

Table of Contents

Preface and Committee

Chapter 1: Materials Science, Processing and Application

Research on Material of Steel Grid Structure with Assemble of Grid Frame of Museology Museum J.M. Gu, Z.Q. Li and L.L. Meng	3
Research on Material Selection Construction Method Construction Technology with the High-Support Formwork Construction of NingBo Cultrural Plaza Grand J.M. Gu, L.J. Liang and X.L. Jiao	7
Orthogonal Experimental Study on the Mixing Proportion of Reactive Powder Concrete X.T. Ren, X. She, K. Lu, J.C. Zhu and W.P. Wang	10
The Feature of Symmetric Frames and Two-Directional Vector Wavelets and Applications in Material Science H.W. Gao	15
The Research of Dual Quarternary Pseudoframes for Hardy Space and Applications in Engineering Materials C.Y. Jiao and S.H. Wang	19
Test Methods Research of Cracks in Ceramics Based on Genetic Algorithm B.X. Liu, F.Q. Wang, X.D. Wu and Y.X. Li	25
Application of Synthetic Substitute Materials on Reconstruction of Anterior Cruciate Ligament of Knee Joint in Exercise-Induced Injury X.L. Miao, L. Zhang, H.M. Zhuang and Z.Q. Zhao	30
Composition Limy Binder with the Use of the Synthesized Aluminosilicates for Dry Construction Blends V. Loganina, L.V. Makarova, R.V. Tarasov and M.A. Sadovnikova	34
Composite Nondestructive Testing Technology H.X. Wang, W.F. Zhang and T.J. Liu	38
Identification of Soluble Organic Compounds from Shengli Lignite in Toluene/Ethanol Mixed Solvent J. Zhou, X.H. Du, Y. Chen, Z.M. Zong and X.Y. Wei	42
Cold-Start Emissions of an SI Engine Using Butanol/Gasoline Blends M.Y. Shi, R.F. Zhu, J. Li and Y.T. Sun	47
The Research Status of the Preparation and Properties of the Tungsten Heavy Alloy X.L. Fang, W.F. Zhang and H.X. Wang	51
Dye-Sensitized Solar Cells Assembled with Modified Photoanode and Carbon Nanotubes as Counter Electrode H.Y. Shi, J.Q. Tian and W. Zheng	55
Synthesis and Characterization of Fluorine-Doped Tin Oxide Nanocrystals Prepared by Sol-Gel Method J.Q. Tian, H.Y. Shi and W. Zheng	59
Analysis and Probe of the Causes and Solution of Cracks of Precast Concrete Lightweight Partition Board L. Wang, Z.L. Zhang and S.J. Pang	63
Conductive Silver-Modified TiO₂ Nanoparticles Prepared by a Silver Mirror Reaction Y.M. Gong, N. Zhao, Y.W. Li, S. Zhang, H. Zhang and J. Guo	69
Material Balance Method Combined with Hydrocarbon Generation Kinetics to Calculate the Efficiency of Hydrocarbon Expulsion A.H. Huang, M. Wang, S.S. Tian, H.T. Xue, Z.W. Wang and W.H. Zhang	73
Preparation and Coagulation Performance of Polymeric Aluminum Zinc Ferric (PAZF) from Galvanized Aluminum Slag M. Li, Y.Z. Yu and Y.Z. Guo	78

Characteristic of a Novel Composite Inorganic Polymer Coagulant-PAZF Prepared from Industrial Wastes M. Li, Y.Z. Yu and J.T. Wang	82
A Novel Soft Paper Prepared by Hydrothermal Synthesis of Ultralong TiO₂ Nanofibers Y.M. Gong, Y.W. Li, N. Zhao, M.Y. Chen, H. Zhang and J. Guo	86
Separation and Acidic Solution Washing for Heavy Metals from Contaminated Soils Y.K. Chang, Y.L. Shu, I.Y. Hsu and Z.W. Hong	90
Effect of Scrap: Sponge Ratio on Mechanical and Corrosion Properties of Zr-1Nb-0.7Sn-0.1Fe Alloy G.B. Jeong, P.W. Shin and S.I. Hong	94
Microstructure and Deformability of Cast Zr-Nb-Fe-O Alloy with High Iron and Oxygen Content G.B. Jeong, J.S. Song and S.I. Hong	99
Application of High Styrene Rubber Materials on Improved Tennis Performance Z.Q. Zhao, H.M. Zhuang, L. Zhang and X.L. Miao	104
Study of Enhanced Surface Raman Scattering on Nano-Particle in Terahertz Range Y.D. Wu and G.J. Ren	108
Application of Green Packaging Material with a Necessary Analysis on the Packaging Design H.Z. Ouyang	112
Effect Analysis of Temperature on the Rubber Material Stress-Strain Relationship Y.L. Yang, L. Qiao, C. Wang, F. Lu and X.H. Kang	116
Study of Performance on Reduce Fragility and Increase the Toughness of Fly Ash Ceramsite Concrete R. Li, X.H. Zhang and Y.F. Meng	120
Study on the Oxidation and Spontaneous Combustion Characteristics of Jurassic Coal in North Shaanxi J. Deng, K. Wang and X.W. Zhai	124
Correlation between Zener-Hollomon Parameter and DRX Critical Parameters of a Fe-Cr-Ni Super Austenitic Stainless Steel during Hot Deformation C.B. Hu, B.F. Guo, Y.T. Zhang, M. Jin, G.Q. Yang and M.F. Ma	129
Effects of the Binders on the Storage Stability of the Silicon Delay Composition T.F. Han and S.L. Yan	135
Applied Technology with Methods for Measuring Sulfur Blank Values by Using Infrared Absorption Method K.H. Tang and H.L. He	141

Chapter 2: Energy, Power and Heat Engineering

Study on Region Energy Allocation under Carbon Emission Constraints: Base on Analysis of Carbon Pinch H. Yu, J.F. Wang and L. Hu	149
Research on Energy Saving of Appliances with Evaluation Method and Application of Appliances Green Degree Based on Fuzzy-EAHP J.L. Wang, R.H. Ma and X.H. Dong	155
Application of Wind-Solar Hybrid Energy for Optimization and Design for Seawater Desalination System H. Zhan and S.M. Wang	161
Energy Saving Analysis of Clean Air Conditioning System in Pharmaceutical Company X. Li, X.Y. Ma and Y.F. Hao	166
Analysis of the Influence Factors of Energy Consumption in Pharmaceutical Industry X. Li, R.Y. Jia and R.P. Niu	170
Research on Energy Saving Diagnosis of Clean Air Conditioning System in Pharmaceutical Industry X. Li, R.Y. Jia and R.P. Niu	174
Shallow Geothermal Energy in the Application of Building Energy Saving in Shijiazhuang L.L. Tan and P. Huo	178

Research on Electric Power with Development and Application of Line Loss Rate Forecasting Software Based on MLRM-GM	182
W.D. Liu, T.J. Zeng, T. Jun, L.L. Shang Guan and B.J. Li	
A New Characterization Measure of the Degradation of Power Battery Based on Declining Point	186
G. Yu and Y. Yang	
Research on Thermal Balance with Critical Density in the Zero-Range Process with many Defect Sites	191
R.F. Zeng	
Research on Thermal Balance with One-Dimensional Zero-Range Process Model (ZRP) and Dynamics	195
R.F. Zeng	
Thermodynamics Analysis and Mathematic Proof of the Error of the Equivalent Enthalpy Drop Partial Quantitative Method (EEDPQM)	199
M. Zhao, Y.Y. Sun, J.Y. Liang, F.R. Shen, J.C. Sai and J.Q. Xu	
Analysis on Petrophysical Properties of the Shale Gas Reservoir	208
J. Fu, X.M. Tang and Y.C. Liu	
Study on Influencing Factors of Thermal Analysis Experiment on Coal Oxidation and Spontaneous Combustibility	213
H. Yang, K. Wang and Y.N. Zhang	
Parameter Matching and Simulation for Powertrain System of Pure Electric City Bus	218
F. He, H.B. Wu, H. Li and Y.M. Li	
Influence of Flap Deflection Angle on Wind Turbine Airfoil with Trailing Edge Flaps	222
Y.L. Jia, Z.H. Han, F.Y. Li, Y.K. Bai and J.X. Wang	

Chapter 3: Construction and Civil Engineering

Research on Mining Engineering with Dual Gradient High Inclination-Angle Fully Mechanized Mining Technology	231
X. Song and L.M. Wang	
Study on Method for Building Horizontal Deformation Based on Material Properties and Coordinate Transposition	235
F.M. Lu and T.Y. Jiang	
The Horizontal Deformation Model of the Landslide Based on Material Properties and Partitioning Method	239
F.M. Lu and T.Y. Jiang	
Application of Spline Function Based on Material Properties in the Deformation Analysis	243
F.M. Lu and T.Y. Jiang	
2D Numerical Analysis on Influence of Embankment's Security and Stability Caused by Shield Tunneling	247
X.C. Zhong, W.L. Ye, Y.B. Ren, G.Y. Zhai and X.D. Chen	
Study on Direction for Land Reclamation Engineering in Limestone Mining Area — The Case of Limestone Mine Land in Tongyuanpu, Fengcheng	253
Y.X. Bao	

Chapter 4: Environmental and Chemistry Engineering

Environmental Research on the Effects of Fenton Reaction Conditions on the Dehydration Properties of Lake Dongting Mud	259
S.Z. Fang, T. Hao, S. Huang and Y. Wu	
Environment Research with Progress of Bioremediations for Aquaculture Effluent	264
X.Y. Mao, X.H. Shao, J.Q. Mao, C. Yin, L. Wang, H.B. Sun, Z.L. Tang and T.T. Chang	
Optimization of Coagulation Process for Disperse Navy Blue Dye Wastewater Treatment Using Response Surface Methodology	270
M. Li, Y.Z. Yu and G.Y. Yan	
Studies on Adsorption Kinetic of Cd²⁺ by δ-MnO₂	274
P. Huo, F. Xue, L.X. Wang, Y.K. Cheng and H.X. Yun	

Treating Disperse Dye Wastewater with Organic Clay L.X. Wang, Y.K. Cheng, P. Huo and Y.N. Gao	279
Environmental Study of the Design and Operation of the SCR Flue Gas Denitration Project Y.K. Cheng, L.X. Wang and P. Huo	285
Soil and Water Conservation Society and the Construction of Ecological Civilization City Z.Q. Yu, Q. Gao and W.F. Ding	290
Environmental Pollution in China's Urbanization Process and its Enlightenments Y. Han	295
Excess Heat Measurement and Transmutation Study of Pd Wires after Lasers Stimulation in a D₂ Gas-Loading System X.Y. Wang, B.J. Shen, L.H. Jin, X.L. Zhao, H.Y. Wang, X. Lu, L.Y. Li and J. Tian	300
Research on Problems and Disposal of Municipal Solid Waste in China with Current Management Model and System Y.B. Wang and X. Li	304
Gas Generation Regularities of Dissipated Soluble Organic Matter in Sichuan Basin H.T. Xue, G.D. Mu, S.S. Tian and S.F. Lu	308

Chapter 5: Control Engineering and Monitoring

Optimization of Control and Combustion on a 330MW Face-Fired Boiler Q.F. Zhang	315
Analysis of Typical Driving Condition Test and Control Strategies Based on Toyota Prius Y.T. Sun, J.Z. Zhang, Y.L. Wang, D.H. Fan and R.F. Zhu	321
The Design of STM32 Embedded Data Gathering Control System Based on GPRS Network S.W. Lin	326
A Study of Remote Monitoring Fire Alarm System Based on Internet of Things Q.L. Hao, P.X. Yang, M.J. Wang and R. Ma	330
Combined Test of Capacity Regulating in 1100kV Controlled Shunt Reactor Valve-Control System X. Lei, G.Z. Xu and K.Z. Xing	334
Adaptive Fuzzy Sliding Mode Control for Brushless Double-Fed Wind Power Generation System Z.K. Shao, Z.R. Duan and G.Y. Huang	338
In-Vehicle Temperature Regulating System Based on Theory Calculation Y.B. Xu	344
A New Method for Multi-Fault Diagnosis of Rotating Machinery Based on the Mixture Alpha Stable Distribution Model G. Yu and J. Kang	349
Study on Water Engineering with Hydromechanics and the Bubble Float Flow Measuring Method A.D. Li and H.H. Wang	353

Chapter 6: Design and Modeling in Mechanics and Construction Engineering

Numerical Design of Pillar Width in the Inclined Coal Seam J.D. Qi, J. Chai and J.Z. Zhang	361
Multi-Objective Optimal Design of a Double Circular Gear Based on the Differential Evolution Algorithm L.M. Zou, B. Guo and X.Y. Qian	365
Design of Wireless Sensor Gateway Based on ARM S.P. Zhao, J.H. Xing and H. He	370
Numerical Simulation on Stress Distribution of the Inclined Coal Seam under Different Pillar Width J.D. Qi, J. Chai and J.Z. Zhang	374

Analytic Study of Structural Stability at High Temperature of Structural Beam Made of SM 400 I.K. Kwon	378
Hydromechanics Analysis and Simulation on Three-Dimensional Flow Field of Marine Propeller L.T. Zhang, H.B. Ji and X.X. Wang	382
Dynamic Response Analysis of Ocean Drilling Derrick under the Dynamic Load C. Wang, Z.J. Xu, X. Li and G. Liu	387
Study on Light HVDC Converter and Harmonic Suppression of the Active Filter S.Q. Lv	391
Analysis and Research on Flight Mechanics with Air-Wake around Large Warship Decks X. Li, S. Huang and C. Wang	395
Applied Mechanics in Moving Boundary Problems of One-Dimensional Non-Darcy Flow in Semi-Infinite Long Porous Media J.H. Wang, L. Wang and D.K. Zhou	399
Research on Gun Dynamic Characteristic under Muzzle Strong Impact C.C. Di, L. Qiao, C. Wang, F. Lu and X.H. Kang	404
Design of Artillery Recoil Distance Automatic Recording and Limit Distance Alarm Device S.H. Zhou, Z.H. Xu, Z.J. Yang and J.H. Lu	409
Dual Analysis of DC Chopper Circuit with LC Input Filter Z.C. Liu, J.S. Zhang, X.P. Xiao, S.W. Zhu and R. Chen	413
Research and Application of Aeroelastic Analysis Based on Fluid-Structure Interaction R. Li and C.H. Tang	418

Chapter 7: Management, Computation and Information Technologies

Applied Technology in Dynamics Study for Projecting Deployment of a New Anti-Riot Net Y.Y. Li, L. Fang and H.B. Chen	425
Applied Technology in Image Retrieval via 8-Direction Gaussian Density in the DCT Domain J.F. Wang, W.M. Wu and X.R. Zhao	431
The Application of Stress Testing and Applied Technology in Credit Risk Management N.F. Zhang and X. Kang	435
Research on Applied-Information Technology in Reformation System of the Physical Examination Mode of School Infirmarys L.F. Hu, Y. Zhao, D.D. Zhang, Y.Y. Yu and J. Yang	442
Research of Software Test Technology in Airborne Software Based on GCC L.L. Liu, X.X. Yu, X. Fan and J. Shu	447
Research on Applied-Information Technology with Inter-Partition Integration Testing Strategy under IMA Architecture J. Shu, C. Zheng, F.Y. Yang and W. Zheng	454
Research on Information Engineering with Information Technology for E-Learning Based on Face Recognition X.W. Song, S. Zhu, Y.W. Wei, Q.J. Sun and L.Q. Zhao	460
An Information Retrieval Expansion Model Based on Wikipedia L.X. Gan and W. Tu	464
Information Technology in Intelligent Warehouse Management System Based on ZigBee X. Xu, W.W. Yao and L. Gong	468
Research of Engineering Spot Attendance and Employee Information Management Integration System L.J. Zhang	472
Research of a Novel Automatic Management System for Material Storages Z.T. Jin and Y. Wang	476
Research on Information Processing with Release Method of Railway Freight Loading Information Based on Dynamic Planning Model Y.M. Hou and Q. Zhang	480

Applied Technology for Typical Attacks and Security Mechanisms in Wireless Sensor Networks R. Zeng	484
Applied-Information Technology for Brand Image towards the Usage of iPhone G.M. Ling, Y.S. Fern, T.S. Huat, L.K. Boon and T.S. Lee	491
An IMU Static Attitude Angle Calibration Method Based on Total Station X.Y. Xiong, F. Wei and B. Fu	496
Information Technology in Multi-Object Tracking Based on Bilateral Structure Tensor Corner Detection for Mutual Occlusion Y.H. Xie, X.W. Han and Y.G. He	502
Design and Implementation of Security Network Optimization W.W. Yao, L. Gong and X. Xu	507
Data Analysis and its Application of Network Security L.P. Huo, X. Xu and W.W. Yao	511
Data Processing in Moving Boundary Problems of One-Dimensional Non-Darcy Flow in Semi-Infinite Porous Media R.R. Jin and J.H. Wang	515
Data Processing with Transportation Cost Allocation Method of Formwork and Scaffold Leasing Companies Based on Supply Chain Z.Y. Han and Z.G. Han	520
The Design of Software Protection Mechanism Based on Virtual Machine S.Q. Hu	525
The Study of Tight Periodic Wavelet Frames and Wavelet Frame Packets and Applications Q.J. Chen, Y.Z. Chai and C.L. Cai	532
Engineering Research with Application of System Dynamics Model of Risk Identification in Railway Construction Project L. Zhang and Y. Zhong	536
Research on Technology Industry Value Chain and its Properties Y.Y. Jiao and J.H. Li	541
Research on Management Engineering with Data Processing for Relationship between Equity Structures and Operating Performance — Take the Utilities Listed Companies as Example B.J. Li, D.X. Niu, Y. Lu, H.L. Xia and W.B. Ding	547