Table of Contents

Preface and Committee

Chapter 1: Metal Materials

Progress of Mechanism and Research Methods of Marine Corrosion of Steels J. Yang, G.F. Xi and X.Q. Fan	3
Investigation of Fatigue Behaviour and Notch Sensitivity of Ti-6Al-4V S. Hosseini and M.B. Limooei	7
Microcantilevers Fabrication Process of Silicon-Based (Pb, La)(Zr, Ti)O ₃ Antiferroelectric Thick Films for Microactuator Applications Y.H. Yang, Z.Y. Zhao, X.F. Guan and X.J. Chou	13
Grain Refinement of Fe-32%Ni Alloy by Multi-Axial Forging X.J. Wang and B.J. Han	18
Modeling of Phase Transformation Behaviors of Shape Memory Alloy Associated with Temperature Memory Effect B. Zhou and S.C. Zhao	22
Life Degeneration Rule on 2A12 Aluminium Alloy with Corrosion and Fatigue Experiment H.W. Zhang, Y.T. He, L.M. Wu, H. Ding and Q. Shao	27
Analysis and Optimization on the Gating System of Aluminum Alloy Piston in Casting Y.F. Jiang, Y. He, Y.Z. He, X.M. Qian and Y. Huang	32
Microscopic Phase-Field Simulation of the Process of Middle Heat Treatment of Ni-Cr-Al Alloy	36
Z. Chu and G.Q. Zhao Effect of Process Parameters on Microstructures of 7055 Aluminum Alloy in Creep Age Forming	
L.H. Zhan, Y.G. Li and M.H. Huang Modeling on Laser Cladding on In718 Superalloy Q.M. Chang, C.J. Chen, X. Chen, S.Q. Bao and C.G. Pan	40 46
Cyclic Oxidation Behaviour of a Ni-Based Alloy at 900°C X.D. Lu, C.A. Guo, J. Wang and S.W. Ma	51
Studies on Photocatalytic Degradation of Methylene Blue by Eu ³⁺ / Gd ³⁺ Co-Doped TiO ₂ X.D. Lu, C.Z. Jiang and X.H. Zhu	55
Tribological Behavior of Mesophase Carbon Added with Titanium and Copper X.Q. Yue, H. Wang and S.Y. Wang	60
The Study on Stress Analysis of Compound Steel-Foam-Glass Fiber Reinforced Polymer (GFRP) Structure by Lock-in Thermography J.Y. Liu, X. Liu and Y. Wang	64
Research Progress of Surface Modification of Aluminum Powders for Corrosion Protection B. Du, S.S. Zhou, N.L. Li and N. Wang	70
Study on Stress-Magnetic Effect around Hole of Q-235 Carbon Steel under Static Tension Conditions	
Y.X. Zhang and T. Gulnar Numerical Simulation of Billet Continuous Casting Solidification Based on the	76
Measurement of Shell Thickness and Surface Temperature J.C. Ma, H.Z. Sun, X.B. Wang and X. Lv	81
A Selective and Sensitive Method for the Determination of Molybdenum in High Grade Pipeline Steels X. Shao	86
Numerical Simulation of Continuous Extrusion Extending Forming under the Large Expansion Ratio for Copper Strip X.B. Yun, M.L. Yao, Y. Wu and B.Y. Song	91
Study on Copper and Copper Alloy's Manual SHS Welding Technology L.F. Qu, W.T. Xin, Y.S. Wu and S. Wang	96

Cementite Spheroidization of Drawn Wire during Isothermal Treatment F. Fang, X.J. Hu, S.H. Chen and J.Q. Jiang	100
Influence on the Proprieties of PET Coated Diamond-Like Carbon Film for Different Preparing Condition by PECVD	104
G.M. Zhang, Q. Chen, W.C. Xu, F. Pan and B.P. Miao	104
A Replaceable Lead-Free Solder for Sn-37Pb Y.S. Li, X. Chen and Y.F. Luo	108
Corrosion Damage Research of Shot Peening Aluminum Alloy S. Lin, S.L. Lv, W. Zhang and X.Y. Tong	113
Effects of Ti(C,N) Nanoparticles on Mechanical Properties of the Si ₃ N ₄ Ceramics Q. Li, F.S. Zhu, Z.M. Xiu and X.D. Sun	119
Influence of Structure Parameters on Compressive Behavior of Aluminum Foam F. Wang, L.C. Wang and Z.M. Zhang	123
Study on the Properties of Spherical Pore Porous Metal Prepared by Plastic Working L.Z. Zhang, G.D. Shi, L.L. Xu, Y.J. Yu and X.J. Zhao	128
Microstructure and Grain Abrasion Properties of (Ti,W)C-Ni Cermet Cladding Layers Prepared by Tungsten Inert Gas Cladding	122
L.P. Zhao, Z.D. Liu and B. Li Theory and Evaluation of Standay Ness Projectile into Steel	133
Theory and Experiment Study of Normal Penetration of Slender Nose Projectile into Steel Target G.Y. Huang, G. Wu, S.S. Feng and T. Zhou	137
Interface Performance Analyses of Electrodeposited Nickel Coating on ABAQUS	137
X.C. Huang, H.Y. Wang and L.Q. Zhou	143
Acoustic Emission Behavior during Fatigue Crack of API5LX70 Gas Pipeline Steel M.F.M. Yusof, C.K.E. Nizwan, N. Jamaludin and S. Abdullah	148
Effect of Temperature on Spinel LiMn ₂ O ₄ by Molten-Salt Flameless Combustion Synthesis M. Huang, Y. Xia, J.M. Guo and Y.J. Zhang	153
Microstructures and Properties of Zn-Al-Si Cast Alloys S.Q. Jia, S.J. Li, H. Chen, Z.K. Zhao and W.K. Gao	158
Preparation and Properties of CrN/NbN Nanomultilayers by Dual-Target D.C. Reactive Magnetron Sputtering Y.Q. Shan and B.Q. Liang	163
Temperature Field Simulation of Pure Al Solidified by PTC Method and PTC Medium L.Y. Zhang, Z. Ma, F.H. Sun and Y.H. Jiang	168
Fatigue Performance Study of E36 Steel Welding Joint Z.X. Song, D.P. Wang, G.A. Wei and C.H. Yang	173
The Role of Electric Current on Friction and Wear Behaviors of the Carbon Strip/Copper Contact Wire	
T. Ding, G.X. Chen, Z.G. Xiong, L. Xie and C.X. Wu	178
Chapter 2: Inorganic Nonmetallic Materials	
Effects of Chemical Structure on Adsorption of Polycarboxylate Superplasticizers on Cement Particles	
S.H. Lv, R.J. Gao and J.P. Duan	185
Mechanical Behaviors of High Performance Recycled Aggregate Concrete S.H. Liu, Z.Y. Gao and L.H. Li	190
Vibration Simulating and Measuring of Pipe Being Filled with Hydrogen in Chemical Ship X.M. Shi, H.Y. Hao and H.Z. Ni	195
A Novel Electrochemical Immunosensor Based on DNA/Fe ₃ O ₄ (Core) /ZrO ₂ Shellone Dimension Magnetic Probes for Carcino-Embryonic Antigen F.T. Hu, Y.Z. Wu, Y.T. Cao and N. Gan	200
Effects of Bamboo Age on the Strength of Board Made from Laccase-Treated <i>Pleioblastus</i> amarus Particle	
J. Wang, L. Liu and C.D. Jin	207
Deformation and Acoustics Parameters Feature of Recycled Concrete under Cyclic Loading X.W. Luo and H.L. Yao	213

Formation of Graphite Encapsulated Nickel Nanoparticles by Ball Milling and Annealing of Expanded Graphite with Nickel	
X.Q. Yue, H.J. Fu and D.J. Li	217
Structural Evolution of Natural Flake Graphite with Different Particle Sizes during the Intercalation and Exfoliation Processes X.Q. Yue, Y. Lu and D.H. Lu	221
Effect of Expansion Temperature of Expandable Graphite on Anti-Friction Effect of Graphite Nonasheets from Sonicating Expanded Graphite W.Y. Duan	225
Nanostructure Evolution of Expanded Graphite during High-Energy Ball-Milling W.Y. Duan	229
Effect of Heating Temperature of Expandable Graphite on Amorphous Process of Expanded Graphite/Ni System during Ball Milling Z.G. Liu	233
Anti-Friction Effect of Ball-Milled Expanded Graphite/Ni Mixture Used as Lubricating Additive Z.G. Liu	237
A New Device of Self-Quantitative and Uniform Mixing to Produce Semisolid Metal Ceramic Composite	231
S.Y. Zhang, R. Zhang, X. Zhang and C.C. Wang	241
Material Characteristics of Zinc Oxide Doped Aluminum for Microharvesting W.Y. Chang, T.H. Fang and C.H. Syu	245
Nanoindentation Characteristics of Patterned ITO for Multi-Touch Panel W.Y. Chang and C.H. Hsu	250
Inductor-Based Active Balancing of Li-Ion Battery J.P. Xie, X.Z. Wei and H.F. Dai	255
The Fracture of Concrete Based on Acoustic Emission S.W. Hu, J. Lu and X.Q. Fan	261
Analysis on Ground Surface Damage of Quartz Fiber-Reinforced Quartz Composites Y.S. Shi, Y.G. Wang, Y. Yang, L.P. Sun and B. Lin	266
Dielectric and Magnetoelectric Properties of Nano-Microscale Lead-Free Composite by 0.4Co-Ferrite and 0.6(K _{0.5} Na _{0.5})NbO ₃ -Based Ferroelectric Matrix Y.X. Ye, S.H. Zhou and Y. Zhou	271
Transformation of Quantum States in Quantum Computation J. Lu	276
PLS Regression on Coal Infrared Spectrum with Wavelet Pre-Processing Y.M. Wang, G.Q. Shi, X.X. Zhong and D.M. Wang	279
The Effect of Sodium Sulfate on the Dispersion of Polycarboxylate Superplasticizer S.H. Lv, J.P. Duan and R.J. Gao	284
Numerical Calculation of Throttle Nozzle Diameter Influence on Downhole Choke Flow Field	
J.L. Tian, Z. Liang, L. Yang, X.Q. Mei, Q.G. Mei and Y.A. Jia	288
The Performance and Antiwear Mechanism of 3-(N-mono-n- butylaminomethyl) Quinazolin-4-One as Additive in Liquid Paraffin O.Y. Ping and X.M. Zhang	294
Phosphorus Removed by High Calcium Fly Ash Ceramsite in Artificial Biological Filter Bed S.W. Cao, W. Chen and Z.Q. Jing	298
Linear Location of Acoustic Emission Source Based on LS-SVR and NGA J.T. Yu, M.L. Ding and Q. Wang	302
Research and Development of Design Technologies for Functionally Gradient Ceramic Materials	
Y.L. Zhang, C.H. Xu, G.Y. Wu, M.D. Yi and B. Fang	307
Heat Transfer Model for Solidification Process of NH ₄ Cl Solution Y. Jin and Z.B. Tian	313
Analysis of Vibration and Sound Propagation in a Fluid-Filled Pipe J. Yan, S.L. Zhang and J. Zhang	317
Optimizing the Performance for Nonbonded Force Calculation of Chemical Simulation on CBEA	
G.F. Feng, M. Wang, M. Chen and T. Chi	322

Preparation and Electrochemical Properties of VO ₂ (B) Nanobelts H.B. Li, M.J. Fan, Y.F. Zhang, C. Huang, G.Y. Xie and X.H. Liu	327
Effect of Nitric Acid Modification on LiMn ₂ O ₄ Prepared by Solution Combustion Synthesis Y. Xia, M. Huang, J.M. Guo and Y.J. Zhang	332
Chapter 3: Organic Polymer Materials	
Simulation Research on Stress of Polymeric Patterns during Micro Hot Embossing T. Zhang, Y. He and J.Z. Fu	339
Research on the Combination Degree between Nylon and Insert in the Pipe Wrench Y.F. Jiang, Q. Huang, Z.N. Guo, Y.Z. He and J.W. Zhang	346
Preparation of Aromatic Aldehydes from Lignin Oxidation with a Perovskite-Type Catalyst B. Wang and Z. Long	350
Application of Environment-Friendly Insoluble Azo Dyes on Anti-Counterfeiting Paper M.M. Jiang, Z. Long, Q. Fu, H. Zhang and C.H. Dong	355
Third-Order Optical Nonlinearity of a 1,3-Bis(2,4,6-Trihydroxy-Phenyl)Squaraine Z.Y. Li, S. Xu and Y. Du	360
Compressive Constitutive Relation for Multi-Layer Corrugated Boards D.M. Wang	365
Synthesis of Poly(<i>D</i> , <i>L</i> -Lactic Acid- <i>Co</i> -Glucose) via Direct Polycondensation and its Characterization	250
S.H. Luo, Z.Y. Wang, D.N. Huang, C.X. Mao and J.F. Xiong Thin-Wall Plastic Parts' Warpage Analysis Based on Taguchi Method	370
J.Z. Chu and R. Song A Laboratory Investigation into the Composite Bonding System of Cement-Emulsified	375
Asphalt-Epoxy Resin Q.J. Ding, F. Shen, Z. Sun and S.L. Huang	379
The Inherent Defects of Injection Molding Products and its Special Processes S.F. Jiang, M.Y. Su, J.Q. Li and T. Hong	385
Synthesis and Properties of Phenolic Syntan with HRP Catalysis S.H. Lv and M.M. Hou	391
Preparation and Properties of Copolymer of Methacrylic Acid and Acrylamide onto Degraded Chitosan Initiated by HRP/H ₂ O ₂ /ACAC S.H. Lv, X.L. Yan and R.J. Gao	396
Preparation and Properties of Tetrabasic Graft Copolymer Adhesive of CR/TPI/MMA/MAA	400
S.H. Lv and D. Li Preparation and Characterization of a New Type of Magnetic Polymer Micro Spheres	400
L.L. Zhang, H.W. Zhang, X.H. Yao, C.B. Zhang, J.J. Tian and G.Y. Liu Study on Seismic Isolation of High-Speed Railway Bridge Fabricated Lead Rubber	405
Bearings H. Tang, H. Wang, B. Zhou and L.K. Chen	409
Orientin-Induced Cardioprotection against Ischemia/Reperfusion is Associated with Suppressing Proteasome Inhibition	41.4
N. Lu, Y.G. Sun and X.X. Zheng	414
Chapter 4: Composite Materials	
Kinetic Study for Biosorption of Malachite Green from Aqueous Solution by Pretreated <i>Penicillium</i> sp.	
L.F. Zhang, Y.Y. Chen and S.J. Dai Sol-Gel Derived Gradient Biocoatings on Titanium Alloy	421
D.H. He, Q. Zhao, C.B. Wang, H. Zhang, X.R. Zhang, P. Liu and X.K. Liu	426
Microstructures and Properties of Ti-Nb Alloys Produced by Powder Metallurgy Z.C. Zhou, J. Du, H. Yang, S.Y. Gu and Y.J. Yan	431
Study on the CNTs Strengthening Metal Matrix Composite and its Properties Y.H. Sheng, H.M. Dai and L. Zhang	436

Low-Temperature Self-Mixing Combustion Synthesis of Spinel LiMn ₂ O ₄ : Effect of Igniting Temperatures	
G.Y. Liu, J.M. Guo, B.S. Wang, Y. He and L.L. Zhang	440
A Database for Material Design of C/SiC Composites S.L. Lv, L.J. Yao, X.Y. Tong and Z. Li	444
Atomics Simulation of Cutting Velocity Dependency in AFM-Based Nanomachining Process J.X. Chen, Y.C. Liang, L.Q. Wang and X.L. Hu	448
A Renewable C Reactive Protein Amperometric Immunosensor Based on Magnetic Multiwalled Carbon Nanotubes Probles Modified Electrode	450
S.L. Zeng, H.K. Zhou, N. Gan and Y.T. Cao The Influences of Aging on the Two Relaxation Peaks in the Air-Cooled Fe71Al29 Alloy	452
S.Y. Gu, Z.C. Zhou, Y.J. Yan, H. Yang and J. Du	457
The Corrosion Morphology and Crack Growth Analysis of Aluminum Alloy Z.T. Mu, H. Liu, Z.T. Zhu and D.H. Chen	464
Chapter 5: Structural Materials	
Fluid's Flow Parameters Research of Piping Bifurcation Layout R.Q. Zhang	471
Selection of Hole and Axle Interference Fit Tolerance	7/1
H.X. Yao, E.M. Miao and P.C. Niu	475
The Detection and Analysis of Straightness Errors on Pillar and Guide Rail of Alien Stone Turning-Milling Compound Machining Center K. Zhang, Z.X. Cui, D.H. Zhao, L.W. Rao and Y.H. Wu	480
Structural Time History Response Analysis of Bidirectional Seismic Input Y.S. Bai, J.J. Sun, G.L. Xu and Y.C. Liu	485
Damage Identification for Simply-Supported Bridge Based on SVM Optimized by PSO (PSO-SVM)	
H.B. Liu, Y.B. Jiao, Y.F. Gong, H.P. Bi and Y.Y. Sun	490
Experimental Research on Machining Process for Convex Curved Rake Face of Pinion Cutter	
X.G. Li, G.Q. Shi, S.R. Zhang and L.S. Song	495
Study on the Profile Design of Special Disk Milling Cutter for the Forming of Complex Inner Helicoid S.Q. Wang, K. Wang and X.M. Liu	501
The Prediction Model of Tunnel Face Based on Fuzzy Comprehensive Evaluation J. Lu, S.W. Hu, X.Q. Fan and Z.G. Niu	506
Life Cycle VV&A Simulation Modeling Process Based on Validation J. Sun, B.K. Zhang and C.G. Wu	511
The Deformation Prediction of Foundation Pit Slope Based on Time Series Analysis H.B. Liu, Y.Y. Sun, Y.C. Cheng, P. Jiang and Y.B. Jiao	516
On Structure Function and the Temperature and the Thermal Stress of Brake Discs W.H. Nong, F. Gao, R. Fu and Q.J. Yu	521
Influence of a Crack on the Natural Frequency of Pipe Y.M. He, X. Chen and X.L. Zhang	527
Construction of the Beam Element Based Second Generation Wavelet Y.M. He, X. Chen and X.L. Zhang	532
Dynamic Response of Pre/Post Buckled Thin-Walled Structure under Thermo-Acoustic Loading Y.D. Sha, J.Y. Li and Z.J. Gao	536
Optimization of Process Parameters of Tube Hydroforming Based on Orthogonal Experiment	220
J.T. Du, C.Z. Chen, C. Huang and Q.J. Chen	542
Optimization to Control Parameters on Rolling of Tailor Rolling Blanks by Orthogonal Test J.T. Du, C. Huang, C.Z. Chen and Q.J. Chen	546
An Algorithm to Prediction the Radial Runout of Cylindrical Roller Bearings Y.G. Liu, J.S. Li, W.X. Shi and X.Z. Jia	551

Investigation on Failure Mode of Spruce under Different Loading Conditions W.Z. Zhong, X.C. Huang, Z.M. Hao, R.Z. Xie and G. Chen	556
Analytical Solution of the Residual Stress when the Inflexion of the Retaining Ring is near	
to the Top Q.M. Liu and J.L. Zheng	561
Numerical Seismic Analysis of Simply-Supported Girder Railway Bridge under High-Speed	
Train Load H. Wang, G. Ding, H. Tang and L.K. Chen	566
A Novel Design for Crack Width Monitoring of Concrete Structures B.N. Zhang, X.X. Li and Z.X. Zhou	571
Multiscale Simulation in Mesoscopic Dynamic Behavior of Lunar Soil Simulant Subjected to Rigid Lugged Wheel G.F. Zhou, S.H. Zhang, S.C. Xu, R. Zhang and J.Q. Li	575
DEM Simulation in Effects of the Section Structure of Smooth Rigid Wheel on Dynaminc Mechanical Behavior of Lunar Soil Simulant G.F. Zhou, F. Liu, R. Zhang, S.C. Xu, Y.L. Hu and J.Q. Li	580
Analysis on the Straight-End Problem in Thin-Plate Three-Roll Bending	300
Z.Y. Cai and Y.W. Lan	585
Design of State Monitoring System of Internal Combustion Engine Based on Serial Bus K. Feng, X.M. Meng, X.L. Wang and G.L. Lu	591
Experimental Research on Flexural Performance of Prestressed Composite Beam with Partial Shear Connection	506
X.F. Ye and S.W. Hu Forming Analysis of Housing with Small Fillets	596
P. Yuan, H.G. Xia, X.C. Zhuang, H.J. Zhao, Y. Dong and Z. Zhao	601
An Inversion of Site Response and Medium Parameters of Shaanxi Area Using Records of the Wenchuan Aftershocks	
H.C. Shao, X.Y. Zhu and C.J. Luo	606
Design of Fire-Control System Fault Detection Instrument Based on Embedded Technology D.Z. Su, X.Q. Yang, J. Yan and X.L. Wang	611
Discussion Structure of Variable Displacement of Double Action Vane Pump L. Chen, P. Zhang, H.Y. Wang and J. An	616
The Implicit Euler Form of Walker Viscoplastic Constitutive Model Q.W. Wang and S.H. Zhang	621
Research on Computing Method of Similarity Scale of Dynamic Model Test Concerning Fluid-Structure Coupling for Water-Conveyance Tunnel J.Y. Liu and C.C. Xia	626
Research on Thread Forming Process of Extrusion Tapping of Internal Thread	020
Y.Y. Li and S.D. Zhao	631
Simulation Analysis of a Surface Crack Monitoring Sensor for Metallic Structures J.Q. Du, Y.T. He, R.H. Cui, Z.M. Yu and H. Ding	638
Constitutive Model and Properties of AMT100 Steel at Thermal Deformation Z.T. Wang, S.H. Zhang and H.Z. Wang	643
Chapter 6: Functional Materials	
Modeling Design and Motion Simulation of a Kind of Marine Corrosion Test Device J. Yang, G.F. Xi and X.D. Zhao	649
Visual Spray and Evaporization Character of Biodiesel Blend Fuels in a Combustion Chamber	
Y. Liu and J. Li	654
Study on the High-Heat Tribological Characteristics of Lubricating Wear-Resisting Coating Prepared by Supersonic Plasma Spraying Y.C. Zhao, J.J. Mao, C.M. Deng and W.Y. Ma	661
Thermal Stress Analysis of Lubricating Wear-Resisting Coating Prepared by Supersonic	001
Plasma Spraying in the High-Heat Tribological Process Y.C. Zhao, G.J. Hao, C.M. Deng and W.Y. Ma	667

Study on the Methods of the Surface Self-Nanocrystalline Technology and its Effect on the Materials Properties	(72
B.L. He, J. Liu and B. Wang	673
Equilibrium and Thermodynamic Studies on Biosorption of Dye from Aqueous Solution by <i>Penicillium</i> sp. L.F. Zhang, Y.Y. Chen and S.J. Dai	678
The Relationship between Nanocrystalline Structure and Frictional Properties of Nanodiamond/Ni Composite Coatings by Brush Plating	070
Y. Li, B.X. Li and W.J. Zou	683
Film Thickness-Dependent Microstructures and Dielectric Properties of Pb(Zr,Ti)O ₃ Thick Films by Sol-Gel Processing Y.T. Zhang, X.J. Chou, W.P. Geng, Y. Tian, J.J. Xiong and T. Guo	688
Design of Ultra Low Temperature Pressure and Temperature Sensor Structure C.H. Ji, B.Z. Zhang, J. Zhang, X.H. Li and J.L. Liu	693
The Calibration of the Pressure Sensor at the Ultra-Low Temperature J. Zhang, B.Z. Zhang, C.H. Ji, J.L. Liu and X.H. Li	698
Bead-on-Plate Welding on Q235A Steel by Underwater Wet Welding Process with Flux-Cored Wire	
H.T. Zhang, H.Y. Gao, W.J. Jiang and S.S. Zhong	704
Control System of Diesel Particulate Filter Regeneration Equipment Based on LPG H. Zhang, B.Y. Xu and C.S. Wang	709
The Analysis of Automotive Door Seal Energy Consumption Y.K. Gao and D.W. Gao	714
Application of Extendable Optimal Degree in Determinating Weaknesses of the Cleaning	
Process S.A. Wang, F.H. Tao and C.Z. Jia	719
A Chi-Square Distribution Based Steady-State Data Judgment Criterion J. Su and X.G. Wang	724
Designing of CO ₂ Inverter Welding Power for the Mode of Full-Bridge and IGBT Based on DSP	53. 0
C.T. Li, X.B. Zhang, Y. Luo and C.H. Du	730
Electrospun Diameter Controllable Scheme Basing on Numerical Simulation Y.Y. Liu, C.J. Jing, Q.W. Li, Q.G. Wang and Q.X. Hu	737
Numerical Simulation Investigation of the Air Cushion Suspension Technology Y. Yu and G.Q. Zhang	742
Dynamic Analysis of Self-Energizing Shock Absorber of Suspension for Energy-Regenerative	716
J.S. Shen, X.M. Ye and X.B. Ning	746
Investigation of Emission Characteristic of a Diesel Engine by Simulation Y.H. Xiao and P.L. Zhou	752
Orientin Protects Cardiomyocytes against Reperfusion via Mitochondrial Calcium Uniporter	
N. Lu and X.X. Zheng	757
Design and Realization of Management Module for Single Cell D.Z. Zhang, Q. Liu and N. Zhou	762
Structure Design for Heat Sink Based on Thermal Analysis H.G. Sun and Y. Zhou	767
Shape Optimization of a Body Immersed in the Navier-Stokes Flow X.B. Duan, X.Q. Qin and Y.Q. Guo	774
The Analysis of the Influence on Quality of Shearing Section Y.G. Li, F. Fan, Q. Ye and H.L. Gui	779
Numerical Simulation of Thermodynamic Parameters during Diffusion Combustion for Vehicle Air Heater P.Y. Ni, X.L. Wang and S.L. Wei	783
Low Cycle Fatigue Behavior of a New Type of Zircaloy Material W.W. Yu, F. Xue, X.M. Meng and L. Lin	788
A Kind of Joint Structure of Rigid Pipe and Flexible Pipe in Seabed C.C. Peng, Z.L. Xu and Z.W. Zhu	792

New Measure Based Manifold Algorithm and Application in Anomaly Detection of Hyperspectral Imagery	
L.L. Wang, Z.Y. Li, J.X. Sun and C. Du	797
Chapter 7: Mechanics Engineering and Materials	
Finite Element Calculation about Stress Concentration Coefficient of Welded Butt Joints Based on the ABAQUS	907
B.L. He and X.D. Zhang Study on Control Strategy of Regenerative Braking in Electric Vehicles Z.L. Han, Y.Y. Wang, J. Zhao and F. Liu	807 812
Gripper of Manipulator with Automatic Center Aligning and Size Control Driven by Double-Piston Cylinder	816
X.M. Sheng, X.W. Hu and Y.Q. Xu Research on the Parametric Designing for Thread Fasteners X.Q. Zhang	820
Studies of a High Voltage Management System in Electric Vehicles H.F. Dai, X.Z. Wei, Z.C. Sun and X.Y. Chang	825
Finit Element Analysis of Time-Sharing 4WD Vehicle Transfer Case Based on Romax Y.M. Wang, M.F. Huang, Q. Zheng, L. Lu and Y. Chen	832
The Parameters Sensitivity Analysis of Battery Electric Vehicle Dynamic Performance M. Chen and L.X. Guo Nonlinear Model and Digital Simulation Analysis of Valve Controlled Cylinder Base on	837
Power Bond Graph L. Yu, Y.C. Zhao and C.Q. Jia	841
Response Calculation for NOPD Beam by an Improved Algorithm Based on the Endochronic Theory and Test Verification W. Wang and Y.Y. Li	845
Stiction Failure Mechanisms of the Micromachined Electrostatic Comb-Drive Structures Y.S. Xu, J.H. Gu and Z. Tao	850
Rolling Friction Performance Analysis of Swash-Plate Engine in Underwater Vehicle W.G. Liang, Z.S. Zhang and L. Luo	855
Idling Natural Characteristic Analysis of the Torsion Absorber with Dual Mass Flywheel X.J. Meng and J.W. Li The Output Character Analysis of the Piezoelectric Cantilever Power Generator for	860
Ambient Vibration Harvesting X.Z. Du, H. Yu and Y. Li	865
The Application Study of Accumulator Used in Hydraulic System of 20MN Fast Forging Machine M.Q. Dai, S.D. Zhao and X.M. Yuan	870
Incipient Bearing Fault Diagnosis Based on Improved Hilbert-Huang Transform and Support Vector Machine	
J.H. Yan and L. Lu Restraint of Period Doubling Bifurcation and Chaos Gait of the Biped Robot Based on Passive Dynamic Principle	875
X.G. Wu, J. Zhao and X.Z. Zang Application of Oxyhydrogen Energy to Underwater Vehicle Thermal Power System	880
R. Zhu, L. Luo and W.G. Liang System Modeling and Analysis of Wind Turbine Blade Grinding Robot C.W. Bu and L.X. Zhang	885 889
Study on the Return Control of the Electro-Controlled Steering Damper Based on Magnetorheological Fluid	
J.G. Cao, X.H. Yang and J. Xu A Fuzzy Control Simulation about Bearing Residual Magnetic Treatment	894
F.J. Zhang, W.J. Fang, C. Zhou and Z. Liu Experimental Investigation of a Multifunctional Solar Assisted Heat Pump in Space Cooling Integrated Water Heating Mode and Space Cooling only Mode	899
A.G. Jiang and X.Z. Wang	904

Structure Analysis and Optimum Design of NC Grinding Machine Tool Bed X.W. Sun, J. Wang, X. Feng and K. Wang	909
Analysis of Sensible Random Factors that Influence Gear Reliability S.X. Sun, M. Yan, W. Jia and P. Bai	913
Extension Control Research of Pump-Control Electro-Hydraulic Servo System H.B. Zheng, Y.S. Sun, M. Li and C.B. Xian	917
The Modeling and Application of Moving Deformable Barrier Model with Beam Element L.B. Cao, W.T. Cheng and X.N. Shi	922
Statics Analysis on Beam Structures of Large Five-Axis Machining Center Based on ANSYS Y.Q. Wang, G.Y. Zhong, Y.B. Chang and G.X. Liu	927
Research on Aerodynamic Brake of High-Speed Train Y. Xi, X.X. Li, Q. Fu, L.Q. Gao and Z. Chen	932
Investigation of Forging Process Parameters Effects on Die Fatigue Life Using Numerical Methods	
G.S. Bagheri, M.R. Soleymani Yazdi and M. Tahmasebi	937
Effect of Machining Parameters on Deformation Field in Machining by Finite Element Method	
C.L. Wu and Z.R. Wang	942
Analysis of the Impact of Vertical Stiffness of Tire on Macpherson Front Suspension on the Basis of ADAMS/CAR Z.P. Wang and W.L. Cui	946
Defects Detection for Casting of Railway Freight Car Using X-Ray Radiography Y.N. Zou, J.W. Li and J. Wang	951
Ring Strength Analysis of Driving Wheel Bearing Based on Ultimate Strength Design	
Methods G. Zhang, X. Zhang, D.D. Jiang, M.Y. Li and J. Ruan	956
Numerical Simulation of Solidification Process for Impeller Investment Casting J. Zhang, K.W. Li, H.W. Ye, D.Q. Zhang and P.W. Wu	961
Numerical Simulation of Mold Filling Process for Wax Pattern of the Impeller in Investment Casting J. Zhang, H.W. Ye, K.W. Li, G. Wang and F. Li	965
Simulation of Radial Deformation for Orbiting Scroll Wrap in a Scroll Compressor X. Ma, F.Q. Wang and Y. He	969
The Stress Distortion Analysis of Coiler Mandrel Based on Pro/E-MECHANICAL Y.C. Zhao, F.P. Hu and D.L. Guo	975
State-of-the-Art of Rotational Moulding Technique and its Application Y. Wang, K. Zhang, Y.C. Dai, J. Liu and Y.Y. Zhang	980
Finite Element Analysis and Structure Optimization of Machine Tool Worktable D.Q. Gao, F. Zhang, Z.Y. Mao, H. Lin and J.M. Yi	985
Fabrication and Analysis of a Tunable Inductor J.L. Liu, X.H. Li, B.Z. Zhang, J. Zhang, C.H. Ji and H.T. Yao	990
Structure Design of Downhole Robot in Oil Well H.X. Wei, W. Wu and Z.G. Wang	996
The Construction of the Three-Dimensional Optimize Expert System of Oil-Immersed Pump Lectotype	
Q. Li and J.Z. Li	1000
Design of Loader Working Device Based on SolidWorks R.C. Guo and J. Zhou	1006
Influence of Transverse Vibration of Axially Moving Electrode Wire on Machining Precision in Wire-Cut EDM S.Y. Fan, Q.J. Zhang and H.W. Chen	1010
Finite Element Analysis and Topology Optimization for the Gantry Milling Machine	1010
Column Structure W. Huang, C.S. Ou, H.M. Lu and Z.L. Xie	1016
Mining Rule of Quality Control for Spinning Process with Rough Set Theory Q. Xiang, Z.J. Lv, J.G. Yang and X.G. Yin	1021
Study on a Novel Adaptive Force Control Table Employed for Rotary Ultrasonic Drilling L.P. Liu, B. Lin and F.Z. Fang	1027

Evaluation of the Mechanical Performance of Woodball Mallet: A Finite Element Study Y.C. Lu and Y.D. Gu	1032
Study on Weld Seam Control and Thickness Distributing of Tailor-Welded Blanks Drawing Z.T. Wang, G.X. Qi and S.H. Zhang	1035
Chapter 8: Industrial Mechanics	
Simulation on Motion Reliability of Five-Axis Turning-Milling Center D.P. Liu, W.W. Yang and J.S. Gao	1041
A Nonlinear Multi-Objective Optimal Design for Cutter Head of TBM J. Cheng, Y.D. Gong, H.F. Zhao, Y.M. Liu and J.Y. Yang	1046
Dynamic Characteristics of Guideway Joints for CNC Machine Tool C.X. Zhu, B. Li and J.M. Luo	1051
Simulation of Dynamic Characteristic for Parallel Machine Tool C.X. Zhu, J.M. Luo and B. Li	1055
Fault Diagnosis of Automobile Engine Based on Support Vector Machine D.J. Wang, M. Li, C. Liu and J.N. Sun	1060
The Optimization of Braking Force Distribution Control Strategy for ESP System D.J. Wang, Y.Y. Wang, H.H. Feng, L.H. Wang and C. Liu	1065
Study on Web-Based Collaborative Design for the Vehicle Clutch Release Bearings G.L. Chen and X.Y. Chen	1070
Cosine Second Order Robot Trajectory Planning Method Z.W. Xie, C. Li and H. Liu	1075
High Dynamic Humanoid Robot Arm for Ping-Pong Playing Q. Zhang, Z.W. Xie, Y.W. Liu, Z.Q. Li and H. Liu	1081
The Particle Swarm Optimization Method Used in the Design of Two-Stage Cylindrical Helical Gear Reducer	
G. He, Z.G. Zhang, D.L. Zhu and Z.Y. Pan	1086
Comparison of Algorithms for Static Multi-Leaf Collimator Field Segmentation D.D. Ni, X. Wu, J.Q. Chen, J. Jing and C.X. Liu	1091
Stability Analysis of the Golden Section Adaptive Control Systems for Attitude Keeping of Spacecraft with Unknown Parameters D.Q. Sun	1096
An Optimization Method Selecting the Location Points for Drilling and Riveting of Aircraft's Wing Panel	1102
K.F. Zhang, F.G. Liu, Z.X. Liu and Y. Li Application of Computer Aided Testing System in Aero Engine Running	1103
C.Z. Li, C. Lin and Y. Lei MBD Based Digital Automotive Manufacturing Application Framework	1109
Q.Z. Zhou and L.Y. Deng	1113
The Studying of Logix Gear Construction Principle and Parameter Simulation Using Matlab	
A.Q. An, M.H. Pang, L.F. Zhang and Y.F. Nie Design for a PM-OLED Driver Circuit	1118
L. Wu and W.S. Wang	1123
Study on Effect of Electronically Controlled EGR System on Diesel Engine Performance Z.G. Su and J.Q. Long	1128
Research of the Installation Angle of New Rotor Impact Plate Based on EDEM D.R. Duan, F. Zhao, S. Wang and X.X. Chen	1133
Web Adds	
A Rapid Field Calibrating Method for MIMU Y.B. Fan, J. Li, B. Wang, X.C. Tian and J. Liu	1140
Numerical Simulation of 3D Flow in Rotation Cup of Rotor Spinning X.W. Yang, H.L. Chen, Z.Y. Wu and S.F. Xu	1145

A New Non-Destructive Testing Method Used in the Axle of Landing Gear Q.S. Tu, W.M. Zhang, L. Huang, C.F. Chen and Q. Yong	1150
The Power System Active-Synchronizing Control of the PHEV during the AMT Shifting Process	
X.Y. Dong, J.Q. Xi and H.Y. Chen	1155
Performance Test Bench Development of Auto Transmission Control Mechanism S.W. Yu and R.J. Liu	1160
Study on High Risky Spots of Engine Hood for Pedestrian Head Crash R.J. Liu and S.W. Yu	1165
A New Classification of Electric Power System Information and Rationality Evaluation Based on Automatic Control Theory H.Y. Han, K. Du and G. Wang	1170
Jumping Mechanism and Simulation of the Humanoid Robot Y. Chen	1176
Intelligent Velocity Control Strategy for Electric Vehicles	1170
L.Q. Jin, C.X. Song and J.H. Li	1180
Chapter 9: Information System for Materials and Mechanics	
Reliability Assessment Method of the System with Multiple Degradation Parameters Based on SVDD and SVR	
H. Cong, G.P. Wu, F.Z. Feng and G.Q. Rao	1187
Design and Construction of Container Terminal Machine Cooperation Virtual Environment	
H.J. Lu, D.F. Chang, W.J. Mi and J.S. Liu Study on Modular Design Method for CNC Lathe	1193
Z.W. Xu and Y.X. Liu	1198
Impedance Control of Wind Turbine Blade Grinding Robot C.W. Bu and L.X. Zhang	1203
BW-FILERAID: A Kind of File Based Distributed RAID System and Optimization T. Guo, Y.L. Shen, Z.J. Liu and L. Xu	1208
Fragmentation Degree Research Based on File's Layout Y.D. Zhu, J.W. Zhang, C. Wang and Z.J. Liu	1217
Finding Free Space for Task Placement on Reconfigurable Devices J.F. Zhang and X. Chen	1226
An Identification Algorithm of Insects Wing Based on Grid Z.L. Deng and D.D. Shi	1232
Design and Development of Embedded Turbine Supervisory Instruments Based on ARM and Linux	
J. Cheng, Y.M. Wei, X. Xiong, C.B. Gan and S.X. Yang A Study of Equipment Fault Forecast System Based on Virtual Setting	1237
J.D. Huang	1244
The FPGA-Based Phase-Locked Loop Speed Control System of BLDCM for Magnetically Suspended Control Moment Gyroscope B.C. Han, D. He, F.Z. Guo, Y. Wang and B.N. Huang	1249
Design of Chatter Measurement and Control System Based on Virtual Instrument J.H. Li, Y.X. Liu, Y. Yu, J.L. Han and D.L. Yi	1258
Gross Error Positioning and Processing Method Based on Forest Grey Modeling Y. Li, Z.W. Wang and S.N. Tang	1262
Research on Extracting Skeleton of Mechanism T.Z. Sui, L. Wang and P.C. Jia	1268
Research about Post Processing for Fagor CNC System Based on Visual C++	
C. Wang, Y. Yao, Q.S. Zhao and Q.X. Hu Researching on Clutch Rotational Speed Signal Processing of AMT Vehicle	1273
J.X. Peng, H.O. Liu and H.Y. Chen	1278
Research on the Relation Expression for District Collaborative Design J. Ma	1284

Normalization-Based Omnidirectional Gait Planning for Small Humanoid Robot G.D. Li, J.Y. Peng, K.P. Liu and X.J. Wang	1289
Design of Applied Diffusion Pump System for Electron Beam Process Y. Jin, J.J. Hu and H.B. Xu	1295
Research on the Disassembly Sequence Planning for Mechanical Product S.J. Su, X.F. Fang and F. Li	1300
Developing a Hybrid Stack Mode for Dynamic Yard Allocation Strategy of Export Containers	1305
J.L. He, W.J. Mi, D.F. Chang and Z.C. Bian Yard Allocation Planning for Container Terminals Based on Twin 40ft Handing System D.F. Chang, Z.H. Jiang, G.Q. Zhou and J.L. He	1310
The Three-Ply Analytic Approaches of Cycle Working Chart in Design of Automatic Packaging Machine R.M. Wu, D.A. Liu, J.H. Yu and Y.Z. Xiao	1315
Ground Penetrating Radar Use on Tunnel Disaster Warning C.Z. Yang and B.Q. Hu	1320
Development and Test Study of a New Classification Equipment for Bauxite Desiliconization D.F. Lu, Y.H. Wang, W. Sun, D.L. Lu and Y.H. Hu	1324
RFID-Enabled Real-Time Production Tracking System for PCB Assembly Industry G. Zhang, J. Zhang and S.Y. Tian	1330
Integrated Scheduling of the Job and AGV for Flexible Manufacturing System Y.L. Lv, G. Zhang, J. Zhang and Y.J. Dong	1335
Experimental Study on Thermal Contact Resistance between Cuprum and Aluminum S. Ji, H.M. Huang and G. Huang	1340
Subpixel Edge Detection Algorithm of the Glass Bottle Based on Zernike Moments H. Yang and L. Pei	1345
Review of Groups-Robot Cooperation System Research Basing on Swarm Intelligence X.H. Zhao, L. Zhao and J. Xu	1350