

Table of Contents

Preface and Committees

Chapter 1: Mechatronics Materials

The Fault Diagnosis Method Based on Wavelet Packet Characteristic Entropy and Relevance Vector Machine S.Y. Zhao and Q. Wang	3
Simulation on Drilling with Water-Jet Guided Laser C.Q. Li, L.J. Yan and Y. Wang	7
Code Created and Simulation Realized of Milling in High Speed on Typical Arc Surface of Transmission Box Based on Vericut K.R. Jiao, L. Xin, X.Q. Wang and Z.G. Zhang	13
The Effects of Exfoliation Corrosion on Upper Wing Skins Structural Integrity D.Z. Yu, W. Han and S.Y. Liu	19
Corrosion Behavior of BG80S Anti-Sulfur Oil Tube Steel in High Temperature High Pressure H₂S/CO₂ Environment B. Wang, J.L. Zhang, J.H. Bai, D.M. Zhou, L. Yang and K. Shen	23
The Oxidation Resistance of Cu-Ag Alloy Nanopowders Prepared by Induction Plasma Technology M.M. Zou, M. Yan, F.J. Shang, W. Huang, Y. Liu, J.H. Su, W.L. Shi, R.Z. Wang and X.Y. Chen	28
Numerical Simulation of Fractal Tree-Shaped Flow Field Structures in PEMFC J.H. Dong and S.F. Liu	32
Experimental Analysis of Micro-CHP Based on Biomass Direct-Fired Stirling Engine D.G. Ma, X.B. Jiang, X. Zhang and Y. Ma	36
Study on the Eddy Current Loss Characteristic of the Coaxial Cylinder Style Magnetic Coupler H.J. Zhang, X.F. Du and B. Li	41
Creep Tests Research on a New Zirconium Alloy for Nuclear Fuel Cladding Tubes X.M. Meng, F. Xue, W.W. Yu and H.M. Guo	47
Retarded Modes of Lateral Ferromagnetic/Ferromagnetic Superlattice X.H. Liu, Y.F. Liu, J.H. Liu, Z.Z. Song and J.J. Li	52
Preparation of Fluorocarbon Acrylic Emulsion with Core-Shell Structure Modified by Versatate Carbon Y.F. Li, Z.M. Yu, J.J. Zhu and X.H. Gao	57
Research of Generalized Structure Module Modeling Based on Similar Feature Clustering S.Y. Gao and L. Li	61
Study on Anti-Bacterial UV Ink with Zinc-Copper W.T. Huang, G.X. Chen, B.L. Tang and M.G. Yu	66
Dynamic Simulation Analysis for Processing of Screw Pump inside Spiral Surface K. Wang, S.S. Li and Y.J. Shi	70
A Point Dislocation Interacting with an Elliptical Hole Located at a Bi-Material Interface X.F. Wang, F. Xing, N. Hasebe and P.B.N. Prasad	75

Chapter 2: Mechatronics

A Method of Fault Diagnosis for Reciprocating Compressor Based on Phase Space Reconstruction (PSR) and Empirical Mode Decomposition (EMD) Y. Liu, W. Yuan and S.G. Wang	83
Telephone Clients Management System with Short Messages Y.C. Ma and Z. Li	87
Selection of Wavelet Basis for Infrared Face Recognition in Wavelet Domain Y.H. Xia, Z.Y. Wang and W. Wang	91

General Application Research on GSM Module Y.C. Ma and Y.H. Huang	96
Research on Mathematical Model and Calibration of Weighing System by Digital Addition C.F. Zhu, S.J. Ji and J.L. Zhao	101
The Design and Experimental Researches of Medium-Sized Ground Source Heat Pump Incubator J. Lin, J.W. Wu, Y.N. Hu, J.S. Liu, T. Lin and S. Li	105
A CAD Modeling Method of Dental Surface Based on Scanning Data L.C. Fan and F.F. Zhang	111
Hardware Design of a Pipeline Inspection Robot H. Zhang, L.N. Zhao and X.F. Dai	116
Characteristic Analysis on Heavy Hydrostatic Bearing of DVT500 Vertical Lathe X.B. Li, X.F. Du, S.G. Wang, D.S. Li and Y.Q. Yu	121
Research on Improving the Accuracy of AD Conversion in DSP J.C. Hou and C.F. Zhu	126
Propagation Behaviors of SH Waves in Piezoelectric Layer/Elastic Cylinder with an Imperfect Interface Y.H. Wang, M.L. Wang and J.X. Liu	130
Study on the Influence of Processing Condition on Impact Property of Injection-Molded Polycarbonate Y.H. Shang, B. Wang, F.F. Wang, Z.X. Wang and C.T. Liu	135
Optimization of Sensor Placement in SHM Based on the Dual Coded Genetic Algorithm J.X. Yang and L.W. Zhang	139
Design of a Dual Stop-Band Filter Based on Coplanar Waveguide Z.L. Deng, C. Shu and N.B. Zhang	145
The Compiling of the Motorcycle Frame Load Spectrum Based on Dynamic Characteristic Analysis L. Bao and X.Z. Li	150
Research on Web-Based Elastohydrodynamic Lubrication Oil Theory of Rolling Bearing Type Planetary Friction Transmission Mechanism J.Z. Zhao, Y.T. Liu and Z.X. Zhao	155
Strength and Mode Analysis of Testing Machine of 3MW Wind Turbine Bearing with Finite Element Method Z.Y. Duan, Y. Wang, M.D. Hong and G.F. Ren	160
Estimation of Vehicle Pre-Braking Speed W.K. Tseng and S.X. Liao	165
A Novel MEMS CPW Structure Z.L. Deng, H.L. Qu and Y.Z. Chen	170
The Optimal Scheduling for PCB Flexible Assembling Automation S.G. Wang, F.J. Wang and Y.J. Wang	175
Study on Hot Roll Profile in the Initial Stage of Twin-Roll Continuous Strip Casting G.M. Zhu, Z. Chang and X.L. Xian	179
Design and Implementation of Fuzzy Based Person Following Mobile Robot M. Mahbubur Rashid, A. Akramin Shafie, T. Bin Alamgir and I. Jawad Alfar	184
Simulation of Dynamic Behavior of Slider at Head/Disk Interface of Hard Disk Drives Y. Chen, H.R. Ao and H.Y. Jiang	189
Analysis in Y Direction Reamer Error Based on Aspheric Parallel Grinding J.K. Xu, H.D. Yu and X.J. Zhang	193
Centering Deviation Auto-Detection and Angle Measuring Error Compensation Method of Photoelectric Theodolite P.C. Pu, X.S. Guo, Z.F. Zhou and K.M. Wang	198
Research on the Method of Incline Degree Automatic Detection and Dynamic Compensation of Photoelectric Theodolite P.C. Pu, X.S. Guo, Z.F. Zhou and K.M. Wang	203

Chapter 3: Materials Engineering

Study on Weathering Quality of PP/PP-g-AN Blend Y.Z. Wang, S.C. Xue, T.Y. Lan and Y.L. Zhang	209
Research on Pressure Sensor Temperature Compensation by WNN Based on FA Y.M. Sun, S.D. Liu, F.J. Miao and B.R. Tao	213
Study on Preparation and Dielectric Properties of Nano Ni/SiC Composite Particles H. Xu, G.X. Wang, X.C. Yu and M.S. Cao	218
Pass Design of Finishing Mill Group of Angle Iron and Finite Element Simulation of Rolling Process T.X. Liu, J.J. Zhang and X.Y. Jia	222
Preparing and Ferroelectrical Properties of PZT Nanoparticle Modified PZT Thick Film by Alternately Spinning Technique X.Y. Yang, Q.L. Zhao, D.Q. Zhang, R. Lu, H.M. Liu and M.S. Cao	226
Efficient Photovoltaic Devices Using Zinc Oxide Nanowires Overlaid with Conjugated Polymers X.Z. Zhang, X.G. Jian and L.W. Zu	231
The Chaotic Characteristics of Dynamic System of Cutting Coal and Rock by Pick C.S. Liu, D.G. Li, Y.Y. Zhao and Y. Song	235
Preparation of EPDM Flame-Resistant Cable Materials W.L. Wu and L. Tian	240
Temperature On-Line Measured in Ultrasonic Vibration-Assisted Pelleting Cellulosic Biomass Y.J. Tang, C.M. Chen and G. Wang	245
Research on Magnetic Memory Characteristics of 2.25Cr1Mo Steel under Bend Deformation State F.F. Long and G.Z. Gao	250
Lifetime Prediction of Steam Turbine Components under Multiaxial Thermo-Mechanical Fatigue Loading L. Cui and P. Wang	255
Preparation and Electrochemical Properties of TiN-Nickel-Graphite Composite Anode Materials for Lithium Batteries L.M. Feng, X. Wei and Y. Liu	260
The Synthesis and Characterization of Ba_{0.5}Sr_{0.5}TiO₃ Film Fabricated by Micro Arc Oxidation M. Wang, H.Y. Guo, W.B. Huang and W.F. Li	266
Effect of Burning-Out Materials on the Properties of Synthesized Microporous Mullite Y.B. Bi, H.F. Wang and W. Lu	271
Modal Analysis of Laminated Composite Beams Based on Elastic Wave Theory X.J. Shen, J.X. Lan, X.R. Yang and F. Ji	275
Preparation of Functionalized Hollow ZnS Microspheres and their Analytical Application S.J. Chen, Y.J. Li, R.J. Lü and P. Wang	281
Stress Analysis of Tall Steel Reinforced Concrete Cantilever Beam K.W. Ding and A.Y. Yang	286
Structural Stability Analysis of High-Rise Building Transfer Beam High-Formwork Supporting System J.H. Cui and P. Liu	291
Evaluation of the Grouting Effect of the Change of Grout Hole Spacing in Splitting Grouting for Dams K. Wu and M.Y. Ma	295
Development of a Cold Spraying System for Fabricating Hydroxyapatite Coating L. Zhang, W.T. Zhang, H.Q. Li, W.Q. Geng and Y.J. Bao	300
Simulation for the Bird-Strike Damage of Drone Radome Composite Structure Y.B. He, X.H. Yao, X. Liu and L.F. He	305
Microstructure Properties of Bi_{0.5}Na_{0.5}TiO₃-BaZrO₃ Piezoelectric Ceramics J.S. Lin, T.C. Yu, C.H. Hsu, C.J. Huang and H.W. Yang	310
Dielectric Properties of Sol-Gel Derived MgAl₂O₄ Thin Films C.F. Tseng, C.H. Hsu and C.H. Lai	314
Preparation of a Novel Viscosifier for Drilling Fluid by Sulfonation Technology Based on the Enriched Organic Compounds in TNT Red Water F.F. Wei, Y.H. Zhang and F.Z. Lv	319

Polyaniline/Fluorocarbon Composite Emulsion Coatings for Anticorrosion to Mild Steel Y.F. Li, Z.P. Zeng, D. Wang, X.G. Wu and L.S. Qiang	323
Topology Optimization of Truss-Like Continuum under Stress Constraints by Sequence Linear Program K.M. Zhou and X. Li	327
Hot Deformation Behavior and Microstructure Evolution of a DC Cast Hypereutectic Al-Si Alloy K.Z. He, F.X. Yu, D.Z. Zhao and L. Zuo	332
Synthesis of Self-Stratifying Polyacrylate Latex Containing Silicon Y.F. Li, H.C. Wang, Z.Y. Xiang and X.H. Gao	337
Numerical Simulation and Thermal Factorial Analysis of Pneumatic Drying on Straw Fuel W. Lv, H.W. Sun, X.H. Wang, Y.D. Li, Z.Y. Yao, D.L. Zhang, J.L. Yuan and P. Du	341
Effect of Zirconia, Zirconite and Zircon Mullite Additives on the Properties of Alumina Castable B.Q. Li, Y. Shu, W.B. Dai and J.K. Yu	346
High Ethanol Gas Sensitivity of Nano γ-Fe₂O₃/ZnO Double-Layer Films Prepared by the Screen Printing Technology and the Hydrothermal Method K.J. Huang, S.W. Ma and F.L. Yuan	350
Research of Leaching Alumina and Iron Oxide from Bayer Red Mud R.R. Lu, Y.H. Zhang, F.S. Zhou and X.K. Wang	355
Microstructure Characteristic of Directionally Solidified NTS-09C Alloy J.J. Yu, Y.H. Yang, X.F. Sun, Z.Q. Hu, Q.X. Nie, W.P. Xie and J.H. Wang	360
Preparation of ZnO-Cr₂O₃ Composites by a Sol-Gel Method and their Photocatalytic Activities K.Y. Gu, Z.E. Peng, J.H. Feng and F.Q. Sun	365
Study on UV-Curable Polyester Acrylate/SiO₂ Nanocomposite Resin M.G. Yu, G.X. Chen, Q.F. Chen and W.T. Huang	368
Influence of Ink-Jet Paper Surface Characteristics on Color Reproduction Z.W. Zhu, G.X. Chen, Q.F. Chen and M.G. Yu	373
The Degradation and BMP Release Dynamics of Silica-Based Xerogels Modified by Adding Calcium and Magnesium or Sintering Process X.S. Li, W. Lin and F.L. Xing	378
Research on the Numerical Simulation Technology in the Cutting Process of Aluminum 2024-T3 S.G. Wang, Y.Q. Yu and X.B. Li	383
Binder System Removal from Laminated Boron Carbide Ceramics Y.Y. Liu, Y.J. Qiao, A.D. Liu and Y. Wang	388
Synthesis and Characterization of Polyacrylate Latex Containing Fluorine and Silicon X.H. Gao, Y.F. Li and H.C. Wang	392
Thermopiezoelectric Response of a One-Dimensional Functionally Graded Piezoelectric Medium to a Moving Heat Source - A Review Z.T. Chen, H. Akbarzadeh and H. Babaei	396
An Effective Routing Algorithm for Dynamic Shared Path Protection in ASON L. Du, Y.X. Yan and L.M. Jiang	401

Chapter 4: Engineering Mechanics

UG Software-Based Socket Cover Mold Design and Processing S. Li and M.F. Dong	409
Optimization Design of a Hyperbolic Flexure Hinge Based on its Closed-Form Equations J.F. Hu, X.F. Cui and P. Li	414
Standard Parts of 3D Library Establishing Methods Discussed Based on UG T. Jiang, L.J. Li, R.L. Zhou, J.G. Li and J.S. Lin	419
Modal Analysis of the Gantry Milling and Boring Machine Tool Beam Based on FEM Z.L. Cao, Y. Ding, Q.M. Hu and Q. Guo	424
The Mechanical Structure Design of Behavior Training System Q. Guo, S.G. Wang, X.B. Li and Z.L. Cao	429

Research on Concept System of Mechanical Glide Symmetry Z.Y. Ma	433
Research on Concept System of Rotation-Translation Symmetry in Mechanical Systems Z.Y. Ma	438
Analysis of Key Stresses of Coated Tool in High Speed Cutting Y.Q. Xu, Z.H. Shi, C.H. Guo and J.H. Zhao	442
Research of Chebyshev Equivalent Ripple Approximation Filter Based on DSP L.P. Zhen and S.W. Si	446
Design of the Several Pneumatic Tendon Piston Y.Q. Wang and Y.J. Cai	451
Robust Object Tracking by Particle Filter with Scale Invariant Features M. Xin, S.W. Li and M.H. Zhang	458
System Design of Spindle on High-Precise CNC J.F. Wang, X.F. Du, Q.M. Hu and S.G. Wang	463
Relation between Residual Stresses in TBCs Interface Area with TGO Interface Morphology Z.Y. Han and H. Zhang	469
Influence of Aggregates on Cracking Resistance of Concrete at Early Age B. Chen, J.T. Ding and Y.B. Cai	474
Modeling and Simulation for the Articulated Robotic Arm Test System of the Combination Drive Z.M. Long, S.Q. Guo, G.J. Chen and B.L. Yin	480
The Contact Simulation of CTP Imaging Drum and Plate on ANSYS J.F. Xing, J. Zhang and L.J. He	484

Chapter 5: Control Science

Extending RRT for Robot Motion Planning with SLAM H.Z. Pan and J.X. Zhang	493
A Task of Miniature Mobile Robot Learning for Obstacle Avoidance through Neural Networks J.X. Zhang and H.Z. Pan	498
Urban Oversaturated Traffic Network Control Based on Stability Preference Multi-Objective Compatible Optimization Control J. Chen, Q.S. Hu and X.Y. Sun	503
Application of Configuration Technology in Traffic Light Control System Based on PLC Y.P. Yao, Y. Shi and J.Y. Fei	510
Research on the Control Method of Penetration Depth Based on the Acceleration Data H.S. Cao, B.C. Ma, Y. Zhang, H.S. Zhang and Y.B. Shi	514
Transmission Mode Research on the Joints of a Multi-Legged Walking Robot H.B. Gao, H.C. Zhuang, Z.Q. Deng, L. Ding and Z. Liu	518
Application of Neural Network on Acoustic Signal Identification L.X. Zhang, F.Z. Feng, P.C. Jiang and X.C. Wang	523
Noise Compensation Based Hysteretic Noisy Chaotic Neural Network for Broadcast Scheduling Problem in Wireless Multihop Networks M. Sun, Y. Guo, X.F. Dai and Y.Q. Xu	527
A Novel Chaotic Neural Network with Radial Basis Function and their Application to TSP N. Xu, L.J. Liu and Y.Q. Xu	532
Study on Software Vulnerability Discovering Based on Linux Sequence of System Call C. Wang, G.J. Song and C.L. Zhao	537
Research on Storage Automation Rebuilding of Traditional Warehouse Q.M. Hu, D.S. Li, X.B. Li, J.H. Guo and S.G. Wang	544
The Research of a Multi-Language Supporting Description-Oriented Clustering Algorithm on Meta-Search Engine Result W.L. Ren and L.J. Liu	549
Design and Error Analysis of Tool Checking Instrument on CNC Lathe J.F. Wang, F.J. Wang, X.F. Du and S.G. Wang	554

Implementation of Hierarchical Database Attributes Covering in Multidetector A-R Mining Algorithm	560
S.F. Jiang	
RETRACTED: Towards the Visualization of XML	565
Y.N. Guo	
An Efficient Algorithm for Mining Frequent Closed Itemsets over Data Stream	570
G.D. Li and K.W. Xia	
A Recommendation System Framework Based on Web Mining	576
Z.J. Yang and K.W. Xia	
Performance Analysis of a Simple Power Saving Scheme for Energy Efficient Ethernet	583
S.F. Jin, R.Y. Fan and L. Chen	
Performance Evaluation of Active Control Systems in Diffuse Fields	587
W.K. Tseng	
An Appraisal System for Bilateral Vehicle Accident	592
W.K. Tseng and C.S. Lu	
RETRACTED: Improving Web Browsers Using Bayesian Theory	597
Z. Chen	
RETRACTED: Deconstructing Forward-Error Correction	602
D.J. Fang	
Global-Based Salient Region Detection for Microscopic Image	607
X.J. Liu, C. Bai and Y.G. Wang	
A Global Stereo Matching Algorithm Based on Adaptive Support-Weight and Graph Cut	612
G.H. Yu, J.M. Liu, X.S. Xie and J.G. Zeng	
Research on Limitations for Stabilizability of Networked Controlled Systems	617
S.F. Wan and Z.D. Lu	
Fuzzy Control of Hydraulic Dynamometer Water Pressure Based on Visual C++	622
C.Z. Li and Y. Lei	
Chilled Water Temperature Control of HVAC System Using GPC Based Controller	626
Q. Ma, J.G. Lu, Q.M. Yang, J.S. Chen and Y.X. Sun	
Application of Intelligence Fusion Algorithm in Path Optimization Problem	632
S.G. Wang, Y.J. Wang, G.X. Wu and Y.L. Fu	
Knowledge Structure of TRIZ Case Based on Situational Analogy	637
S. Liu	
Wireless Communication System Development of Mobile Robot Based on Embedded Technology	641
X.J. Liu	
Design of the Comprehensive Experimental Platform for Testing Technology Based on Virtual Instrument	646
G.J. Chen, B.B. Yan, H.Y. Chen and W. Guo	

Chapter 6: Other Related Topics

A Novel Edge Detection Algorithm for Medical Image	653
Z.C. Ma and X.M. Ning	
Research and Implementation on Face Recognition Algorithm	657
X.M. Ning and Y. Shi	
Method of Fault Character Extraction for Diesel Engine Based on Multivariate Time Series	661
Y. Liu, W. Yuan and X.B. Li	
The Preparation of a Novel Environmentally Friendly Green Antimicrobial Packaging Film	665
J.F. Duan, H. Zhao, X.J. Zhang, Z.Y. Li, L.L. Shi and G.J. Zhao	
A Synthetic Encryption Scheme on Attribute Granularity in the ODB Model	668
N. Wang, H.C. Zhuang and S. Zhuang	
Study on Software Vulnerability Dynamic Discovering System	673
G.J. Song, C.L. Zhao and M. Li	
Restudy on the Sampling Distribution of Coefficient of Variation for a Normal Population	678
J.M. Xu and L. Bai	

A Fast Orthoimage Mosaic Method for Application of Grid Z.G. Li, B. Wang, Y.S. Zhang, X.C. Tong, W.C. Meng and Q.F. Bao	685
Selecting Problem from Design Contradiction Set Found in QFD S. Liu and D.Y. Shi	690
A Decision Making Approach for Selecting Inventive Principles from Contradiction Matrix S. Liu	695
Dancing Exercising Effect on the Middle-Aged Females' Healthiness: A Pilot Study H. Zhang	700
Implementation of Bar Chart Plotting Based on IDL Object Graphics R.H. Tao, B. Chen and X.L. Chen	703
Product Lifecycle Oriented Domain Specific Model for Knowledge Resource Allocation Service L. Cao, H.J. Deng and Y. Xu	707
A Novel Surface Reconstruction Framework from Point Clouds without Normal Y.J. Liu, Y.D. Zhang and J.X. Jiang	711
Groove Optimization and Finite Element Analysis for Different Groove Milling Insert Y.N. Cheng, L.Q. Wang, Z.J. Li, J. Gao and X.C. Ao	716
Modelling Material Behavior of Austenitic Stainless Steel under Monotonic and Cyclic Loadings R.S. Kumar, P. Chellapandi and C.L. Rao	721
Anisotropic Behaviour of AZ31B Sheet at High Strain Rates I.R. Ahmad and D.W. Shu	726