Y. Li and C. Zhang	464
Numerical Study on Double Layers Fragment Warhead under Asymmetrical Initiation Z.C. Wang, C.L. Jiang and Z.Y. Chang	471
The Research on the Calculation Methods and the Influential Factors Analysis of the Mechanical Joint Persistence Ratio of Jointed Rock Mass J.Y. Chen and X.W. Hu	476
An Algorithm for Map Coloring Problem Based on Depth First Search F. Gao, X.Z. Mai and B.L. Cui	480
Bioinformatics Analysis of the Complete Nucleotide Sequence of the Duck Enteritis Virus (DEV) US2 Gene J. Gao, A.C. Cheng and M.S. Wang	484
The Optimization of EB Flatform with Dynamic Cache X. Wang	488
Bioinformatics Analysis and Characteristics of US2 Protein Encoded by the Newly Identified US2 Gene of Duck Enteritis Virus J. Gao, A.C. Cheng and M.S. Wang	493
Framework of 3D Model Manufacturing Features Extraction Technology X.G. Wang, Y.W. Bai, K. Liu and X.X. Tang	498
Common Breakdowns Analysis and Processing Measures on Frequency Inverter X.M. Hu and Y.Z. Liu	502
Effect of Working Parameters on the Damage of Ladder Impact Drill F.S. Yu, X. Wang, X.Q. Shen, M.Q. Dong and R.L. Zhang	506
The Research on Directional Elements of High-Voltage Line Protections Based on Zero-Sequence Reactance of Fault Components X.H. Zeng, Y.H. Chen and H. Song	511
Structure Optimization of Large-Diameter Percussive Drill X. Wang, F.S. Yu, X.Q. Shen, M.Q. Dong and R.L. Zhang	516
Analysis of Soft Rock Tunnel Mechanics Effects Based on Strain Softening Model of Surrounding Rock J.H. Zhang	520

Simulation of Design and Optimization of Local Oil Gas Ventilation Equipments with CFX L. Jia, W.J. Wang, X.Q. Yu, M. Lin and Y. Zhang	526
Analysis of Influencing Factors of Coal-Biomass Compound Briquets Combustion Characteristics X.W. Zhao, Z.K. Wang and H.Z. Huang	531
Optimization Design of Gravity Dam Section Based on PSO Algorithm L.M. Hu and Y.Z. Li	535
The Process Modification of Bathing Wastewater Treatment and Reuse System in School G. Wang, X.Y. Zhang, J.L. Liu and Y. Li	540
Application of Organic Inclusion in Hydrocarbon Exploration H.Q. Liu and Y.Y. Zhong	545
Design and Implementation of NIDS String Matching Based on SOPC J.J. Li, Y. Chen, H. Cholman, Z.L. Lu and L.Q. Nan	551
Analysis of Heat Exchange Efficiency during the Spray Cooling Process G.N. Liu, F. Gao, D.Y. Zhang and G.F. Liu	555
Research on the Sensory Quality Evaluation of Agricultural Food Based on Linguistic Information D.L. Zhang, X.M. Xu, Y. Liu and P.F. Mu	560
N-Soliton Solutions for (2+1)-Dimensional Nonlinear Dissipative Zabolotskaya-Khokhlov System B.Q. Li and C. Wang	564
End Processing of MAEAM Pair Potential for BCC Metals H.S. Jin and A. Du	568
A New Compact Dual-Band Filter Using SIR J.P. Hu, G.H. Li, W.D. Fang, W. Zhang and H.P. Hu	573
A Novel Kernel Matrix Isomap Algorithm Based on Partial Least Squares B. Li, F.M. Guo and Y.G. He	577
Study on MAEAM Multi-Body Potentials with Farther Neighbor Atoms for HCP Metals H.S. Jin and A. Du	581
Modeling of Arbitrary Power Level PV Array Based on Circuit Equivalent Mechanism Z.Q. Wang, Y.R. Chen and Y. Ruan	586
The Use of Biotreatment Technology to Dispose of Offshore Drilling Waste Oily Fluids Z.Y. Li, S.X. Xie, G.C. Jiang, M.T. Bao, Z.L. Wang, X.B. Huang and F. Xu	592
Forklift Hydraulic System Simulation Based on ADAMS Y.M. Wang, C. Zhao and J.H. Zhang	598
Optimization and Validation of an Indirect Competitive ELISA for Detecting Enrofloxacin Residue S.X. Wu and J.Q. Jiang	603
Dynamic Routing Algorithm Based on HIP Multicast Model X.Z. Shen and X.G. Tang	607
Preparation of Artificial Antigen and Immunological Trait for Estradiol S.X. Wu and J.Q. Jiang	612
The Design and Implementation of Monitoring Data Warehouse of Ambient Air Quality R.L. Hou, A.M. Dong and X.F. Li	616
Photocatalytic Activities of HZSM-5 Supported TiO₂ in Different Electrolyte Solutions W.J. Zhang, K.X. Li and H.B. He	621
An IoT Anomaly Detection Model Based on Artificial Immunity C.M. Liu, S.Y. Chen, Y. Zhang, R. Chen and K.L. Guo	625
Analysis and Improvement of Vibration and Noise for Driving Axle W.K. Shi, N.C. Guo, W. Yang, G.M. Wu, G.L. Wang and F. Zhang	629
Photocatalytic Activity of TiO₂ Coated on HZSM-5 Prepared by Oxalic Acid Treatment W.J. Zhang, J.L. Chen and H.B. He	633
Prediction and Analysis of Vehicle Cab Interior Noise Based on Structure-Acoustic Coupling W.K. Shi, G.M. Wu, Z.Y. Chen and N.C. Guo	637
Electrochemical Study on S²⁻ to the Surface Passivation Film of T23 Material Used in Supercritical Unit Tubes M.S. Lin, F. Yu, W. Su and Y. Chen	641

Investigation of Vibration for Vehicle Rear Axle Based on Modal Analysis W.K. Shi, N.C. Guo, W.J. Liu, G.M. Wu, G.L. Wang and F. Zhang	646
Development of the Self-Motion Advanced Hydraulic Support Based on the Virtual Prototype Technology X. Li	650
The Analysis of Frame-Shear Wall Structure Model L. Pan and Y.Q. Zhang	654
Research on the Performance of the Autoclaved Fly Ash Common Brick L. Pan and C. Han	660
A Measurement and Analysis Technique of Curves of Metal Parts W. Shao and D.X. Hua	665
Bioinformatics Analysis and Characteristics of UL14 Protein Encoded by UL14 Gene in Duck Enteritis Virus F.J. Li, A.C. Cheng and M.S. Wang	669
Vascular Contour Extraction of MRS Regional Morphology Algorithm Based on Sobel Operator F.X. Cheng, X.M. Lin and N.N. Dong	676
Analysis of Synonymous Codon Usage in the UL14 Gene of Duck Enteritis Virus F.J. Li, A.C. Cheng and M.S. Wang	680

Chapter 4: Engineering Material, Energy Science and Dynamic System in Mechanical Engineering

Three Layers Optimization Model for Time-of-Use and Interruptible Price Based on Fuel Saving and Emission Reducing Y.H. Zhao, Z.F. Tan and Y.H. Song	693
A Research Review of the Construction Problem of Dynamic Alliance of Project Oriented Small and Medium-Sized Enterprises G.L. Liu, S.T. Liu and D. Wang	697
Nonlinear Controller Design for Hypersonic Vehicles Based on Dynamic Inversion Considering Flexible States Z. Cheng, P. Xue and Y.L. Liu	701
Resource Representation in Migrating Workflow System Modeling X.G. Wu	709
Research on Road Signs Recognition Based on Machine Vision M.H. Zhang, Y.B. Zhao and L. Guo	713
Stiffening and End Processing of MAEAM Pair Potential for FCC Metals H.S. Jin and A. Du	718
Overview: Methods of Crack Damage Detection Based on Modal Analysis Y.C. Deng, H.C. Sun and J. Li	723
The Analysis of Wireless Channel in the Workshop of Chemical Water Treatment in Power Plant R.S. Wang, Y. Bai, Y.X. Xu, C.Y. Xu and Q.L. Li	728
A Novel Multi-Layer Intelligent Test and Adjustment Technology for Water Injection Well D.L. Jia, F.S. Wang and S.J. Zhang	732
Flow Control Strategy for Novel Layered Synchronous Water Injection Technology in Oilfield D.L. Jia, F.S. Wang, S.J. Zhang and M.X. Zhao	737
Synthesis of $\text{Li}_{0.8}\text{Zn}_{1.1}\text{PO}_4$ and its Selectivity to Li^+ Exchange H. Li	742
Research on Inverter Fault Detection and Diagnosis Q.L. Yang, H.P. Zhang and J.J. Cheng	746
Sewage Anti-Blocking Machine Principle and Double-Stage Pump Technology C.H. Zhang, N. Meng and D.X. Sun	751
Research on Gas Station Selection Support System with Given Refueling Volume Q.H. Zhang, N.N. Xiu, G.Q. Cheng and Z. Wang	756
A Fast Image Encryption by Bit-Chaotic-Shuffle Based on Chaotic Systems C.K. Huang, H.H. Nien, S.L. Hsu and S.S. Tu	761

Laser-Induced Electroless Copper Deposition on Modified Plastic Surface X. Peng and K.Y. Jiang	765
Cost-Effective Energy Recovery Circuit for Plasma Display H.L. Do	770
Analysis on Peeping Image Enhancement of Coal Mine Borehole Based on Wavelet Packet Decomposition W.H. Zha, J.L. Xiong and X.H. Liu	773
Non-Isolated Single-Switch Step Up/Down Converter with Wide Conversion Range H.L. Do	777
Study of an Inorganic Ion Exchanger $\text{Li}_{1.2}\text{Zn}_{0.9}\text{PO}_4$ H. Li	780
The Airport Runway Foreign Objects Detection Method Research Based on the Algorithm of SIFT Y. Yu, M. Zhang, G.H. Zhang and J. Niu	784
The Synthesis and Ion-Exchange Property of Li^+ Memorized Spinel LiZnPO_4 H. Li	789
Interleaved Synchronous Buck Converter with a Coupled Inductor H.L. Do	793
Speed and Rotor Position Identification for PMSM Based on Improved Nonsingular Terminal Sliding-Mode Y.L. Liu, Y.F. Ji, Z. Cheng and T. Jia	796
Operation Mode and Cost Analysis of Pure Electric Vehicle Charging System with Polymer Insulation Materials in China F. Qiu, Y. Han, Y. Liu, B.Z. Zhang, X.J. Zhou, G.Q. Zhang and X. Zhao	801
Optical Performance of Horizontal Single-Axis Tracked Solar Panels G.H. Li, R.S. Tang and H. Zhong	805
Study on Slag Entrapment of Molten Steel in Mold with Electromagnetic Stirring Technology M.L. Yang, Z.S. Li, F.L. Wei, C.G. Cheng, X. Chen and S.B. Qi	811
A Signal Processing Method for Ground Monitoring System of a Certain Missile's Guidance Module D.S. Li and W.X. Fu	817
Quality Control and Supervision of Material in Construction Y. Cai	821
Preparation of Microbial Flocculant and its Preliminary Application on Removal of Ammonia in Tannery Effluent C.Q. Zhao, Q.H. Yang, B. Teng, W.Y. Chen, L. Jiang, Y. Wang and S.S. Deng	824
Research of Minimum Ship Safety Manning for Trial X.D. Zhang, H. Zhang and W.J. Chen	828
Wetland Plant Landscape Construction of the Ancient Canal Combining Archaic Rhyme with Wild - Taking China Yangzhou Sanwan Wetland Park as a Case Z.L. Zhu and N. Li	833
Design of Mould on Cold Rolling for CARB Bearing's Arc Roller L.P. Zhang, B. Ma and J. Fu	838
The Solar Assisted Ground-Source Heat Pump Heating Applied Research of Cold Regions C.Y. Ran, Z. Wang and L.Y. Zhang	844
Diamond Tools Matrix Composites of Co Replaced by Fe with Doping Rare Earth Q.H. Zou	848
Development and Analysis on Energy Conservation Equipment and Control Technology of HVAC J.M. Sun and C.D. Zhang	852
Numerical Study of the Effect of Wall Opening on Wind Pressures on Low-Rise Gable-Roofed Buildings S.F. Chen, M. Yu and D.Y. Wang	857
Material's Chemical Reaction Progression Variables Fluctuating and Detailed Equilibrium Principle Q.H. Zou	861
Kinematic Analysis of Humanoid Based on Screw Theory X.R. Wang and Z.Q. Wang	865

Enhanced Hydrolysis of Furfural Residues by <i>Trichoderma cellulases</i> with Addition of Natural Surfactant Tea Saponin	
Y. Feng, L. Ji, H.Q. Liu and J.X. Jiang	871
DTA of Rare-Earth Fe-Based Matrix Composites for Diamond Tools	
Q.H. Zou	876
A Design Proposal of Integrated PC-Architecture Embedded Control System for Remotely Operated Weapon Station	
H.M. Qian, P. Sun and H.T. Zhao	881
Improvement of Running Tunnel Based on OSPF TE	
C.W. Wang	885
Design of Internal Control Risk Management System of Coal Mining Enterprises Based on Systems Engineering	
S.L. Hao and Z.X. Ding	890
Research on the Forest Inventory Based on Three Dimentional Laser Scanner	
L. Ma and X.R. Guo	894
Solving the Dynamic Model of Metabolic Network of <i>Escherichia coli</i> by Adams Methods	
Q.H. Zhou, J. Cui and J. Xie	900
Finite Element Analysis of High Pressure Storage Tank	
Y. Cai, Q.S. Ma and D.X. Tian	904
Research of the Sprayed Steel Fiber Concrete Application in Tunnel Construction	
X.L. Luo, L.Z. Li and H.Z. Yin	908
Research and Exploration of Waste Money Drilling Technology	
X.C. Cheng and Q.L. Du	912
Investigation on Shading Effect of Urban Green Space in Summer in Hangzhou	
W.T. Wu, H.Y. Zhao, Y. Ren, M.M. Tian and D. Shen	916

Chapter 5: Environment Research, Dynamic System and Applied Mechanics

The Study on Organic Acid Detection Using Ion Chromatography	
X.J. Hu, W. Chen, L. Li, J.P. Zhou, B.S. Guo and M. Zeng	923
The Application of the Fuzzy-PID in the Circulating Water Control System with Constant Pressure	
X.P. Meng, H.J. Xu, W.N. Zhao and H. Wang	927
Numerical Simulation of Turbulent Flow for Various Inlet Velocities in Tee Junctions with Periodic Porous Media	
Y.W. Wang, T. Lu and K.S. Wang	932
Intelligent Control Method for Aircraft Deicing Fluidtemperature Based on a New Adaptive Smith Predictor	
Z.W. Xing and B.J. Ding	936
Correction Technology and Development on Active Power Factor	
X.M. Hu and G.T. Zhang	941
Development of Electric Automobiles and Electric Vehicle Charging Facilities in China	
Y. Liu, Y. Han, B.Z. Zhang, X.J. Zhou, G.Q. Zhang and X. Zhao	945
Synthesis of SrTiO₃ Nanoparticles by a Simple Sonochemical Method	
Y.J. Wang, L.L. Yang and Y.G. Wang	949
Characteristics Analysis of Double Chevron-Type Plate Heat Exchanges with Different Corrugation Ratios	
C.S. Guo, W.J. Du, Y. Chen and L. Cheng	953
Research on Environment of Dwellings with Rammed Earth Walls in Deqin Area in Yunnan Province	
L.P. Li	957
Research Based on Simulink of Hearth Negative Pressure Control System	
L.P. Song and H.H. Chen	962
Research on the Weak Signal Detecting Technique for Crop Water Stress Based on Wavelet Denoising	
J.H. Wang, L.H. Geng and C.M. Zhang	966

Experimental Study on the Characteristics of Modified Ca-Based Sorbents and its Mercury Adsorption Capability in the Flue Gas	
P. Wang, J. Wu, P. He, J.H. Chen, Q.Y. Liu, C. Feng, J.W. Zhang, R.Y. Wei and Y. Han	971
Research on New Folk Houses with Regional Characteristics and Earth Material	
H. Wang and L.P. Li	977
Photoelectrocatalytic Oxidation of Methyl Orange in KCl Solution	
F.Q. Li and W.J. Zhang	981
The Measurement Method to Position Coordinates of Movable Platform for a Parallel Machine Tool	
J.Y. Guo, L. Zhao and Z.Q. Sheng	985
Influences of Aeration and pH on Activities of HZSM-5 Supported TiO₂	
F.Q. Li and W.J. Zhang	990
GA-CDFM Based Hybrid Optimization Method for Steelmaking Scheduling and Caster Operation	
X.C. Luo and C.Z. Na	994
Effect of Ultra-High Pressure on the Characterization of Ursolic Acid/β-Cyclodextrin Inclusion Complex	
F.Z. Liu and W. Zong	999
Research of the Measurement Technique for the DC Motor Sensorless Control	
E.B. Peng, H.G. Zhang and H.Y. Wang	1003
Research on Surface Treatment of Carbon Fiber and the Conductive Properties of Paper	
Z.J. Hu	1007
Research on Repeat Compensation Algorithm in the Servo System of CNC Machine Tools	
H.Y. Wang and E.B. Peng	1011
Effect of Electron Beam Treatment on the Surface Properties of AZ31B Magnesium Alloy	
H. Ye, R. Chen and Z.L. Yan	1016
Hydrogen Bell-Type Furnace Control System Based on Multi-Layer System Structure	
S.X. Li and Y.F. Mo	1020
Non-Isolated High Step-up DC-DC Converter with a Coupled Inductor	
H.L. Do	1024
Tire Shredding Delamination Peeling Method Research	
L.J. Qiu and J. Yang	1028
The Characteristics Research of Spray Evaporative Condenser	
Z.H. Tang, M.Y. Xiong and D.B. Lei	1032
AMLU Truck Crane Torque Instrument Working Set and Analysis	
J. Yang and L.J. Qiu	1037
Research on Nonlinear Modeling and Simulation for Flexible Drive Train of Wind Turbine	
W.H. Zhao, Z.Y. Duan and S. Liu	1041
Photoelectrocatalytic Oxidation of Methyl Orange in KNO₃ Solution	
Y.T. Song and W.J. Zhang	1044
Quality Detection of Punched Sheets with Circle Fitting Based-On Machine Vision	
F.C. You and Y.J. Chen	1048
Low Power Wi-Fi(IEEE 802.11) for Mobile Sensing of the Internet of Things of Mine	
L.G. Qu, Y.R. Huang, C.L. Tang and L.Y. Ling	1053
Preparation and Analysis of Magnetic Nanoparticles Used as Highly Active Catalysts over a Wide pH Range	
W. Wang, T.L. Li and Y. Liu	1057
Application and Research of XML Technology in IETM	
W.P. Sheng, R.Q. Wang, Y. Lin, J.L. Huang, C.Y. Yang and T.J. Li	1062
Optical Navigation Satellite Constellation Design	
J. Ao, Y. Wu and C.B. Ma	1065
Obstacle Detection System Based on Stereo Vision and a Structured Light	
K. Peng, X.L. Zhou and J.G. Liu	1070
The Performance Research of Ceramic Fibers Filtration Composite Material	
P.D. Gu, H. Huang and R. Qiu	1075
FSSS Technical Retrofit of 130T/H All Gas Fired Boiler	
Y.L. Duan and Y.J. Zhao	1080

Installation Determination Method of the Combined Wind-Storage System Aiming at Smooth Effects H.Z. Nie, D.S. Zhang, Y. Qiao, F. Xu, J. Li and Z. Cui	1083
Concrete Superplasticizer Prepared from Catalytic Oxidation of Lignosulfonate Z. Wang, J.W. Xue, J.S. Zhang and W.X. Liu	1088
Soft-Switching Boost Half-Bridge Converter with High Voltage Gain and Low Input Current Ripple H.L. Do	1093
Finite Element Simulation of Crack Testing System of Electromagnetic Acoustic Emission Based on ANSYS Q.Y. Zou and X.C. Dong	1097
The Optimization of Cutting Parameters of Cast Iron Based on the Genetic Algorithm H.J. Yang, X.H. Guo, D.D. Wan and T.T. Chen	1102
Optical Character Recognition of Postmark Date Based on Machine Vision F.C. You and Y.J. Liu	1107
Detection Technology and Application of SpO₂ Based on Dual Wavelength System Q.X. Zhao, D.X. Zhang, X. Ji, L. Zhao and H. Wang	1112
The Control of Fixed-Bed Reactors for Biomass Pyrolysis: An Overview J.H. Wu, J.K. Wang, J. Chen, H.P. Si and K.Y. Lin	1117
Database System Construction of Unearthed Textiles Q.L. Cao, L. Wang and G.Z. Li	1124
A Method of Generating Three-Dimensional Terrain Based on Digital Geographical Topographic Map J.J. Zhou, M. Qi, D.J. Li, H.L. Cui, X.X. Zhang, Y.H. Han and Y. Wang	1127
Multi-Objective Scheduling Based on Weighted Combination of Heuristic Rules and the Simulation Method L.M. Ma, J.Y. Li, W.S. Xu and L.J. Kong	1132
A Survey on the Status Quo of the Wood Carving Art of the Confucius' Temples in Hunan Province M. Luo and S. Liu	1139
Research on the Design of Windshield Inspection Gauge Based on WAVE Technology L.Z. Zhou, C.D. Ji, Q. Jiang and J. Tao	1144

Chapter 6: Engineering Material, Mechanical Engineering and Applied Mechanics

Shipbuilding-Oriented Welding Technology Based on NX L.Z. Zhou, B. Wang, C.D. Ji and J. Tao	1151
Research on Wet Thermal Recovery Plant Used by Air Conditioning Y.A. Li, X.L. Liu, J.J. Yan and T. Xing	1155
The Flying Height Control with a Switched Controller for Data Storage Devices Z.Z. Wu and M. Liu	1159
DNA Addition Algorithm Based on Molecular Beacon Y.R. Huang, J. Wang and X.M. Tian	1164
Discrimination of Internal Wall Thinning in Pipeline with PPP-BOTDA Based Distributed Optical Fiber Sensors G.A. Wang and H. Zhang	1170
The Implementation of PCIE Image Transmission Board D.Y. Li, Q. Wu and Q.S. Liu	1174
Research on Coordinated Control System of Unit Considering Regenerator System Based on Bilinear Fit Z.L. Zhu, Z.X. Han and L.J. Chen	1179
Slope Stability Analysis Based on Strength Reduction Method FEM from the Perspective of Mechanics Y. Zhai and K.L. Yin	1187
Finite Element Analysis of a Certain Tracked Vehicle Engine Compartment Test-Bed Support D.L. Cui, K. Jiang, S.L. Feng and X.H. Zhai	1191

Bearing Capacity Evaluation of RC Beam Bridge Based on Crack Index P.T. Xue, H. Cao, X.L. Wang and P. Liang	1195
Analysis and Implementation of a Zero-Voltage-Switching Zeta Converter H.L. Do	1199
Analysis and Processing Method of Insufficient Anti-Floating of Basement Parking Garage Floor X. Liang	1203
CFD Analysis on Fire Feature of Subway Station with Different Location of Ticket Machine X. Han, C.Y. Li and B.H. Cong	1207
Grafting Modification of Sesbania Gum and Sizing Performance H.J. Liu, R.L. Qi, L. Gao, M. Xue and D. Shen	1211
Simulation Analysis on Crowd Evacuation of the Subway Train Fire X. Han, J.N. Ma and B.H. Cong	1215
Electrospun MWCNTs/Poly(lactic-co-glycolic acid) Composite Nanofibrous Drug Delivery System R.L. Qi and H.J. Liu	1220
Effect Analysis of Different Exhaust Velocity on Fire Smoke Control in Subway Tunnel X. Han, X.M. Gao and B.H. Cong	1224
Experimental Study on Working Performance of Axially Loaded Short Columns with Micro-Expansive Concrete Filled Steel Tube S. Qi, J.X. He, N. Liu and W. Wu	1228
The Study of Influence Laws of the Part Orientation on the Dimensions of Green Part Base on SLS G. Lu, Q.S. Yan, X. Xiong, H. Wan, S.Y. Zhang and C.C. Liu	1233
The Study on Combustion Mechanism of Methanol and Diesel Micro-Emulsion in Engine Q.H. Zhou, Q.B. Li and W. Ji	1237
The Traits of Orthogonal Quarternary Small Function Wraps according to Quantity Matrix Dilation Y.R. Wei	1244
Performance Study of New Energy-Saving Gas Stove and its Optimization J.H. Zhang, X.W. Dai, M. Yang, N. Xie, R.X. Zhang, Y. Liu and J. Wu	1249
A Novel Kind of Turbidity Sensor and its Measurement Method X.Q. Liu and P. Zhang	1253
Experimental Study of Mercury Releasing Characteristics of Coal Fly Ash under Mild Thermal Condition Y.R. Cai, W.F. Xu, J. Wu, K. Zhu, Z. Shi, J.H. Chen and X.Y. Zhang	1258
Digital Single-Phase Thyristor AC Voltage Regulator Research Based on Fuzzy PID and APF Control F.X. Li and G. Chuan	1262
The Corrosion Characteristic Study of GGH Materials W.F. Xu, Y.R. Cai, J.H. Zhang, Y.C. Liu, Y.H. Ouyang and J. Wu	1266
Automatic Gas Meter Reading System Based on Wireless Sensor Network Y.J. Yang, D.H. Lv and X.X. Lin	1270
Steel Structure Damage Detection Based on BOTDR Based Distributed Fiber Optic Sensors G.A. Wang and H. Zhang	1274
Study for Fuel Management about Energy Saving Index of Thermal Power Plant G. Chen, W. Su and T.S. Chen	1278
The Application of LTD-2100 GPR (Ground Penetrating Radar) in Inspection of Concrete Structures F. Xie and C.C. Wang	1282
An Adaptive Segmentation Algorithm Based on Threshold Surface L. Ouyang and D.Y. Wang	1287
New Construction Technique Applied in Super High Rise Concrete Structure - Wanxin Building in Shenyang, China Y.N. Dong and S.H. Yin	1293
Experimental Study on Direct Biomass Reburning Denitrification H.B. Lu, Z.H. Wang and H.Y. Dai	1297

The Kinetic Analysis of Biomass Burning Based on Two-Component Reaction Model H.B. Lu, Z.H. Wang and Y.X. Ma	1301
Research on Reconstruction Algorithm of Temperature Field by Acoustic Measurement in Boiler H.B. Lu, W.H. Sun and Z.H. Li	1305
Research on Monitoring Instrument of Environmental Condition J.H. Niu, Z.J. Qiu and C. Hu	1309
Removal of Methylene Blue from Aqueous Solution by Powdered Expanded Graphite: Adsorption Isotherms and Thermodynamics S.C. Tan, P.H. Shi, R.J. Su and M.C. Zhu	1313
A Review of Wind Energy Activities in China Z.P. Guo, Q.A. Li, Q.L. Liu and Y.F. Wang	1318
Study on Advanced Oxidation of Cafeteria Wastewater Using Fenton Reagent R.J. Su, P. Wang and L.M. Jiang	1322
Study on Different Advanced Oxidations of Cafeteria Wastewater R.J. Su	1326
Study and Practice of Cleaner Production Pre-Audit on a Pharmaceutical Factory in Harbin R.J. Su	1330
Study on a Practical Case of Cleaner Production Audit R.J. Su	1334
The Quality Management of Food Cold Chain Logistics Based on PDCA Cycle Q.Y. Zhang, X.F. Sun and C. Wang	1338
A Dynamic Cost Sensitive Support Vector Machine X.L. Chen, Y. Jiang, M.J. Chen, Y. Yu, H.P. Nie and M. Li	1342
Design of Monitoring and Controlling Software of Footwear Sole Friction Based on QT Y.J. Yang, X.X. Lin and D.H. Lv	1347