

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Manufacturing Technology and Processes, Design, Modelling, Simulation and Mechanical Engineering

Simulation of Microbubbles Drag Reduction on Nonsmooth Surface with Hydrophobic Property Y.L. Hu, Z. Li and Z. Xu	3
The Research on Rake-Car's Driving System of Ore Reclaimer Y.H. Li, K.S. Chen, J.H. Deng and X.Y. Chen	10
The Sequence Injection Analysis of Automobile Air Inlet Grille Plastic Part J.Z. Chu	14
Research on the Simulation of Self-Synchronization of Dual Mass for Vibrating System with Two-Motor Drives D. Yang, Y. Li, H. Li and B.C. Wen	18
Current Situation of and Development Strategy for Non-Road Multi-Cylinder Diesel Engine with a Small Power J.L. Liu, S.J. Liu and J. Wang	22
Effect of End of Injection Angle on Performance and Emission Formation for a Gasoline Engine H.F. Chang, W.C. Cheng and F.T. Weng	27
Mechanical Performance Simulation Model Based on PDM X.W. Zeng, C. Zeng and B. Han	32
Hierarchical Pipe System Disassembly Sequence Planning by Dynamic Self-Adaptive Tree Based Motion Planning B.X. Zhao, J.H. Liu, R.X. Ning and M. Liu	36
Development of Hydraulic Oil-Fired Deicing System for Aircraft Deicing Vehicle K. Deng and J.L. Wang	43
Architecture Design and Realization for Virtual Manufacturing Oriented CAPP System X.L. Sui, Q. Wang, R. Yang and Q. Wang	47
AGV Scheduling Optimizing Research of Collaborative Manufacturing System Based on Improved Genetic Algorithm N.F. Ren, D. Liu, Y. Zhao and X.B. Ge	55
Aerodynamic Characteristics Analysis of High-Speed Train on Cutting under Crosswinds K. Ye and R.X. Li	62
Investigation on the Simulation of Nonlinear Switch Load in Three Phase Coordinate System C.W. Huang and S.C. Chen	68
Research of Chaotic Phenomenon for a Synchronous Reluctance Motor W.B. Lin, H.K. Chiang and C.Y. Chang	73
CMMI Based System Software Process for Industrial Manufacturing System H.Y. Jeong, Y.H. Kim and Y.G. Kim	77
A Knowledge Based Approach for Product Variant Design Y.D. Wu and T.H. Zhang	81
The Dynamic Software Development Process for Industrial Manufacturing System H.Y. Jeong, J.H. Park and H.G. Choi	85
Developing an Audio News System Based on Android B.C. Zhong and Y.J. Shen	89
Dynamics Analysis and Power Allocation Strategy Research for a New Hybrid Electric Urban Rail Vehicle Y.Q. Chen, J.Y. Zhang, X.X. Chen and M. Li	93
Multidisciplinary Optimization of Crank-Link Mechanism of HCPE Based on iSIGHT Y. Liu, H.X. Zhang and K. Yin	99

Experimental Study on Combustor Outlet Temperature Field of Gas Turbine K. Liu	104
Research on Low Voltage Ride-Through Technique in DD-PMSG Wind Power Generator System Y.X. Li, P.H. Liu and J.L. Zhang	108
3D Reconstruction Method of Bent Tube with NURBS Curve T. Zhang, J.H. Liu, C.T. Tang and S.L. Liu	112
Comparison of LES and RANS Models in Compartment Fires Simulation P. Liu, Y. Gao and S.S. Li	119
WSN System Based on Weight Adjust for Machinery Manufacturing Machine Monitoring W.T. Sung, C.C. Hsu and J.H. Chen	124
Blanking of Plastic Forming Simulation and Analysis Based on the DEFORM W.S. Wang, Y. Wang and Q.P. Wang	128
Study on Simulation of Ocean Wave Generation System Based on SIMULINK S.M. Wang and J. He	133
Single-Row Facility Layout Based on Manufacturing Costs X.H. Suo and X. Chi	140
Ship Cabin Layout Optimization Design Based on the Improved Genetic Algorithm Method Y.L. Wang, C. Wang and Y. Lin	146
Experiment Research and Model on Drilling Force of CFRP S.N. Liu, F. Gao, X.T. Tian and B. Li	150
Retrieval and Clustering for Multiple Disciplines Design Knowledge Based on Ontology and Semantic G.H. Zhang and Y.S. Li	155
The Simulation Study for Energy-Absorbing Properties of the Railway Vehicle's Anti-Climber with Different Vertical Offsets W.B. Wang, J.J. Jiang and Q. Wang	160
The Study of Marine Gas Turbine Power System Simulation Software Development L. Cao, S.Y. Li and Z.T. Wang	166
Fault Tree Analysis of Vehicle Engine Lubricating Oil's Failure Q.L. Han and X. Gao	172
Instantaneous Storage Availability Model: Considering Spare Parts Degradation before Replacement S.M. Fei and L. Huo	176
Experimental Research on Parameters Identification of Dynamic Characteristic for Parallel Machine Tool C.X. Zhu, Z.W. Chen, B. Liu and J. Wang	181
Experimental Study of Atomization Characteristic of Air Blast Atomizer K. Liu and L.Y. Sun	185
Short-Term Wind Speed Forecasting Based on Optimized Support Vector Machine Y. Sun, L.L. Li, X.S. Huang and C.Y. Duan	189
Simulation of Toothpaste Flavor Transportation in Oral and Nasal Cavity during Respiration G. Zhang, H.C. Yang and W.D. Wei	195
Theory and Technique on Design of Extended Range in Solar Powered Intellective Vehicles D.Y. Chen, H.P. Wu, J.C. Bao, L.F. Wang, Z.B. Gu and L.L. Jing	199
A CO₂ Laser Camera K.C. Lee, C.C. Hwu and G. Thomson	203
The Simulation Analysis of a Micro Electromagnetic Harvester Based on Vibration Energy W.R. Nie and W.D. Ma	207
Optimal Channel Choice under Stochastic Demand with Multiplicative and Additive Shocks J.L. Ding and X.D. Liu	213
Study of V/H/J of Pointing-Lapping for Hypoid Gears H.R. Yan and M.X. Xiao	217
Finite Element Analysis and Optimal Design of Frictional Roller Q.R. Meng, Z.P. Hu and J. Quan	221

Optimization of Loss Models for Centrifugal Compressor Performance Prediction Based on Numerical Analysis Results B. Qi, S.J. Dong and J. Wang	225
Conversion CL Data to NC Data Using an Instinctive Method for Non-Orthogonal Table-Type 5 Axis Machines T.K. Lin and A.C. Lin	232
The Evaluation for Technological Innovation Capability during Product Development of Auto Parts Enterprises J. Chen, T. Wu and H. Huang	236
Finite Element Simulation of the Artificial Knee-Joints of Similar Type Pairing L. Liu, L. Wei and Z.H. Liu	243
Modeling Methods of Cylindrical Surface Form Error by Precision Turning for Assembly X. Jin, X. Zhang, Z.J. Zhang, T.Y. Zhang and J.F. Chen	248
Analysis on Milling Force Based on AdvantEdge FEM X.L. Sui, R. Yang, Q. Wang and X.L. Zhao	253
Discussion on Modeling Approach of 3-Dimensional Models Based on Web3D X.P. Yang, W.P. Hu and J.J. Wang	261
Simulation of Two Dimensional Nanoscale Cutting Copper by Quasi-Steady Molecular Statics Method Z.C. Lin and W.F. Huang	265
Research on the Starting Characteristics of the Linear Engine System Using the Eccentric-Slider Starting System Z.L. Yin, Z. Wang, H.C. Li, J. Deng and T. Zhang	269
New Collaboration between Engineer and Product Feature Generation in Industrial PLM Systems L. Horváth and I.J. Rudas	273
Vertical Tail Topology Optimization Design Based on the Variable Density Method with Constraint Factor F.S. Qiu, W.Q. Ji and H.C. Xu	280
Structural Drag Reduction in Taylor-Couette Flow Y.B. Xue, Z.Q. Yao and C.X. Li	285
Simulation Research on Vibration of Valve Mechanism for Diesel Engine Based on AMESim J.B. Ding	290
Simulation of Deployment Process of Junction Box F.Y. Xia, D.J. Li and J.Y. Zhang	294
The Research and Development of VB and Solidworks-Based 3D Fixture Component Library T. Chen, X.X. Yan and Z.H. Yu	301
Design and Optimization of Electromagnetic Structures for Linear ISG Used in Range-Extended Electric Vehicle Z. Wang, C.L. Sun, Z.L. Yin, J. Deng and T. Zhang	306
Multiple Momentum Term BP Algorithm and its Application in Hot Rolling AGC System Y. Du and Y. Wang	314
Variant Design Method of Series Products Based on Skeleton B.Z. Yang and C.N. Li	318
Construction of the Information Model of Ancient Architecture Components Based on BIM - A Case Study of Bracket Sets R. Wang, W.X. Sun and X. Zhang	323
The Research on Traction Simulation for a New Hybrid Power Train G.L. Wang, J.Y. Zhang, X.H. Xu and M. Li	327
Design of Hybrid Electric Bus on Regenerative Braking System J.J. Chen, L.X. Zhou, X.B. Ning and C.L. Zhao	333
Design of 3D Modeling for the New Wave Power Generation Device and Test S.M. Wang, Y.N. Wang and Y. Liu	338
The Rolling Bearing Fault Diagnosis Research Based on Improved Hilbert-Huang Transformation Z. Wan, X.Z. Liao, X. Xiong and J.C. Han	344

Chapter 2: Robotic, Automation, Sensors, Detection and Monitoring Technologies

Biomimically Leg-Kinematics on Walking Robots C.K. Wang	353
The Design and Implementation of Hexa-Rotor Aerial Robot J.T. Zou, G.W. Huang and C.Y. Hsu	357
A Low-Cost Stewart Platform for a Radio Telescope F.J. van Vuuren, Y.S. Kim and K. Schreve	362
Electro-Mechanical Maximum Power Point Tracking of Photovoltaic System D. Holtzhausen and Y.S. Kim	371
Analysis on Energy Efficiency of a Rolling-Jumping Robot T.T. Ho and S.Y. Lee	378
Implementation of a High-Precision Ultrasonic Rain Gauge Z.W. Xu and G.L. Zheng	382
Development of the Escaping Programming System for Fire Environment K.L. Su, B.Y. Li and J.D. Fong	389
Design of Small Laser Tracking System Based on Four-Quadrant Detector W. Zhang, H. Zhang, B. Liu and J. Xu	393
Design and Implementation Based on ADXL213 of the Digital Inclinometer H.P. Bao, Y.X. Hu, M. Lv and J. Zhang	400
Adaptive Interacting Multiple Model Unscented Particle Filter for Dynamic Acoustic Array Y.L. Liu and X.H. Gu	407
Exquisite Design of a CCD Analog Front End Module W.T. Huang, C.N. Hung, Y.M. Yu, Q.H. Wu and C.C. Tuan	414
Approximate Analytical Solutions of the Pull-In Behavior of an Electrostatically Actuated Clamped-Clamped Micro-Beam S.L. Kong	419
Three-Dimensional Structure Trajectory Guiding Scan and Points Cloud Registration Y. Cai	423
Digital Closed Loop Fiber-Optic Current Sensor Based on Integrated Optical Phase Modulator X.X. Wang, X.C. Wang and X.J. Feng	427
Dynamic Analysis of Eyeball Mechanism on Android Robots C.K. Wang	432
Vision Sensor Application for Intelligent Polishing Robotic Cell R. Zamri, N.B. Ismail, B.T.H.T. Baharudin, A.H.M. Ariff and A.S. Prabuwno	436
Development of Intelligent Fire Detection Module Using Optic-Sensors Y.C. Lin, K.L. Su and C.Y. Chung	440
Highway Mechanical and Electrical Engineering Quality Evaluation Methods Discussion Y.X. Liu and X. Jia	444
Motion Planning of Lineclimber, a Robot for Inspection of Transmission Lines L.J. Fang, G.H. Tao and Y.L. Wei	449
Design of Temperature and Humidity Monitoring System for Marine Working Platform Z.Y. Wu, S. Zhang and T. Gao	453
Lower Distortion in Trajectory Planning for a Rigid-Flexible Manipulator Based on PSO Algorithm H.B. Yin, N.C. Jiang, J.L. Xu and F.Y. Huang	458
Shielding Method for the Capacitive Touch-Sensor C.C. Hwu and J.L. Hsu	464
Study on Fault-Tolerant Method of Mobile Robot Integrated Navigation J. Zeng, X.S. Guo and G.L. Zhang	468
A Study of Robot Car Positioning System in Small Area Based on Optical Mouse Sensor T.H. Su and Y.C. Chi	475
Modeling and Development of a Robotized Hand-Hold Bone Cutting Device G. Boiadjev, V. Kotev, K. Delchev and T. Boiadjev	479

Research on Real-Time Vision Detection Method for Sanitary Labels C. Luo, L. Song, M.R. Zhao, Y.C. Lin and J. Li	484
Monitoring System with Wireless Sensor Network: A Survey H.Y. Jeong and B.H. Hong	490
The Indoor Automatic Guided Vehicle with an IR Positioning and Low-Cost Inertial Navigation System M.F. Lu, B.C. Liu, J.P. Wu, F.K. Hsu and W.T. Huang	494
Analysis of Underwater Wet Welding Seam Forming Based on Arc Sensor Information B. Chen, H.T. Zhang and J.C. Feng	500
Research of Facular Energy Distribution for Pulsed Laser Tracking System J. Xu, H. Zhang, J.T. Sun and Y.B. Cui	504
Robot Fish with Novel Wire-Driven Continuum Flapping Propulsor Z. Li, R. Du, Y. Zhang and H. Li	510
The Summary on Robot Moving Platform D.Y. Zhu, M.L. Zhang and R. Li	515
Target Searching of Mobile Robots Using Improved A* Searching Algorithm C.H. Chang, J.T. Zou and K.L. Su	519
Fast and Accurate Event Detection Based on Wireless Sensor Networks Using Fuzzy Logic Method W.T. Sung and J.H. Chen	523
The Unbalance Current Effect Caused by Non-Uniform Inductors in the Multi Phase Converter with a Single Current Sensor C.W. Hung and J.H. Chen	527
The Design of Permanent Magnetic Adhesion System for Wall-Climbing Robot Y. Chen and C.M. Wang	531
Comparison of the On-Line Power Detection and Prediction System J.H. Guo, K.L. Su and Y.L. Liao	537
The Modeling and Simulation of Hexa-Rotor Aerial Robot J.T. Zou, G.W. Huang and R.F. Zheng	542
Application of Conductive Rubber Filled by Carbon Black for 3-D Force Measurement S.H. Li, Y.J. Ge, Y. Huang, Y.B. Wang, H.B. Cao and J.X. Ding	547
An On-Line Monitoring System of Temperature Field in Tire D.C. Li, J.H. Wang and Y.S. Yang	551
The Best Path Planning of Home Care Robot by Building a Conceptual CBR Framework W.H. Lu, W.Y. Tao and J.G. Wei	556
Design and Analysis of a Non-Vision-Based System for Detecting Unstable Gait C.H. Chen, Y.M. Yu, S.Y. Tan, H.L. Tseng and W.T. Huang	561
Application of Mobile Robot System for Cell Production K. Matsuda and H. Ishihara	566
Implementation of Sun Tracking for Solar Cell with Maximum Power Point Tracking S. Chen and C.C. Chen	572
Construct Small-Scale Vertical Axis Wind Turbine Monitoring System by Wireless Sensor Networks W.T. Sung and J.H. Chen	576
Battlefield Awareness Network Research Based on Intelligence Role Division and Wireless Sensor Network T. Li, P.Y. Liu and Y. Ke	580
Design and Fabrication of Micro-Coil Sensor Array by Using UV-LIGA Process Z.X. Xu and F.J. Jiang	585
Monitoring of Human Driver Behavior by Vehicle Trajectory Reconstruction for Transportation Safety Management G.S. Heo, S.R. Lee, C.W. Park, M.K. Kwak and C.Y. Lee	589
Structural Optimization of MEMS-Based Hydrophones with Perforated Active Membrane S.H. Chang, I. Zhilyaev, M. Shevtsova, P.C. Wu, Y.T. Cheng and J.K. Wu	597
Fault Detection of Robot Control Systems Based on Available Wireless Network Measurements J. Zhang, M. Lv, P.F. Guo, L. He and Y.M. Bo	604

The Research And Design of Wireless Coal Mine Safety Network Monitoring System On The Basis of ZigBee J. Qu	611
Wireless Power and Information Synchronous Transmission Technology Based on Magnetic Resonance W.X. Li, H. Zhang and C.S. Li	615
 Chapter 3: Development Elecrtionics, Networks, Information Technology and Algorithms in Systems Applications	
A New Adaptive Square-Root Unscented Kalman Filter for Nonlinear Systems Y. Zhou, Y.F. Zhang and J.Z. Zhang	623
Near-Optimality in Stochastic Control of an Capital Accumulation System with Markovian Switching and Poisson Jumps Y.T. Liu and Q.M. Zhang	627
The Study on the Calculation Method of Bin Actual Coverage Based on the GPU Acceleration Y. Li	631
Fault Diagnosis Method of Time Domain and Time-Frequency Domain Based on Information Fusion J. Zhao, J. Wang and M. Shang	635
Comprehensive Evaluation of Regional Grid Development Level of China under the Smart Grid Construction D.X. Niu, J.P. Liu, T. Liu and H.C. Guo	640
A Mixed-Integer Memetic Algorithm Applied to Batch Process Optimization Y.C. Lin	645
Method of Data Transmission for Penetration Information Based on Flexible Connecting Cable S.Z. Li, Y. Zhang and X.B. Zhang	649
A Method to Ascertain Parameters of Samples and their Feature Weights in the Weighted Fuzzy Clustering W.D. Wen, Z.L. Liu and H. Li	653
The Research of Particle Swarm Algorithm Based on Heuristic Rules for the Layout of Airplane Equipment Cabin X.J. Han, X.F. Ding and C. Xiao	659
The Web Service Framework for SaaS in Cloud Computing Environment H.Y. Jeong and H.G. Choi	664
Porting RT-Thread to Cortex-M3 Processor Y.S. Sun and B. Gui	668
Identification of Precision Positioning Stage Based on ARX Model J.S. Wang, M.C. Feng and C.A. Zhu	672
A New Approach to Flat Form Error and Contact Error Analysis Q. Liu, W.R. Wu, Z.J. Zhang and X. Jin	676
Hydraulic Balance Optimization Calculation and Experimental Research on Model of Fluid Network System C.Y. Lu, J.F. Ma, X.H. Wang and X.R. Shen	681
The Identification of Quality Attributes for SaaS in Cloud Computing H.Y. Jeong and B.H. Hong	689
Design and Implementation of Virtual Maintenance Training System Based on Ngrain Aviation Equipment H.P. Li, S. Li, Y.J. Lv, Y.D. Wang and J.Q. Lin	693
Simulation Test System of CCD Signal Processor Based on FPGA D. Zhang and D.B. Liu	698
The Supplier Management Problems and Analyses of The Mechatronic Manufacturing Enterprises J.H. Tan and W. Zeng	703

Optimization of Flapper Compliant Mechanism Using Fuzzy Logic Combined Taguchi Method	
T.P. Dao and S.C. Huang	710
Fault Diagnosis Method of Rolling Bearing Based on Ensemble Local Mean Decomposition and Neural Network	
X.Z. Liao, Z. Wan, Y.Y. Li and L. Cheng	714
A Robust P300-Speller Brain-Computer Interface Based on Kernel PCA	
Y.H. Liu, J.T. Weng, H.P. Huang and J.T. Teng	721
A Novel Improved Algorithm of Radial Feature Code Extraction	
Y.R. Du and L.H. Chen	725
Embedded Machine Vision System Design Based on Davinci DM355	
H.R. Ma, J.X. Cai and R.H. Yu	729
A Novel Fuzzy Clustering Method with No Outliers Influence	
L.J. Kao and Y.P. Huang	735
Dynamic License Plate Localization for Vehicles on Multi-lane Using Single Camera	
H.L. Tseng, C.N. Hung, C.C. Tuan, Y.R. Wen, W.T. Huang and C.H. Chen	740
Application of Weighted Projection PM Algorithm in Estimation of DOA	
W.W. Hu, C.M. Wang and A.J. Zhang	746

Chapter 4: Mechanics, Thermal and Dynamics Systems, Vibration, Noise, Applied Mechanics and Numerical Simulation Applications

Research on Wavelet Compression and Reconstruction of Wind Turbine Vibration Signal	
X.Y. Gan and Z.D. Huang	753
System-Reliability Evaluation Based on Series Chain Model under Exponential Distribution	
R.X. Gu, X.B. Ma and Y. Zhao	758
A New Method for the Eigenvalue Problem of Structures with Uncertain-but-Non-Random Parameters	
J.J. Zhang, B. Fang, L.J. Tan, W.H. Huang and T. Lin	765
Numerical Investigation on the Effects of Sample Wire Motion in a Tube Furnace	
T.A. Cheema, H. Ali, K.W. Kim, C.Y. Lee, M.K. Kwak and C.W. Park	771
Application of Ghost Body-Cell Method on Adaptively Refined Cartesian Grid in Computational Fluid Dynamics	
Y.Q. Han, S.X. Cui, Y. Wang and G. Gao	775
The Study of Blockages Effect at Leading Edge on Rectangular Cavity in Subsonic Flow Using Particle Image Velocimetry (PIV)	
A.N.M. Annuar, A.S.M. Rafie and M.T.H. Sultan	781
Axial Deformation of Ball Screw Considering Contact Angle	
L. Liu, Z.X. He and X.C. Zhang	785
A Study of Experimental Method for Mechanical Properties of Solid Propellant under Hydrostatic Compressive Loading	
J.B. Zhang, Y.T. Ju and C.S. Zhou	789
Thermal Analysis of Heating System in Thermosonic Bonding Process	
L.F. Zhang, X.L. Li, J.W. Fang, J.D. Cai, L.S. Nian and W.J. Luo	794
Analysis of Incidence of Rail Failure and Track Composite Irregularity State Forecast	
H.B. Zhai and C.L. Jia	802
Symmetrical Dynamic Propagation Problems of Mode III Interface Crack	
N.C. Lü, Y.H. Cheng and Y.T. Wang	806
Applications of Statistical Energy Analysis in Influencing Factors Analysis of Aircraft Vibro-Acoustic Response Characteristics	
G.J. Zhang and Y.J. Yan	810
Finite Proximate Method for Simulating Flood Propagation in Complicated River Channel and Flood Detention Area	
T.R. Li, Z.Y. Bai, X.C. Peng and T. He	814
Tool Orientation Planning for Four-Axis CNC Machines	
T.K. Lin and A.C. Lin	821
Optimum Design of Rubber Isolator Based on Nonlinear Finite Element Method	
W.X. Liu and Q.D. Zhou	825

Influence of Liquid Paraffins in Crude Oil on the Friction and Wear Behaviors of the Progressing Cavity Pump's Stator Rubber S.J. Wang, H. Lin and X.R. Lv	833
The Beauty of Molecule Motion A.P. Zeng	837
Short-Term Wind Speed Forecasting by Using Chaotic Theory and SVM C.H. Zhu, L.L. Li, J.H. Li and J.S. Gao	842
A Research on Gaussian Process Based Feature Extraction Z.H. Sun and O. Osman	848
An Experiment Based Reach Model for Fighter Cockpit Design L.J. Wang, X.H. Gao and W. Xiang	853
Using DOProC Method in Structural Reliability Assessment M. Krejsa, P. Janas and R. Čajka	860
Fatigue Analysis for the Aircraft Landing Gear Connecting Parts J.Y. Li and Z.B. Yang	870
Research on the Pressure-Measuring Uncertainty of Standard Internal Crusher Gauge C.R. Zhao, D.R. Kong, F. Wang, L.X. Yang and L.P. Li	874
Mechanical Property Parameters Prediction of Tube Based on RBF Neural Network M.H. Jia, C.T. Tang, J.H. Liu and T. Zhang	882
Size Effect on Pull-In Behaviors of Electrostatically Actuated Cantilever Micro-Beams S.L. Kong	889
Numerical Analysis of Bubble Motion Characteristics within Vertical Rectangular Micro Channels Y. Chen, Y. Lu and S.S. Zhang	893
The Noise Source Localization of Industrial Sewing Machine by NAH Method Z.W. Li, T. Feng, Z.G. Huang, B. Su, R. Li, Y.J. Li and Y. Wu	898
Structural Design of Primary Mirror Subassembly for Space Telescope H. Xu	903
Finite Element Numerical Simulation Computation of Kitchen Units under the Condition of Stacking and Horizontal Controlled Impact S.L. Sheng, H. Yang, Z.S. Gong, D.Z. Zheng and F. Wang	907
PZT Acoustic Energy Harvester Arrays with Dual Top Electrodes Y. Uchida, S. Iizumi, S. Tomioka, K. Tsujimoto, K. Tomii, T. Matsuda, S. Hagiwara, S. Miyake and Y. Nishioka	912
Real-Time Monitoring for Vehicle Brake Temperature Rise in Continuous Long Downhill W.L. Li, W. Zhou, L. Gao and Y. Chen	916
Multi-Physical Analysis of Eddy Current Damper (ECD) for Reaction Force Compensation Device H.J. Ahn, Y.H. You, K.R. Kim, J.H. Kwon, K.J. Cho and D.S. Choi	920
Mobility Deposition Effect of Aerosol Particles in the Boundary Layer M.C. Chiou and W.Z. Hsu	924
Research on the Theories of Self-Synchronization of Dual Mass for Vibrating System with Two-Motor Drives D. Yang, Y. Li, H. Li and B.C. Wen	928
Study of Thermal Management System for a Series-Parallel Hybrid Electric Vehicle Using Numerical Simulation X.X. Sun, Y.C. Wang, C.M. Shao, Y.F. Wu and G.Z. Wang	932
Investigation of the Magnetic Signals for the Ferromagnetic Components after Tensile Fatigue under Weak Magnetic Excitation Y. Qiu, W.M. Zhang, W.Q. Zeng and Z.C. Qiu	938
The Over-Range Collocation Method for Nonlinear Analyses Y.M. Guo and S. Kamitani	942
Foundation Pit Excavation on Surrounding Buildings Effect Analysis Q. Zhang, H.M. Cheng, Y. Gui and J. Cao	950
Experimental Estimation of Shear Wave Velocity Profile Using MASW Method and Inversion Technique P.H. Tsai and C.C. Lou	955

Rough Road Identification Method Based on Engine Speed Variation Rate Y.L. Lei, S.B. Li and H.B. Liu	959
Independent Velocity Measurement of Small Underwater High-Speed Moving Body Based on External Turbine Y. Chen, H. Zhang, Q. Jiang and D.Z. Shen	967
Harmonic Analysis of the High-Speed Winder with Unbalance Masses X. Hou, H. Zhang and S.Z. Wang	974
Analysis of Modal Properties of Spur Planetary Gears J.G. Wang, Y. Wang and Z.P. Huo	978
The Field Inspection and Research of Related Problems about a Kind of Non-API Thread Connections J. Wu, Z.Y. Wei and X.L. Han	982
Analysis of Bifurcations for a Functionally Graded Materials Plate W.Q. Yu	988
Research on the Random Vibration Cumulative Fatigue Damage Life Based on the Finite Element Analysis C.C. Wang, C.R. Li and T. Ma	992
Simulation Research on Motion Law of Arresting Hook during Landing Q.D. Zhu, X. Meng and Z. Zhang	997
Novel Equivalent Circuit Model for Spiral Inductors on Lossy Silicon Substrate J. Zou and Z.N. Tang	1003
Analysis for the Syngas Composition of Gasifier S.H. Chen, K.C. Lee, K.C. Li and Y.S. Chang	1008
Design of Amplifying Circuit for Receiving Weak Signal for Laser Fuze B.T. Zha, H. Zhang, J.H. Wang and J. Guo	1012
Determination of Stator Temperature Distribution for a Synchronous Machine B.Q. Yuan and X.Z. Wu	1018
Research on Heat Transfer Regulation of Power-Split Hybrid Electric Vehicle under Silent Watch Operation X.X. Sun, Y.C. Wang, Y.F. Wu, J.Y. Gao and F.L. Zhong	1022
Wind Tunnel Experiment and Numerical Simulation of the Pressure Distribution on a Sedan Exterior Surface B. Yang, L.N. Huang, D.J. Wu and X.J. Hu	1027
Aerodynamic Design and Numerical Simulation Analysis of a Passenger Car's Defrosting Duct B. Yang, L.N. Huang and F.T. Ren	1032
The Research of Impeller Used in Wave Energy Power Generate Equipment S.M. Wang, L.L. Jiang and Q.S. Hu	1036
Free Torsional Vibration Characteristics of a Closed-Form Planetary Gear Set Q.L. Huang, Y. Wang, Z.P. Huo, J.G. Wang and R.Y. Sheng	1042
Experimental Study of Capillary Radiant Cooling System with Parameters Changing Y.H. Wang	1048
The Influence of Wheel Rotating to FSAE Racing Car Aerodynamic Characteristics S.X. Shao, Y.C. Zhang, J. Zhao and W.H. Tang	1054
Spectral Clustering Algorithm of Uncertain Objects T. He	1058
An Improved Single-Phase Free-Surface Lattice Boltzmann Model with Surface Tension and Wall Adhesion Y. Yu, L. Chen, J.H. Lu and G.X. Hou	1062
The Fatigue Simulation Analysis of Customized Implanted Titanium Plate for Human Mandible Bone Reconstruction W.Z. Wu, L. Zhang, J. Zhao, X.T. Qu, D. Zhao, Y. Zhang and W.S. Wang	1067
Influence Analysis of Blade Fracture on Hydrodynamic Performance of Ducted Propellers Based on CFD L.J. Ou, D.Y. Li and W. Zhang	1071
Experimental Study on the Durability Performance of PPS Filter Media N. Mao, D.Q. Chang, J.X. Liu and X. Sun	1077

Settlement Deformation Evaluation Method of High-Speed Railway Cutting under Rebound Effect	
L.F. Jiang, S.D. Xiong, T.B. Lei and X.C. Xu	1081
Effect of Sample Size of Needle Felt on its Strength Measurement	
N. Mao, D.Q. Chang, J.X. Liu and X. Sun	1085
Effect of Bolt Hole Residual Stresses on Fatigue Performance of Truck Frame Rail Structures	
K. Chinnaraj, P.M. Sathya and R.C. Lakshmana	1089
Study on the Temperature Field of U75V Rail in the Cooling Process Based on ANSYS	
H. Jia, S.Y. Yuan, H. Liu, S.H. Tong, L.H. Fu and H. Song	1099
Shaft Vibration Signal Denoising Based on Wavelet Analysis	
T.Q. Sun, R. Liu and Z.Q. Qiu	1110
XFEM Based Analysis of the Crack Tip Stress Fields on a Three-Point Bending Specimen	
D.L. Ren, W. Jiang and J.S. Yang	1114
P-SS Algorithm for Solving the Eigenvalue Problem of Finite Element System	
J.F. Wang and W.G. An	1118
Comparative Study of the Flow in a Differentially Heated Cavity Using Thermal Lattice Boltzmann Method	
W.S. Chen, D.B. Dong, Z.X. Hou and S.J. Shi	1122
Accuracy of Stress Analysis Using Numerical Integration of Elastic Half-Space	
R. Čajka	1127
Continuum Aeroelastic Model and Flutter Analysis for a Variable-Span Morphing Wing	
R. Huang, Z.P. Qiu and X.J. Wang	1136
Meshing Method of Calculating Water-Entry Flow Field at High Speed	
Z. Zhu, X.L. Yuan, Y.D. Wang and Y.J. Yan	1144
Design Method of Dynamic Similarity of the Rotor-Bearing System	
Z. Luo, J.Z. Li, Y.L. Yan and Q.K. Han	1148
Influence of Passive Joint Damping on Modal Space Decoupling for a Class of Symmetric Spatial Parallel Mechanisms	
T.X. Tian, H.Z. Jiang, J.F. He and Z.Z. Tong	1152
Size Effect on Buckling Behaviors of Gradient Elastic Slender Columns	
S.L. Kong	1158
A Comparison of Two Accelerated Degradation Models with Temperature and Humidity as Accelerating Stresses	
W.Y. Wang, X.B. Ma, S.H. Chang and R. Kang	1162
Research on Thermal Degradation Kinetics of Polyphenylene Sulfide Filter Media	
D.Q. Chang, J.X. Liu, N. Mao and B.Z. Chen	1171
Sensitivity and Linearity Measuring of Micro-Gyroscope Based on Dynamic Analysis	
H.G. Sun and Y. Zhou	1175
The Research on the Influences of Exhaust Noise and Engine Performances by Using Cracking Sound Attenuation Coupler	
J.J. Cui, Y.F. Xu and J.R. Sun	1181
Study on Viscoelastic Plastic Damage Model for Mica-Quartzose Schist	
W.L. Chen and F.S. Zhao	1186
Magnetism and Solid Coupling Vibration of Stator Double-Shell System of Asynchronous Machine	
B.Z. Li and J.J. Qiu	1193
Study and Simulation of Dead-Time Compensation for the Voltage Source SVPWM Inverter	
S.C. Chen, H.Y. He, C. Li and C.H. Wang	1200
Existence of Solutions for Elliptic Equation with Critical Sobolev Exponent	
Z.H. Xiu	1205
Design of Improved Disturbance Observer for Stabilized Platform Servo System	
J.S. Lu, C.M. Wang, A.J. Zhang and X.F. Meng	1209
Research of Socket Welds Vibration Fatigue Resistance and Application of Wavelet Transform Method in Damage Detection	
L. Lin, D.C. Xu, F. Xue and W.X. Ti	1214

Reliability Study about the Approximation Methods of Censored Data in Fatigue W. Hu, Y.L. Zhang, X.H. Li and J.W. Li	1222
Analysis of Non-Standard Gear Contact Fatigue Life Y.Q. Xu, J.H. Zhao and Z.H. Shi	1227
Nonlinear Dynamic Analysis for the New Whole-Spacecraft Passive Vibration Isolator L.J. Tan, B. Fang, J.J. Zhang and W.H. Huang	1231
Study on the Influence of Gravity Factor on Parametric Resonance of Pipe Conveying Fluid B. Chen, M.L. Deng and Z.J. Yin	1235

Chapter 5: Materials Science and Technology, Material Manufacturing Processes

A Precision CNC Turn-Mill Machining Center with Gear Hobbing Capability X.S. Chen, D.L. Zhang, S.M. Yuan, X. Zhang, J.Y. Chen and R. Du	1241
Improvement in Elastic Modulus of MWCNT/Epoxy Nanocomposites S.C. Her and C.Y. Lai	1250
Research on Friction and Wear Behavior of Rubber in the Mixture of Crude Oil with Water X.R. Lv, X.Y. Huo, G.Z. Qu and S.J. Wang	1254
Effect of (NaPO₃)₆ on Sea Water Corrosion Resistance of Micro-Arc Oxidation Ceramic Coatings Formed on Pure Aluminum S.J. Li, L.M. Wang and X. Feng	1259
Approach to Steel-Bamboo Composite Structure System Z.M. Yan, Y.F. Du, J.G. Huang and Y.S. Li	1263
The Analysis of the Experiment of Polarized Light in Uniaxial Dichroism Crystal N.Y. Ye and D.H. Han	1267
Cloning and Expression of β-Glucosidase Gene from <i>Bacillus pumilus</i> L. Li, Q.L. Ji, J.F. Hao and L. Yuan	1271
The Application and Analysis of the Risk Assessment Model about BLEVE Accident F. Xie, W.H. Song, Z. Chen and L.Y. Lv	1275
Influence of Pattern Coating Thickness on Porosity and Mechanical Properties of Lost Foam Casting of Al-Si (LM6) Alloy S. Sulaiman, M.K.A.M. Ariffin, S.H. Tang and A. Saleh	1281
Current Characteristics of AlGaN/AlN Ultraviolet Photodetector with Metal-Semiconductor-Metal Structure L.Z. Hsieh and J.Y. Chang	1285
Study on the Mechanical Properties of ABS Enhanced by Magnesium Hydroxide Whiskers Y.Z. Jiang, L.L. Zhang, Z.Y. Zhang and L.H. Wang	1289
Research on Fine Particles Capture of Baghouse Filter Media J.X. Liu, D.Q. Chang, Y. Xie, N. Mao and X. Sun	1293
Influence of Repeated Quenching-Tempering on Fisheye Cracks around Tin and Al₂O₃ Inclusions in SAE 52100 Steel K. Mizobe, T. Honda, H. Koike, E.C. Santos, T. Shibukawa and K. Kida	1298
Discrete Element Method Simulation of Residual Stresses in Grinding of Granite with Single Diamond Grain L. Kang and Y. Ye	1304
Characteristics of Stress Distribution of Micro-Cantilever of Polycrystalline Copper at the Pull-in Voltage J.L. Su, Y.J. Zhang and X.F. Lian	1309
The Effect of the Stirring with a Large Size of Stirrer on Formation of the Composite Joint Reinforced with SiC Particle B.F. Zhou, H.B. Xu, X.Y. Ding, C.J. Zhang and B. Dou	1313
Analysis of Application of New Photochromic Materials in Design of Kindergarten B. Xu and W.P. Hu	1317
Reinforcement of Polypropylene Using Micro-Fillers H.G. Le, S.C. Huang, V.S. Nguyen and T.P. Dao	1321
Evaluation of Gamma Radiation on NR/PHBV Blends M. Chutamas, J. Sunthornvarabhas and K.R. Sriroth	1325

Effect of Lanthanum Nitrate on Titanium Alloys Ceramic Membrane Formed by Micro-Arc Oxidation S.J. Li, X. Feng and L.M. Wang	1330
Evaluation of Cadmium Contamination in the Sediments of Northern Kaohsiung Harbor, Taiwan L.C. Chang, C.F. Chen, C.W. Chen and C.D. Dong	1334
Experiment Investigation on Two Filter Medias for Air Filtration J.X. Liu, D.Q. Chang, L.T. Miao, N. Mao and X. Sun	1340
Selective Glycine Polymorph Crystallization by Using Silver Nanoparticles F. Lu	1344
Experimental Study of Bamboo Fiber Cushion Packaging Materials for the Express Packaging Y. Liu and S.H. Wang	1348
Polypyrrole Actuator Operating Characteristics in Electrolyte Solution Mixed with Methanol F. Tsumuji, D. Hoshino, S. Ogihara, Z.F. Duan, Y. Suzuki, T. Kadoyama, J. Yamasaki and Y. Nishioka	1352
Electroosmotic Flow Pump on Transparent Polyimide Substrate Fabricated Using Hot Embossing H. Saito, H. Komatsuzaki, R. Ikoma, T. Komori, K. Kuroda, Y. Kimura, Y. Fukushi, H. Maenosono, S. Koide, M. Satano and Y. Nishioka	1356
Improved Performances of All-Polyimide Fluidic Devices Using Thermal Nanoimprinting K. Kuroda, T. Komori, H. Saito, R. Ikoma, Y. Kimura, H. Komatsuzaki, K. Suzuki, S.W. Youn, H. Hiroshima, R. Maeda and Y. Nishioka	1360
Valveless Micropumps with Dual Polyimide Diaphragms R. Ikoma, H. Komatsuzaki, T. Komori, K. Kuroda, H. Saito and Y. Nishioka	1364
Fabrication of Au Micro-Electrodes on Polyimide Films Using Transfer Printing Techniques T. Komori, T. Kosugi, H. Saito, K. Kuroda, M. Satano, H. Komatsuzaki, R. Ikoma and Y. Nishioka	1368
Single-Ball Rolling Contact Fatigue of 13Cr-2Ni-2Mo Stainless Steels Quenched by Induction Heating Method K. Kida, T. Honda, Y. Seto, E.C. Santos and T. Shibukawa	1372
Experimental Study on the Fatigue Properties and Reliability for the Steel of Elastic Oil Sump B. Li, Z.D. Liu and P. Duan	1377
Evaluation of the Status of Copper Contamination of Surface Sediments of Jen-Gen River Estuary, Taiwan C.D. Dong, Y.T. Tu, C.W. Chen, C.M. Kao and C.F. Chen	1381
Ordered Melanin Film Fabricated by the Self-Assembly Technique F. Lu	1385
An Interpolation Algorithm Based on S-Curve Feedrate Profile and Look-Ahead Function K.Z. Sun, X.F. Zhou, G. Zhang and X.S. Chen	1389
Research on Compensation Method of Coupled Error in High-Precision Micro-Machining Process Y.J. Deng, X. Jin, Z.J. Zhang, X.F. Zhang, X. Ye and Z.P. Ye	1397

Chapter 6: Control System Modeling and Applications

An Intelligent Cruise Controller for High-Speed Train Operation Based on Fuzzy Neural Network Theory L.S. Wang, H.Z. Xu and H.Y. Luo	1405
Adaptive Backstepping Stopping Control of Urban Rail Vehicle M.N. Zhang and H.Z. Xu	1412
A Digital Peak Current-Mode Control PFC with Bifurcation Control C.W. Hung, L.S. Zhang and L.C. Lu	1419
Robust Control Design and Analysis Using SCILAB Y.S. Kim	1423

Spacecraft Attitude Tracking Using Second-Order Sliding Mode Control via Backstepping Y. Hao, X. Yan and B. Zhang	1430
Quasi-Sliding Mode Control for Impulsive Delayed Vehicle Longitudinal Following System with Bounded and Varying Parameters X.H. Xu, W.C. Fu, J.Y. Zhang and W. Xi	1436
Design and Implementation of Adaptive Fuzzy Cerebellar Model Articulation Controller for Direct Torque Control System S.Y. Wang, C.L. Tseng, C.H. Tseng, J.H. Chou and M.H. Tsai	1444
Physical Modeling of Magneto Hydrodynamic Explosive Munition and Detonation Control Y.L. Shi, S.J. Ma, H. Zhang and L. Gu	1448
Multidisciplinary Design Optimization of a High-Flow Control Valve F. Cao and Y. Wang	1454
Research on Hydraulic Pitch-Control System of Wind Turbine J.C. Song, G.G. Ren and Y.J. Ren	1458
Design of Five Axis Cooperation Machine Based on Motion Control Board S.W. Yang, S.K. Cao and J. Jia	1463
Design on the Bearing Forging Spray Cooling Control Device H.B. Huang, Y.M. Wang and Y.Q. Sun	1467
A Touch-Based Wheelchair Control Interface: Concept and Implementation T.S. Chen, Y.C. Kuo, Y.S. Syu and C.H. Kuo	1471
Study on Predictive Control Technology Based on Disturbance of Electrically Heated Boiler M.Q. Li and S.H. Jiang	1475
Precise Angle Control of Electromechanical Actuator with Fuzzy PID and Genetic Algorithm Y.B. Cui, J. Zheng, Y.T. Ju and J. Xu	1479
Design and Simulation of Fuzzy-PID Vector Control System Based on Mine Hoist Y.X. Wu, C.J. Zhang and Y.Q. Liu	1486
The Speed Control of Immune-Fuzzy Sliding Mode Controller for a Synchronous Reluctance Motor W.B. Lin, H.K. Chiang and Y.L. Chung	1490
Engineering Objective Controls Knowledge Driven Product Definition in Industrial Product Development L. Horváth and I.J. Rudas	1494
Research on Improvement Algorithm of Model Free Learning Adaptive Controller G. Ren, P.L. Qin, Y. Lin and Y.L. Wang	1500
Robust Fixed Point Transformations in the Model Reference Adaptive Control of a Three DoF Aeroelastic Wing J.K. Tar, I.J. Rudas, J.F. Bitó and K. Kósi	1505
Research on Modeling and Control Characteristics for Electric Power Steering System of Logistics Machine G.J. Chen, T.T. Liu, J. Ni, H.P. Chen and H.Q. Feng	1513
Stationary Response of Duffing-van der Pol Oscillator with Delayed Feedback Control under Wide-Band Noise Excitation P. Lin, C.S. Feng and Q.Y. Wang	1518
Driving Performance Advancement for SRM Using a Novel Adaptive Learning Control on Dominant Parameters S.C. Lin, S.C. Wang, K.C. Liang, S.Y. Wang and C.L. Tseng	1525
Application of DEA-DA Model and Method on Quality Control in Production Process Y.S. Yang, C.Q. Guo, Y. Cheng and J. Yang	1529
PID Neural Network Smith Predictive Control for a Control System with Time Delay Z.G. Yang and J.L. Qian	1533
An EEG Based Control System for Intelligent Wheelchair M. Li, Y. Zhang, H. Zhang and H.S. Hu	1540
The Research of Digital Display Pump Test Stand Based on IPC K. Ma	1546
Adaptive Controller Designed for High-Speed Train ATO System with Nonlinear and Uncertain Resistance H.Y. Luo and H.Z. Xu	1551

Intelligent Power Management of Electric Vehicle with Li-Ion Battery S. Chen and C.C. Chen	1558
Robust Controller of Self-Powered Vehicle Active Suspension Based on LMI Design P. Wang, P.Y. Song, J.Y. Zhang and M. Li	1562
Influence of Parameters in Coupled Adaptive Self-Organizing Sliding-Mode Fuzzy Controller Using Volumetric Type Bending Machine R.H. Wong	1569
Hybrid Projective Synchronization for the Fractional-Order Chen-Lee System and its Circuit Realization S.K. Lao, H.K. Chen, L.M. Tam and L.J. Sheu	1573
Control Platform for Tubular Permanent-Magnet Linear Synchronous Motor P.Y. Song, J.Y. Zhang, M. Li and S. Wang	1579
New Planning of Pipe Cooling in Temperature Control for Mass Concrete H. Tang, D.S. Cai and L. Yang	1584
Robust Backstepping Control for Longitudinal Flight Dynamics M.S. Li, M. Chen and R. Mei	1589
Iterative Adaptive Control of a Three Degrees-of-Freedom Aeroelastic Wing Model J.K. Tar, I.J. Rudas, J.F. Bitó and K. Kósi	1593
A Kind of Design for Intelligent Photoelectric Tracing Trolley W. Gao	1600
LABTM Control System Based on FPGA X.F. Li, X.P. Wang, X.D. Qi, Y. Wang and P. Yu	1604
Receding Horizon Control on Automatic Landing Lateral Loop of Carrier-Based Aircraft X.W. Jiang, Q.D. Zhu and Z.X. Wen	1610
Research on Data Reports Based on Experimentation & Test of Traffic Engineering Y.H. Lu, B.Y. Gong and J. Ren	1617

Chapter 7: Developments in Medical Technologies and Images Processing Technologies

The Effects of Production Performance Model and Competitive Environment of Hospital Systems C.K. Wei	1623
The Viscoelasticity of Intestines by Dynamical Mechanical Analysis R.J. Tan, H. Liu, C. Zhang, H.Y. Li and Y.C. Wang	1628
Development of a CCD-Based Optical Computed Tomography Scanner Used in 3D Gel Dosimetry Y.J. Chang, H.L. Tseng, C.H. Chen, S.Y. Tan, B.T. Hsieh, W.L. Chang and W.T. Huang	1632
Finite Deformation Analysis and Numerical Simulation of Arterial Wall J.B. Sang, L.F. Sun, L.L. Ge, Z.K. Zhang, D.L. Zhang and Y. Jing	1636
The Research of Applying Parallel Streaming Technology on Developing Cloud Computing Platform for Delivering Medical Images H.L. Tseng, C.H. Chen, Y.J. Chang, S.Y. Tan and W.T. Huang	1640
The Illumination of a Electrical Non-Fiberoptic Endoscope of Surgery T.T. Tsung, L.Y. Yang, C.H. Chen and H. Chang	1645
Cell Separation Through Ascending and Descending Curvilinear Microchannels W.A.H.S.S. Wewala, J.K. Kasi, A.K. Kasi and N. Afzulpurkar	1649
The Influence of Suture Density on Bioprosthetic Heart Valve Q. Yuan, H.B. Ma and X. Huang	1654
Computer Simulation for New Theoretical Model Constructed with Tuberculosis C.Y. Chung and H.Y. Chung	1658
Color Image Enhancement Methods Based on Matlab X.M. Xie, C.M. Wang and A.J. Zhang	1664
Design and Implementation of Seismic Data Digital Filter Y. Li	1669
Realization of Car's Frontal Projected Area Based on OpenCV C.B. Dong, X.J. Hu, Y. Wang and L.M. Fu	1673

Audio-Video Synchronization Method Based on Playback Time J.B. Fu and H.W. Yu	1677
Comparative Analysis of Image Measurement Accuracy in High Temperature Based on Visible and Infrared Vision Z. Liu, S.M. Cui, H. Yin and Y.C. Lin	1681