

Table of Contents

Preface and Committee

Chapter 1: Applied Chemistry and Chemical Engineering

The Effect of KNO₃ on Electrolysis-Assisted Flocculation of Azophloxine Using Polyaluminum Chloride L.N. Zhou, L. Du and W.J. Zhang	3
A Rapid and Sensitive Chemiluminescent Immunoassay of Bisphenol a with NSP-SA-NHS-Labeled F.F. Yang, L.X. Zhu, L. Xu, R.R. Liu, Y. Fan and W. Meng	7
Determination of N-Heptyl Pyridine Tetrafluoroborate in Acetonitrile Using UV-Spectrum T. Huang and P. Tian	12
Preparation and Characterization of N-Octyl Pyridine Tetrafluoroborate P. Tian, Y.H. Kang, L.Y. Liu and J. Lu	16
Determination Content of N-Octyl Pyridine Tetrafluoroborate in Water Using UV-Spectrum C.C. Zhang, P. Tian and Q.Y. Chen	20
UV-Spectrum Analysis of N-Octyl Pyridine Tetrafluoroborate in Ethanol M. Yang, P. Tian and J. Zeng	24
Synthesis of a New Monomer: 4,7-bis(5-phenylthiophen-2-yl)benzo[c][1,2,5]selenadiazole T. Hu, L.P. Wang, X.L. Lei and X.X. Sun	28
Synthesis of Novel Monomer with Quinoxaline Derivatives P.L. Zhang, T. Hu and X.X. Sun	32
Synthesis and Photochromism Studies of 1-(2-n-butyl-3-benzothienyl)-2-[2-methyl-5-phenyl-3-thienyl] Perfluorocyclopentene X.G. Tang, H.L. Liu and S.Z. Pu	36
Synthesis and Photochromism Studies of 1,2-bis[2-methyl-5-(4-bromomethylphenyl)-3-thienyl] Perfluorocyclopentene Y.J. Tang, S.J. Xia, S.Q. Cui and S.Z. Pu	40
Synthesis and Properties of [1-(3,5-dimethyl-4-iodoisoxazole)-2-(2-methyl-5-ethynyl)trimethylsilane-3-thienyl]perfluorocyclopentene Z.Y. Tian, S.Q. Cui and S.Z. Pu	44
Synthesis and Photochromic Properties of Diarylethene 1-[2-methyl-5-(4-trifluoromethylphenyl)-3-thienyl]-2-[2-methyl-5-(3-fluoro-4-chloro)phenyl-3-thienyl]perfluorocyclopentene D.D. Xue, C.H. Zheng and S.Z. Pu	48
Synthesis and Application of 1-[2-methyl-3-benzofuran]-2-[2-methyl-5-(4-pentylphenyl)-3-thienyl]perfluorocyclopentene Y.M. Xue, R.J. Wang and S.Z. Pu	52
Synthesis and properties of 1-[2,4-dimethyl-5-thiazole]-2-[2-methyl-5-(4-pentylphenyl)-3-thienyl]perfluorocyclopentene C.C. Zhang, Z.Y. Sun, C.B. Fan and S.Z. Pu	56
Synthesis and Characterization of Unsymmetrical Diarylethene Based on Phenylpentane X.D. Zhang, S.S. Wei and S.Z. Pu	60
Application of Sericin in Anti-Crease Finishing of Silk Fabric L. Xu	64
The Study of the Effects of Synthesis Process on the PAE Curing Effect P.P. Wang, C.S. Zhao, W.J. Han and Y.F. Jiang	69
Synthesis, Characterization and Properties of Rare Earth Complexes with Caprolactam H.F. Yang, S.X. Ren, L. Sun and H. Li	73
Effects of Sn Ion on Photocatalytic Performances of Titanium Dioxide Thin Film Z.J. Gao, Q. Yang, Q. Li, J. Cui and Z.S. Zhang	77
Limy Finishing Compositions with the Use of Additive Based on Sol of Silicon Acid V. Loganina, L.V. Makarova, R.V. Tarasov and O.A. Davydova	81

Research and Application of Solid-Solid Phase Change as Energy Storage Materials H.L. Wang, S.J. Liu and F.Q. Zhao	85
Relationship between Surface Roughness before and after UDR Treating L. Li, W. Li and T. Li	90
The Properties and Enhanced Photocatalytic Behaviour of TiO₂-RGO Nanocomposites F.J. Wu, W. Liu, J.W. Mai, J.L. Qiu, S.T. Zhang and W.Y. Zhou	94
Preparation of the BaF₂: Ce³⁺, Yb³⁺ Nanoparticles and near Infrared Luminescent Properties S.W. Li, Y. Jiang and S.G. Ju	98
Fabrication and Luminescent Properties of YVO₄: Eu³⁺/MCM-41 Mesoporous Composites Y. Jiang and S.W. Li	102
Effect of Beating on Paper Physical Strength of OCC X. Hu, C.S. Zhao, H.R. Yang and W.J. Han	106

Chapter 2: Microbiology and Biomedical Engineering

The Alternating Current Scanning Electrochemical Microscopy Characterization of Diatom Cell Activity Affected by Paeonol S.H. Zhao, J.Y. Zheng, J.Y. Yang, C.G. Lin, W. Wang, R. Qiu and Q. Chen	113
Discovery of Over-Represented Words in Intron 1s of <i>Drosophila</i> Ribosomal Protein Genes H.M. Li, Z.G. Yang and D. Chen	117
Ultrasonic-Assisted Extraction of Total Flavonoids from <i>Cassia</i> Seeds A.H. Chen, S.L. Chen, E.Q. Liu, J.W. Li, Y. Shao, C.L. Zhang and Y.H. Wu	121
Cloning of <i>MeGolS5</i> Promoter from Cassava (<i>Manihot esculenta</i> Crantz) and Expression Analysis in Abiotic Stress of <i>MeGolS5</i> Y.Q. Wang, J. Fan, R.M. Li, F. Zhang, M.T. Geng, Y. Yao, S.P. Fu, X.W. Hu and J.C. Guo	126
Research Progress of Analgin Production Process Based on Properties of Biochemical Materials F. Jia, H.J. Liu and F.Q. Zhao	133
Difference of Cell Morphology on Different Callus Types of Alfalfa Y.Y. Hu, J.H. Yang, C. Zhang, T. Liu, B. Li and Y. Wang	137
Optimizing the Extraction Process of Rubusoside from the <i>Rubus Suavissimus</i>: A Cellulase Pretreatment Approach X.H. Zhu, M. Xia and C.X. Yang	144
Antioxidant Properties of Microalgae Protein Hydrolysates Prepared by Neutral Protease Digestion X. Hu, X.Q. Yang, L.H. Li, Y.Y. Wu, W.L. Lin, H. Huang and S.L. Yang	149
Research of Preparation and Properties of CaSO₄/HA Bone Graft Substitute T.T. Yan, S.Y. Wu, M. Fang and Q.H. Chen	154
A Novel Biodegradable Phosphate Coating on AZ31B Alloy T.T. Yan, S.Y. Wu, Q.H. Chen, Q.M. Liu and J.R. Yang	158
Biodegradability of AZ31B Magnesium Alloy with a Permanganate Conversion Coating S.Y. Wu, Q.G. Chen, J.J. Xu, T.T. Yan and Q.H. Chen	163
Determination of Calcium Element in Natural Huazi Mushroom by Inductively Coupled Plasma Atomic Emission Spectrometry C.C. Zhang and P. Tian	168
Determination of Iron Element in Comb Mushroom by ICP-AES T.T. Xu and P. Tian	172
Determination Content of Zinc Element in Natural Huazi Mushroom by ICP-AES W.T. Liang and P. Tian	176
Research on Parasitic Infections in Raw Seafood Industry Z. Zhao, H.L. Ding and L.J. Wu	180
Application of Calcium Phosphate Biological Material on Rehabilitation in Exercise-Induced Rotator Cuff Injury C. Zhao, Z.L. Ma and L. Zhang	184
The Research on Neural Network Diagnosis and Treatment System of Child Mental Health Disorders B.M. Chen, H.W. Zhou, X.P. Fan, X.R. Li and Z.M. Zhou	188

Chapter 3: Environmental Engineering

Modified Clay Adsorbent for the Adsorption of Cd²⁺ Research J. Sheng, S.M. Yan, X. Feng, A.C. He and G.H. Zeng	195
Phytic Acid Sepiolite Compound Adsorbent on the Adsorption of Cd²⁺ Performance Research of Heavy Metals J. Sheng, S.M. Yan, X. Feng and G.H. Zeng	199
Utilization of Coal Mine Water A.J. Shao, S.W. Wang, L.L. Chai, Q. Wang, Y. Liu and S. Yang	202
Design of Greenhouse Environment Measurement and Control System Based on Super Wi-Fi J.H. Wu, T. Hu, J. Chen, H.P. Si and K.Y. Lin	208
Optimizing Land Use Structure for Low Carbon Target: A Case Study in Zhangye of Gansu Province X.Y. Zhang and P.J. Shi	214
Soil Nutrient Variation in Greenhouse Soil from Haicheng Municipality, Liaoning Province X.Y. Chen and J. Han	219
An Online Monitoring System Installed to Alarm on Pollution Incidents in Douhe Reservoir in Tangshan, China B.X. Ren, Q. Ren, G.Y. Si, L. Yin, H.T. Yang and Z.M. Ren	223
Ecological Environment Effect Calculation of Land Use Change Based on Geography Information System Z.B. Liu and P.J. Shi	228
The Study on Dynamic Change of Cultivated Land Resources and Driving Forces - A Study Case of Lixian County, Hebei Province C. Zhang, H.C. Shi and X.X. Lv	232
Soil Carbon Mineralization and Microbial Biomass Carbon of <i>In Situ</i> and Exchange-Location Incubation in Forest along Urban-Rural Gradient R. Lu, X.Y. Peng and M.Q. Yu	237
Analysis on the Influence of Mining Development on the Ecological Environment in Dandong Area Y.X. Bao	243
Study on Adsorption Removal of Humic Acid in Water by Modified Clays Y.H. Wang, Y. Xiong, J.N. Zhang, Y.T. Zeng and J.R. Chen	247
Improving Maize Growth by Biochar and Biochar-Based Amendment in Light Sierozem in Ningxia D. Li, L. Chen, X.N. Song and G.C. Liu	251
Impact of Biochar Modified by HNO₃ on Plant Growth in Low Nutrient Coastal Saline Soil Y. Xia, M.H. Liu, X.N. Song and H. Zheng	255
Algicidal and Bactericidal Effect of Potassium Monopersulfate Compound on Eutrophic Water M.S. Wu, X.Y. Xu, X. Xu, Y.T. Zeng, J.N. Zhang, X.Y. Li, J. Xu and R. Duan	259
Irregular Striped Vegetation Patterns in Arid and Semiarid Regions Resulted from Oscillatory Instability T.S. Huang, H.Y. Zhang and F.F. Zhang	263

Chapter 4: Geology and Mining

DFS-Based Partition Method of Coalmine Ventilation Safety SubRegion P. Wang, X.T. Chang, Z.G. Yan and Y.P. Wang	269
A Study on Application of Real-Time Online Analysis of Ventilation Safety Data Based on Coalmine Monitoring System Z.G. Yan, Y.P. Wang and X.T. Chang	276
Evaluation of Uncertainty for the Determination of Magnesium Oxide Content in Limestone by the Atomic Absorption Spectrometry X.D. Wen, Z. Zhou, W.Y. Pan and M. Shao	283

Numerical Experimental Research on Shear Strength of Rock Mass Discontinuity Concerning Roughness	
J.H. Wei, Y.Y. Yang and X.B. Gao	289
Analysis and Research of Hydrogeochemical Characteristics about Yiliang Geothermal Field	
J.J. Ba, S.G. Xu and C.C. Li	294
Application of Comprehensive Geophysical Prospecting Method to Geothermal Resource Exploration in Yiliang County, Kunming	
J.J. Ba, S.G. Xu and C.C. Li	299
The Geological Characteristics for Pre-Cambrian Shale Gas Accumulation in China	
T.Y. Jing, F. Feng, G. Yang and J. Zhang	303

Chapter 5 Machine Parts and Mechanisms, Mechatronics, Automation and Control

The Finite Element Analysis of Axle Housing	
P.M. Zhang, L.Q. Ma and W.C. Zhang	309
PLC Temperature Monitoring System Research and Design Based on Web	
X. Zhang	313
Research on Water Sprays Shielding Device for Transport Vehicle	
J. Huang	317
Multi-Sensor Target Recognition Using VIKOR Combined with G1 Method	
H. Zheng	321
No-Load Grid Connection Control Strategy of Double-Fed Induction Generator in Wind Power Generation System	
B.Q. Xu and S.Y. Zhang	325
Improved Control Strategy of Wind Turbine with DFIG for Low Voltage Ride through Capability	
L.L. Sun and D. Fang	329
A Detection Method for Broken Rotor Bar Fault in Induction Motors Based on SVD Combined MUSIC with Extended Prony	
B.Q. Xu and S.H. Tian	333
Rashba Spin-Orbit Effect on Traversal Time in Parabolic-Well Magnetic Tunneling Junction	
Z. Huang	338
Magnetic Field Finite Element Analysis of Generator with Rotor Inter-Turn Short-Circuit Fault	
Y.G. Li and B. Han	343
Forest Seed Loam Cutting and Collecting Machine	
B.J. Cui, D.G. Kong, H.Y. Jiang, J.T. Liu, Y.L. Li and J.G. Yi	348
Influence and Optimization of Boiler Efficiency	
H. Li	352
Design and Experimental Study on the Vibration Subsoiler	
X.H. Liu, Y. Yu and L.C. Qiu	356
Modular Design of 3-D Ribbon Conveyer	
J.W. Qiao, X.H. Yin and N. Liu	360
Research on Electromagnetic Engineering and Technology with Application of EFIT Code in J-TEXT Tokamak	
F.F. Yuan, T. Xu, T.T. Qian and F. Zhang	364
EtherCAT Technology with Design of EtherCAT Slave Station	
F.M. Gong	368
Rigid Body Orientation Analysis Model Based on Stereo Vision	
H.C. Fan, F.L. Niu and R. Liang	372
A New Scheme Based on Climbing Method for Maximum Photovoltaic Power Tracking Control	
B.Q. Xu and J.B. Li	377
The Finite Element Analysis of Mining Dump Truck Frame	
P.M. Zhang, Q.R. Zhang and W.C. Zhang	381

Data Processing for Corrections to the Two Potentials from the Generalized Uncertainty Principle Z. Huang	386
Damage Mechanics-Finite Element Full-Couple Method to Predict the Fatigue Life of Metallic Material X.M. Chen, D. Guan and F.P. Yang	390
An Overview of the Finite Element Method on the Tool-Soil Interacting Problem of Tillage X.H. Liu, Y. Yu and L.C. Qiu	397
The Modification to the FEM Model of the Prestressed Concrete Beam with the Combination of the Data of Static and Dynamic Test T. He and C.J. Zhao	401
Computational Fluid Dynamics and Numerical Acoustic Response for Ship Accommodation Areas due to Propeller Excitation, towards a Human Factors Recommendations H. Abdelkhalek, D.F. Han, L.T. Gao and Q. Wang	406
Study on the Application of Rigid Body Dynamics in the Traffic Accident Reconstruction M. Ni	412
Research on Measurement of Grass's Moisture Content with Microwave Oven Method Y. Feng, Q.Q. Shen, L.L. Chen, S.L. Luo, G.B. Jiang, D.Q. Zhang and Y.S. Luo	417

Chapter 6: Communication and Networks, Applied Information Technologies and Data Processing

Design of the X-Band Frequency Source Based on the Multiplying Technology S. Zhao and Y.Q. Liu	425
Modeling of Emergency Communication Mission Based on Object-Oriented Petri Net F. Xiao, B.X. Han, X.P. Li and X. Li	429
A New Bayesian Algorithm for Wireless Sensor Network Link Selection L.J. Luo and H.P. Ren	436
Intelligent Science of Knowledge Retrieval System Model Based on Ontology T.T. Liang and C.Q. Li	441
The Application of Information Instructional Design in Graduate Courses Teaching L. Zhou	445
Multi-Level Fuzzy Evaluation Model of Gymnastics Teaching Ability in Colleges and Universities H.Y. Geng, C.H. Wu and L.X. Xiao	450
Analysis Model of Computer Network Security Teaching Founded on Apriori Algorithm J.S. Huang	454
Network Security Isolation System Based on Information Filtering D.M. Zhao and K.F. Zhu	458
Applied-Information Technology in the Homework System Founded on ActiveX Components D.M. Zhao and K.F. Zhu	462
The Specific Implementation Based on Infrared Images in Energy Consumption L.Y. Han, G.H. Cheng, X.S. Zheng, F.Q. Hao and R.Y. Zhang	466
Data Processing in Square Zero Preservers on Spaces of 2x2 Trace Zero Matrices S. Song, S.B. Chen and Y. Zhang	471
The Error Analysis of the Chirp Radar Waveforms Based on DDS Technology S. Zhao and Y.B. Yue	476
A Method for Selecting Emergency Response Model of Disruptive Incident Based on Cloud Model Z.F. Li, X. Li, X.P. Li and F. Xiao	480
An Improved Close Value Method for Multi-Sensor Object Recognition C.Q. Zhang	487

Chapter 7: Engineering Management

Data Processing in Model of the Bank Credit Risk Assessment Based on Asset Assessment L.R. Wang	493
Applied-Information Technology in Intelligent College Dormitory Assignment Strategy J. Wang, L.Y. Xue and Q. Zhang	497
Applied-Information Technology in Multi-Agent Simulation in Securities Market Modeling W.L. Xia, X.J. Wei and T.T. Sun	501
Improved COPRAS Method and Application in Material Selection Problem F. Xia, H. Wei and L.W. Yang	505
A Material Selection Method Based on Double Base Points S.G. Chao	509
Information Processing for Analysis of Consumption Flexibility of Global Natural Gas Demand X.M. Zhang, K. Cen and W.L. Xing	514
Study on Modern Machinery Manufacturing Technology and High Precision Machining Technology M. Liu and J. Luo	520
Evaluation of Electric Vehicles' Impacts and Rationalization of their Energy Sources' Distribution Based on Analytic Hierarchy Process and Multi-Objective Programming Model Z.M. Jiang and C. Hou	525
Early Diseases of Asphalt Pavement Damage of Water Research and Countermeasures Z.M. Zhang	532