

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Materials Science: Technology, Processing and Applied Research

Random Characteristics on Cutting Interpenetrating Network Composites N. Fan, X.L. Fu and Y. Qiao	3
Aluminum Pigments Encapsulated by MTES and TEOS for Corrosion Inhibition and their Characterizations P.H. Pi, C. Liu, X.F. Wen, S.P. Xu and J. Cheng	7
The Deformation Behavior of Thermal Compression for ZK30 Magnesium Alloy B.D. Chen, F. Guo and J. Wen	12
A Preliminary Study on the Effect of WEC Cleaner Papermaking Chemical on the Improvement of Paper Physical Strength Y.Q. Zhu, F. Gao, P. Cao and Z.J. Zhang	18
Microstructure and Properties of 8YSZ with High Component BAS J. Qin, G. Chen, Z.M. Du and J.H. Niu	25
Research of Compression and Energy Absorption Characteristics of Polyimide Foam M.Q. Li, G. Ma and J.J. Xiao	30
The Spherical Copper Nanoparticle Grown at Water-Immiscible Interface of Castor Oiled Graphite-Epoxy Solid Electrode Surface X.R. Zhu	35
Investigation of the Solubility and Absorption Rate of CO₂ in PZ Promoted K₂CO₃ Aqueous Solution S.B. Zhao, F. Liu, X.C. Wu and D. Fu	40
Study on Effect of the Ternary Composite Retarder on Properties of FGD Gypsum Plaster Material X.L. Li, G.Z. Li, Y.Z. Liu and D.C. Su	45
Effect of Sodium Alginate on the Properties of Composite Protein Films Q. Lei, Z.Y. Huang, J.Z. Pan, J.Q. Bao and Q.N. Xun	49
Preparation and Study on the Performance of Polymer-Modified Cement-Based Composite Insulation Materials X.L. Li, G.Z. Li, L. Wang and Y.Z. Liu	57
Study on the Corrosion Resistance Behavior of Multi-Elements Alloy CoCrFeNiTi0.5 S.J. Pang, P. Li, T.J. Li and J. Zhao	61
Preparation and Study on the Waterproof Performance of Polystyrene Lightweight Composite Insulation Materials X.L. Li, G.Z. Li, L. Wang and D.C. Su	69
Development of Multifunctional Nanomaterials in Phototherapy Y.N. Huang, F.R. Liu and Z. Zhu	73
Viscosity of Dimethylbenzene in [Bmim][BF₄] and [Bmim][PF₆] Ionic Liquids M. Zhu, M.X. Zhu, Y. Song, W.Z. Liang, W. Han and Y.N. Chen	78
The Influence on the Hardness and Form of U75V from the Different Cooling Rates P.F. Wang, R. Wei, Z.M. Liu, L. Chen and G. Li	83
Improvement of Polymers by UV Irradiation: The Research in Ageing and Solidification - Take Polysiloxane-Modified-Polyacrylates and Asphalt as an Example H. Shi	90
Preparation of Terephthalic Acid (TPA) and Dioctyl Terephthalate (DOTP) by Anthracite's Alkali Oxygen Oxidation K. Du, M.L. Lian, Z.F. Fan and Y. Li	95
Study on the Preparation and Properties of Desulfurization Gypsum-Based Self-Leveling Material L.L. Li and G.Z. Li	100

The Preparation of Red Mud Foam Lightweight Thermal Insulation Material L. Ma and G.Z. Li	104
Autothermal Reforming of Ethanol for Hydrogen Production: Modeling and Simulation C. Wuthithanyawat and N. Srisiriwat	108
Study on the Vacuum Insulation Panel Protected by Silicone Rubber L. Wang, Z.F. Chen, C. Wu and S.N. Guan	113
Influence of CaF_2 on the Formation Kinetics of Belite-Calcium Barium Sulphoaluminate Cement Clinker Y.B. Huang, S.D. Wang, Y.T. Zhao, C.C. Gong and L.C. Lu	118
Influence of Limestone Powder on the Performance of Cementitious Materials Y. Dong, K.T. Xiao and H.Q. Yang	123
CO_2 Fixation Using MEA and CaCl_2 Aqueous Solutions F. Liu, Z.X. Li and D. Fu	130
Synthesis and Performance Evaluation on Amphoteric Surfactant of Dodecyl/Tetradecyl Phosphobetain S.C. Cui	134
Effect of Material Constitution on the Properties of Thermal Insulation Materials B. Liu, S.D. Wang, S. Yang, C.C. Gong and L.C. Lu	141
Study on the Formation of C_3S Doped with SO_3, BaO and MgO J. Zhang, C.C. Gong, X. Chen, Q.L. Huang, S.D. Wang and L.C. Lu	146
Gas Sensors Fabricated by Aerosol Deposition C.C. Hsiao and L.S. Luo	151
Effects of Titanium Oxide Precipitate on Acicular Ferrite Nucleation in Carbon Structural Steel	155
A Study of Morphology of Titanium Powder Used in Electron Beam Melting A. Mohammadhosseini, D. Fraser, S.H. Masood and M. Jahedi	160
Study on Preparing Coating for the Anti-Erosion Property of Artillery F. Wang and Y.C. Chen	164
Mineral Composition and Performance of Phosphoaluminate Clinker with Addition of SO_3 S. Yang, S.D. Wang, X.N. Dong, B. Liu, C.C. Gong and L.C. Lu	169
Error Analysis of Natural Vibration Characteristic of the Diamond Wire Saw F. Wang, B. Huang, J.S. Zhang, Z. Wang and H. Zhang	174
Research on the Decoating Effect and Microstructure of Surface Damage of High-Pressure Waterjet Q. Guo, X.J. Jia, S. Li, Y.Y. Nie and S.X. Ge	180
Synthesis, Characterization and Property of Nano Rare Earth Terbium Complex with Gatifloxacin Y.G. Lv, L. Zhang, K.L. Lv, S.J. Zhou, D. A, J.H. Zheng, P. Jiao, J.Y. Hou and Y. Zhu	185
Production of Phenolic Compounds from Low Temperature Catalytic Fast Pyrolysis of Biomass with Activated Carbon Z.B. Zhang, X.N. Ye, Q. Lu, C.Q. Dong and Y.Q. Liu	190
Performance Evaluation of Polymer Microspheres for Profile Control and Oil Displacement K. Wang, J.C. Fang and X.M. Wu	195
The Influence of Heat Treatment on the Interface and Properties of Mo_2FeB_2 Cermets-Steel Clad Material J.S. Peng, Y.J. Pan and H. Zhang	199
Determination of Tricalcium Silicates Crystal Forms in Belite-Barium Calcium Sulphoaluminate Cement Y.T. Zhao, X. Chen, L.C. Lu, Y.B. Huang and J. Zhang	204
Study on Sucrose Powder in Selective Laser Sintering Mechanism L.X. Yang, X.S. Yao and Y.B. Xue	209
The Relationship between the Hydrolysis Degree and Calcium-Binding Capacity of Whey Protein by Enzymatic Hydrolysis L.N. Zhao, S.Y. Wang, S.L. Huang and Y.F. Huang	214
Microscintillator of Ce Doped $\beta\text{-NaLuF}_4$ in Uniform Hexagonal Prism Morphology by a Facile Hydrothermal Method L.S. Liu, H.H. Chen, B.Q. Liu, B. Tang, Z.J. Sun and J.T. Zhao	220

The Preparation of a New Type of Pectin Capsules Replacing Gelatin Capsules W.J. Zhou, Y. Zhuo, Y.D. Cui and C.J. Wang	225
Raman Study on the Crystallization Characteristics of Amorphous Ge₂Sb₂Te₅ Film Z. Zhu, F.R. Liu and Y.N. Huang	229
Strength Prediction of Double-Lap Woven CFRP Bolted Joint Incorporating Material Softening H. Ahmad	234
W-Cu Nano-Composite Powders Prepared by Hydrothermal Method J.P. Xie, S. Liu, D.Q. Ma, F.M. Wang, A.Q. Wang, J.W. Li and W.Y. Wang	239
Study on Effect of Matrix Properties on Fatigue Damage Initiation of Woven Carbon Fabric Vinylester Composites Y.Z. Shao, K. Okubo, T. Fujii, O. Shibata and Y. Fujita	243
Studies on the Way of Obtain C₂H₃⁺ by C₅H₈O⁺ Small Fragments Calculation H.B. Chen, Y. Zhu and J. Wu	250
Blinking in Photoluminescence of InGaN Devices is Caused by Slow Beating of THz Vibrations of the Quantum Well R. Micheletto, K. Oikawa and C. Feldmeier	253
Taguchi Grey Relational Analysis of Dry Sliding Wear Behaviour of Annealed AA7075-TiC Metal Matrix Composites S. Baskaran, V. Anandakrishnan, M. Durai Selvam, S. Raghuraman and V.M.I. Muthaiyaa	258
Effect of Heat Treatment on Wear Behavior of Hot Extruded AA7075 - 4%TiC <i>In Situ</i> Metal Matrix Composite S. Baskaran, B.M.M. Selvan, V. Anandakrishnan, R. Venkatraman and M. Durai Selvam	263
Deep Drawing and Bulging Processes of Hard-Deformed Light Alloy Sheet with Resistance Heating Z.J. Gao, K.F. Zhang, B. Wang and C. Li	268
Effect of Water Reducer and Cellulose Ether on Sulphoaluminate Cement-Based Lightweight Thermal Insulation Board X.N. Dong, X. Chen, L.C. Lu and S. Yang	273
2124 Aluminum Alloy Aging Forming Springback Study Based on a Combination Forecasting Method Z. Gan, Z.W. Qian and Y.S. Xia	277
The Anti-Bending Performance Study of Loaded Continuous Beam that Strengthened with Prestressed Laterally Bonded Carbon Fiber Sheets X.R. Zeng, C.P. Li, J. Chen, X. Xie and L. Zhang	283
Investigation of Blends of sPS/B30, B30/iPP and sPS/iPP/B30: Mechanical and Thermal Properties X.Y. Yang, X.H. Wu, Y.F. Zhao and Q.G. Huang	288
Characterization of Spray Angle and Velocity in Water-Mist Nozzle by Using Response Surface Approximation Y.S. Jeong, Y.W. Shin and T.I. Seo	293
Mechanical Analysis for Thin-Walled Stiffened Plates on the Base of Plants Venations Growth Algorithm W.Y. Wang, Y.Y. Li and P. Wang	299
Study about the Effects of Cryogenic Treatment on the Mechanical Properties of PCrNi3MoVA Steel F. Wang and Y.C. Chen	303
Mechanical Behavior Research of Recycled Concrete Small-Sized Hollow Block Based on Load Test J.S. Lei, Z.P. Zhou, Y.L. Wang and H.H. Wang	307
The Beryllium Bronze for Capacitance Sensitive Accelerometer H.W. Wang and X. Tian	312
Modeling and Control Techniques for Microstructure Development R. Karthikeyan, R.K. Ganesh Ram and V. Kalaichelvi	317
Composition Characteristics of Reconstructed Steel Slag with Electric Furnace Slag Q.L. Huang, C.C. Gong, D.L. Lou, J. Zhang and L.C. Lu	324
Stabilization of Multiple Heavy Metal Contaminated Soils Using Biological Materials C. Zhang, Z. Zhong, Y.J. Sun and H.M. Lao	329

Study on the Recovery of Sulfur from a Lead-Zinc Tailings of Fujian Y.W. Zhang, X. Wang, K.C. Gong, Z.G. Wang and H.H. Miao	334
The Research of Biomass Biodegradable Material Microstructure Impact on Performance X.J. Jia, J.F. Li and F.Y. Li	338
Biomass Biodegradable Starch Material Cushioning Packaging Products and Plasticizing Properties of Compatibility X.J. Jia, J.F. Li and F.Y. Li	343
Comparative Study of Squeeze Casting of AA6061 with and without Employing Ultrasonic Cavitations M.T. Azhagan, B. Mohan and A. Rajadurai	349
Multi-Response Optimization of CNC WEDM Process Parameters for Machining Titanium Alloy Ti 6Al-4V Using Response Surface Methodology (RSM) C. Nandakumar and B. Mohan	354
Process Factor Optimization for Reducing Warp and Shrinkage in Injection Molding Using Design of Experiments G.J. Kang	359
Performance of Brazed Carbide End Mill Tool for Machining of Ti6Al4V S. Nawaz, L.X. Xing and Z. Chai	363
Experimental Investigations on the Effect of Vegetable Based Cutting Fluid in Turning AISI 1040 Steel D. Jhodkar, M. Amaranth, H. Chelladurai and J. Ramkumar	368
Determination of Isothermic Heat and Entropy of Sorption of Air Dried Sheet Rubber Using Artificial Neural Network Approach K. Suntaro, S. Tirawanichakul and Y. Tirawanichakul	374
Giant Permittivity of Barium Titanate Prepared by Ultra-Fast Sintering Method C.J. Xu, J.Y. Zhang, D.M. Zhang and Z.Y. Fu	380
Experimental Study on Superficial Modification of Recycled Aggregate with Fly Ash F.X. Wang, G.Z. Li and J. Chen	384
Influence of Foaming Agent on Properties of Red Mud Lightweight Baking-Free Brick L. Ma and G.Z. Li	388
Effect of Minimum Quantity Lubrication when Turning a Steel Grade K.A. Abou-El-Hossein	392
Microbial Oil Production from Lignocellulosic Biomass – Recent Development and Prospect Z.N. Lin, H.J. Liu, Z.Q. Wang and J.N. Zhang	397
An Overview of the Mechanism of Non-Metallic Materials for Energy-Saving and Environment-Protection Z.H. Ye, Q. Yan, A.J. Wang, R.G. Luo and G.W. Liu	404
Winding Trajectory Generation for Composite Products J.H. Fu, J.D. Yun and Y.H. Jung	407

Chapter 2: Electronics and Integrated Circuits, Electrical Engineering and Applications

The Design and Test of Durability Test Platform for Small Scale Electromotor J. Guo	415
The Design of Active Low Pass Filter Y.C. Liao, H.B. Zhao, Y.J. Liu and Q. Yu	419
Driveline Simulation of 2013 Formula Student Electric Racing Vehicle Y.L. Li, M. Kley and S.J. Wang	424
Development of a New Pulse Discriminating System for Micro Electro Discharge Machining (μEDM) C.K. Nirala, G. Gupta, A. Agrawal and P. Saha	430
Circuit Design of High Reliability Pulse Driver for Relay Control Y. Jiang and W. Peng	436
Capacity Optimization of Steinmetz Compensation Circuit for Electrification Railway Unbalance Controll G. Wang, X.X. Pei and M. Zhou	440

The Application of Phase-Locked Loop Frequency Tracking in the Intelligence-Type Induction Heating Power Supply Y.F. Li	445
The Coupling Effect of Electromagnetic Pulse and Computer G.H. Du and Y.M. Tian	452
Design and Analysis of UHF RFID Tag Antenna on the Surface of Cylinder P.Y. Duan and D. Wang	458
Control of Cascaded H-Bridge STATCOM for Load Compensation S. Wang, L.C. Tan, P. Wang and Y.H. Li	462
Design of Arbitrary Waveform Generator Based on Direct Digital Synthesis Technique Using Code Composer Studio Platform S.H. Xu	466
Design Sheet Beam Gun for THz Traveling-Wave Tube Z.L. Wang, Y.B. Gong, H.R. Gong, J.J. Feng and X. Xu	470
A New Hybrid SSD Architecture Based on SLC and MLC H.Y. Li and C. Gui	474
Resonance Frequency Calculation of Long-Neck Cylindrical Acoustic Resonators D.Y. Li, L.F. Zheng and L.J. Ou	478
Analysis of Novel OLED Based Four-Primary Displays F. Deng and Y. Xiong	482
Identification Parameters with Neural Network for Preisach Hysteresis Model M. Amir, M. Zergoug and A. Amrouche	487
A Fast Digital 3D-SVPWM Algorithm for Four-Leg Converter P.X. Song, P. Wang and Y.H. Li	494

Chapter 3: Mechanics, Tools and Mechanical Engineering: Technology, Design and Applied Research

Stress and Modal Analysis for Rear Axle Housing of Mining Scraper Z.F. Dong, Y.Z. Zhang, H.L. Ma, Q.J. Kuang and G. Dan	501
The Floquet Analysis of Liquid Interface Wave in a Double-Frequency Excited Cylindrical Container L. Chang, Y.J. Jian, Y.J. Sun, J. Su and Q.S. Liu	505
The Body Structural Optimization Based on Safe Side Impact G.Y. Zhao, Y.F. Zhao, L.Y. Xie and X.J. Li	514
Simulation Analysis and Optimization Design of Double-Wishbone Independent Suspension X.T. Wang, Y.F. Zhao and B. Jiao	519
Research and Development of Steel Casting CAD/CAE Integration Technology Based on the Neutral STEP File L. Wang, J.X. Zhou, H.T. Tang and D.M. Liao	524
The Research of Remanufacturing Technology Applied to Lifting Machinery H.X. Jin, C.B. Yin, M. Guo and Y. Gong	530
Many-to-Many Regression Analysis of Loading Characteristic in Dieless Tube Hydroforming Z.K. Tian, F.H. Yang and C. Yin	534
The Method of Transforming Ordinary Machine Tools to Ultrasonic Vibration Deep Hole Drilling Machine Tools X.H. Shen and H.B. Zhao	538
Fault Diagnosis Method of Mini Excavator Slewing Bearing G.T. Guo, Z.S. Duan, L.C. Shi and L. Zhao	544
The Oil Spill Analysis and Structure Improvement of Marine Sliding Bearing G.F. Hu and S.P. Yang	549
Optimization Design of Rectangular Cross-Sectional Wire Race Ball Bearing Y. Zhao, J. Yao and C. Tong	553
Numerical Flow Simulation in a Horizontal-to-Vertical Elbow A.Z. Zhou, J.G. Wu, L.P. Li, D.M. Chen, H.Q. Yang and F. Chen	559

Experimental and Numerical Investigation of Circular Arc Dovetail Attachments under Fatigue Loading	
L. Shi, D.S. Wei and Y.R. Wang	564
Strength Safety Coefficient and Fatigue Life Analysis of Coupling Diaphragm Based on FE-Simulation	
Z.K. Tian, C. Yin and F.H. Yang	569
Research on Racing Loss of a High-Power Hydraulic Retarder	
H.Y. Li, H. Ji, X.Q. Qin, C. Wu and Y.H. Wang	574
Analysis and Research of the Technology Based on Carbide Tool Passivation	
Z.X. Mao, C.T. Cai and J.X. Qi	579
The Study on the Wear Characteristics of Flank Lock Type Precision Locknut in the Dynamic Conditions	
C.M. Chen and C.H. Sun	584
The Study on the Variation of Friction Coefficient of Flank Lock Type Precision Locknut at the Different Tightening Speed	
C.M. Chen and C.H. Sun	588
High-Cycle Fatigue P-S-N Curve Estimating Method Based on Maximum Likelihood Method for Turbine Coupling Bolt Materials	
Y.J. Gu, T.Z. Jin, H.D. Zu, J. Xu and D.C. Chen	592
Statics Analysis on Sail Structure for Ocean-Going Ships	
L. Xu, J.T. Fang, W.Y. Li and S.H. Chen	599
Research on Functional Similarity and Structural Similarity of Mechanical Components	
J. Yin and A.L. Wang	603
Numerical Investigation on Aero-Thermodynamic Characteristics of Wedge Shaped Nose Cone of Near Space Supersonic Flight	
J. Lin, L.J. Zhao and J.H. Wang	608
Experimental Investigation of Vibration Characteristics for Vapor Cavitation in Plain Journal Bearing	
R.H. Yusof and I. Idris	613
Research on CAD/CAE System of Gate Valve Based on UG	
D.Y. Wang	618
Effect of Helical Screw Tape Insertion on Heat Transfer and Pressure Drop Characteristics in a Horizontal Concentric Double Tube Heat Exchanger	
A.A. Kapse, P.R. Dongarwar and R.R. Gawande	622
Experimental Investigations of Single and Multi-Fault in Rotor System	
S.P. Mogal and D.I. Lalwani	628
A Brief Review on Fault Diagnosis of Rotating Machineries	
S.P. Mogal and D.I. Lalwani	635
The Influence of Front Support on Vibration Behaviors of TBM Cutterhead under Impact Heavy Loads	
J.Z. Huo, X.Y. Ouyang, X. Zhang and J. Chen	641
The Performance of TFC Slider under Second-Order Discontinuous Boundary Conditions	
H.R. Ao, D. Pan, M. Dong and H.Y. Jiang	645
Analysis of Detecting Multi Crack with Location and Size in Simply Supported Shaft Using ANFIS	
J. Nanda, L.D. Das, H.C. Das, A. Biswal and A. Tripathy	649
The Numerical Analysis of the Velocity and Pressure Distribution of the Oil Film in Heavy Hydrostatic Thrust Bearing	
J. Li, Y. Chen, Y.C. Yu, Z.X. Tian and Y. Huang	658
Application of Taguchi Design of Experiment Method in Optimization of Izod Impact Testing	
R. Davis	663
Multi-Objective Structure Optimization Design on the Upper Carriage of a Naval Gun	
K. Wang and D.W. Ma	669
Anti-Slosh Effectiveness of Baffles and Braking Performance of a Partly-Filled Tank Truck	
F. Yang, G. Yan and S. Rakheja	674
Research of Agricultural Machinery Modeling Method Based on Virtual Reality	
F. Wang, R.J. Chi, Z.X. Zhu and E.R. Mao	684

An Experimental Investigation on Transpiration Cooling for Supersonic Vehicle Nose Cone Using Porous Material	
L.J. Zhao, J. Lin, J.H. Wang, J.L. Peng, D.J. Qu and L.Z. Chen	690
Dynamic Response Analysis of Motorcycle Fenders	
J. Liu and L. Li	695
Dynamic Simulation of the Stack-Manipulator to Aluminum-Ingot Based on ADAMS	
D.W. Xu, H.T. Wu, H.B. Liu, J.C. Cai and T.C. Yao	700
The Simulation of Stack-Manipulator to Aluminum-Ingot Based on ADAMS	
T.C. Yao, H.T. Wu, H.B. Liu, D.W. Xu and J.C. Cai	704
Modeling and Simulation of Wire Electrode Deflection in WEDM	
Z. Chen, H. Li, Y. Huang and Z. Zhang	708
Numerical Simulation of Particle Impact Erosion within Electric Submersible Pump Based on Fluent	
S.J. Mei, Z.C. Wang, S. Chen, F.X. Lu and J.G. He	713
The Summary Research on the Noise of High-Speed Traction Elevators	
X.W. Wang, Y.J. Yu, R.J. Zhang, S.C. Wang and Y. Tian	716
Method of <i>Ginkgo biloba</i> Drying and Drying Machine Design	
J.M. Hou, D.X. Yang and K.J. Wu	722
Modeling, Simulation and Design Optimization of a Series Hydraulic Hybrid Vehicle	
R. Ramakrishnan, S.S. Hiremath and M. Singaperumal	727
Movement Simulation of NC Lathe Machine Based on EON Studio	
A. Khlil, G.Q. Li, L.F. Luo and X.P. Song	732
Research and Control for Inertia of Automobile Steering Test System	
X. Lu, Y.J. Luo and Y.F. Mai	737
Development of Piezo Driven Motion Amplified Stage	
J.H. Kim	742
Study on Development of a Urea-SCR System of Diesel Engine	
T. Qiu, X.C. Li, J. Peng, Y. Lei and G.Z. Yue	747
Experimental Investigation and Numerical Simulation for High Temperature Air Source Heat Pump with New Mixed-Refrigerant	
J. Yang, G.Z. Ding, X.Y. Zhang, S.M. Shu and J.Y. Tan	752
Simulation Study on the Combined Harvester with Four Tracked Feet Passing through Ditch Based on RecurDyn	
Z.D. Hu, S.R. Du and J.B. Yang	756
Simulation Investigation about Combustion and Emission Characteristics of n-Butanol/Diesel Fuel Mixture on Diesel Engine	
J. Wu, H.M. Wang, L.L. Zhu and Y. Hua	763
The Design and Research of Automatic Charging Parking Space	
W.C. Sun	769
A Simple Optical Coupling Method for Water-Jet Guided Laser Machining System	
M. Li, W.W. Zhang, X.P. Zhang and T.R. Zhang	774
Analytical Method for Obtaining Cut Geometry of Helical Toroidal Cutter during Semi-Finish in 5-Axis Milling	
G. Kiswanto, H. Hendriko and E. Duc	780
Machining Evaluation of High-Speed Milling for Thin-Wall Machining of Al7075-T651	
J.Y. Koo, P.H. Kim, M.H. Cho, H. Kim, J.K. Oh and J.S. Kim	785
Effect of Changing the Position of Tool Point on the Moving Platform on the Kinematics of a 3RRR Planar Parallel Manipulator	
R.F. Abo-Shanab	792
Analyzing the Vibration of Warp Yarns in Lengthwise and Crosswise	
F. Chen and Y.S. Liu	798
Development of Post Processor for Dual-Spindle Turning Center	
A.J. Cai, F.R. Ma, M.W. Ding and S.H. Guo	804
Synthesis of Planar Four-Bar for Generating Path with Prescribed Arc	
W.Y. Chung	808
The Modified Quadruple-Tanks Process: A Flexible Mathematical Model with an Adjustable Simulink Block	
A. Numsomran, J. Chaoraingern and T. Trisuwannawat	813

A Modified Distributed Tuned Mass Damper Design Approach F. Yang, R. Sedaghati and E. Esmailzadeh	822
A Study on Conventional <i>versus</i> Independent Suspension System of an Automobile A. Balaraju and R. Venkatachalam	827
Simulation of TBM Mucking Process Based on the Ballast Fluidity J.Z. Huo, W. Chen, X.Y. Ouyang and X. Zhang	832
Quantitative Mixing Analysis of Laminar Flow in Circle Grid Perforated Plate with 50% Porosity Static Mixer M.L.M. Zamadi, A. Khalid and B. Manshoor	836
Finite Element Analysis of a Mud Pump Damming Machine Frame J.Y. Sun and J.M. Xiao	841
Design and Kinematics of a Cable-Driven Humanoid Ankle Joint L.M. Chen, Z.Z. Zhu, Q. Lin and X.J. Wang	846
Symmetrical Pneumatic Muscle Actuated Gripper System with Two Mobile Jaws D. Negrea, T. Deaconescu and A. Deaconescu	852
Parameters Analysis of Bracing Structure with Friction Energy Dissipation System W. Zhou, X. Xu and W.X. Hao	857

Chapter 4: Power and Energy: Engineering and Applications

Study on a Quantitative Risk Assessment Method of Primary Equipments Based on Power Grid Safety Analysis K.L. Deng, D.D. Li, Y. Wang, X.L. Cheng, M. Li and X.Q. Fan	863
A Comprehensive Evaluation Method on Dynamic Simulation Accuracy of Power System H.P. Zheng, M. Xue, Y. Zhao, X.Y. Liu and Y. Han	869
Study on the Practical Connection Mode of Microgrid Adapting to Dual Power Supply B. Yang, Z. Cao, H.L. Bao and Z.Q. Yuan	875
Study on the Different Dynamic Models and its Simplified Standards of the PWR Neutron P. Wu, Q. Yu, H. Chen, J. Yi and G.Q. Pu	880
A Comparative Study on Solar Refrigeration Technology H. Zhang, X. Ji, M. Li, Q. Wang and X.B. Song	887
Modeling and Practice of Wind/PV/Pumped-Storage Hybrid System P.F. Yi, J. Zhang and Z.Y. Zhang	892
Environmental Turbulence Analysis of the Wind Power Industry Chain C.B. Li, H.Y. Chen, J. Zhu and Z.Y. Zhao	898
Component Characteristics of Coal-Based Jet Fuel and Petroleum-Based Jet Fuel Y. Lin, T.Y. Zhou, X. Wang and X.Y. Yang	904
Present Situation of Exploitation and Utilization of Geothermal Resources in China H.B. Liu, Y.S. Shi, L. Zhang and M. Qiu	911
Safety Study of Primary Loop System of Civil Marine Nuclear Power Plant L. Xu, R.C. Deng, C. Xu, D. Zhang and C.X. Sheng	916
Heat Integration of Solid Oxide Fuel Cell System N. Srisiriwat and C. Wutthithanyawat	922
Status of Unconventional Oil and Gas Resources and its Environment Risk Factors in China B. Cai, Y.H. Ding, Y.J. Lu, H. Shen and Z.Z. Yang	927
Reliability Evaluation of Generation and Transmission Systems Considering the Effects of Wind Farm B. Liu and H. Wu	932
The Research Progress on Biomass Fuel Reburning D. Yang and X. Lu	937
The Combined Solar with a Dual Heat Source Heat Pump Applied in a Greenhouse Heating System - An Operation Optimization of Water Source Heat Pump X.P. Sun, Z.R. Zou and Y. Zhang	942
Optimization of Pyrolysis Technical Parameters for Cotton Stalk Based on Response Surface Methodology Y. Yang and W.X. Zheng	949

Potential Analysis of Architectural Application of Solar Energy Resource in Panzhihua S.M. Li, J. Mei and Y. Yao	954
Design of Desalination Reverse Osmosis System Power-Supplied by PV and Wind Energy Y. Liu and S.M. Wang	961
Integrated AHP-BPNN Model for Wind Farm Investment Evaluation X.F. Zhang, T.Y. Liu and B. Jiao	966
Wind Energy Resource Assessment at Tindouf Region, Extreme Southwest of Algeria S.M. Boudia, A. Benmansour and M.A. Tabet Hellal	972
A Novel Adaptive Protection Scheme for Microgrid Z. Xi, G.B. Zou and T. Chun	977
Study on Combustion and Emission Characteristics of Acidic Oil Biodiesel J. Wu, Y. Hua, Z.C. Wang, L.L. Zhu and H.M. Wang	982
The Design and Implementation of PV Inverter for Grid-Connected System Base on SVPWM L. Zhang, M.Y. Li and H.H. Zhang	989
Study of Heat Losses from Cylindrical Cavity Receiver of Solar Concentrator S.D. Barahate, P.R. Dongarwar and V.C. Shewale	996
Progressive Study of GIS Based Land Suitability for Wind Farm in the South Wales Area in UK via GIS L. Tang and W.B. Sun	1002
Chemical Kinetic Mechanism Reduction Scheme for Diesel Fuel Surrogate H.M. Poon, H.K. Ng, S.Y. Gan, K.M. Pang and J. Schramm	1006
Analysis of Spherical Cavity Receiver of Solar Concentrator for Heat Losses V.C. Shewale, P.R. Dongarwar and R.R. Gawande	1011
Drying Modeling and Energy Consumption of Air Dried Sheet (ADS) Rubber by Solar and Biomass Energy C. Pupakapanpong, S. Tirawanichakul and Y. Tirawanichakul	1017
Open Fault Characteristics and Simple Diagnosis Scheme in a Back-to-Back Converter for Wind Power Conversion K.H. Kim	1022
A New Backward/Forward Algorithm for Weakly Meshed Distribution Systems with Distributed Generation F.L. Jiang, Z.L. Piao and L.D. Wang	1027
Innovative Development of Non-Contact Torque Sensor Applied to Wind Generator D.Y. Ju and K. Tabata	1032

Chapter 5: Robots and Manipulators

Dynamic Modeling Based on Screw Theory and Lagrange's Equations of a 3-DOF Cable-Driven Surgical Instrument L.P. Xu, H.Q. Sang and L.M. Chang	1039
An Optimized Design of Humanoid Robot Distributed Control System Z. Qiu, L. Zhang, Y. Tian, X.K. Feng and S.Y. Zhang	1043
Posture Control of a Reconfigurable Mobile Vehicle with Legged Mode J.Y. Tian, P.Y. Li, Y.P. Li and H.H. Zhao	1049
Optimization of Fuzzy Logic Controller Using PSO for Mobile Robot Navigation in an Unknown Environment M. Algabri, H. Ramdane, H. Mathkour, K. Al-Mutib and M. Alsulaiman	1053
Research on the Fault Diagnosis Method of the Reconfigurable Modular Robot Based on Second-Order Sliding Mode Observer L. Wu and Y.C. Li	1062
A New Design of Circular Li-Ion Battery Sorting Equipment Based on High-Speed Robot J.P. Mei, X. Zhang and Z.Y. Zhang	1067
Dynamic Obstacle Avoidance Algorithm for the Mobile Robot Based on Depth Image of Kinect Sensor Y. Zhang, X.R. Tong and Y. Luo	1072
Bigtoe Sizing Design of Small Biped Robot by Using Gait Generation Method K. Nerakae and H. Hasegawa	1079

Design and Kick Analysis of a Soccer Playing Robot H. Alamgir, Z. Rahid, R. Miftahur, R. Masud, A. Fardan and A.B. Yeasin	1087
Design and Control of a Cleaning Unit for a Novel Wall-Climbing Robot T.Y. Kim, J.H. Kim, K.C. Seo, H.M. Kim, G.U. Lee, J.W. Kim and H.S. Kim	1092
Design and Control of a Dexterous Anthropomorphic Five Fingered Robotic Arm J. Prasanna, L.N. Aswin, M.V. Raman, S. Prashanth and C.D. Raj	1097
Design of a PD Controller Combined with a MRAS-Based LFFC for a Two - Link Robot Manipulator N.D. Cuong, N.V. Lanh, D.B. Loc, T.Q. Son and N.M. Chu	1102
Collision Free Control of Variable Length Hyper Redundant Robot Manipulator A. Jamali, M.R. Khan, M.S. Osman, M.M. Rahman, M.F. Ashari, M.S. Jamaludin and E. Junaidi	1107
Research on Control System of Intelligent Creel Multi-Robot J. She, K. Zou, J.H. Wen and R.C. Shi	1115
A Robot Presenting Reproduced Stories among Older Adults in Group Conversation K. Yamaguchi, M. Nergui and M. Otake	1120
Architectural System Design of Six Channels Compact Fuzzy Logic Controller for Arm Robot Joints Using FPGA Technology B. Siswoyo, M.A. Choiron, I.N.G. Wardana and Y.S. Irawan	1127
Design and Control of a Waterproof Robot Arm Applying the Gravity Compensator H.S. Choi, D.H. Kim, Y.D. Joo and J.H. Ha	1132
Inverse Solution and Optimal Concept Rethink from Human Operation to Industrial Redundant Manipulator M.L. Wang, M.Z. Luo and X. Lin	1140
Development of Transfer Robot Using for Small Size Flat Panel Display Manufacturing Process M.J. Chung	1146
A Review on Lower-Limb Exoskeleton System for Sit to Stand, Ascending and Descending Staircase Motion A. Norhafizan, R.A.R. Ghazilla, V. Kasi, Z. Taha and B. Hamid	1150

Chapter 6: Control Systems

Guided Rocket Control System Design Based on Discrete-Time Adaptive Sliding Mode R.J. Yang and Y.G. Shi	1159
Finite-Time Formation Control for Autonomous Underwater Vehicles Based on Hierarchical Leader-Follower D.H. Wang, J. Yuan, J. Xu and Z.H. Zhou	1164
Study on Control Strategy of the Hydro-Mechanical Variable Transmission S.J. Yang, H. Pan, W.F. Wang, J. Din and X.J. Jiao	1168
Modeling and Control Research for Fuelcell Supercapacitor Hybrid Powertrain Z.H. Jin, D.W. Gao and Q.C. Lu	1173
Bus-Clamping Based Improved Discrete Duty Ratio Control Technology of Direct Torque Control for Induction Motors H.X. Yu and C. Li	1177
Control System Design of Air Compression Double-Bubble Foaming Machine J.L. Li, C.Y. Gu and Y.Q. Li	1185
The Hydraulic System of Intelligent Asphalt Disperser Based on Neural Network Internal Model Control Y.J. Zhang and X. Fang	1191
Bioreactor Substrate Feeding Control Using DO Stat Control Strategy: A Modeling and Computer Simulation Study L. Gao, Y.T. Lin, H.B. Lin, X.Y. Jia, J.Q. Lin and J.Q. Lin	1198
Research on Characteristics and Key Design Parameters of a Pilot-Assisted Load Control Valve J.B. Liu and H.B. Xie	1203
Design of a Load Lift PLC Control System H.Y. Yang	1211

Controlling Chaos by Bounded Self-Controlling Function Using Butterworth Filter Feedback	
L. Du and F.L. Jia	1216
Application of GPC Algorithm in Level Control System	
Y.X. Wu and Z.Y. Gao	1222
Tuning of PID Controller for the Integrating Systems	
H.K. Liao, Y.C. Hu, J. Luo, X. Zhang, S.H. Chen and D.H. Li	1228
Comparison of Servo Positioning Performance of Pneumatic Cylinders Using Proportional Valve Method and PWM Control Method	
B. Mohan and D. Saravanakumar	1233
Application of Fuzzy Adaptive PID Control for Rotor Side Converter of DFIG Based WPGS	
W.J. Si and N. Zhang	1238
Research of the Servo Motion Control of Wave Maker	
L.F. Su, A.F. Zhang and X. Liang	1243
A Design of Control Strategy for Chaotic Systems with Time-Delay	
J. Xu and T. Li	1248
Adaptive Fuzzy Controller Design for Dynamic Positioning System	
Y.S. Zhao, Y.M. Bai and W.H. Wu	1256
Biomass Boiler Drum Water Level Control System Using Neural Networks	
V. Kalaichelvi, R.K. Ganesh Ram and R. Karthikeyan	1260
Characteristics Analysis of Proportional Control Valve on Vane Damp	
W.R. Wang and Y.L. Yin	1266
The Research and Application of AGC in Circulating Fluidized Bed Unit	
P. Zhou, X.G. Xin, S.H. Chen, X.H. Guo, C.X. Yang and B. Wang	1271
Design and Application of IC Card Paid Water Wells Remote Monitoring System	
D.J. Li, Z.H. Li, J.H. Yu and X.Y. Lou	1276

Chapter 7: Measurement, Testing, Monitoring, Detection: Technologies, Analysis and Methodology

The Optimal Design of the New Tube Inside and Outside Differential Pressure Flow Meter	
S.W. Xie, J.Z. Gao, Z.T. Wen, L.D. Fang, X.J. Kong and F. Dong	1283
Two-Phase Flow Field Numerical Simulation in Scrubber for Exhaust Gas Desulfurization	
Z.F. Dong, Q.J. Kuang, Y.Z. Gu, R. Yao and H.W. Wang	1288
Design and Implementation of Fault Detection Equipment of Certain Type of Microwave Range Finder	
D.Y. Wang, J.Y. Peng, X. Huo and G.D. Li	1292
Indoor Human Detection and Monitoring System Using PIR Wireless Sensors Array	
K. Boudjemaa and P. Song	1297
Modeling and Simulation of Engagement Process of Antiaircraft Missile for Training Simulation	
K. Li, P. Liu and N. Chen	1304
A Secure Wireless Telehealthcare Monitoring System and its Web Application	
M.M. Baig, H.G. Hosseini and D.H. Luo	1309
Study on Star Shot Analysis for Physics Quality Assurance in Radiotherapy	
K. Liu, X. Bian, L.X. Hou and X. Zhou	1313
Necessary and Sufficient Condition on Controllability and Reachability of Fractional-Order Linear Switched System	
C. Deng and W. Zhu	1319
The Additional Side Force on the Force Transducer in the Combinatorial Load Cell	
T.P. Wei, X.X. Yang, J.H. Yao and H. Xu	1327
Numerical Simulation Research of Velocity and Temperature Fields in High Temperature Flow of Liquid Lead-Bismuth Eutectic	
Y.B. Li, T. Zhou, Q.J. Huo and X. Yang	1333
System Design of Greenhouse Temperature and Humidity Monitoring and Alarming	
L.C. Zhang, X.L. Hu, Y.G. Wei and Y.Y. Chen	1338

Monitoring and Management of Source Water Pollution Based on a New Bio-Optoelectronic System in Jinan, China X.G. Wang, Z.M. Ren and Z.Y. Ma	1350
Aluminium Self-Piercing Rivet's Failure: Testing and Numerical Analyses N.H. Hoang and M. Langseth	1355
The Measurement Method of Echo Highlights in Low Frequency J. Hui, S.J. Wen, A.B. Zhao and F. Niu	1360
Three-Dimensional Numerical Simulation of the Mechanism of Armour-Piercing Bullet Attacking on the Target Q. Li and W.H. Chu	1365
Temperature Drifts Compensation of Strain-Temperature Method for the Measurement of Continuous Welded Rail Temperature Force C. Liu, H. Zhang, D.Z. Wang, W.J. Zhou, L. Li, F.S. Zhang, J.S. Liang, T.Q. Ren and T.R. Wang	1370
Study on Key Technology for Local Installation of Protection and Monitoring Device at Low Temperature Y. Sun	1376
Analysis the Thermal Field for the Liquid Floated Gyroscope and it's Simulation Z.J. Wang, J.Z. Yang, Y.Y. Yang, Z. You and F.F. Chen	1382
Aircraft Free Flight Simulation in a Wind Tunnel A. Elhashani, A. Kurban and M.L. Agela	1390
Comparison of FLAASH and 6S Code Atmospheric Correction on Snow Cover Detection in Akita Prefecture, Japan Using MODIS Imagery Data P.P. Pan, K. Saruta, Y. Terata and G.Y. Chen	1394
Monitoring Bicycle Riding Motion with Multiple Inertial Sensors J.H. Lee, T. Yano, T. Yamashita and S. Okamoto	1398
Experimental Study of Suppressing Vertical PS Fires Using Water Spray H.Z. Zhao, Y.M. Zhang, H.B. Hu and L.M. Zhao	1403
A New Method for Evaluating the Profile of Large Paraboloidal Antennas Y.R. Jiang	1408
An Introductory Review of Mechanical Reliability Testing Z.Z. Zhang, J.Q. Qin, C.C. Di and D. Wang	1414
Face Milling Tool Wear Condition Monitoring Based on Wavelet Transform and Shannon Entropy M. Zhang, H.Q. Liu and B. Li	1419
Stability of Online Monitoring Stress for Shipbuilding Portal Crane Q.L. Niu, W.X. Tang, N. Shan and X.P. Zhao	1424
Detection and Tracking of Vehicle Target Based on Super-Resolution Reconstruction and Variable Template Matching J.Y. Ma, S.D. Chen and S.W. Zhang	1429
Performance Study of Solar Trough Tracking Control System H.L. Li, C.M. Xu, X. Ji, M. Li and L.J. Tan	1433
Three Modeling Methods Application in Near-Infrared Spectra Analysis for Determination of Volatile in Lignite Coal Samples X.L. Yang and F. Wang	1438
A Gas Pipeline Leakage Diagnosis of Fusing BP Neural Network Basing on WSN and D-S Theory P.T. Liu, R.K. Gong, Y.H. Gong and C.H. Wang	1442
Study on the Parts Surface Defect Detection Method Based on Modified SVM Algorithm F.Y. Zhang and R.J. Liu	1447
Joint Transmit Antenna Selection and Artificial Noise for Security in MIMO Wiretap Channels T. Liang, Y.J. Zhang, G.B. Yuan and L. Guo	1452
An Agent-Based Load Balancing Approach for RFID MiddleWares Z.G. Wei, X.Z. Sun and X.H. Wang	1458
UHF RFID Localization Based on Phase Map Y.S. Li and D. Wang	1463
Multi-Hierarchical Functional Directed Graph Modeling Method for Aircraft System Fault Diagnosis Y. Su and P.P. Liu	1467

Mixed Integer Linear Programming for UAV Trajectory Planning Problem L. Zhang, Z. Zhou and F.M. Zhang	1473
Coupled CFD/GNC Modeling for the Basic Finner Projectile with Closed Loop K. Xi, C. Yan, Y. Huang and W. Wang	1478
Feature Extraction for Bearing Prognostics Based on Continuous Hidden Markov Model J.S. Kang, X.H. Zhang, J.S. Zhao and L. Xiao	1483
Position Estimation in Singly-Fed Electrostatic Actuation Systems by Superposing Sensing Signals A. Yamamoto and J. Suzuki	1487
The Supporting Scheme Selection of Deep Foundation Pit Based on Fuzzy Optimization Theory Z.S. Yang, J.X. Tao, H.K. Pan and Y.T. Li	1492
Implementation of the Dynamic Tension Load of Cell Membrane and its Stress Analysis W.J. Hu, Y. Yu, J.X. Zhou and X.B. Tang	1497

Chapter 8: Manufacturing and Industrial Engineering: Management Applications

Modeling and Analysis of the Manufacturers Inventory in Closed-Loop Supply Chain L. Ma and Y. Chai	1507
Research on Reliability Analysis Method of Industrial Control System Based on Markov Process C.C. Wang, X.J. Liu and C.X. Wang	1513
Robust Design – A Case Study in a Research and Development Company T.O. Kowang, C.S. Long, L.H. Heng and A.B.M. Rasli	1518
Research of Prediction Model of Operating Condition of Loom Y.B. Fan, J. Zhu, J.W. Song, W.Q. Zhang and X.N. Liu	1523
Research on the Application of EPC Encoding Technology for Plastic Windows Manufacturing X.G. Miao, X.B. Ze, Y.B. Qu and M.J. Zhang	1527
Manufacturing Technology Impact on Environmental Factors and Manufacturing Performance R.M. Ismail, R.C. Razak and H.M. Lazim	1532
Using the Modified Regression Analysis to Estimate Industrial Competitiveness – The Case of Banks in Tanzania D. Pastory and X.Z. Qin	1537
Enhancing Ceramic Product Value through Appropriate Production Techniques O.F. Enoch, A.A. Shuaib and A.H. bin Hasbullah	1540
Design of Flexiable Manufacturing System Based on Practical Application of Engineering Training H.M. Fan	1545
The Electric Vehicle Development: Experiences Aboard and Enlightenment to China J.Y. Wang, Y.Q. Liu and A. Kokko	1549
Modeling and Analysis of the Bullwhip Effect in Remanufacturing Closed-Loop Supply Chain L. Ma, Y. Chai, Y.Y. Zhang and L. Zheng	1556