Table of Contents

Preface, Organizing Committees and Sponsors

Chapter 1: Applied Materials

Investigation on Dissolving and Strain Induced Precipitation Behavior in Nb-Bearing Microalloyed Steel	
S.Q. Yuan, G.L. Liang and H.B. Wu	3
Investigation on Nano-Scale Structure of Plain and FA Cement Paste H.Y. Sun, Z. He, A.M. Gong, X.D. Wen, Y.L. Peng and F.L. Wang	7
Numerical Simulation of Different Projectile Penetrating the Single-Layer Steel Target L.S. Liu, J. Liu and Y.B. Shi	12
Microstructure Modeling for Prediction of Thermal Conductivity of Plain Weave C/SiC Fibre Bundles Considering Manufacturing Flaws	17
S.L. Lv, Q.N. Zeng, L.J. Yao, L.D. Chen and X.Y. Tong Effect of Annealing Process and Cold Reduction Ratio on Microstructure and Mechanical Property of 350MPa Grade Structural Hot Dip Galvanized Steel Sheets M.L. Wang, Z.W. Zheng and L. Xiao	23
The Corrosion Behavior of 304L and 316L Stainless Steel in Food Grade Phosphoric Acid	23
Solutions Y.L. Li, S. Xiang, H.T. Zeng, J.P. Wang and Q.D. Wang	28
Numerical Study on the Equivalent Target for Deep Penetration S.Y. Wang, J.B. Men and J.W. Jiang	32
The Study on Engineering Construction Material Information Management System Based on .NET	
J.Q. Liang, S.C. Guo, C. Gao, Z.G. Du, L. Li and S.S. Yang	37
Microstructure and Performance of Multiple Tracks Lap-Joint Coating by Plasma Cladding L.M. Wang, J.B. Liu and B.X. Huang	42
Study on the Performances and Interfacial Structure of Magnesium Hydroxide Whiskers/ABS Composites Y.Z. Jiang, L.L. Zhang and Y.B. Li	46
An Improved Magnesium Alloy Heater's Controller Based on the Smith Predictor X.X. Hu	51
Application of SPC in the Quality Control of the Leaf Tobacco Threshing and Redrying Production	
P.P. Huang and H.W. Liu	56
IFC-Compatible Durability Controlling System for RC Structure Y.H. Ye, W.P. Liu and B. Diao	60
The Research of Biological Reaction Food Waste Disposal Equipment Y.J. Lan, Y.D. Liu, Y.J. Sheng, W.T. Shi, Y. Zhang and Y. Liu	65
Improve Lower Leg Impact Performance Considering Pedestrian Protection J.H. Chen and X.D. Huang	70
Fluid Flowing of Cohesive Mixing in the Tank of a Planetary Mixer M.J. Yang, X.W. Li and T.L. Shi	75
Fracture Monitoring of Composite Wind Turbine Blade Using High-Speed Bragg Grating Sensor System H.J. Bang and S.H. Kim	79
Failure Mode Estimation with Inter-Fiber Failure Analysis of Composite Wind Turbine Blade	
S.H. Kim and H.J. Bang	84

Chapter 2: Fundamental Materials Science

Facile Synthesis of Flake Copper Powder Loaded With Silver Particles X.F. Tian and W.K. Zhang	91
Research on Strength Characteristics of Expansive Soil Q. Li and L. Fu	96
Deriving Plastic Constitutive Equations of the Material in Complex Stress State by Means of Simple Test Results X.J. Feng and L.F. Liang	100
Properties of Graphite Matrix Composite Bipolar Plate Reinforced by Short Carbon Fiber Y.M. Wang, W.Q. Wang and A.J. Li	105
Controlled Preparation of Microporous Polymer Membrane by Simple Biodegradation Method	110
G.Z. Guo, Y.Y. Sun, B.H. Yang and Y.Q. Liu Study on Stress Intensity Factor of PMMA with Double Cracks Using Coherent Gradient Sensing (CGS) Technique	110
L.T. Mao, C.P. Liu, K. Chen, L.Q. An and X.X. Zhu	114
Decomposition of Two Phase WC and W ₂ C in Casting Tungsten Carbide Particles in Steel/Iron Substrate Composites Q. Shan, Z.L. Li, Y.H. Jiang, R. Zhou and Y.D. Sui	120
The Adsorption of Low Concentration SO ₂ with the Second Modified Activated Carbon Fiber Loaded Mn	
J. Fu, Y.C. Yan and J. Zhang	125
Features Extraction of CO₂ Signal with Operational Conditions Adaptability J. Sun and W.G. Lin	131
Finite Element Simulation of Surface Roughness of an Al-5052 Plate Processed by Shot Peening	
J.X. Lan, M.L. Wang, Y.H. Wang and X.J. Shen	136
Micro-Structure and Hardness of (Ti,Al,Nb)N Coatings Prepared under Different Negative Pulse Bias by Arc Ion Plating M.S. Li, S.J. Zhang, J. Huang and L.Z. Zhang	141
Crack Behavior of Fe-Based Coating by Plasma Cladding J.B. Liu, L.M. Wang and B.X. Huang	145
Alloy and Powder Preparation of High Niobium Containing TiAl Based Alloys H.J. Zeng, L.Q. Zhang, J.P. Lin, S.J. Zhang and G.L. Chen	150
Study on Microstructure and Mechanical Properties of Epoxy Resin/Carbon Black Composites Prepared by in Situ Polymerization X.F. Lu, P.Q. La, X. Guo and Y.P. Wei	156
Soften Behavior of 7050 Aluminum Alloy during High Temperature Compression Deformation	161
H. Hu, X.D. Kong and Z.H. Shao Experimental Study on the Process of the Three-Dimensional Rock Crack Growth	161
Influenced by the Pre-Crack Profile Geometry D. Yan, Y.J. Kang, D. Zhang and S.P. Ma	165
Study on Curing Reaction and Mechanical Properties of Liquid Crystalline P-	103
SBPEPB/BPAER/MeTHPA System L. Huo, Y.G. Du and Y.M. Wang	170
A Facile Method for the Synthesis of Silver Nanoparticles in the Presence of Sodium	
Phosphate Y.L. Shi, Q. Zhou, L.Y. Lv and W. Hong	174
Chapter 3: Mechanics of Materials	
Dynamic Data-Bit Allocation of a Ternary Optical Computer X.C. Wang, Y.F. Yao, C.S. Wang and K.Z. Wang	181
Study on a New Technological Scheme for Cold Press Forging Forming of Step Holes in Thick Sheet Metal	
J.L. Liu, K.S. Wang and X.W. Chen	187
Application of Group Technology in Mechanical Processing C.L. Liu and K.S. Wang	191

Measurement of Permittivity of Ferroelectrics Using Coaxial Resonator B. Tan and S.B. Su	195
Coupled Dynamic Analysis of Magnetic Bearing-Rotor System under the Influences of Base	173
Motion W.W. Zhang	199
Optimization of Lug Design Based on Damage Tolerance Analysis Z.P. Yin, G.F. Li, Q.Q. Huang, J. Zhang and M.B. Xu	204
Theoretical Study on Stability of the Separable Elliptic Ultrasonic Vibration Cutting Process	
H. Li, K.F. Song, Z. Yin and Z.Y. Cao	210
Particle Swarm Optimization for Cylinder Helical Gear Multi-Objective Design Problems Y.B. Mo	216
A Cascaded Multi- and Single-Mode Fiber Transporting for Laser Beam Z.G. Xiao, Y. Jiang and X. Xiao	222
Research and Analysis of Dry Crushed Waste Tire Processing J. Yang, S.G. Yang and L.J. Qiu	228
Flow Filed Simulation Analysis of Nearly Balanced Drilling Mechanism X.H. Yi, X.M. Cheng and H.C. Fan	232
Optical Fiber CO Concentration Measurement Prism of the Gas Chamber Variable Optical Path Automatic Adjustment System Research	
H.X. Zhu, H. Zheng, H.B. Zhang, X. Wang, B.X. Yang, X. Yang and B. Hou Simulating the Fracture Wave Field Characteristics Using Finite Element Method of the	237
Anisotropic Elastic Wave D.Y. Yang	244
Intelligent Vehicle-Mounted Alcohol Detection Control System F.P. Li, M.L. Jiang and Z.Y. Guo	248
Thermal Shock Cracks Initiation and Propagation of WCp / Steel Substrate Surface	
Composite at 500°C R.Q. Huang, Z.L. Li, Y.H. Jiang, R. Zhou and F. Gao	253
The Preparation of the Second Modification of Activated Carbon Fiber Loaded Mn L. Lu, J. Zhang and Y.C. Yan	261
A Low-Power High Linearity Gm-C Filter H.Y. Hu, L. Sun, H.M. Zhang and J.J. Song	266
Design and Implementation of High-Speed Dual-Modulus J.J. Song, L. Sun, H.M. Zhang and H.Y. Hu	271
Numerical Simulation Analysis for Enclosure Piles Cracking of a Deep Pit Foundation J.C. Zhang, Y.K. Yang and Y. Xu	276
Study on Emission Control of CNG Engine Based on D-S Evidence Theory X.Q. Li, S.Y. Cai, B. Liu and X.Q. He	281
Generic Object Detection Based on Boosting Embedded with Bag-of-Words X.N. Qiu, S.R. Liu and J.T. Song	285
Seismic Vulnerability Analysis of Water Pipeline in Wenchuan Earthquake E.D. Guo, D. Yang, Z. Liu and Z.R. Wang	290
Simulation Study on the Heavy Parts of Pipe Hydrostatic Tester and their Structures Optimization	
R.J. Gu, J.G. Liu, J.G. Zhang, P.L. Li, Y.L. Kou and H.C. Liu	296
Stream Function of Cohesive Mixing in the Tank of a Planetary Mixer M.J. Yang, X.W. Li and T.L. Shi	302
Fuzzy-Control with Gray-Predictor for Time-Varying Delay Systems Z.Y. Zhang, X. Liu and C.X. Huang	306
Chapter 4: Manufacturing and Mechanics Engineering	
A Novel Fault Diagnosis for Rolling Element Bearings Based on Continuous Wavelet Transform and Hidden Markov Model	212
R.G. Zhang and Y.H. Tan	313

Neural Network-Based Reliability Prediction of Free-Running Submarine Model Test	
System O. Liu, W. Wang and C.H. Yang	318
Design of Fractional Order Fuzzy Controller Based on Sliding Mode Control for Robotic Flexible Joint Manipulators A. Fayazi and A.H. Hadjahmadi	323
Synchronization of Chaotic Fractional-Order Systems via Fractional-Order Adaptive Controller	
A. Fayazi	333
Design and Optimization of the Hydraulic Incline Drawing Lifting Mechanism W.Y. Shang and F.J. Qiu	340
Influence of Depth of Cut on Grind-Hardened Layer and Its Uniformity L.F. Liu, J.Z. Zhuang and C. Liu	345
FEA Simulation of Extruding Feed through Die Hole in Pelleting Process K. Wu, S.J. Shi, Y.L. Wang and B.B. Peng	350
Research on the Integrated Development System of NGW Planetary Gear Transmission J.B. Wu, L. Shu and X. Wang	355
Timing Effection Analysis of Micro-Robot Actuated by ICPF L. Nie, X.L. Zhang and R. Nie	360
Design of the Automatic Position Block for the Punched Holes on Angle Steel of Transmission Tower	
X.L. Wang, X.S. Wang and K.T. Li	364
Cans' Optimization Design Model J.E. Ma and M.Y. Li	368
Development of Safety Detection Integrated Equipment for Car Seat F.Y. Wang, L. Hong and L.F. Yang	372
Automatic Wool Washing Machine Design and Research H.C. Fan, X.H. Yi, X.M. Cheng and Y.F. Zhu	377
Rescue Robot Design and Research Y.P. Mao, H.C. Fan, C. Li and H.F. Lin	381
The 3D Measuring Method Based on the Color Coding Grating J. Chen, K.T. Li, X.B. Ouyang and S.H. Ding	385
Design of Vibration Isolation System for Laser Strapdown IMU D.D. Huang and B. Wu	390
Design and Simulation of Brushless DC Motor Control System Based on DSP X. Zhang, R.Y. Sun and X.M. Liu	395
Research and Application of High-Efficiency Multi-Cyclone Dust Removal Y.H. Yang and D.F. Ni	400
Pricing of Some Exotic Options under Jump Diffusion and Stochastic Interest Rates Model B. Peng	405
The Method on Modifying the Dynamic Properties of Self-Interactive Systems by External Factors	
W. Wang	410
Discussion of Security and Health Monitoring on Quayside Container Crane J.C. Zhang, L. Ji and K. Qi	415
Automatic Assembly and Key Technologies of Expansion Joints Y.K. Fang	420
Analysis on Tax Preferential Policies of Promoting University Students' Venture and Employment R. Jiang	424
Research on Teaching Reform of the "Tax Law" Course	428
R. Jiang The Mathematical Modeling Method of the Square Packing Container Optimization	428
Arrangement L.S. Wang, D.A. Wang, J.L. Chen and H.N. Ni	432
Program Design of On-Line Fault Diagnosis for ASCS of AMT in a Heavy-Duty Vehicle H.O. Liu, A. Zeng and W.Q. Song	437

Studies on Mega-Pixel Cell Phone Lenses Based on Aspheric Optics Y.J. Zhu, F.J. Chen and S.H. Yin	441
On the Living Satisfaction of University Students Based on the Restriction Factors of Recreational Activities - A Case Study of Zhejiang F.F. Chen and S.H. Bie	445
Rapid Prototyping of Handicraft Based on Reverse Engineering X.M. Cheng, Z.Q. Ye and X.H. Yi	451
Chapter 5: Industrial Mechanics	
Super-Resolution Reconstruction of Underground Mine Surveillance Images Based on MAP G.L. Fan, Z.C. Wang and Y.Q. Zhao	457
The Study and Application of Knowledge Management System of Manufacture Enterprise under Collaborative Manufacturing L.J. Tai, R.F. Hu and H. Zhao	462
Robust and Fast Spatial Verification W.Y. Wang, R.J. Guo, H. Yu and S.R. Tian	466
Research on Class Evaluating Method for Cooling Water Fouling Countermeasures Based on PNN J. Li, H. Pan and L.F. Sun	471
Simulation for Operation of Tidal Power Plant X.B. Ouyang and W. Lu	476
Numerical Simulation Analysis of High-Voltage Transmission Tower H.X. Lin, X.C. Ma and W.L. Cai	480
Design of LED Backlight Module Used for Large-Size TFT-LCD J.Y. Zhou, J.S. Xu, Q.H. Lin and W.Y. Pei Analysis of Cross Shins Design and Manufacturing Technology	485
Analysis of Green Ships Design and Manufacturing Technology T.L. Guo, H.X. Zhang and H.J. Dai Modeling and Simulation of LED Manufacturing Process with ExtendSim	489
Y.H. Ao and Z.X. Wu Process Technology and Fixture Design for Critical Component of Radar	494
L.Z. Jiang, W. Zhang and M. Zhang Numerical Analysis for the Multi-Point Stretch Forming Process of Aircraft Skin Panel V.S. Dong, Y. Yao and S.H. Wang	499 504
Y.S. Deng, Y. Yao and S.H. Wang Numerical Simulation of Gas Flow Field in Gas-Liquid Hydrocyclone Separator X.H. Jin, F.S. Han, J.L. Zhang, H. Huang and X.W. Liu	509
Shaping Parameter Control of High-Speed Cold Roll-Beating Based on Simulation and Regression Analysis	517
M.S. Yang, Y. Li, Q.L. Yuan and J.M. Zheng Schedule Study and Simulation Experiment of Lift-Sliding Stereo Garage Based on A* Algorithm	517
Z.X. Yang, X.B. Ren, J.T. Song and W.L. Wang A New PRI Transform for the Deinterleaving of Radar Pulses	523
X.Y. Zhao, H.Y. Wang, C.Z. Yang and H.C. Wu System Modeling and Application in Gearbox Fault Diagnosis Based on EMD and ARX	528
Model H.X. Pan and L.M. Sun Circuit Design on Electronic Control System of Automatic Transmission of Automobile	532
Y.D. Song Design of Sliding Mode Control Based on Nonlinear Observer for Nonlinear System	537
H.D. Duan, Y.T. Tian and D.J. Liu Analysis of Driver's Physiological Characteristics under Ice-Snow Conditions Base on	541
Driving Simulator L.W. Hu and Y.L. Pei	547
Numerical Simulation of High Velocity Waterjet Characteristics and Impact Pressure Q. Luo, K. He, H. Mao, J.H. Li, Q.C. Li and R. Du Looding Control of Eddy Current Dynamometer for AMT Test Pench	551
Loading-Control of Eddy Current Dynamometer for AMT Test Bench Y.N. Zhao and J.B. Chen	557

Study of Calibration Technology of AMT Clutch Control F.Y. Yue, H.O. Liu and J.X. Peng	561
The Testing Equipment Research of Auto Electric Window Lifter Performance Q.H. Li, Y.G. Li and C.S. He	567
Secondary Development of Automatic Drawing Software of Spindle of Numerical Control Lathe S.L. Zhang and N.Q. Zhang	571
Chapter 6: Materials and Mechanics Information System	
Research of Recommended Service of Mobile Terminal Based on User Behavior Analysis W. Liu, D.M. Mu, D.L. Huang and J. Hao	577
Design of Defense Algorithm Concerning Arp Attack on Campus Network H.X. Zhang, J.S. Zhu, K.J. He and Z.X. Wu	582
Development of Embedded System GUI Based on Qt/Embedded R. Song, W.C. Lang and S.W. Pan	586
Principles of Collaborative Decision Making Application at Airport (Ukraine) B. Wang and S.L. Yang	591
A Time Petri Net Representation for Scientific Research Project Management B.Q. Ren, J. Guo and W.Z. Zhong	596
Design on Data Manipulation Class Based on ADO.NET Y.C. Ren, T. Xing, Z.F. Xing and W. Cai	603
Developing Students' Comprehensive Abilities through Mathematical Modeling Teaching J.E. Ma, D.M. Li and D.B. Zhu	608
Chinese New Word Identification Using N-Gram and PPM Models D. Li, W. Tu and L. Shi	612
Dynamics of a Pair of Five-Neuron Networks with Delays X.C. Mao	617
The Study of Point Cloud Data Automatic Merging Technology in 3D Measuring F. Su and J.T. Cheng	621
A New Efficient Secure Multi-Party Computation Y.L. Tang	626
Study on Cloud Computing in Telecommunications P.Y. Yuan	631
A New Fuzzy Support Vector Machine for Credit Scoring B. Tang and M. Xia	636
LAHP-Based Theory of Building e-Commerce Customer Satisfaction Degree Index System C.M. Jia and L.H. Yu	641
A Study on the Development Strategies of the 4PL in Ningbo C.M. Jia, L.H. Yu and X. Chen	646
Ningbo Urban Logistics System Planning C.M. Jia and L.H. Yu	651
Feature Analysis for Shadow Detection X.P. Hu, W. Huang and G.M. Shi	656
Fitting Methods by Cubic Spline Interpolation to Curved Surface Molding in Automobiles' Covering Components H.X. Yao and P.C. Niu	661
Adaptive Contract Net Protocol Based on Ant Colony Optimization Algorithm X.L. Tang, Z. Fan, Y.N. Li and L.Q. Cai	666
PSO-Based Uncorrelated Hybrid Discriminant Analysis Algorithm X.P. Liu and G.Y. Xu	671
Optimization Methods of Loading Path for Tube Hydroforming Z.H. Tao, L.F. Yang and X.C. Mao	676
A New Formant Detection Algorithm Based on Cepstrum J.B. He, H.C. Fan, X.H. Yi and J.F. Hu	681
Design of Embedded Multimedia Advertising System Y. Chen	685

Research of Image Denoising Based on Wavelet Threshold	600
P.G. Hou, H.F. Gu and Y.T. Wang	690
The Study of CNC Machine Tools Interface Design C.Q. Yang	695
Study on Word Association Knowledge and Reading Ability T. Mao	699
Teaching Interpretation for English Majors of Vocational Colleges - A Workshop Approach T. Mao	703
Computer Aided Design of Valve Train of Cylinder Z.T. Wu	707
Computer Aided Design of Transmission Components of Liquid Stirred Tank Y. Jiang and J. Liu	711
Research on Mining Frequent Path and Prediction Algorithms of Object Movement Patterns in RFID Database	
K.F. Hu, L. Zhao, Y.C. Xu and L. Chen	715
Data Acquisition System Based on VC++ J.B. Wu, X. Wang and L. Shu	720
A SPH Based Particle System Editor for Computer Games Y.S. Zhan and X.J. Chen	725
Multi-Relational Sequential Pattern Mining Based on Iceberg Concept Lattice J. Yin, Y. Li, C.C. Shen and B. Liu	729
Research on Framework of Digital City Based on GIS Y.S. Zhan, X.J. Chen and W.Z. Liu	734
A Survey of Mobile Internet Data Management: Models and Searching Methods H. Zheng and Y. Xu	738