

Table of Contents

Preface and Organizing Committee

Chapter 1: Digital Manufacturing and Advanced Manufacturing

A Fuzzy Case-Based Reasoning Model to Forecast Prices of Aquatic Products R. Maharjan and H.C. Yuan	3
A New Kind of Optimization Method for Gear Design Y.G. Wu	7
AMESim Based Numerical Analysis for Electrohydraulic Exciter Applied on New Tamper D. Han, G.F. Gong and Y. Liu	11
An Optimized Algorithm for Discretization of Cutter Location Points on the Laser Cutting Path of Three-Dimensional Surface J. Hu, F. Deng and X.C. Qiu	19
An Ultrasonic Knife System for MEMS Packaging J. Sha, Z.Y. Yao and Y. Jiao	23
Application of SLP Method in Design of Facilities Layout in Workshop Z.R. Li, L. Qin and Z.Q. Cao	28
Based 3D Process Production Site Visualization Manufacturing Technology Research B.R. Du, X.L. Wang and B. Meng	33
Based on Energy Loss Analysis Theory to Analysis Operation Parameter and Coal Consumption of 300MW Power Plant K.R. Liu and J.B. Yang	37
CFD Analysis of Elementary-Kinetic Chemical Reactions and Effects on Transport Processes in Anodes of Solid Oxide Fuel Cells C. Yang, G.G. Yang, D.T. Yue and J.L. Yuan	43
Change Order Audit in Machinery Enterprise Base on the Delivery Schedule and Loss Cost Estimate J.Q. Chen	53
Characteristic Analysis of Francis-Turbine in Cooling Tower L.J. Zhang, L. Wang and Y. Ren	57
Cloud Manufacturing-Based Enterprise Platform Architecture and Implementation F. Zhang and H.F. Xue	60
Cultivation Management and Standard Library Automatic Query System of Digital Greenhouse J. Sun, G.Q. Zhang, Z. Chen, L. Gao and J.M. Li	64
Design and Realization of Scald Device in Automatic Confecting Machine of Rice Noodles J. Li	70
Design Knowledge Reuse Strategies for Complex Equipment Design D.M. Zhang, Y.Y. Wu and Y. Huang	74
Development Practice of LCR Automatic Test System Based on Agilent E4980A M.T. Yang, C.R. Zhu, H.W. Jin, W. Cai and X.M. Wang	78
Endogenous Growth Model for China's Green IT Based on Green Technology and Green Society F.T. Liu	83
Fault Diagnosis to Mid-Size Excavator Bucket Hydraulic System Based on Fault Tree Analysis J.H. Sun, C. Ma and Y.L. Yi	88
High Speed Dry Cutting Technology Applications in Production Y.C. Li, Y.H. Zhang and B. Sun	93
Identification of Dynamic Model for Ultra-Precision Positioning System H. Chen, X.P. Zhou, Y.H. Tan, R.Q. Li, Y.H. Zhang and R.L. Dong	97
Knowledge Representation for Process Planning of Mechanical Parts Based on Ontology W.B. Zhu, X.K. Lin, L. Chen and Y. Gan	101

Method Research and Practice for Numerical Simulation Analysis of Temperature Field of Hot Runner of Injection Mould F. Chen	106
Modeling and Performance Analysis for Cluster Tools Based on SPN X.H. Zheng	111
Numerical and Experimental Investigations on the Expansion Tube Energy Absorber H. Mao, C.J. Luo, K. He and R. Du	115
Numerical Investigation of Fine Blanking of a Helical Gear S. Yang, L. Hua and Y.L. Song	121
On Anti-Noise-Algorithm of Optical-Polarization-Sensing Localization G.X. Guan, Y.Z. Han, M.H. Wu and J.G. Han	126
Optimization of Valve Block Shape Using CFD Q. Yang, X.Z. Wang, M.Y. Liu, J. Hu and Z.G. Zhang	133
OSG-Based Modeling of the Flexural Deformation of the Crane's Main Arm Q.W. Deng, Z.W. Wu, Q. Fan and Y.R. Hu	139
Practically Optimal Point and its Solution in Deterministic System R.P. Li, X.Y. Kong, L.Q. Gao and D.X. Zou	143
Predictive Modeling of the Performance of the Hydrocyclone with Different Cone Combination F.Q. He, H.L. Wang, Y.H. Tan, J.G. Wang, P. Zhou and C.K. Seong	147
Research on Production Quality Control and Efficiency Measurement Based on DEA-Benchmark Model Y.S. Yang, C.Q. Guo, Y. Cheng and J. Yang	151
Research on Production Scheduling Method and the Application in Switch Machine Production Enterprise J.Q. Chen	156
Revenue-Sharing Contract of Three-Level Supply Chain under Disruption Q.H. Pang, H. Jiang and T.T. Lu	160
Rough Set of Optimized Probabilistic Neural Network in Identification of Blue and White Ceramic from Jingdezhen H. Wang, H.Y. Liang and B.X. Liu	164
Serial-Communication between PLC and Host Computer in Spatial Carport S.L. Dong, F. Wang and J.L. Yu	168
Simulation Analysis of Parallel Cluster Tools in Semiconductor Manufacturing X.H. Zheng and K.F. Zhang	173
Simulation and Analysis of the Model of Calculating Contact Tangential Stiffness between Cylinders' Joint Interfaces by MATLAB Q. Chen, K. Huang, H. Zhao and Y. Zhang	177
Simulation and Modeling Method for Micro Turn-Milling Cutting Process Z.W. Zhao, X. Jin, Z.J. Zhang, X.Y. Sun and Y.J. Deng	182
Study on Welding Process of Clutch Wheel-Hub Weldment Using Vacuum Electron Beam Welding D.Q. Wang	187
The Application of BP Neural Network to Comprehensive Assessment in Equipment Maintainance Support J.J. Wu, B.N. Cao, Z.J. Wan and J.L. Zhang	191
The Construction of Security Supervision Platform for Fireworks and Firecrackers Based on IOT B. Jia, Y.J. Yang and C.S. Cui	195
The Designment of Digital Greenhouse Expert System J. Sun, F. Zhang and Z. Chen	199
The Research of System Security Based on .NET Platform J. Zhou	205
The Solution of the Dynamics Prediction of Aircraft State X.Y. Zhao, J.C. Quan, J.Y. Wei, Y. Liu and K.X. Chen	209
The TCA of Hypoid Gears Based on MATLAB M.X. Xiao and H.R. Yan	213

The Uncertain Programming of the Closed-Loop Supply Chain with Remanufacturing System	
Y.J. Chen, D.B. Liu, H.W. Mao and Z.Q. Zhang	218
Three Dimensional Numerical Analysis of Plasma Spraying Using Supersonic Plasma Gun	
F.S. Hu, Z.Y. Wei, B.L. Liu, J. Du, C. Tan and Z.H. Han	222
Using Contextual Words for Object Detection	
J. Guo and C.R. Zhu	227
Virtual Prototype and Modal Analysis of Stator System of Large Turbo-Generator	
Y.X. Wang, Y. Wang and L. Lin	232
Web Roaming of 3D Taiwan Island Based on Skyline Prototype System	
J.W. Wu, J.C. Quan, X.Y. Zhao, Y. Liu and H.W. Wang	237
A New Approach to Battery Capacity Prediction Based on Hybrid ARMA and ANN Model	
H.C. Dong, S.T. Zhang, Q.H. Li and C.H. Wang	241
Finite-Element Analyze of D-Post on Numeric Controlled Gear Hobbing Cooperative Working Machine Based on ANSYS	
S.Z. Zheng, G.L. Zhang, C.X. Zhang and Y. Zhao	245
Study of Development IETM Based on S1000D Specification	
Z.J. Wan	249
The Effect of Temperature and Solvent Concentration on the Nanomotor Motion by Molecular Dynamics Simulation	
G.Y. Zhang, Q. Sun, L.Q. Li and L. Wang	253
The Relative Efficiencies of the Aggregated Improved Generalized Ridge Estimators of the Parameters in the Linear Model	
Y.Z. Zhou and W.T. Lv	257
Ant Colony Clustering Algorithm for Handwritten Arabic Numeral Recognition	
K.H. Hu, B.X. Liu and Y.J. Zhang	261
Application of Hard C-Means and Fuzzy C-Means in Data Fusion	
A.H. Tang, L. Cai and Y.M. Zhang	265
Design and Implementation about Virtual Experiment for Lift Coefficient Mensuration	
L. Ming, S. Li, J.X. Yin, T.Y. Hu, Z.K. Wang and P. He	269
Design of Virtual Store Roaming System Based on Virtools	
G.Q. Shen and J.J. Xu	273
Determination of Parameters in Compound Fill Sphere Model for Haptic Interaction	
Y. Liu, Y.C. Zhang and W.S. Chou	277
Model of Customer Loss Based on Cluster and Neural Network	
Y. Wu, B.X. Liu and M.S. Li	284
Modelica-Based Simulation of Fuzzy Temperature Control System in Virtual Experiment	
J.F. Lu, L.H. Xiao and R. Su	288
Parameter Identification Research Based on ARX Model	
H.Y. Liu, J.H. He and S. Chen	292
Research on Completeness in Decomposition and Composition of Petri Nets	
C.L. Hou, Z. Ma and X.Z. Qi	297
Research on Construction of the Military Geographic Information System Based on Web Services Technology	
H.W. Wang, G. Yang, H.N. Wu, Y.W. Yuan and J.W. Wu	304
Research on Key Technologies for Internet of Things	
G.L. Shi and Y.X. Liu	308
Simulation on Electronic Throttle Control System Based on D2P	
L. Li, Z.H. Fang, C. Wang, T.T. Hong, J.J. Li, W. Lv and Y. Sun	313
Study on the Computer Network of the Yellow River Reservoir Running Information Platform	
Q.L. Guo and K. Huang	317
The Research on Behavioral Status Judgment Method Based on Skeleton Modeling and Vector Processing	
X.P. Li, H.J. Cui, S. Chen, C.H. Liang, F. Liu, J.Q. Xu and X. Mao	321
The Seismic Damage Assessment and Information Service System	
Z.W. Huang, Y.J. Huang and S.X. Xie	329

Constrained Optimization Solution Based on an Improved Genetic Algorithm C.Y. Li and G.H. Zeng	334
Dynamic Simulation of the Heat Exchanger Based on Simulink Y.X. Tang and F.H. Chen	338
Fitting Algorithm of Parameterized Continued Fractions with Keeping Endpoints and its Application T.S. Zhan and W. Zhao	343
Multivariate Decision Tree Algorithm Based on Rough Set B.X. Liu, Y. Wu and M.S. Li	347
Non-Negative Matrix Factorization Based on Double Sparsity K-SVD Z. Hong, L. Zhen and L. Zhao	352
Research on Embedded Computer Techniques Used in Agricultural Equipments ATS H.D. Zhang, H. Bao, D.G. Chen and J. Yu	356
Research on New Algorithm of Network Topology Design Based on Cloud Integration X.Y. Qu, F. Zhang and H.F. Xue	360
Secret Image Sharing with Threshold Set D. Tang and K. Liu	364
Discrete Element Method Analysis of Mechanical Properties of Railway Ballast during Tamping Process under Different Vibration Frequency T.Y. Zhou, B. Hu, X.J. Wang and B. Yan	369
Finite Element Analysis on Tower Crane Based on ANSYS Q. Liu and Y.H. Zeng	373
Finite Element Model Simplification for the Stator Component in the Hydraulic-Bulging Assembly Process Simulation H.H. Liu and W. Jiang	381
Numerical Analysis of Multi-Pass H-Beam Hot Rolling Processing Q.Q. He, J. Sun, J.Y. Zhao, B.M. Yuan and L.J. Xu	385
Rapid Stereotype of Cylindrical Drip Emitter Based on Computational Fluid Dynamics and Rapid Prototyping Manufacturing L.P. Wang, Z.Y. Wei, X. Zhou and W.J. Yuan	390
Research on IETM Based on Ontology Integration Framework L. Lu and F. Zhang	395

Chapter 2: Material Science and its Application

48"600lb Full-Welded Ball Valve Wall Thickness Optimal Design C.L. Mo, X.W. Tang and X.M. Guo	401
A Computational Study on Structures, Stabilities and Electronic Properties of Chloro Silsesquioxanes $\text{Si}_{2n}\text{O}_{3n}\text{Cl}_{2n}$ (n=1-5) C.G. Zhang, S.Y. Yu and Z.J. Cao	405
A New Energy Saving Building Type – Cavity Construction System with Trombe Wall Y. Liu and D.Y. Yang	409
A Physical Model for Self-Emitting Magnetic Signals during Fatigue Crack Propagation L.H. Dong, B.S. Xu, H.P. Wang and N. Xue	415
Analysis of Concrete Bridge Asphalt Pavement's High Temperature Stability H. Jiang, J.B. Yuan and H. Yang	419
Analysis of Factors Influencing on Compaction Performance of Hot Asphalt Mixtures by Orthogonal Test L. Ouyang	423
Analysis of Optimization Method for OGFC Mixture Gradation Design L. Ouyang	427
Compressive Creep Behavior of Mg-4Al-1RE-1Ca-0.2Sr Alloy D.F. Xu, C.P. Du and D. Ye	431
Corrosion Resistant Performance of TMCP HSLA Steel for Oil Ship Y.T. Chen and K.G. Zhang	435
Crack Resistance of the Old Cement Concrete Pavement Treatment H. Jiang, J.B. Yuan and H. Yang	440

Design of Welding with Trailing Peening System for Reaction Nitrogen Arc Welding Cladding	
X.Z. Li, J.J. Hao, J.C. Li, J.G. Zhao and Y.J. Ma	444
Detection and Evaluation of Corrosion Damage under Coating by Infrared Thermal Wave Technology	
G.F. Jin, Z.Y. Huang, W. Zhang, Z.W. Yang and L. Zhu	447
Determination of Bisphenol A by Fluorescence Immunoassay Based on Quantum Dots as Probe	
X. Zhang, Y.B. Pang, Y.Y. Song and S.H. Wang	452
Effect of Ca and Rare Earths on Compressive Creep Behavior of Mg-4Al Alloy	
C.P. Du, D.F. Xu and B.W. Wang	457
Effect of Mortar Joint Thickness on the Compressive Strength of Autoclaved Flyash - Lime Brick Masonry	
F. Tang	462
Effect of Particle Size Distribution on the Properties of Sand Mold by Three Dimensional Printing	
H.P. Zhao, C.S. Ye and Z.T. Fan	467
Electroless Deposition of Silver Layer on Atomic-Layer-Deposited TiN	
Y.G. Lee	471
Electroless Deposition of Silver Layer on Silicon of High Density Plasma Bombardment	
Y.G. Lee	474
Flow Stress Behavior Anisotropy of Extruded 7075 Aluminum Alloy Bar at Elevated Temperatures	
G.J. Li, Z.M. Zhang and Y.B. Yang	478
Fractal Characteristics of the Pore Structure of Low Permeability Sandstone	
S.G. Qin, H.L. Wu, M.B. Tian, J.C. Wu and S.L. Yao	482
Fracture Behavior of a Brittle Thin Film on an Elastic Substrate under Residual Stress and Uniaxial Tensile Loading	
B.Q. Yang, X.J. Chen, W.H. Sun, H.Q. Chen, J.W. Pan and Y. Chen	487
Green Preparation of Ultra-Fine Silver Particles in Ionic Liquid	
M.S. Yang, Y. Quan, W. Tang and L.K. Li	491
Improved Design of Long Tunnel's Cement Concrete Pavement Slab Length	
H. Jiang, J.B. Yuan and H. Yang	496
Influence of Ageing on Yield Stress Anisotropy of Extruded 7075 Aluminum Alloy Bar at Ambient Temperature	
Z.M. Zhang, Y.B. Yang and K.R. Xu	500
Investigation into Permeability and Bearing Strength of Plugging Zone Formed by Lost Circulation Materials	
S. Li, Y.L. Kang, L.J. You and D.Q. Li	504
Mechanical and Thermal Simulation of a Multi-Functional Hybrid Composite	
Z.H. Wu, J.Y. Xiao and D.Z. Jiang	509
Mechanical Properties of the Cracked Thick Aluminum Plate Repaired with M40J/Epoxy Composite Patch	
S.T. Li, S.L. Xing, S.W. Wen, C.Y. Peng, S.Y. Wang, R. Li and F.H. Yu	513
Microstructure Evolution of Hydrogenated Ti6Al4V Alloy during Compression	
B.G. Yuan, Q. Chen, H.P. Yu, P. Li, K.M. Xue and C.F. Li	517
Phase Field Method Simulation of Dendrite Crystal Growth of Metal Nickel Based on Fractal Theory	
Z.Y. Ruan, S.D. Zeng, L.X. Lin and L.R. Wu	522
Preparation and Properties of Poly-2,5-dihydroxyaniline/Activated Carbon Composite Electrode	
M. Sun, W. Wang, B.L. He, M.L. Sun, F. Sun, W. Liu, H.L. Ge and Q.J. Zhang	528
Preparation of TiO₂-Pillared Montmorillonite as Photocatalyst and Photocatalytic Degradation of Methyl Orange	
B.X. Zhao, L.P. Dang, X.L. Zhang, N. Yang and Y.Y. Sun	534
Production Practice of Hot-Rolled Thin Plate of 30CrMo Steel in WISCO	
Z.B. Dong, H.X. Dong and X. Hong	539

Research on Interfacial Cracking of a Cr Coating/Steel Substrate with and without Laser Pre-Quenching Treatment under Thermal Fatigue Loading B.Q. Yang, G.N. Chen, X.J. Chen, W.H. Sun, H.Q. Chen, J.W. Pan and Y. Chen	543
Research on the Metal Ablation Thresholds of Picosecond Laser J.P. Duan, M. Chen, Z.X. Bai and G. Li	547
Strength Analysis and Calculation of JJ225/42-KC Type Oil Rig Derrick X.Z. Yi, S.Z. Jiang, Y.Q. Ji, D. Feng and D.L. Gao	551
Study of Magnetic Performance of Co₂Z Hexaferrite Doped with Nd³⁺ L.H. Yu, J. Yao, Z.K. Feng and A.P. Huang	555
Study on Pyrolysis Characteristic of the Waste Tires L.L. Yu, Z.P. Zhong, K. Ding and Z.C. Liu	560
Study on TiCN/Ti Based Composite Coating Fabricated by Reactive Electric Spark Deposition J.J. Hao, L. Gao, S.H. Yang, X.Z. Li and Y.J. Ma	567
Synthesis, Properties of Gadolinium Double-Decker Sandwich-Type Complex Containing Tetrabenzoporphyrin Ligand H.Y. Xu, C.H. Hu, Q.F. Liu, W.X. Zhao and Y. Liu	571
Thin-Layer Drying Characteristics and Modeling of Paper Sludge H.M. Xiao	575
TiCN Cermet Composite Coating Prepared By Reaction Nitrogen Arc Welding Cladding Process J.J. Hao, L.P. Ma, L. Gao, Y.J. Ma and J.G. Zhao	581
Woodceramics Prepared form Liquefaction Wood and Wood Powder D.L. Sun, X.C. Yu, D.B. Sun and R. Wang	585
Research and Development of High Strength Architectural Heavy Plates M.W. Tong, Z.X. Yuan and K.G. Zhang	590
Study of Micro-Arc Oxidation Process in Magnesium Surface Z.M. Chen, P. Lu and Q.H. Dong	595
The Development and Mechanism of Micro-Arc Oxidation Process in Magnesium Surface Z.M. Chen, P. Lu, J.Z. Xu and Q.H. Dong	599
Ultrasonic-Assistant Dispersive Liquid-Liquid Microextraction Based on Solidification of Floating Organic Droplet Method for Quick Determination of Polycyclic Aromatic Hydrocarbons in Soils C. Zhang, L. Jiang, C. Meng, X.P. Li and Y. Li	603
Numerical Study on NO Mechanism during High Temperature Air Combustion of Natural Gas Y.X. Su and C.W. Chen	609
The Influence of Shadow Mask Technique in Sulfur Hexafluoride Plasma on PES Surface Wettability M.J. Chuang and J.R. Wang	615
Modeling and Application of Combustion Process in Gasoline Engines under Transient Conditions Y.L. Li, S.T. Dong, X. He, J.T. He and C. Zuo	619

Chapter 3: Mechatronics and Robot Technology

A Low Cost Compact Control System for the HIPPO ROV B. Wang, C. Wu and T. Ge	627
A Multi-Sensor Suspension Robot for Autonomous Detection and Surveillance C.C. Wang, T.E. Lee, K.H. Hsia, L.S. Ma and Y.C. Hsieh	634
A Novel Approach of Thrust Ripple Minimization by Combinational Iron-Cored Primary in Permanent Magnet Linear Synchronous Motor N. Xi, J.J. Yang, W.W. Liu, J.F. Shen and Y.X. Cheng	638
A Novel Implementation of UHF RFID Reader H.Y. Wang, Q. Yang, J.F. Wu and J.C. Li	642
A Speed Smoothing Algorithm in Micro Segment High-Speed Machining L. Luo, J. Hu and F. Deng	647

An Improved Method for Mobile Robot Localization Based on Passive RFID System Q. Yang, H.Y. Wang, J.C. Li and R.J. Shen	651
Application of PCA-CFAR-MNF to Image Enhancement for a UGV FLGPR H.H. Zhang, Y.M. Wang and Q. Song	656
Automated Visual Inspection of Contact Gap and Contact Malposition of Automotive Relay C.H. Hsieh, C.S. Tsai, T.Y. Tseng, Y.S. Wong and S.Z. Zhou	661
Design an Auto-Recharging System for Mobile Robots K.L. Su, J.H. Guo, C.W. Hung and Y.C. Song	666
Design and Analysis of a Robot-Assisted Manipulator in Retinal Vascular Bypass Surgery L. Huang, L.Y. Zhang, Y. Yang, L.J. Shen and Y.Q. Chen	673
Design and Experiment of Shock Absorber Electro-Hydraulic Servo-Testing System X.J. Liu, C.X. Liu and E.L. Zhang	679
Development of a Computer Integrated Testing System for Humanoid Robots Ex-Work Inspection C.S. Tsai and C.H. Hsieh	683
Evaluation and Analysis of Temperature Uniformity for Planar Automotive Waste Heat Thermoelectric Generator X.H. Yuan, Q. Sun, X.J. Hou, S. Chen, Z.E. Liu and Y.D. Deng	688
Image Recognition Method Applying in Formation Control of Mobile Robots Y.C. Lin, C.H. Chen, K.L. Su and J.H. Guo	693
Linear Octree Represented Tool Swept Volume Modeling on Complex Surface Machining X.B. Chen, C.Y. Shan and Y.L. Xiong	699
Nonsingular Terminal Sliding Mode Control of Mobile Robot Using Support Vector Machines X.R. Wu and Y.N. Wang	705
On Vision-Based Orientation Detection Analysis of Industrial Object with Circular-Shape Features F.L. Niu and X.H. Yi	710
Path Planning for the Chassis of Duct-Cleaning Robot Based on Ant Colony Algorithm Q. Zhu, W. Sun, Z.W. Zhou and S.W. Zhang	715
PID Control of an Electric Clutch Actuator B. Wang, H.Q. Yue, Q. Han and B.Z. Gao	719
Ship Rolling Motion Prediction Based on Wavelet Neural Network Y.C. Wang, F.M. Liu and H.X. Fu	724
Structure Design and Analysis of Rescue Robot H. Cheng, H.C. Fan, H.F. Lin, C. Li, Y.P. Mao and X.H. Yi	729
Study on the Trajectory Planning of Hybrid-Driven Planar 3-RRR Mechanism S.T. Song, R.Q. Li, A.L. Wang and Y. Gao	733
The Design and Implement of a Receiver for FSK Signal X.P. Liu, Y. Han, D.D. Zhong and M.Y. Wang	739
The Design of Automatic Solar Tracker H.J. Yu, Y.L. Wang, J.Y. Li and X.L. He	742
Traffic Sign Recognition Based on Vision Bionics Z. Zhang, X.N. Fan, X.W. Zhang, R.Y. Liang and S.M. Lin	746
Trajectory Planning of Knot-Tying Manipulation in Surgery J.J. Xiao, Y. Yang and Z. Wang	752
Visual Simulation for Satellite on Track and Shaded Part Compute for Solar Panel N.X. Li and Y.F. Wang	758
Application of Compensation Wheel on Satellite K.L. Gan, S.M. Ge and L. Wang	763
Attitude Matching for Gimbaled Inertial Navigation System Transfer Alignment Z.J. Ding, H. Cai, H.B. Yang and Y. Cao	768
Design Teaching Machine Tool of Open CNC System on PC Y. Lü and Y.Q. Liu	774
Feature Extraction of Ground Vehicles from High Resolution SAR Imagery Based on Electromagnetic Scattering Characteristic K.F. Ji, X.W. Xing, J.K. Zhang and H.X. Zhou	778

Research on Distributed Remote Monitoring System for NC Machine Tools X.G. Han and B.W. Wang	786
Tool Path Generation Algorithm Based on the Double Spiral Filling Curve J.B. Gong, L. Luo and J. Hu	790
Stiction of Flexural MEMS Structures Y. Liu and Y. Zhang	794
Designs of Eddy Current Sensor Probes Based on Multilayer Printed Circuit Board Technology K. Zhang, X.J. Dai and X.Z. Zhang	801
Implementation of Precision Force Control for an Electro-Hydraulic Servo Press System H.M. Chen, C.S. Shen and T.E. Lee	806

Chapter 4: Deep Sea Mining Equipments, Complex Equipment Design and Extreme Manufacturing

A Single CCD Algorithm to Determine the Position and Attitude during Rolling Phase of Rendezvous and Docking L.L. Zheng and Y.X. Jiang	813
Research of H_{∞} Robust Control for the Giant Die Forging Hydraulic Press's Synchronous Control System under the Uncertainty Coefficient Y.J. Deng and Z.W. Liu	819
Simulation Analysis of the Vibration Characteristics of the Parallel Hybrid Shaft System J.Y. Zuo, S.J. Liu, Z.H. Huang and Q. Hu	825
Structural Finite Element Analysis and Optimization of Underwater High Pressure Valve X.Z. Yi, S.Z. Jiang, J.F. Zhang, D. Feng and D.L. Gao	832
The Design of the Giant Die Forging Hydraulic Press Synchronous Control System and its Dynamic Simulation Z.W. Liu and Y.J. Deng	836
The Development Status of Underwater Positioning and Navigation Technology Used on Deep Tow System R. Shan, T.H. Zhao and C. Zeng	842
The Dynamic Simulations of Throttle Effect for Hydraulic Engine Mount Y.X. Zhang, T. Hao and Z.M. He	847
The Study on Released Holes of Flameproof Submersible Pump with Inner Motor for Coal Mine X.L. Wang and W.D. Cao	852
Constant Power Speed-Adjusting of Shearer Cutting Motor by Single Neuron Self-Adaptive PID Controlling X.H. Li, Y.T. Hu, Q.D. Chi and S.W. Bai	856
Modeling and Simulation of Emulsion Pump Station Pressure Control System Based on Electro-Hydraulic Proportional Relief Valve C. Zhang, S.H. Zhao, G. Guo and W.K. Dong	860
Real-Time Simulations for Design of Active Safety Systems for Multi-Trailer Articulated Heavy Vehicles X.J. Ding and Y.P. He	865

Chapter 5: Control and Detection Technology

A Bearing Fault Diagnosis Using Wavelet Envelope Spectrum Based on Full Vector Spectrum Technology X.Y. Gong, J. Han, H. Chen and W.P. Lei	873
A Global Fast Integral Operator Terminal Adaptive Sliding-Mode Controller L. Cao, X.Q. Chen and Y. Zhao	880
A Method on Establishment TCM Symptoms Diagnosis Criteria C.X. Chen, S.J. Yao, Y.C. Wang and C.H. Zhou	886
A Nonlinear Control Method of Steering Angle Following Used in Steer-by-Wire System Y.R. Li, J.M. Huang and Z.M. He	890

A Novel Approach in Doppler Measurement Processing K. Dong, X. Guan, Y.Q. Cui and Y. He	894
A Solution about Application System How to Transfer Information Across Different Domains G.H. Yang, Q. Zhang, D.Y. Tang and C.M. Huang	898
Accurate Measurement of Photoelasticity Based on Digital Camera H.H.P. Wu and S.H. Chang	902
Adaptive Interacting Multiple Model Unscented Particle Filter Tracking Algorithm H.J. Liu	906
An Amended Harmony Search Algorithm for Unconstrained Optimization Problems R.P. Li, H.B. Ouyang and L.Q. Gao	911
Application of a New Soft Measurement in Xylitol Fermentation Process Y.Y. Lin, C.F. Xu and B.W. Wang	915
Application of a Optimized Wavelet Neural Networks in Rolling Bearing Fault Diagnosis Y.Y. Lin and B.W. Wang	919
Application of Radius Error Compensation Principle in the Profile Measuring Instrument J.F. Wang and F.G. Ma	923
Application of Time-Frequency Analysis and Back-Propagation Neural Network in the Lung Sound Signal Recognition M.Y. Chen and C.C. Huang	927
Application Research on Haigh Diagram in the Wind Turbine Fatigue Analysis P. Zhao and H.W. Yan	931
Based on Estimation of the Ionospheric Characteristics HF Frequency Prediction Method C. Li, Y.J. Liu, H.Y. Zhang, X.P. Yang and F. Wang	936
Based on Unit Impulse the Signal of Function Analyse with System W.X. Zhang and L. Zhang	940
Category Level Object Discovery Using Dynamic Topic Model J. Guo, H. Sun and C.R. Zhu	944
Convergence of Numerical Solutions to Stochastic Age-Structured System of Two Species with Diffusion B. Liu and Q.M. Zhang	949
Crack Detection of Nonlinear Rotor in Large Rotating Machinery J. Zou, X.L. Shen, S.D. Li and C.Q. Hu	954
Damage Diagnosis of Cable of Large Span Cable-Stayed Bridge Based on the Support Vector Machine D.M. Tan, W.L. Qu, J.B. Zhang, G.Q. Wei and J. Liu	958
Design and Implementation of OFDM Baseband Transmission System Based on CORDIC Algorithm and Pipeline FFT J. Yang, H.W. Ding, G. Zhao and P.P. Shu	962
Distributed Temperature Sensor Network System H.W. Wang, C.L. Zhang, X.M. Ni, Z.G. Gao, W.K. Zhang, X.N. Wang, Z.T. Hao and M.H. Wang	968
Distributed Optical Sensor Network with Self-Monitoring Mechanism for Accurate Indoor Location and Coordinate Measurement L.H. Yang, Y. Wang, J.G. Zhu and X.Y. Yang	972
E-Bayesian Estimation of Failure Probability under Zero-Failure Data with Double Hyper Parameters X.B. Wu	977
Engine Gearbox Fault Diagnosis Using Modified Elman Neural Network and ACO Algorithm H.C. Wu and C.Z. Song	982
Fault Diagnosis for Suspension Signal of Maglev Vehicle Based on Mathematical Model Y.P. Cui, L.H. She, X.L. Li and A.M. Hao	987
Feature Extraction of Rolling Bearing Fault Diagnosis L.J. Sun, L. Zhang, Y.B. Yang, D.B. Zhang and L.C. Wu	993
Imaging of Transmission Equipment Based on Block Compressed Sensing J.J. Zhao, J.X. Sun, S.L. Zhou and L. Hu	998

Intelligent Vacuum-Pumping Detection Device Base on STM32MCU Z.Z. Gao, Q.L. Zeng and S.G. Li	1002
Measurement & Control of Pulverized Coal Concentration in Exhaust Pneumatic Convey System X.S. Yang and J. Yin	1006
Method of Bearing Fault Identification Based on SVM Decision Tree H. Cheng, X. Li, Z.B. Qin and C.Y. Huang	1010
Monitoring Volatile Organic Compound by Visual Recognition Technology of Application M.Y. Chen and H.C. Chen	1016
On-Line Measuring System Using Isotope to Gauge Film Thickness L.Z. Lin, T. Wang and J.S. Zhang	1021
Quality Monitoring and Prognostic of Electronics Using Multidimensional Time Series Method B. Wan, L. Wang and G.C. Fu	1029
Research on a New Azimuth Control Method for Stratospheric Balloon-Borne Gondola System H.H. Wang, Z.H. Yuan and J. Wu	1033
Research on Edge Detection Algorithm for Caption Extraction from Video Frames J. Wu	1040
Research on Execution Process Monitoring for Curved Block Construction J.F. Lei, A.M. Wang, J. Zhou and Z.Y. Li	1044
Research on Signal Transmission Mode of Underground Based on Power Carrier S. Bai, P. Du and S.L. Shi	1049
Semi-Global Adaptive Control Using Barrier Lyapunov Functions for a Class of Uncertain Nonlinear Systems P.N. Chen and L.L. Sun	1053
Study on Remote Monitoring Visualization System of Roof Support W.L. Zhang, X.W. Zheng, B.F. Chen and Y. Peng	1057
Target Damage Assessment Based on the Detection Information T. Li, L. Chen, J.S. Xu and Z.J. Ma	1061
Term Substitution Theorem in First-Order Fuzzy Predicate System Z.B. Zhao	1065
The Application of Variable-Structure Control in Theodolite Fast Capture B. Ge	1069
The Design and Implementation of a Multifunctional Programmable Signal Generator X.Z. Li and X.M. Wang	1074
The Design of Power Equipment Monitoring System Based on Wireless Sensor Network M.W. Wang, Z. Yao and H.Z. Li	1079
The Research on Multi-Level Theses Evaluation Model Based on Fuzzy Cluster Analysis X.P. Li, S. Chen, H.J. Cui, C.H. Liang, F. Liu, X. Mao and Z.H. Wang	1083
Vehicle Detection Based on Binocular Stereovision and Edge Extraction F. Tong and L. Xu	1090
A Laser Projection Device for Locating Points on the Plane Object H. Ding, J.F. Ouyang, X. Ma and Y.G. Yan	1094
A Novel Method of Ship Detection from Spaceborne Optical Image Based on Spatial Pyramid Matching J. Guo and C.R. Zhu	1099
A Remote Control System Based on Short Messaging Service for Intelligent Agricultural Irrigation Z.P. Huo, Z.Y. Wei and Y.P. Tang	1104
An Improved Edge Extraction Algorithm for Lithography Micrographs S.S. Gong and M.J. Li	1109
Design and Research of the Gas Monitoring System Based on ZigBee Wireless Network Y.K. Wang	1113
Design of Colliery Gas Monitoring Alarm System Based on DSP J. He and S.Y. Yuan	1117
Design of Long-Distance Pipeline Remote Monitoring System J. Wu	1121

Discriminative Action Recognition Using Supervised Latent Topic Model H.X. Zou, H. Sun and K.F. Ji	1125
Embedded Digital Oscilloscope Based on STM32 and μC/OS-II J. Shi and M. Guo	1129
Extracting Ionosphere Scintillations Index Based on Single Frequency GPS Software Receiver Z. Huang, H. Yuan and Q.Y. Zuo	1136
High Energy Radiographic Testing in Railway Industry S.Y. Wan, D.L. Lu, S.Y. Liu, W.X. Zhang, X.K. Zheng and H.J. Ren	1144
Intelligent Monitoring and Energy Management Platform of New Energy Power Station in the Islands Y.B. Yang, C.G. Zhai and X.H. Ding	1148
Modified Interval Dempster-Shafer Theory and its Application for Target Identification H.J. Liu, H.S. Nie, H.Q. Yu, H.H. Hua and Z. Liu	1153
Overview of Development Plans for Magnetic Bearing Control System X.M. Zhu and W.Q. Teng	1157
Pitch Angle Control Based Improved Cooperative Co-Evolution in Power Generation System Q. Wang, J. Sun, L.Y. Wang and D.Z. Liao	1162
Research and Implementation of Key Technologies of Goaf Coal Spontaneous Combustion Wireless Monitoring System X.L. Qin, M.C. Fu and L.H. Li	1166
Research of Wireless Routing Protocol Used in Underground Wireless Gas Monitoring Network Based on Star-Bus Topology and Non Protocol Stack B. Shen, X.L. Liu, X.L. Qin and M.C. Fu	1170
Robust Reliable Control for a Class of Uncertain Time-Delay Switched Fuzzy Systems Based on Observers Switching L. Zhang, H. Yang and X.D. Liu	1175
Study of Real-Time Monitoring System on the Underground Mining Activities Based on Explosion Source Location Technology X.Z. Meng, Z. ZHANG and Z.S. Wang	1179
The Control System about the Automatic Adjustment of the Press Control Values M. Zhang and Y.Q. Yang	1183
The Design of Intelligent Household Remote Monitoring System Based on GSM and ARM M. Li and F.Q. Li	1187
The Design of Spectrometer Detection and Control System Based on C8051F350 Y.Y. Zhao and J. Sun	1191
The Pitch Control Strategy with the Clonal Selection on Quantum Genetic Algorithm H. Wang, D.T. Zhang, J. Dong and Y.Z. Li	1195
The Research on Fast and Efficient Algorithm in Multi - Cameras-Relay Target Tracking X.P. Li, C.H. Liang, S. Chen, H.J. Cui, J.Q. Xu, Q. Xu, F.N. Zhao and X. Mao	1198

Chapter 6: Applied Mechanics and Mechanical Engineering

Application of Vacuum Preloading for Soft Foundation Treatment in Grain Storage Q.X. Liu and Y. Zhao	1207
Study on Common Problem and the Design of Granary Railway Canopy Q.X. Liu and Y. Zhao	1214
The Combined Guiding Hole Technology of Large Diameter DTH Hammer and Long Screw-Pile Driver Q.X. Liu and L. Fan	1220
The Records of Slope Reinforcement Engineering in a Loess City Q.X. Liu and L. Fan	1227
R&D of a Pulsatile Rotary Heart Pump Imitating the Native Ventricle K.X. Qian, T. Jing, H.Y. Yuan, H. Wang, F.Q. Wang and P. Zeng	1234
Application of Fractal Theory in the River Regime in the Lower Yellow River S.M. Tian, X.H. Su, W.H. Wang and R.X. Lai	1238

Bending Deformation of U75V Heavy Rail through Natural Cooling Process H. Song, S.H. Tong, J.J. Jiang, H. Jia, S.Y. Yuan, H. Liu, F.B. Lian and K.X. Li	1244
Evaluation Model of Dike Safety Based on Cusp Catastrophe Theory X.Z. Shen, X.P. Yang and W.D. Ma	1249
Mechanism Dynamics Analysis of Inertia Vibrating Screen Z.B. Xu and J.Q. Min	1254
Novel Shock-Absorbing Spring Stiffness Changes in Automobile Clutch Driven Plate Application Y. Zhang, J.L. He, Y. Cai, Z.Y. Liu and M.Z. Li	1258
Stress Analysis of Tubular Turbine Based on Fluid-Structure Coupling F.X. Zhang, Y. Zheng, C.X. Yang, X.L. Jin and L. Ding	1261
Stress and Displacement Analysis with Multiple Loads D.L. Zhang, B.W. Wang and F. Liu	1266
Study on the Trajectory of Pellet Fragment for Explosive Anti-Riots Munition D.H. Ouyang and S.X. Guo	1269
Videogrammetry of the Model's Attitude in Wind Tunnel Testing Z.Y. Zhang, Z.X. Sun, X.H. Huang and Y. Sun	1273
Design and Manufacturing of the Transmission of Rotary Tiller C.L. Zhang, R.Q. Li and H. Shen	1278
Foundation Design for Reciprocating Compressor G.Q. Deng and R. Wang	1282
Gear Shifting Control for Pure Electric Vehicle with Inverse-AMT Q. Liang, B.Z. Gao and H. Chen	1286
Studies on Dynamic Characteristics of Main Shaft for TM Electronic Jacquard Machine F. Chen and W. Zhang	1290
Effect of Lubricant Viscosity on Gearing Contact Fatigue Life X.M. Qi, C.K. Gao and Z.Q. Zhang	1295
Effect of Mass Flow Rate of Working Fluid on Performance of Capillary Porous Wick Evaporator with Bayonet Tube for AMTEC S.Y. Wu, B.X. Cao, L. Xiao and Y.R. Li	1302
Effects of Sb Addition on Heat-Treated Microstructure and Mechanical Properties of AZ61-0.7Si Magnesium Alloy M.B. Yang, H.L. Li, R.J. Cheng and H.J. Hu	1306
Mechanical Drift of Ultrasonic-Linear-Motor-Driving Motion Platforms J. Sha, Z.Y. Yao and R.R. Geng	1311
Research on Cutter of Field Straw Chopper Strengthened with Flame Spray Welding X.Z. Li, J.J. Hao, L. Gao, L.P. Ma and Y.J. Ma	1317
Research on Flow Field and Temperature Field Characteristics of One Rocket Charge with Complicated Structure by Numerical Method J. Li and Y.H. Zhu	1321
Study on Applicability of Sound Radiation Characteristics of Thin Finite Length Cylindrical Shells Using Wave Propagation Approach B.R. Li, X.Y. Wang, H.L. Ge and Y.P. Jiang	1325
The Research on the Surface Temperature Field of the Gas Cooler in the Microchannel B.Q. He, C.L. Liao and J.Y. Chen	1331
The Surface Characteristic of the Film Flow under Different Surface Tension and Uneven Bottom M. Liu and Z.R. Wu	1336
Vortex Tube Expansion Transcritical CO₂ Heat Pump Cycle Y.F. Liu, C.J. Geng and G.Y. Jin	1340
A Study on a Passenger Car Diesel Engine Fueled with Butanol-Diesel Blend under Typical Operating Condition T.B. Zhou, Z.Y. Han, Z. Chen, B. Du and Y. Liu	1345
Disquisition of Testing System for BMBS Vacuum Booster Y. Shi, Y. Lu and X.Y. Wang	1351
Research on Dropwise Condensation for Binary Mixed Vapor S.H. Hu, X.R. Ma and F. Wu	1355

The Design of a Security System for 13° Wheel Strike Testing Rig X.M. Zhang, K. Yue, D.M. Wang and X.S. Bai	1361
The Mechanism Design and Testing Study on Accelerator Based on The Internal Parallel Moving Gears G.S. Wang, G.X. Ma, D.L. Wang and Z.X. Long	1365
Research on the Time-Frequency Analysis Method to Extract Early Fault Features of Rotating Machinery P.H. Ju and G.B. Zhang	1371
Robust Optimization Design for Spring G. Chen and Y.F. Ma	1376