

Table of Contents

Preface and Committee

CHAPTER 1: Material Engineering, Chemistry and Bioinformatics

Correlation between Clinicopathology and Immunolocalization of Heat Shock Protein 72 and Glycoprotein 96 in Human Hepatocellular Carcinomas X.P. Wang, H.P. Lin and Q.X. Wang	3
Multiple Sequence Alignment Based on Profile Hidden Markov Model and Quantum-Behaved Particle Swarm Optimization with Selection Method H.X. Long, L.H. Wu and Y. Zhang	7
Catalytic Oxidation of 4,4'-Dibromobiphenyl in Sub-Critical Water with Mn_{0.9}-Co_{0.1}-Ce-Oxide J.Y. Chen, R.Y. Ruan and Z. Li	13
Study on the Electron Excitation for Polychlorinated Dibenzo-P-Dioxins and Several Aromatic Substances by DFT Method Y.G. Su, Y. Meng, Y. Ban and X.J. Wang	17
The Evolution Rules of Overlying Strata Porosity Influenced by Mining Activation G.Q. Cheng and Y.J. Song	21
H1N1 Flu Epidemic Spatio-Temporal Evolution Analysis System	26
Multivariable Predictive Functional Control for the First-Order Plus Time-Delay System Q.L. Zhang	32
Pollution Situation and Estimation of Ocean Economic Organisms and Sediment H.Y. Qiu	38
Design of Yb Fiber High Power Amplifier through 915nm Pumping Z.Q. Zhang, J.H. Ren, S.Q. Shen and T.G. Zhao	42
Effect of Sand Moisture Content on Diesel Oil Volatilization X.D. Feng and Y.F. Ma	47
Curriculum Construction Research of Environmental Engineering X.D. Feng, Y.F. Ma and J.D. Liu	51
Digital Watermarking Technology in Information Security Y.C. Li and L.F. Zhao	55
Study of Flocc Morphology of Chitosan Coagulation Aid Treatment and Fractal Dimensions B.T. Liu, H.Y. Cong and Y. Cao	59
Experimental Studies on the Treatment of Aniline Wasterwater by Activated Carbon Fiber B.T. Liu, Y.Q. Yang and L. Zhang	64
Conceptual Modelling for Domain Ontology Using a 5W1H Six-Layer Framework L. Yang, Z.G. Hu, J. Long and T. Guo	68
Multi-Criteria Decision Analysis Method and Management Information System Reengineering for Solving Vendor-Managed Inventory Bottlenecks in the Notebook Computer Industry S.T. Wang and M.H. Li	74
An Empirical Research on HRM Practice Promoting Innovation Operation in China R. Sun	78
Design and Realization of an Intelligent Protection Circuit for Li-Ion Batteries X.P. Ji, X.F. Guan and Z.H. Wang	82
Combining Agent Technology with Digital Watermarking Techniques for Building Digital Right Management System C.M. Bao	86
The Pressure Behavior Regularity of Workface and Simulation Optimization Analysis of Support Type Choice H.K. Dong and H.Q. Zhou	90
Synthesis, Crystal Structure and Antibacterial Activity of 1D Chain Ca(II) Coordination Polymer X.S. Tai	96

Synthesis and Structural Characterization of Zn(II) Coordination Polymer Material L.H. Wang	100
Secured Publishing AntiBlocking Multimedia Realtime Billboard Display D.Q. Wang, Y.Q. Shi, T. Wang, X.K. Wu and Q.L. Zhou	104
Preparation and X-Ray Crystal Structure of Layered Ca(II) Complex Material X.S. Tai	108
Vanadium Redox Battery System and Its Energy Storage Application in Wind Farm C.Y. Kong, S.F. Wu, Y. Sun and K.J. Li	112
Synthesis and Characterization of Chiral Poly(Amide-Imide) Containing L-Alanine Z.Y. Yang, J.S. Yao and R.B. Guo	116
Seismic Reliability Analysis of Hydraulic Aqueduct with Maximum Entropy Method Y.J. Li and J.G. Xu	120
Application Technology of Thin Asphalt Concrete Overlay on Old Pavement S. Li, Z.H. Liu and X.C. Chen	124
Reaction Behavior of Phosphorus in CaO-SiO₂-FeO_x Low Basicity Slag C. Su, J.K. Yu and N.N. Lv	129
Evaluation of the Preparation Technology on Chitosan-Gelatin Microcarrier by Orthogonal Design L. Ye, S. Ding, Y.L. Cui, Q.S. Wang and Y. Zhang	133
Study on Spatial Variability of Soil Characteristics on Different Land Use Types Based on Land Parcel Scale - A Case Study in Kenli County N. Liu, B. Guo, X.J. Li, Y.L. Zhao and X.G. Wang	138
Study on the Curing Process of Allyl Phenol-Formaldehyde Resin Y. Liu and J.K. Yu	143
Preliminary Study on Systematic Modeling and Optimal Control of Dual Delivery Nanocarriers for Bone Regeneration H.M. Peng, J.W. Bian and H.W. Li	147
On Existence of Matrix-Valued Wavelets B.M. Yu	153
FPGA Implementation of Laplacian of Gaussian Edge Detection Algorithm F. Wang, G.T. Wang, R.H. Wang and X.W. Huang	157
Research on Pattern Recognition Based on BP Neural Network Y.L. Wang, Y. Liu and S.B. Che	161
Study on the Self-Organize Selective Fusion Support Vector Machine Algorithm Y.M. Cai and Q. Chang	165
Analysis of Combustion Characterization of Computer Monitor and Paper in Conic Calorimeter Test J.L. Tan, Y.S. Xie, X.F. Zhang and T. Wang	169
Security Policy Conflict Detection for Distributed System A.J. Zhang, C. Ji and J. Wang	173
Remote Sensing Monitoring and Analysis on Land Utilization Status on Aksu River Basin of Xinjiang Uygur Autonomous Region B.L. Lai	177
A New Vision of Evil System W.M. Yeh	181
Fuzzy PID Theory Based Digital Switch Power Supply H.G. Liu, L. Peng and F.W. Zhu	185
ZigBee Technology Based Fuzzy Control System for Precision Irrigation H.G. Liu, L. Peng and Y. You	190
Analysis of Testicular Toxicity of Solanine in Mice Y.B. Ji, J.C. Sun and L. Lang	195

CHAPTER 2: Material Science, Environment Science and Engineering

Study on <i>Capparis spionosa</i> L. Polysaccharide (CSPS) Induced HepG2 Apoptosis by Controlling Ca²⁺ Path Y.B. Ji, F. Dong, S.Y. Gao and M. Yu	203
---	-----

Effects of Asparagus Polysaccharide on GPA and Band 3 from Erythrocyte Membrane of S180 Mice Y.B. Ji, C.F. Ji and X.J. Chen	209
Calculation of the Effect of Solanine on the Michaelis Constant and the Maximum Reaction Rate of NAT Y.B. Ji, S.Y. Gao, C.F. Ji and X. Zou	213
On the Measures of Separation of a Fuzzy Clustering C.S. Li and H.L. Dai	218
The Research of the CO₂ Wireless Monitoring System Based on nRF401 L.D. Chen, H.Y. Chen and Y.Z. Zheng	222
Effect of Paddy Hermetic Plastic Tent MAP on Free Fatty Acid Property of Rice during Storage D.G. Cao, X. Liu and X.H. Li	227
Exponential Stability of Stochastic Age-Dependent Population with Diffusion H.L. Han and Q.M. Zhang	231
Research on New Botnet Detection Strategy Based on Information Materials C.Y. Yin, A.A. Ghorbani and R.X. Sun	236
Optimal Recovery for Some Infinitely Differentiable Periodic Functions P.X. Ye and X.H. Li	240
Research on MID Application in RFID Based on Intelligent Materials W.J. Xu	244
Genetic Regulatory Network Analysis for <i>Rpe65</i> in the Eye of BXD Mice H. Lu, H.J. Guan, H. Chen and L. Lu	248
Research on Software Aggregation to Service Aggregation W.J. Xu	253
DEST Simulation Using the Window on the Building Energy Consumption H.L. Ma, J.F. Wang and M. Ji	257
Research on the Development of Clothing Brand Position under the Modern Consumer Culture C.Y. Jin and R.R. Cui	261
Solid-Liquid Reaction Synthesis and Characterization of Bioinorganic Complexes of Nicotinic Acid with Antimony(III) and Bismuth(III) Ion G.Q. Zhong, M. Gu and Y. Zhang	267
The Analysis and Study Based on MEMS Sensor Y.B. Li, M. Yuan and J.Y. Xu	271
Research on a High Accuracy Method for Solving Parabolic Equations Based on Analysis of Scientific Materials G.C. Li	275
Effect of RE on Anti-Corrosion Mechanism of Arc Sprayed Zn-Al-Mg Coatings Z.X. Zhu, J. Zhang and B.S. Xu	279
Axiomatics for Rough Set Model Based on Vague Relations H.D. Zhang and Y.P. He	283
Representations of Vague Approximation Operators H.D. Zhang and Y.P. He	287
The Residual Implication of Interval-Valued Fuzzy Triangle Norm and its Properties Y.P. He and H.D. Zhang	291
The Research of Synchronization of China-US Economic Cycle H.W. Luo and X.S. Yuan	295
Simulation of Adaptive Filter Based on LMS Algorithm in Simulink Y.P. He and H.D. Zhang	299
The Study of Sports Dance Teaching Methods in the Multimedia Environment Based on Dancing Materials H. Liu	303
Efficient Convertible User Designating Confirmer Partially Blind Signature with Provable Security L.Z. Ma	307
Synthesis and Characterization of Magnetic γ-Fe₂O₃/Al₂O₃ Core-Shell Nanocomposites H.Y. Ding, Y. Zhang and G.H. Zhou	312

Synthesis, Antioxidant and Anticancer Activities of Efficient Glutathione Peroxidase Mimic T.T. Lin and J.Q. Liu	317
Design of Copper-Clad Aluminum Winding Alternator for Vehicle Application L.W. Shi and X.Y. Zhang	322
Study on Arithmetic Library of Signal Process Based on PDA D.R. Jiang, J.H. Yin and J.F. Hu	326
Study on Development and Application of Platform with Test Questions Library and Paper Generation Based on SOA D.R. Jiang	330
Research on Bayesian Model Averaging for Lasso Based on Analysis of Scientific Materials A.T. Guo	334
Research on Human Resources Performance Appraisal Based on Data Envelopment Analysis with Scientific Materials B. Zhang	338
Instance Analysis On Investment Decision of Port Engineering B. Zhang	342
A Study of Relations between Environmental Pollution Indicators and Economic Variables J.H. Duan, J.B. Chen and X.B. Chen	346
An Empirical Study on Impact of Economic Development to Environmental Pollution in China J.B. Chen, J.H. Duan and X.B. Chen	350
Synthesis and Characterization on ATP/TiO₂/PANI Core-Shell Nanocomposites L.L. Chen, H.Y. Ding, Y. Zhang and G.H. Zhou	354
Application of Fuzzy Logic in the Network Security Risk Evaluation S. Meng, P.F. Wang and J.C. Wang	359
Study on Encryption and Decryption Algorithm and its Matlab Realization Y.S. Zhu	363
Research on Autogenous Volume Deformation's Influence on Thermal Creep Stress of Concrete High Arch Dam L.F. Xie and L. Yang	367
Development of Hydraulic Security Shearing Machine for the Annulus Chain Used in Coal Mine L.M. Cao, Q.L. Zeng, J. Cui and H.J. Yang	371
An Effective Tabu Search Algorithm for the Vehicle Routing Problem with Stochastic Demands S.L. Hu and C.S. Liu	375
Study on Application of Ground-Source Heat Pump Air Conditioning System in Hohhot L.L. He, S.F. Yang and Y.F. Bai	379
The Aggregated Signature for Many-to-One Communication Based on Rabin Signature Y.L. Han	384
A New Groups Key Distribution for Secure Wireless Multicast Y.L. Han	388

CHAPTER 3: Material Science, Chemistry and Information Technology

Identifying Transition Rates of Ion Channels with One Loop X.Y. Xiang, L.F. Liu and Y. Chen	395
The Comparison for Several Difference Methods in Heat Conduction Equations F.L. Meng	399
Effects of Accelerated Aging Period of Time at 150°C on Tensile Property of Plain Woven Fabric/Epoxy Resin Laminated Composites L.L. Song, Q.R. Liu, L.S. Liu and J.L. Li	403
Preparation of Pruning Mulberry Shoot-Based Activated Carbon by ZnCl₂ Activation J. Wang, N. Qiu, H. Wu and F.A. Wu	407
The Anti-Inflammatory Effects of Biomaterials Cross-Linked with Genipin Y.F. Song, S.S. Ding, Y.L. Cui, Q.S. Wang, L. Ye and Y. Zhang	412
A Bibliometric Primary Study of Bioinformatics Research in China Y.Q. Guo, F. Yu and A.Y. Liu	417

Comparison Study on Bioinformatics Research Papers Written by Chinese and Worldwide Authors Respectively Y.Q. Guo, J. Jin and A.Y. Liu	421
Research on an Improved Algorithm of Fog-Degrade Image Defogging Based on Analysis of Scientific Data Materials X.G. Li and L. Kang	425
Research on Design of a Soccer Robot Control System Based on ARM9 with Analysis of Scientific Materials X.G. Li and Z.F. Qu	429
Research on a Resource Discovery Mechanism in Cloud Computing Environment Based on Analysis of Scientific Materials H.W. Zhao	433
Classifying Cardinal Orthogonal Scaling Function with Dilation Factor 3 L.F. Wang, K.J. Sun and J.B. Yin	437
Study and Simulation of Electro-Mechanical Sensor P. Zhang, C.L. Sun and Q. Li	440
Thermal Behavior Modeling of Interior Refractory Lining of Torpedo-Ladle by Finite Element Method S.W. Liu, J.K. Yu and F.X. Mao	444
Research on Fair E-Payment Protocol Based on Partially Blind Signature with Analysis of Scientific Material X.D. Wang, J.L. Zhang and Z.T. Jiang	449
A Preliminary Bioinformatics Analysis of Cation Diffusion Facilitator (CDF) Proteins in Different Plants H. Zhong, B.P. Sun and F.Y. Zhao	453
Study <i>In Situ</i> on Rat Intestinal Absorption Mechanism and Influential Factors of Ginsenosides Rb1 and Rg1 in Bazhen Decoction W.L. Li, J.X. Ding, J. Bai, L.L. Nan, Y. Yang and Y.B. Ji	457
Effects of Different Pore-Extending Methods on Morphology of Anodic Aluminium Oxide Templates J.W. Cui, Y.C. Wu, Y. Wang, H.M. Zheng, G.Q. Xu and X.Y. Zhang	461
Aged Fingermarks Detection with CdS/PAMAM Nanocomposites Y.J. Jin, Y.J. Luo, G.Z. Xu and B. Yang	466
Research on the Trust in Supply Chain Dynamic Collaboration Based on MAS W.J. Jiang, L. Zhong, J. Ji and Y.H. Wu	470
MAS-Based Supply Chain Dynamic Collaboration Resource Sharing W.J. Jiang, L. Zhong, Q.F. Li and X.Q. Deng	474
Thermodynamic Analysis of Oxide Nucleation in Steel Cooling Process Z.Q. Li and J.K. Yu	478
Study on Entrepreneurship Education Based on the Entrepreneurship Firms' Growth Theory Viewpoint H.Y. Jiang, W.W. Ye and X.J. Chen	483
An Empirical Study on the Relationships between Dynamic Capabilities and Entrepreneurship Performance W.W. Ye, B.B. Zeng and X.J. Chen	488
Research on Corrosive Sulfur and Temperature Effect in Transformer Oil Y.H. Qian, Q.T. Bao, S.A. Cao and R. Liu	492
Study on the Hand Spinning Wheel in a Copy of the Mural Painting Collected by Mr. Liu Xianzhou Q. Li, B. Li and X.M. Yang	497
Research on Thermal-Effect and Phase Properties of a Q-Switched Laser Using KTP Frequency-Doubling Crystal X. Zhang	505
Research on the Development of Botanical Pesticide Based on Analysis of Scientific Materials F.L. Meng	509
Effect of Extract from <i>Lactarius vellereus</i> Fermentation Liquid on Antioxidant Enzymes Activities of <i>Alternaria alternata</i> K. H.F. Ji, L.W. Zhang, F.Y. Cheng, L.Y. Wang, H.H. Jin and R.Q. Song	514

Numerical Simulation of Al_xGa_{1-x}N/GaN Hetero Junction Quantum Well by AMPS-1D K.J. Zhang and B. Wan	518
Theoretical Calculation of Miscibility Gap for Mg_xZn_{1-x}O Alloys K.J. Zhang and X.F. Wang	522
Isolation and Identification of a New Pathogen Causing Mulberry Bacterial Wilt Disease X. Jiang, F.A. Wu, S.Q. Fang, Y.D. Zhang, J. Wang and T. Wu	526
Growth Rate Model and Temperature-Changing Fermentation Process of <i>Pseudomonas Syringae</i> Pv. <i>Mori</i> M4-13 Y. Liang, J. Cheng, R.B. Lv, S.J. Zhang, F. Pan, J. Wang, G.X. Sun, S.Q. Fang, X. Jiang and F.A. Wu	531
Research on Wool Improvements in Modern Shanxi A.L. Xiao and X.M. Guo	535
Preparation, Characterization, and <i>In Vitro</i> Evaluation of EGCG-Loaded Chitosan Nanoparticles J.L. Li, Y.G. Zu, X.H. Zhao, Z.G. An, X.Y. Sui, K.L. Wang and X.L. Sun	539
Effect of <i>Chroogomphus Rutillus</i> Extracts on Activity of Nitrite Scavenging and Nitrosamine Formation Inhibition H.F. Ji, L.W. Zhang, H.H. Jin, L.Y. Wang, F.Y. Cheng and K.X. Sun	545
Design of Dangerous Emergency Escape System Based on IOT S. Zhou	549
Minimum Reinforcement Ratio of Concrete Beams Reinforced with FRP Bars C.X. Li and S.L. Yan	553
Study on Microphase Separation of Polyether-Urethane Block Copolymers Z. Liu, C.F. Xiao and Y.F. Zhang	557
Analyzing Output Phase Properties of Confocal Positive-Branch Laser Resonators by Use of Hartmann-Shack Sensor X. Zhang	561
The Research of Social Intelligence Network (SIN) in Crisis Management of Fund Management Corporations F.R. Yang	565
Solving 0-1 Knapsack Problems by Greedy Method and Dynamic Programming Method L. Liu	570
An Analysis for Effect Factors of Ultrasonic Guided Wave Tomography in Structural Health Monitoring H.Y. Zhang, J.B. Yu and X.H. Chen	574
Study of E-Commerce Sites Customer Segmentation Based on Comprehensive Model H.Y. Ma	579
Performances Comparison of Different Solar Desalination Processes by Bubbling Humidification L.X. Zhang, S.Y. Gao and W.B. Chen	584
Signal Enhancement of Ultrasonic Guided Waves Using Time Reversal Technique H.Y. Zhang, J.B. Yu and X.H. Chen	589
Synthesis of NdFeO₃ Perovskites in a Reverse Microemulsion and its Visible Light Photocatalytic Activity Y.J. Hao, B. Li, R.H. Liu and F.T. Li	593

CHAPTER 4: Intelligent Materials, Photonics and Power

Photocatalytic Oxidation Desulfurization of Fuel Using Nano-TiO₂ in Ionic Liquid Y. Zhao, Y.J. Hao and F.T. Li	599
Theoretical Analysis and Experiment of Bubbling Humidification Flux L.X. Zhang, W.B. Chen and S.Y. Gao	603
The Model of Super-Chen Chaotic Scheme with Oscillating Parameters under the Impulsive Control Y.K. Li	608
The Synchronization of Super-Chen Chaotic Scheme with a Sort of Oscillating Parameters Y.K. Li	612

Cloning and Expression Analysis of <i>ALDH</i> Conserved cDNA Region from <i>Fraxinus velutina</i> F.S. Zeng, H.W. Zhang, Y.G. Zhan and Y. Xin	616
Security Research Based On ACI of LDAP F.H. Liu and X. Xu	621
Analysis of Sound Transmission Loss through Multiple Structures Containing Foam Aluminum B.K. Han and F.M. Zheng	625
Random Vibration Simulation of a Special Truck Frame Based on FEM Q.M. Fan and Y.H. Wu	629
Nonlinear Vibration Characteristics Analysis of Transmission Gears Q.M. Fan and Y.H. Wu	633
The Methods of Soil Heavy Metal Pollution Evaluation Using GRA X.Y. Shao, X. Li and L.L. Li	637
Spatial Data Mining Based on Campus GIS Y.L. Yu, T. Guan and J.F. Shi	641
A Visualization Interface Programming S.S. Zong, Y.L. Yu and J.F. Shi	646
Study of Shaped Charge Jet Penetration into Concrete Target Z.C. Wang, C.L. Jiang and M. Li	650
Study on the Effect of Different Rear Windscreen Angles on Aerodynamic Characteristic of the Automobile H.T. Bao	654
An Intelligent Control System of Candy Production Process J.L. Zhang, B.Z. Li, J.G. Yang and H.Y. Chen	658
Process Optimization of Candy Production Based on Data Mining J.L. Zhang, J.G. Yang, S.G. Shen and H.Y. Chen	662
Research on New Green Camouflage Pigments Z.Y. Hu and H.S. Chen	666
Research on Solution and Key Technologies of Network DNC for CNC Workshop S.B. Huang and G.R. Yan	670
UDDI Based Support System for Collaborative Product Development Q. Wu	675
Design of Intelligent Residential District Service Management System Based on IOT S. Zhang	679
Visualization Service Model for Job Scheduling Y.L. Yu, T. Guan and J.F. Shi	683
Recognition of Papain by Konjac Glucomannan-Based Molecularly Imprinted Membrane Z.Y. Mi, Z. Ma, X.L. Li, W.D. Xiong and Y.Q. Zhang	687
The Relationship between Entrepreneur Psychological Capital and Employee's Innovative Behavior: The Strategic Role of Transformational Leadership and Knowledge Sharing Y. Zhu and Y.F. Wang	691
Novel Fiber-Optic Distributed Disturbance Sensor Using a Modified Phase Generation Carrier Technique W.T. Lin, C.X. Zhang, L.J. Li, S. Liang, Q. Li and X. Zhong	697
Numerical Analysis of Flow at Water Jacket of an Internal Combustion Engine D.Z. Zhang, Y.A. Jin, D.Y. Su and Q. Gao	702
Automatic PMD Compensation Based on GTPSO Algorithm in Optical Fiber Communication Systems J.N. Zhang, J.J. Tao and Y.A. Zhang	706
Research on Simulation of Operation of DSG Collectors Based on Analysis of Scientific Materials T. Gao, J. Zhao, B. Yang and F. Wang	710
Research on Second Harmonic Generation in Two-Dimensional Periodical Nonlinear Photonic Crystals Based on Intelligent Materials J.J. Li and L. Wang	716
Research on Web Server Based on Red5, Tomcat and Apache X.F. Gong and D.M. Zhang	721

Determination of Multi-Objective Optimization Control Variable Domain Value in Coordinated Control System of Coal-Fired Unit J.J. Gu, Z. Yang and Y.L. Ren	726
The Application of Wind and Solar Power Generation System in the Ocean Marginal Oil Field Development S.H. Qiu and Q. Wang	731
Design and Implementation of the Reciprocating Pedal-Powered Electricity Generating Device L. Xu, W.N. Bai, J.Y. Ru, Q. Li and J.M. Li	735
The Design of Off-Grid Multi-Energy Complementary Power System L. Xu, J.Y. Ru, X.J. Zhang, Y.Q. Chen and X.Q. Mu	739
Heilongjiang Forestry Ecological System Construction and Security Measures Y.F. Wang and Q. Chen	744
Genetic Algorithm and Support Vector Regression for Software Effort Estimation J.C. Lin and C.T. Chang	748
Fabrication of Ultrahydrophobic ZnO by Vapor Phase Transport Z.J. Xi, G. Li and L.M. Lu	753
Designment and Implementation on Bullet-Data-Acquisition System C.Q. Qi, J. Suo, F.W. Cao and Y.W. Wang	757
Research on the Equipment Support Effectiveness Evaluation Based on Fuzzy Comprehensive Evaluation Method X. Zhao and G. Chen	761
The Research and Design of Two-Level Load Balancer Based on Web Server Cluster L.F. Wei, J.W. Ji and L.Q. Zhao	765
Application of Data Mining in Data Analysis of Tobacco Consumption R.L. Luo	770
Corrosion Properties of Plasma Electrolytic Oxidation Ceramic Coatings on an A356 Alloy Tested in an Ethanol-Gasoline Fuel (E85) Medium Z.J. Peng, Y. Chen and X.Y. Nie	774