

Table of Contents

Preface and Organizing Committee

Chapter 1: Material Engineering and its Application

Circular Inclined Concrete-Filled Steel Tubular Stub Columns Subjected to Axial Compression	
Q.X. Ren, J.F. Guo, L.G. Jia and S.Z. Yu	3
Supercritical Carbon Dioxide Heat Exchanger Tube Numerical Simulation and Analysis	
J. Yang, J. Lv, D.Z. Yang, K. Liu, S.B. Zhang and H.X. Lu	7
Mechanical Properties of Steel Fiber Reinforced Lightweight Aggregate Concrete	
C.Y. Li, H. Chen and S.B. Zhao	12
Judgement on Rough Set Theory for Disease Formation of Cement Concrete Pavement	
S.M. Liu, J. Tang and S.B. Zhao	16
The Corrosion Fatigue Life Research of Shot Peening Aluminum Alloy	
S. Li, Y. Cui, S.L. Lv, W. Zhang and X.Y. Tong	19
Synthesis and Electrochemical Performances of $\text{Li}_4\text{Ti}_5\text{O}_{12}/\text{C}$ as Anode Material for Lithium-Ion Batteries	
F. Gu and G. Chen	24
Skin Color Detection Method Based on Direct Least Square Ellipse Fitting in CrCbCg Space	
J.G. Sun and Y.C. Zhou	28
Multiattribute Reservoir Prediction of Hei 49 Block in Daqingzi Oilfield, NE China	
Y. Yuan, J.L. Zhang and A.X. Song	32
Study on Mechanical Properties and Water Permeability of Recycled Aggregate Porous Concrete	
C.Y. Li, P. Nie and F.L. Li	36
Oxidation Behavior of K38 Superalloy with Different Amounts of Yttrium Addition at 1173K in Air	
P. Yu, L. Shi, W. Wang and F.H. Wang	40
Research on Multi-Agents Based Distributed Data Integration	
J. Liu and C.S. Zhou	45
Research and Design of XML Based Abstract Component	
C.S. Zhou and J. Liu	50
Genetic Analysis and Repair of Cracks in Prestressed Concrete Box Girders during Precast Period	
S.M. Liu and S.B. Zhao	55
Viscosity of Delaminated Kaolin through Intercalation of Potassium Acetate into its Layers	
L.H. Zhao, J.R. Hu and B.H. He	59
A Video Semantic Mining Scheme	
S.L. Zhang, H.P. Li and S.W. Zhang	64
The Laminar Flow Simulation of Variable Diameter GFRP Pipe with Transition Region	
Y.X. Wang, J. Ji and S. Zhang	68
Intelligent Controller Design for Air Conditioning with Multiple Power Saving	
X.J. Xiang	72
A PDA-Based Solution for the Realization of Green Leafy Vegetable Water-Fertilizer System	
S.K. Ke, L. Li, Y.B. Miao and D.F. Huang	76
A Study on Distributive Regularities of the Fluid Pressure in Elbow Pipes	
X.Y. Lu, X.L. Lu and L.L. Huang	80
Treatment of Raw Water with Ultrafiltration Membrane/PAC	
Y.X. Yang and W.J. Liu	86
Simultaneous Localization and Mapping with Identification of Landmarks Based on Monocular Vision	
Y.M. Yi and Y. Hui	90

Research of 3D Woven C/C Composites Bending Properties C.Y. Yang, X.P. Zan, Z.Y. Hu and J. Li	95
Characterization and PL Properties of Ge-Induced Crystallization of a-Si Films Deposited by Magnetron Sputtering K.Y. Kang, S.K. Deng, R.T. Hao and D.C. Li	99
Prediction of Cotton Ring Yarn Evenness Properties from Process Parameters by Using Artificial Neural Network and Multiple Regression Analysis B. Zhao	103
Prediction of Breaking Elongation of Polyester/Cotton Yarn in Ring Spun Processing B. Zhao	108
Despeckling Algorithm of SAR Image Based on EMD and PCA W.B. Wang and M.G. Wang	113
Research on Lightning Monitoring System of Solar Photovoltaic Power Generation System S.B. Li and W.P. Luo	117
Novel Plasticity Integration Algorithm in Improved Inverse Analysis Method and its Verification in Clover-Shaped Cup Drawing X.Y. Lu, X.L. Lu, B.T. Tang and L.L. Huang	121
Effect of Nitrogen and Sulphur on the Growth and Qualities of Bunching Onion H.C. Liu, J.L. Li, S.W. Song, G.W. Sun and R.Y. Chen	127
Effect of $\text{NH}_4^+\text{-N}$ and $\text{NO}_3^-\text{-N}$ Ratio on the Growth and Quality of Bunching Onion under High Temperature Stress G.W. Sun, C.Y. Jiang, H.C. Liu, S.W. Song and R.Y. Chen	132
Research on the Non-Planarity about the Tensor Product of Graphs Y.Z. Hu, N. Jiang and H.D. Wang	136
Synthesis and Luminescent Characterization of Highlight Blue Mg (II) Materials X.S. Tai	141
Synthesis and Spectral Characterization of a New Mg (II)-Schiff Base Luminescent Materials X.S. Tai	145
Preparation of Eu (III) and Tb (III) Complex Materials X.S. Tai	149
Research on the IR Spectrum and Fluorescence Properties of Cd (II) Complex with 1-Acetyl-2-naphthol-4, 4'-diaminodiphenyl Ether L.H. Wang	153
Preparation of Tb (III) Complex Material with 1-acetyl-2-naphthol-4, 4'-diaminodiphenyl Ether L.H. Wang	157
Synthesis, Spectral Properties of Tb (III) Complexes with 22'-Dithiosalicylic Acid L.H. Wang	161
An Artificial Immune-Based Distributed Intrusion Detection Model for the Internet of Things R. Chen, C.M. Liu and C. Chen	165
Synthesis, IR Spectra and Fluorescent Property of Eu (III) Complexes with Multifunctional Ligands L.H. Wang	169
Near-Infrared Quantum Cutting Nanophosphors for Solar Cells S.W. Li	173
Application of Matlab Optimization Tool Box on Sections of Prestressed Steel-Concrete Composite Box Girder J. Wang, W. Yan and X. Gui	177
Experimental Research on Ultrasound Cast-Rolling Lead Alloy Strip J.P. Li, L.B. Zeng, D.H. Mao and H.F. Jiang	181
The Effects of the Process Parameters on Micro-Hardness for Electroless Ni-P-Nano SiC Composite Plating H. Wang	187
The Analytical Model and Flow Parameter Influencing the Internal Pressure Distribution of Elbow Pipe X.Y. Lu, X.L. Lu, L.L. Huang, Y.M. Xu and Y.Y. Liu	192

Effect of Color Shading-Nets on the Growth and Physiological Characteristics of Chieh-Qua Seedling	197
S.W. Song, L.Y. Yi, H.C. Liu, G.W. Sun and R.Y. Chen	
A NoSQL Framework Based on the DHT	202
Z.H. Peng and X.M. Luo	
Optimization Design of Cross-Section of Prestressed Steel-Concrete Composite Box Girder	207
J. Wang, Z.Q. Li and X.W. Hao	
Generation of Respiratory Flow Having Fractal Signal Feature	211
Z.H. He, Y.H. Du and Z.X. Wu	
Near Infrared Quantum Cutting for Solar Cells in CeF₃:Yb³⁺ Nanophosphors	215
S.W. Li	
Complex Generalized Basis Reduction Assisted Successive Interference Cancellation Detection for SCBLAST Systems	219
L.F. Ni, Q.Q. Li and S.D. Du	
Numerical Simulation of Rock Fragmentation Process Induced by Two Disc Cutters	224
L.T. Man and S.J. Li	
Study on Heat Transfer Model of 2024 Aluminum Alloy under Static Magnetic Field	229
C.G. Cheng, L. Yu, W.C. Wan and Z.T. Liu	
The Design of Emergency Information System	234
X.F. Peng	
Tribological Performance of AlN Nanoparticles as Lubricating Oil Additive	238
H. Wang and Y.M. Wang	
Damage Evolution of Rock and Acoustic Emission Study about Deep Diversion Tunnel in the Excavation Process	243
Z.Q. Kang, Y. Yu and H.M. Wen	

Chapter 2: Material Science and Manufacturing Technology

MgO-PSZ Solid State Electrolyte Tubes for Metallurgical Oxygen Sensors Made by Powder Injection Moulding	249
X.H. Kong, J. Tang, R.H. Sun and Q.G. Liu	
Experimental Study on Flexural Bearing Capacity of Reinforced Ceramsite Concrete Beam	253
W.J. Yang, Z.B. Pi and Z.L. Mo	
The Study of Mine Cyber-Physical Systems	258
X.W. Wang	
Experimental Study on the EFI Engine Fueled with LPG	264
X.G. Li, Y.Y. Wang, Q.L. He and A.G. Zhang	
Study of Multi-Agent Based Integratable Manufacturing Execution System Model	268
F. Li	
Experimental Research on Short Compression Column of the Shale Ceramisite Concrete	272
W.J. Yang, Y.J. Zhou and C.C. Meng	
Non-Linear Analysis of Z-Shaped Section Reinforced Concrete Column	276
T.C. Wang and X. Chen	
Study on the Effect of Cover Thickness on Bond Behavior between Deformed Bar and Shale Ceramsite Concrete	281
J.Y. Yang, J. Yu and Y. Wang	
Design and Development of Intelligent Release Control Unit Based on LPC2478	286
L.X. Zhao, W. Su and L.S. Wu	
The Influence of Temperature and Oxidation Time on the Preparation of Graphite Oxide	291
Q. Huang, H.J. Sun and T.J. Peng	
Investigation on the Aging Properties of Silicone Coating in Marine Concrete	296
X.X. Xu, C.J. Sun, X. Chen, L. Qin and J.Y. Yu	
Preparation of Microwave Organic Modified Montmorillonites and Decolorization on Dye Wastewater of Acid Fuchsin	301
N. Li, H.B. Liu, X.Y. Zhou, Y.H. Wang and X.Y. Zheng	
Dynamic Mechanical Properties and Thermal Stability of PTT/POE/OMMT Nanocomposites	306
M.T. Run, N. Li, B.T. Xing, M. Yao and W. Zhou	

Rheology, Morphology and Mechanical Properties of PA6/PP-g-MAH/POE Blends M.T. Run, M. Yao, B.T. Xing and W. Zhou	310
Crystal Morphology and Thermal Properties of PA6/PP-g-MAH/POE Blends M.T. Run, W. Zhou, B.T. Xing and M. Yao	314
The New Progress of Nickel Sulfide Synthesis Y.H. Zhang and Q. Wang	318
X Ray Phase Contrast Imaging for the Extreme Low Density or Weak Absorption Materials J. Wu, J.B. Chen and X.L. Zhang	322
The Impact of Heat Treatment on Pyrophyllite Structure and Acid-Soluble Properties J.J. Wu, H.F. Chen, S.J. Zhao and B. Li	326
Optimization of Conditions for Extraction of Acid-Soluble Al₂O₃ from Pyrophyllite J.J. Wu, H.F. Chen, S.J. Zhao and B. Li	330
Study on Manufacturing Task Description Based on OWL-S in Manufacturing Grid Y. He, D.C. Hu and Q.L. Zhang	334
RC Structure Durability Information Model Based on IFC Y.H. Ye, W.P. Liu and B. Diao	338
Effect of Aging Treatment on the Thermal Stability and Properties of Cu-10Fe-3Ag <i>In Situ</i> Composites Y. Li, R.Q. Liu and F. Xu	343
Nitrogen Ligands on Gas-Phase Oxidation Carbonylation of Dimethyl Carbonate R. Li	347
Study on the Development and Application of Automobile Transmission Design Expert System N.W. Zou and X.M. Yu	352
Effect of Ce Addition on the Microstructure and Properties of Cu-10Fe-3Ag <i>In Situ</i> Composite Y. Li, R.Q. Liu and F. Xu	357
Optimization of Kaolin Wastewater Treatment Processes Research via Response Surface Methodology L.P. Wu, D.M. Zheng and S.G. Zhu	361
Optimization of Magnesium Separation and Extraction from Boron Slurry Using Response Surface Methodology F. Gao, R. Fu, M.Y. Qian, Z.M. Wang and X. Zhang	366
Kinetics of Sulfuric Acid Leaching of Boron Slurry F. Gao, X.G. Xu, L. Li, H.Y. Sun and H.X. Wang	370
Prepared Activated Carbon from Rice Husk Cracking by Medium Optimization Using a Statistical Experimental Design F. Gao, S.W. Ji, S.W. Pan, X.G. Liu and X. Zhang	374
Numerical Simulations of Drilling Mud Invasion into the Marine Gas Hydrate-Bearing Sediments F.L. Ning, Y.B. Yu, G.S. Jiang, X. Wu, K.N. Zhang, L. Zhang and L. Liu	378
A New Fluorescent Material of Mg (II) Complex with Salicylaldehyde- 4,4'-diaminodiphenylamine X.S. Tai	388
The Structure of Two-Dimensional Layered Cu (II) Complex Material X.S. Tai	392
The Effect of Alkaline Earth Metal and Carboxylate Derivatives on the Luminescence of Quinaldine Acid Zn (II) Complex Material X.S. Tai	396
Research on the Structure of One-Dimensional Chain Calcium (II) Complex Material L.H. Wang	400
The Structure and Antibacterial Activity of Taurine and its Magnesium Complex L.H. Wang	404
Synthesis and Luminescent Properties of Mg (II) Complex Material with Quinaldine Acid L.H. Wang	408
Treatment of Dyeing and Printing Wastewater by Copper Oxide Loaded on Coconut Shell Activated Carbon Y.D. Liu, B.Q. Jiang and Z.Q. Xiao	412

Cloud Computing Model and REST APIs Implementation N. Jiang and Y.Z. Hu	416
Extraction of Collagen from Fish Scales with Papain under Ultrasonic Pretreatment J.N. Zeng, B.Q. Jiang, Z.Q. Xiao and S.H. Li	421
First Principles Investigation of Phase Stability of LaNi₃ and LaMg₂Ni₉ W. Gao and J.G. Niu	425
Design of a Novel Oceanic Oscillating Power Generation System K. Qin, K. Luo, D.J. Li, M. Li and F. Hu	429
Removal of Uranium (VI) from Aqueous Solution by Dry Chitosan Powder Z.J. Yi and J.H. Li	434
Reaction Kinetics Analyses of Ethylenediamine Polyurea Curing Process H. Zhu	438
Landing Motion Simulation of Autonomous Underwater Lurk Vehicle P. Zhang, B.W. Song and X.X. Du	444
Spatial Configurations of Molybdenum Atomic Chains H.X. Shen, W.Z. Zhu and A.Y. Li	447
Fabrication of Hydroxyapatite and Observation of Nanoparticles Entering into Cells D. Yang and E.J. Sun	451
A New Outlier Detection Algorithms Based on Markov Chain J. Yang and Y.L. Wang	456
Preparation and Characterize of Konjac Glucomannan-Based Protein Molecularly Imprinted Polymer Z.Y. Mi, Z. Ma, X.L. Li, P. Wang and Y.Q. Zhang	460
CAE Analysis and Improvement Design of Double-Decker Coach in Full Front Impact Q. Li, F.L. Shen, G.S. Zhang, W. Zhou and K. Zhao	464
Particles Gradation Optimization of Blasting Rockfill Based on Fractal Theory S. Zhu, Y.M. Feng, S.R. Feng and W.Y. Chen	469
Study on the Measurement of U-238 Neutron Yield Base on the Fission Chamber J.M. Ai and Q. Wang	474
Preparation of Polyurethane Solid Tire with Low Heat Generating Y.H. Yi and S.L. Zhang	478
Electroless Ni-P-Zn Alloy Deposition on Surface of Low Carbon Steel Y.D. Liu, B.Q. Jiang and Z.Q. Xiao	482
Pressurized Microwave-Assisted Extraction of Isoflavones from Soy J.N. Zeng, B.Q. Jiang, Z.Q. Xiao and S.H. Li	486
Effect of Kanamycin Sulfate and Gentamicin on Growth of Probiotics G.W. Shu, Z. Ji, Z.W. Wang and H. Chen	490
Experimental Study on Crack Resistance of Ceramic Sand Insulation Mortar W.J. Yang and H. Zeng	494
A Mechanical Investigation on Altered Rocks in Tunnel Construction K. Cui and Z.C. Ling	498
Effect of Cooling Rate on the Solidification of Zn-5wt%Al Alloy F.S. Yang and F. Ni	502
Effect of Steroidal Saponins and Flavonoid from <i>Fructus tribuli</i> on Growth of <i>Lactobacillus brevis</i> Z.C. Miao, Y.M. Zhang, D.W. Wang, S.D. Ma and Z.J. Li	506
Analysis to the Influences of Cutting Force to Machining Deformation of a Titanium Alloy Thin-Wall Tube Y.H. Yang, J.Y. Guo and C. Yu	510
The Ply Stacking Optimization for Composite Laminated Structure: Application of Tabu Search Algorithm J. Zhang	514
Chloride Ions Penetration Resistance of New-Old Concrete Z.M. He and J.Z. Liu	518
Effect of Mineral Admixtures on Chloride Ions Content in Concrete Repair Materials Z.M. He, J.Z. Liu and T.H. Wang	522