

Table of Contents

Preface and Conference Organization

Chapter 1: Damage and Fracture Mechanics

Influence of the Cross Section Shape on Energy Absorbing Component of Bumper Subjected to Low Speed Crash Y.J. Liu and L. Ding	3
Optimization of Sonic Boom Suppression by Off-Body Energy Deposition X.Q. Feng, Z.K. Li, J.H. Sang and B.F. Song	7
Evaluation of Stress Corrosion Resistance Properties of 15CrMoR(H) in H₂S Environment C.C. Wang, J. Wang, Y.L. Zhang and Y. Li	14
Analysis of Plastic Strain between Substrate and Micro-Cantilever under Different Deformation Characteristics H.K. Gao and J.M. Huang	21
Evaluation of the Higher Order Terms of the Wedge-Splitting Specimen Based on the SBFEM F.L. Xu, J.Y. Liu, B.K. Ning and H. Fan	25
Study on Failure Mechanisms of Composite Materials Based on HHT W.Q. Han and J.Y. Zhou	30
The Research on Oblique Crack Tip Deformation Field of Airship Envelope Composites Based on the Digital Speckle Correlation Method L.B. Liu, Y.C. Gu, S. Cao and H.D. Xiao	34
Numerical and Experimental Buckling and Post - Buckling Analysis of Composite Cylindrical Panel with Delamination M. Barski, A. Muc, P. Pastuszak and A. Bondyra	39

Chapter 2: Fatigue and Creep

Finite Element Analysis of Input Axis in Six-Speed Transmission Q.D. Zeng and X. Pan	45
Design of Flat Ends in Pressure Boilers with Circular and Elliptical Stress Relieve Grooves B. Szybiński	49
Analytical Estimation of Maximal Fatigue Loads in Cylindrical Roller Bearings P. Romanowicz and B. Szybiński	54
Analysis on Stress and Contact Failure of BNC Connector Components Z.Y. Li, Y. Liu, S.J. Wang and W.J. Wei	58
Qualitative Calculation of Fatigue Life for Turbine Rotor Blade W.F. Zhang and Q.Y. Tang	63

Chapter 3: Dynamics, Vibration and Structural Stability

Modal Stability Control of a Wheeled Heavy Machine S. Chwastek	69
Initial Temperature Influence to the Rectangular Plates Free Vibrations under Different Types of Boundary Conditions O.I. Poddaeva and A.N. Fedosova	73
Research on Analytic Calculation Method of the Dynamic Response of Buried Pipelines under Indirect Ground Shock G.F. Xu, Z.D. Deng, C. Ji and J.J. Jia	77
Dynamic Experimental Investigation on the Fundamental Frequency of Liquid Storage Tanks under Seismic Excitations D.Y. Liu and Z. Fang	81

Design Principles of Controlling Vehicle Gear Whine Noise Based on Loudness Metric D. Guo, Q. Shi, W.L. Li and C.H. Xu	86
Dynamics of Turbocharger Rotor with Spin Softening Effect X.S. Yao, C.L. Zheng and Y.F. Liao	90
Study of Contact Interface Rough Effect on Vibration Stress Wave Propagation T. Liu	95
Performance Analysis and Improvement Design of School Bus Seat Based on Workbench C.Q. Hu	99
Sensing of Driving Conditions Based on Vibration Signal J. Li	105
A Novel Structural Form of Semi-Submersible Platform for a Floating Offshore Wind Turbine with Hydrodynamic Performance Analysis B.B. Lai, C.B. Zhao, X.M. Chen, Y.H. Tang and W. Lin	109
Effects of Wind Load on Hydrodynamic Performance of an Offshore Wind Turbine Semi-Submersible Platform J.R. Xie, C.B. Zhao, X.M. Chen, Y.H. Tang and W. Lin	114
Tendon Response of 10 MW Offshore Wind Turbine TLP Platform in Extreme Environment Condition Q. Zhang, C.B. Zhao, X.M. Chen, Y.H. Tang and W. Lin	119
Oscillation Suppression in a Delay-Coupled Flexible-Joint System S.Y. Jiang	123
Development of an Novel Adaptive Suspension System Based on Ball-Screw Mechanism C.N. Huang, K.H. Chen and D.T.W. Lin	128
Stable Platform Based on Workbench Vehicle Structure Analysis J.X. Liu, C. Chen, L. Wang and C. Zhang	132

Chapter 4: Solid Mechanics Theory and Methods and Engineering Application

A Method for Calculating the Amount of the Deflection and Force-Energy Parameters for Copper-Clad Steel Tube in the Process of Straightening L.Y. Xia, D.M. Sun, G.R. Kang and J. Sun	137
The Sinusoidal Buckling Mechanical Analysis for the Coiled Tubing Based on Energy Method C.S. He, J.B. Liu, Q.B. Yue and Y. Wang	141
The SVC Based AFOSM Method for the Structure Reliability Sensitivity Analysis W.D. Chen, P. Jia, X.D. Wu, Y.C. Yu, F.C. Zhang and S.Z. Lu	146
Research on Hexahedral and Tetrahedral Mesh Applied to Strength Analysis of Bogie Frame G.J. Li, W.J. Wang, L. An and Z.J. Zhang	150
Research on Geometry Model and Stress State Leading-In through Heavy Rail Cooling to Compound Straightening H. Song, J.K. Yao, K.X. Li, F.B. Lian, S.H. Tong, H. Jia, S.Y. Yuan and Z.Q. Wang	155
Dynamic Response Analysis of Square Honeycomb Sandwich Plates Subjected to Blast Loading L. Deng, A.W. Wang and L.W. Mao	160
Investigation into Dynamic Postbuckling of Thin Rectangular Plate under Elastic Compression Wave D. HAN, A.W. Wang, L.W. Mao and G. Li	165

Chapter 5: Fluid Mechanics and Fluid Engineering

Study on Flow Rate and Steady Flow Force of Hydraulic Combination Valve Based on CFD J.Y. Shi	173
Research on Effects of Positioning Ways on the Strength of Port Plate in Axial Piston Motor J.Y. Shi	177

Investigation of the Predictive Ability of Two Advection Schemes on the Formation of a Turbulent Separation Bubble in a Boundary Layer Wind Tunnel	
M. De Queiroz, G.L.F. De Vasconcellos, C.B. Maia, J. Weiss and S. De Moraes Hanriot	181
The Numerical Simulation and Calculation of Aircraft Horizontal Stabilizer to Aerodynamic Forces by Using Visual Method	
W.Y. Wang, W. Li and C.Z. Jin	186
The Simplified Flow Field Analysis Method of Multi-Layers Parallel Plates Perfusion Bioreactor	
Y.B. Gao, W.H. Zhou, L.S. Cen, Y.C. Xu, J.X. Liang and Y.X. Luo	191
Study on the Blood Flow with Rolling Manipulation of Traditional Chinese Massage	
H.L. Tan, K.Z. Bai, F.R. Kong, L. Jin and H.B. Li	197
Investigation of CFD Method Simulating Hydrodynamic Performance of AUV with Complicated Shape	
Y.X. Wang, Y.J. Pang, T. Gao and J. Wang	203
Direct Solution of Three-Dimensional Turbulent Rayleigh-Bénard Convection	
W. Xu, Y. Bao, G.Y. Ding and Y.Z. Zhang	209
Study on the Characteristics of the Flow Resistance of the Mixed Plate Heat Exchanger	
Z.M. Tong, F. Xie, G.H. Qin and X.G. Tao	213
Influences of the Compliances and the Resistance on Pulsatile Flow Waveforms	
W.B. He, Y. Wang and X.Y. Gong	217
Flow Field Numerical Simulation Analysis of Five Wing Horizontal Wave Turbine Power Plant with Different Blade Angles	
S.M. Wang and K. Tian	221
Simulation Study of Three-Phase Flow Field Based on Microbubble Flotation	
W. He, Z.K. Li, A.R. Tang, A. Liu and B.G. He	226
Numerical Simulation of the Effect of the Uneven Wall on the Liquid Film Flow	
M. Liu, Y. Zhu and S.L. Wang	232
Computational Fluid Dynamic of Date Transfer	
B.Y. Lu and Y.Z. Li	236
Supersonic Bi-Directional Flying Wing Wave Drag Optimization Based on Alternative Form of CST Method	
X. Guan	240
New Exact Solutions for Stokes First Problem of a Generalized Jeffreys Fluid in a Porous Half Space	
X. Guo	246
An Analytical Solution of Wave Exciting Loads on CALM Buoy with Skirt	
D.J. Wang and S.P. Sun	254
Understanding Regular Waves Effect on Ship by Numerical Wave Tank Simulation	
S. Fan, C.B. Zhao and Y.H. Tang	259
Suppression of Vortex Shedding of Circular Cylinder by a Small Control Rod	
L. Hsu, D. Lai and J. Ye	265
Numerical Simulation of Magnetostriction-Induced Cavitation Flow	
D.S. Xia, Y. Yu and H.C. Zhang	271
A Method for Aerodynamic Characteristic Analysis of Hypersonic Aircraft Based on Response Surface Model	
J. Yang, S.P. Wu and W.X. Hou	277
An Immersed Boundary Method for Compressible Flows with Complex Boundaries	
J. Yang and S.P. Wu	281
A Numerical Investigation on Hydrodynamics of Multiple Floating Bodies in Offshore Installation Engineering	
Z.Y. Zhang and L.P. Sun	285

Chapter 6: Computational Mechanics

Computational Technique of the Sliding Interface in Numerical Simulations of 3D Penetration	
J. Yan, F. Wang, J.H. Shen and L. Sha	295

The Energy Relaxation Method for the Verification of Finite Element Analysis Z.C. Xuan, Y.H. Li and M. Guan	299
Mechanical Analysis and Strength Evaluation of KEY COMPONENTS Tripod of SNUBBING UNIT M. Luo, F.C. Li, T.T. Zhao, T.T. Xu, J.B. Liu and W.X. Zhao	303
Nonlinear Calculating Method for Multi-Bar Luffing System of Giant Crane Considering the Sagging Effect Q.C. Zhou, W.J. Li, Q.L. Wu and X.L. Xiong	307
The Mathematical Model of Crane Hoisting Mechanism W. He, Z.K. Li, Z.Y. Wang and A. Liu	315
Dynamic Characteristics Analysis and Modeling of Giant Magnetostrictive Actuator Turning System D. Li, D. Luan, Z. Wang and T. Ma	321
Cross-Deck Slamming Load Calculation of Trimaran Based on Modified Plate Slamming Theory H.L. Ren, L.L. Chen, G.Q. Feng, F. Duan and P.Y. Yu	325
Simulation of Red Particles in Blood Cell A.S.M. Jahangir, G.Q. Hu and L.K. Yu	330

Chapter 7: Biomechanics and Sports Mechanics

A Study on Strength and Training Characteristics of Elite Female Skaters X.M. Zhang and J.Y. Xia	337
The Fitness Characteristics of Elite Female Skaters and Regression Analysis X.G. Mu and J.Y. Xia	341
Research on Body Pressure Distribution at Different Angles of Wheelchair Seat Surface T. Qin, J.G. Zhang and Y.X. Dai	345

Chapter 8: Research and Design in Mechanical Engineering and Manufacturing

Study on Structure Analysis and Control of the Underwater LED Lamp Capable of Changing Brightness H.S. Choi, Y.H. Kim, J.H. Ha and H. Son	351
Affect the Comfort of Pants Crotch Curve Analysis of the Factors Z. Zhang and L.P. Qiao	359
Concept of the Partial Throw-Away Design of Piezoelectric Micropump for Medical Uses with Low Cost and Waste W.F. Luo, R.H. Chen and H.K. Ma	363
Monopole-Gear Design Based on Neural Network and Modified Particle Swarm Optimization H.R. Fang	368
The Influences of New Paper Surface Efficiency on Printing Quality Y.G. Yang, Q.Z. Gao and Q.X. Liu	374
RCS Calculation of Tank Turrets and their Improved Stealth Shapes X. Xu and Y.W. Chen	379
Kinematics Analysis of Morse CVT Input Mechanism Q.H. Chen, D.M. Sun, D.H. Zhao, G.R. Kang and J. Sun	384
Development of a Self-Balancing Cooling System Based on Harvesting Heat via Stirling Engine C.N. Huang, Z.Z. Yu and C.K. Lan	388
Small Refrigerator Simulation and Experimental Study H.C. Zhang, F.L. Li and L.Q. Zhang	392
Solar-Powered Wireless Sensor Network's Energy Gathering Technology D.X. Ma, J. Ma, P.M. Xu, C.X. Song and Y. Pang	396
Research on the Application of Green Air Conditioning in the Granary Y.H. Di, C.Y. Jiang and Z.L. Xu	400

Performance Comparison for Different Material Quantum Dot Single Intermediate Band Solar Cells	
W.S. Wei, F. Shan, S.Y. Zhao and Q.B. Zhang	404
A Method for the Assessment of the Inhalation Dose Exposure to Radionuclides in an Indoor Environment	
X.F. Hu, H. Huang, S.F. Shen and H.Y. Yuan	412

Chapter 9: Geotechnical Engineering

Simulation of Primary Fracture Propagation around Compressive Cavity with the Extended Finite Element Method	
K. Su and Z.M. Zhang	425
Study on Protection Measures of Highway Cutting Soil Slope in Seasonal Frozen Regions	
H. Wu, W.C. Yu, Q. Ge, G.F. Wang and Y.Q. Wang	431
Research on Stability of the Rock-Socketed Piles in a Landslide Control Project	
Y.L. Deng, Y. Lu, Q.M. Li, K. An and S. Niu	435
Reliability of GDS-RCA Resonant Column on Routine Experimentation	
X.F. Li and R. Sun	439
Study on Test and Practical Application of Solidification Treatment of Wasted Mud	
Y. Chen, J.C. Wang, H.B. Gao and J.G. Han	443
Characters Analysis of the Retaining Structure of the Foundation Pit under Local Load	
C.J. Xu, M. Yin and G. Lin	448
Approximate Analytical Method of Load-Settlement Relation for Composite Foundation with Lateral Restriction	
X.Y. Tang, J. Liu, J. He and Q.D. Xie	453
A Method to Determine Pre-Consolidation Pressure of Soft Soil in Dongting Lake Area	
J.H. Zhang, J. He, J.F. Lin and J.L. Zheng	459
Laboratory Test Method for Dynamic Rebound Modulus of Subgrade Red Clay in Moist-Heat Area	
J.H. Zhang, Y. Zhou and J.L. Zheng	466
Experimental Study of Influence Factors in Unsaturated Soil Infiltration Rate	
L. Cao and X.Z. Li	472
Experimental Study on Influence of Seasonally Frozen Ground on Horizontal Frost-Heave Force of Frozen Wall	
H.L. Yu, Y. Zhang, W. Wang, X.Y. Xu and C.X. Zhang	476
Effect of Different Organic Matter Content on Soil Moisture Dynamics	
Y. Ding, H. Huang, L. Wang, Z.Q. Zhang and W.H. Zhang	481
Meso-Mechanical Simulation of Fracture Grouting under Fluid-Solid Coupling Environment and Engineering Applications	
F. Sun, R. Pan, X.Y. Zhu and T.L. Chen	485
Study on Grouting Heave for Pipeline Underground in Urban Tunnel Engineering	
F. Sun, R. Pan and T.L. Chen	492
Further Debate about Visual Design Methods for Pile Foundation	
S.F. Zou, J.Y. Zhang, S.J. Wang, Y. Han and C. Wang	499
Application of Axial Force Compensation for Steel Support System in Practical Project	
S.M. Zhang, X.M. Jia, T.K. Yuan, W.G. Liu and Y. Jun	503
Experimental Study on O-Cell Test of Long Rock Socket Bored Pile	
L.Z. Yao, D.F. Sang, L.W. Su and D.Y. Tan	509
Research on Stability Analysis of Soil Slope in Consideration of Creep Property	
Q.H. Wang and Y.Q. Li	514
Geotechnical Engineering Anti-Leakage in Unstable Mountain	
H.S. Yang, X.L. Peng, B.C. Fu, Y.L. Yang, Y. Wang, X.P. Wang and Y.J. Pu	519
The Grouting Diffusion Model of Power-Law Fluid in Single Fracture	
W. Zhang	524
Hydro-Mechanical Coupled Analysis of the Variable Permeability Coefficient of Fractured Rock Mass	
Y.J. Zhang and T. Xu	531

Analysis on Railway Ballast-Glue Micro-Characteristics Z.J. Wang, G.Q. Jing and G.X. Liu	535
FBG Sensor Application for GFRP Soil Nailing Pull-Out Test Q.P. Jin, Z.J. Zheng, B.Q. Dou and X.W. Lei	539
Simulation and Optimization on GFRP Soil Nailing Support Q.P. Jin, Z.J. Zheng, Z. Chen and X.W. Lei	543
Comparative Analysis on Stress-Strain Characteristics for Cement Stabilized Macadam Base in Different Layer Contact Conditions B. Li, Y.H. Yue and Z.W. Zhang	547
Comprehensive Prediction of Rockburst in High-Speed Railway Tunnel B. Li, L. Wu, C.M. Xu, Z.G. Li and Q.J. Zuo	553
Nonlinear Dynamic Analysis of Macroscopic Fracture of Limestone in General Experiments L. Wang, C.X. Liu, S.S. Lin and X.H. Liu	558
Numerical Simulation on Soil Pressure Distribution Characteristics of Gravity Retaining Wall F.D. He, G.J. Guo, Z.D. Zhou and J.Q. Wu	562
Comparative Analysis on Different Types of Anchor Reinforcing Gravity Retaining Wall D.F. Ma, L. Guo, J.Q. Wu and Z.D. Zhou	567
The Research on Applied of Cement-Soil Mixing Method Reinforcing Shallow Soft-Soil Foundation in Yinchuan Distric C.X. Ma	572
Numerical Simulation of the Effect of Joint Orientation on the Failure Strength of Rock Y.L. Yan, T. Xu, Y.J. Zhang and P.L.P. Wasantha	577
Analysis of Individual Contribution of Two Compression Waves in Vertical Vibration of Water-Saturated Soils J. Yu, Z. Li and J. Huang	582
Experimental Study on Creep of Highly-Weathered Breccia Q. Zhang, S.C. Li, L.P. Li and Q.Q. Zhang	588
Dynamic Stability Analysis of Defective Piles under Vertical Harmonic Load X.G. Ni	592
Numerical Simulation on the Stress Characteristics of Prestressed Retaining Wall J.Q. Wu, H.B. Zhang, X.G. Song, Y.F. Yu and C. Li	596
The Effect of Hole behind Lining on Safety of Tunnel J. Liu and G.H. Zhang	600
A Mathematical Model for Subgrade Soil Water-Vapor Migration J.L. Zheng, C.Q. Mai and J.H. Zhang	604
Transformation of the Triaxial Seepage Device for Measuring Deformation of Coal Containing Gas M. Yuan, Q.H. Meng, J. Xu, B.B. Li and Y.Q. Du	610
Physical and Chemical Characteristics of High Clay Content Dredger Fill in Different Regions X.P. Su and J. Song	614
Acoustic Emission (AE) Propagation Attenuation Theory and Rule in Non-Perfect Elastic Coal and Rock G.W. Dong	620
Experimental Study of C Band Passive Microwave Remote Sensing of Soil Moisture X.L. Gao and H.H. Zhang	624

Chapter 10: Structural Engineering

The Local Stress Analysis for the Anchorage Zone of Tooth Plate in Steel Box Girder Z.L. Luo, J.L. Wang and F.H. Dong	631
Analysis on Vertical Swivel Construction of Cable-Stayed Bridge with Steel Arch Pylon Q.H. Li, X.Y. Wang and L.L. Han	635
Redistribution of Internal Force under Structural Defect and Non-Linear Spatial Stability under Live Load and Wind of Tied-Arch Bridge Q.H. Pu and H. Zhao	640

The Adhesion Experimental Study on the PESB X. Liu and X. Wang	646
Based on ANSYS Buckling-Restrained Brace Frame Structure Shock Absorption Analysis L.J. He, Y. Yao and Y.P. Chu	651
Research on Performance of Precast Two-Way Hollow Slab Shear Wall with Cast-<i>In Situ</i> Boundary Elements H.C. Cui, J.L. Liu and M.J. Chu	655
Theoretical and Experimental Research on Joint Slippage Effects of Lattice Angle Steel Tower Z.Q. Wang, Z.M. Song and W.Q. Jiang	660
A Iterative Computation Method for Main Cable Shape Calculation of Self-Anchored Suspension Bridge X.M. Song	666
Storey-Adding and Strengthening Design for A Reinforced Concrete Frame Structure F. Wang	671
Jacking Technology for a Simply Supported Girder Bridge L.G. Xu, Y.L. Wang and C.J. Xu	675
Research on CFRP Strengthening Corroded Reinforced Concrete Columns in Seismic Performance L.Y. Leng and P.F. Zhang	681
Design Method of Shear Resistance of Hybrid Fiber Reinforced High Performance Concrete Deep Beams S.B. Liu, L.H. Xu, H.L. Lu and H. Tan	686
An Incremental Method for Cable Force Tuning of the Concrete Cable-Stayed Bridge Considering Cable-Girder Temperature Difference Effect N.J. Ma	690
Pull-Out Tests of Deformed Bars from Ferrous Mill Tailing Concrete Y. Zheng, H.Z. Kang and G.Q. Wang	697
Numerical Study on the Influence of Sleeve-Rib Space on the Static Response of Grouting-Sleeve Reinforcement-Connection Component F. Gu, T.G. Wu, W.J. Zhao, X. Dui and P. Zhang	701
Analysis of the Impact Effect of the Suspender System in a Half-Through Concrete Filled Steel Tubular Arch Bridge Y. Shao, Z.G. Sun and Y.F. Chen	705
The Ultimate Bearing Capacity Analysis of RC Beams Strengthened by Externally Bonded and Anchored I-Section Steel L. Zuo, B.L. Ye and W.X. Yu	710
Analysis on Fire-Resistance Performance of Slabs Strengthened by Carbon Fiber Sheet Bonded with Inorganic Adhesive F.X. Wan	714
Numerical Analysis for Geometry Nonlinear Characters of Laminated Box Beam Columns Y.P. Wu, J.W. Zhang, Y.R. Zhao and Y.H. Wang	718
Structural Optimization Design Considering Reliability Constraints L.R. Sha and Y.C. Shi	723
Comfortable Evaluation of Bridge-Station Combined Large Span High Speed Railway Station under High Speed Train Load Y.L. Yu and W. He	727
Modal Parameters Identification of Civil Engineering Structures Based on the Random Decrement Technique Q. Pei and L. Li	732
Structural Modal Parameter Identification Based on ARMA Model Q. Pei and L. Li	736
Flexural Behavior of CFRP Strengthened Reinforced Concrete Beams H. Zhang, H.S. Wu and X.Q. Li	740
Application of Modified Consistent Mode Imperfection Method in Stability Analysis of Single-Layer Reticulated Shells S. He, J. Cai and Q.Q. Liu	744
Study on the New Energy-Saving Structure System with Seismic Performance G. Xu, J. Li and Y.G. Tian	749

Model Test for Hydrodynamic Parameters of Immersed Tube Tunnel in Static Water R.D. Wu, Z.Q. Ying, Z. Wang and L.W. Su	754
Study on Truss Structure Damage Identification Base on Residual Force Vector W.J. Zou, Y.X. Zhang and C.G. Li	759
Research of Rigid Pavement on Structure Combination of HMA Overlays T. Liu, G.W. Hu and Y.C. Gu	765

Chapter 10: Structural Engineering

Interfacial Shear Stresses Calculation of RC Beams Strengthened with FRP Plate under Symmetry Concentrated Loading J. Yang, L.G. Wang and N. Zhang	773
FEM Analysis of Impact Tests for Steel Plate Concrete Panels against Scaled-Aircraft Impact X.Y. Zhu, R. Pan and F. Sun	777
Seismic Performance Analysis under Different Conditions of Location for Shear Wall Frame Shear Structure Y.Z. Yang and H. Gan	784
Stochastic Imperfection Mode Superposition Method for Stability Analysis of Lattice Domes H.J. Liu, L.F. Yang and Y.L. Li	788
Investigation on Wind Tunnel Blockage Effects of High-Rise Building H. Tang and L. Wang	793
Research on the Wind Tunnel Force Balance Tests of Long-Span Closed Coal Trestle S.L. Wang, S.G. Liang, L.H. Zou and X.Y. Zhou	797
The Design of Blasting Demolition of the Reinforced Concrete Chimney Based on Complicated Conditions C.L. Zhang, B. Wang and Y.Z. Zhu	803
Stochastic Analysis to Truss Spar Platform in Deep Sea Y. Wang, R. Gao and L.Q. Yang	809
Test Installation of a Marker-Based Framework for Structural Health Monitoring of Bridges M. Magdics, R.J. Garcia, V. Wattanasoontorn and M. Sbert	813
Aerodynamic Testing of Bridge Structures P. Churin and O.I. Poddaeva	817

Chapter 11: Hydrology and Hydraulic Engineering

A Hydropower Station Energy Dissipation Shape Optimization Test Y. Chen, B. Jiang and H. Chen	825
A Study of Suspended Sediment Transport Characteristics in the Offshore of Yangtze Estuary L.B. Huang and Y.T. Li	829
The Evaluation Model of Fuzzy Analytic Hierarchy Process in Water Project of Xiasha District Based on Entropy Weight P. Qin, Z.Y. Zhang, Z.H. Qin and J.F. Zhou	836
Research on Automatic Safety Monitoring System for Artificial Islands Z.B. Jiao, H.M. Tan, S.H. Zhang and T.T. Mei	840
The Application Study of Non-Linear Dynamic Contact Model of Arch Dam with Contraction Joints Y.Z. Yan, C.X. Xiong and W.H. Li	845
Two-Dimensional Shear Stress on Bonding Interface of FRP Plate Reinforced Hydraulic Concrete L. Zhang, J.L. Wang, K.W. Zhou, Y. Yang, B. Zhang and J. Zheng	850
Research on Relation among Inlet/Outlet Pressure, Pressure Loss and Inlet Velocity of a Complex Resistance Muffler J.H. Fang, Q. Ji, Y.Q. Zhou and D.L. Zhu	858

The Impacts of Water Transfer on Thermal Structure of Shallow Reservoir G.Y. Ma, B.B. Wu and H. Jiang	864
The Application of Entropy Weight of Attribute Recognition Model in Reservoir Eutrophication Evaluation D. Wu, D.S. Tang, X.W. Lu and W.Z. Yu	870
The Classification and Analysis of Risk Response Measures in the Hydraulic Engineering Slope Y.C. Guo and J.L. Guo	874
Prediction and Optimization of Groundwater Development in Beijing Plain H.P. Guo, L.Y. Wang and S.S. Fan	878
Studies on Coupled Model of Seepage Field and Temperature Field and Stress Field H.M. Gao, Y.W. Lan, Y.L. Zhao, J. Ma, B. Liang and Y. Zhao	883
Multiple Stepwise Regression Analysis Crack Open Degree Data in Gravity Dam W.W. Shen and J.M. Ren	888

Chapter 12: Construction Materials

Microstructure Analysis of the Influence of Composite Polymers on Concrete Mechanical Performance C. Zhao and J.Z. Gao	895
Applied Research on Foamed Asphalt Cold-Regenerating Technique in Overhaul Engineering of Binshi Expressway H.Y. Wei, W.F. Zhou and J.Y. Sun	898
The Flowability and Adsorption of Low Sulfate Cement with Superplasticizers M.Z. An and S. Han	904
Hydration Kinetics and Microscopic Analysis of Calcium Oxide Expansion Clinker H. Li, J.P. Liu, Q. Tian and S.Z. Zhang	908
An Innovative Admixture to Enhance the Fresh Properties of Slag Pastes Q. Pan, S. Zhao, H.Y. Zheng and B. Zhu	915
Bond Properties of Ceramic Concrete Reinforced by Bamboo Bar J. Zhou, H.N. Liu, S. Ma, J.J. Li and H.T. Hou	920
The Properties of High-Strength Concrete Containing Super-Fine Fly Ash and Limestone Powder J. Hu and M.Y. Li	926
Several Common Retarders on Performance of Ultra-Early-Strength Grouting Material C.Z. Sun, X.P. Zhang, H.N. Zhao and Q. Gao	931
Early Strength Agent on the Properties of Reinforcement Materials Research C.Z. Sun, X.P. Zhang, H.N. Zhao and Q. Gao	936
The Influence of Super-Fine Steel Slag on the Properties of High-Strength Concrete J.J. Feng, X.Q. Wang and S.S. Wang	941
Research on Secondary Cooling Technology for Billet of HRB500E Vanadium-Containing Steel Rebar P. Tian, Z.Y. Zhong, R.G. Bai, X.L. Zhang, Q.L. Wang, H. Gao and X.G. Hu	945
Study on Hybrid Fiber Reinforced Lightweight Aggregate Concrete Y. Chen	949
Study on Rubber Particles Modified Concrete L. Wang and Y.H. Huang	953
Application of Diatomite Modified Asphalt L. Jiang and Q.L. Liu	959
Laboratory Research on Aging Properties of Recycled SBS Modified Asphalt W.G. Zhang, L. Zhou and L. Zou	964
Simulation of Numerical Test of Concrete Microscopic Structure by Second-Order Manifold Method Y. Zhao, G.X. Zhang and H.F. Li	968
Experimental Research on Fireproofing Measure of Beams Strengthened by Carbon Fiber Sheet Bonded with Inorganic Adhesive F.X. Wan	972

Optical and Micro-Mechanical Properties of Ag-Based Low-E Glass by Magnetron Sputtering	977
J.K. Yang, H.L. Zhao, L.P. Zhao and J. Li	
Thermal Performance Study of Core Board of Metal Sandwich Thermal Insulation Board on Ecotect	982
K.W. Ding, M. Li and D. Chen	
Research on Finite Element Model for Parallel to Bamboo Culms Axial Shear	986
W.S. Fu, Z.R. Zhao, W. Han and J.B. Zhou	
Research on Multivariate Composite Super early Strength Grouting Materials	990
X.P. Zhang, C.Z. Sun and T.F. Zhao	
Research on the Compound early Strength Agent to the Performance of Super High early Strength Grouting Material	996
X.P. Zhang, C.Z. Sun and T.F. Zhao	
Research on Damage Characteristics about Reinforced Concrete Circular Pipe Culvert	1002
J. Zhang and X.D. Zhang	
Electro-Migration Corrosion Inhibitors for Chlorides Induced Corrosion in Reinforced Concrete	1007
X.D. Hu, J.Y. Huang, Z.Q. Li and S.G. Weng	
Mesosopic Numerical Simulation of Temperature Crack with Non-Uniform Temperature Distribution in Concrete	1014
Y. Duan, C. Zhang and X. Chang	
Numerical Simulation on PPFRC with Different Contents	1019
Y.F. Zhang, H. Liu, J.P. Chen and Y. Yang	

Chapter 13: Seismic Engineering

Seismic Performance Evaluation of Large Span Cable-Stayed Bridges	1029
M. Zhang, S.F. Qin and L. Song	
Large-Span Cable-Stayed Bridge Seismic Response Analysis Considering Traveling Wave Effect	1034
J.J. Zhao	
Seismic Damage of Suspended System in Lushan Earthquake	1038
D.Z. Wang and J.W. Dai	
Research Status for Nonstructural Components under Severe Earthquake	1042
D.Z. Wang and J.W. Dai	
Research of Random Seismic Response of Large-Span Multi-Tower Cable-Stayed Bridge	1046
C.Z. Sun and L. Zhao	
Verification of Seismic Safety Evaluation Program LSSRLI-1 Using Exact Solution	1052
R.S. Li and X.M. Yuan	
Difference between Two Seismic Response Analysis Programs for Soft Site	1056
X.B. Yu and R. Sun	
Evaluation of N-M Model on Simulating Seismic Response of High-Rise SRC Structure	1060
G.B. Bu, J. Cai and K.N. Li	
The Influence of Stress Drop on Synthesized Ground Motion	1064
X.X. Tao and H.M. Liu	
The Stability of Ground Motions Randomly Synthesized for an Engineering Site	1069
H.M. Liu, X. Tao and L.Y. Wang	
Research on Static Stress Triggering and Seismicity in Minxian and Adjacent Area, Gansu	1075
F.B. Liu, A.G. Wang and W. Pang	
The Amplification Effect of Soft Site Based on Records from Borehole Arrays	1084
L. Wang, Y.L. Wang and X.M. Yuan	
Application of Post-Stack Seismic Inversion in Discription of the Reservoir Distribution	1088
X.T. Li	
Numerical Simulation Analysis on Seismic Behavior of Tow-Story Websteel	1092
H. Ye and Y.P. Chen	
Numerical Analysis on Seismic Behavior of RC Frame with Different In-Filled Panels	1096
X.H. Zhou	

Research on Material Damage Limits of RC Components for Performance-Based Seismic Design and Assessment Y.L. Qi, X.X. Zhou and C.D. Xie	1101
Examination of CPT-Based Liquefaction Evaluation Methods for New Zealand Earthquake T.Z. Chen and X.M. Yuan	1105
Research on Regional Dividing Technology for Liquefaction Based on ArcGIS C.C. Li, Y.L. Wang and X.M. Yuan	1109

Chapter 14: Architectural Design and Theory

Research of the Economical Campus Construction in Hangzhou G.J. Li and L.Y. Mo	1115
Protection of the Sichuan Earthquake Ruins Landscape Resources Y.W. Ma and X.X. Kang	1119
Study on Disaster Prevention Index System and Evaluation Method of Large Commercial Building B. Song, L. Li and P. Zhang	1124
Study on Architectural Design for Indoor Space of Small Area House F.L. Du and T. Li	1128
Analysis on the Space Characteristics of Shanxi Private Gardens in Ming and Qing Dynasties Y. Liang and J. Gao	1132
The Influence of Social Class in Human Settlements - Take Yen Hsi-Shan's Former Residence and Zhang Jiata Villages as an Example G.Y. Xu and J.P. Wang	1136
Museum Exhibition Space Analysis Based on Tracing Behavior Observation Q. Zhou, Z. Li and J. Li	1140
Study of Traditional Architectural Form Adapt to the Mountain Environment Research - Zhang Jiata Ancient Village in Fangshan County of Shanxi X. Guo and J.P. Wang	1144
Analysis of Shanxi Traditional Local-Style Dwellings F. Tian and J.P. Wang	1148
Brief Analysis of Settlement Patterns in Taiyuan County in Ming Dynasty J. Zheng and J.P. Wang	1152

Chapter 15: Composites and Polymers

Analysis of In-Plane Equivalent Elastic Modulus of Aluminum Honeycomb Cores Based on Finite Element Method M. Chen, X.C. Xu and J.F. Liu	1159
The Influence of Reactive Diluents on the Properties of UV Dual Cured Polyurethane-Modified Epoxy Monoacrylates Films H.B. Liu, W.Y. Zhang, F. Lin, N. Qing and L. Xu	1169
Applied Research of the Modifying Agent of Rubber Plastic Composite (MaR) in Asphalt Mixture L. Zou, J.W. Ne and W.G. Zhang	1175
Study on the Thermodynamics and Dynamics of <i>In Situ</i> Ni-Al/Al Reinforced Aluminum Matrix Composite L.Z. Zhao, J. Xiao, J. Zhang and M.J. Zhao	1179
Preparation and Property of Waterborne Polyurethane Waterproofing Composites Y.P. Wang, X.L. Su, Y.S. Tan, K.L. Zhao and Y.H. Qu	1184
Polymerization and Chiroptical Behavior of N-[o-(4-isopropyl-4,5-dihydro-1,3-oxazol-2-yl)phenyl] Methacrylamide Z. Fu, H. Wei, Y. Ding and C. Yuan	1187
Preparation of a Net with the Function of Sand-Resistance and Sand-Fixation H.W. Wang, M.L. Cheng, Y. Zhu and X.F. Wei	1192

Cross-Linked Alternately Copolymerized Electrolyte Poly (styrene-a-maleic ester) Synthesized through Solvent-Free Strategy G.X. Li, S.C. Zhang, W.B. Liu and X. Wei	1196
Corrugated Board Flute-Shaped Finite Element Analysis and Optimization W. Yuan, G.M. Zhang, D.Z. Liao and J. Liu	1205
Preparation and Anti-Corrosion Performance of Conductive Copolymer (aniline-co-pyrrole)/TiO₂ Composite L.F. Lv, S.L. Lin and C.X. Chen	1210
Mechanism of Micro-Void Initiation in Composite Materials during VaRTM Process According to the Pressure and Thickness of the Impurity Y.H. Kim, H.V. Kim, S.W. Yoon, B.G. Choi, J.W. Lee, H.S. Choi and J.C. Ha	1214

Chapter 16: Micro / Nano Materials

Non-Linear Modeling of Single-Walled Carbon Nanotubes M. Chwał	1225
Production and Properties of Mononuclear Microcapsules Encapsulating Cinnamon Oil by Complex Coacervation W.L. Liu, Z.B. Xiao, G.Y. Zhu, R.J. Zhou, E.Q. Wang and Y.W. Niu	1229
Influence of Free Volume on Residual Solvents of SiO₂ Modified Polypropylene Films J.Y. Zhang, D.L. Li, W.C. Xu and Y.B. Fu	1234
Preparation of the Al₂O₃/3Y-TZP Ceramics by Microwave Sintering under Low Temperature J.M. Luo, J.L. Xu, H.Y. Zuo and J. Huang	1238
Direct Growth of Graphene on SiO₂ by Using Ga-Ni Flux Q. Yu, J.C. Zhang, B. Cao, S.Y. He, C.H. Wang, J.C. Zhang, J.F. Wang and K. Xu	1242
Synthesis of Monodispersed Lauric Acid Capped Silver Nanoparticles by Wet-Chemical Reduction Method C.F. Dong, X.L. Zhang, C.L. Cao and H. Cai	1246

Chapter 17: Metal and Alloys

Investigation of Structure and Performance of SAE4330 Steel L.J. Tan, J.Q. Wang, Q.Q. Wang, X.L. Chen and S.Z. Zhou	1255
Crystallization Kinetics Analysis and SPS Consolidation of Mechanical Alloyed Fe₇₉Ti₁₆P₅ Amorphous Powders C.Y. Tang, Z.Y. Xiao, Z.F. Zhuang, W.P. Dai, S.G. Meng, X. Zhang and X.Y. Chen	1259
Assessment of Fatigue Life of Ni-Ti Samples Prepared by Different Techniques W. Abu Jadayil and M. Alnaber	1264
Study on the Dynamic Recrystallization Critical Stress of AZ91 Magnesium Alloy G. Chen, S.Q. Zheng, J. Lv and Z.M. Zhang	1269
Influence of P₂O₅ and Al₂O₃ on Mineral Formation in Converter Slag Z.H. Deng	1273
Influence of Ti to the Microstructure and Mechanical Properties of Al-12Si-3.2Cu-1Mg-2.4Ni Piston Alloy L.Z. Zhou, Y.J. Peng, X.R. Zhu, G.M. Zhang, L.M. Yang and H.X. Shi	1278
Fatigue Characteristic of Aluminum Alloy Plates with Different Thickness H.G. Jian, M.X. Du, F. Jiang and Z.M. Yin	1284
Study on the Microstructure and Properties of Low Cost TiFeAl Alloy B.L. Li, T. Liu, J. Yuan and Z. Nie	1288
Research on Grain Refinement Effect of Al-5Ti-C Alloy on Pure Aluminum and its Attenuation Mechanism W.W. Ding, T.D. Xia, J.T. Zhu, W.J. Zhao and Y.T. Xu	1293
The Effect of Initial Microstructure on the Dynamic Mechanical Behavior of Titanium Plate at Different Strain Rates M. Li, B.L. Li, T.B. Wang and Z. Nie	1298

Pressure-Induced Tunable Magnetism and Half-Metallic Stability in Co₂FeGa Heusler Alloy	
Q.X. Gao	1303
Influence of Extrusion Ratio on Microstructures and Properties of Cu-17Ni-3Al-X Alloy	
Y.H. Weng, Y.X. Liu, T. Wei, W.W. Zhang and Z.Q. Luo	1307
Effect of Cooling Velocity and Casting Temperature on Solidification Microstructure of Pure Al Refinement under Al-5Ti-B Alloy	
W.W. Ding, X. Zhao, F.L. Zhu, T.D. Xia and W.J. Zhao	1316
The Study on Properties of Soluble Alumina Based Ceramic Cores	
Z.H. Jia, S.C. Wang, M.Z. Ma, L. Xu, Y.T. Zhao, D.X. Ma and X. Zhu	1321

Chapter 18: Biomaterials and Biotechnology

The Adsorption Isotherm Studies of Orange Peel on Pesticide Furadan	
G.F. Xu, H.M. Jing and R.X. Guo	1331
Morphology and Performance Analysis of Alpaca and Cashmere Fiber	
X.Y. Wei, E.L. Yang, Y. Xue and S.Y. Sun	1336
Heterogeneous Method for Grafting of Syringaldehyde onto Chitosan by Laccase Oxidation	
C.H. Yu, J.C. Pei and F.D. Zhang	1340
Distribution Characteristics of Heavy Metals in EPS and Cells	
Q. Hao	1345
Effect of Different Winemaking Technologies on Quality in Cabernet Sauvignon Red Wines	
J.Q. Meng, Y.B. Zhang, W.Q. Yang, X.Y. Jia and X.H. Li	1349
Effect of Multiple Gas Media Package on Preservation of Fresh Sweet Corn at Room Temperature	
J.Q. Meng, X.Y. Jia, W.Q. Yang and X.H. Li	1354
Development of the Reliable Fluorometric Assay for the Sensitive Determination of Nitric Oxide Metabolites in Biological Fluids	
Q. Yang, X.L. Zhang and H.L. Huang	1359

Chapter 19: Materials Processing Technology and Chemical Engineering

Accelerated Seeded Precipitation Pre-Treatment for the Improvement of Reverse Osmosis Membrane	
Y. Chen, X.L. Zhang, J.L. Lu, W.J. Liu and Y. Tu	1365
Study on Metal Transfer and Welding Spatter Characteristics of Basic Flux Cored Wire	
Y. Wang, Y.Q. Zhang, B. Wang and Z.J. Wang	1369
Influence of Plasma Treatment on Size Adhesion Strength to Raw Cotton Yarns	
S.Y. Sun, C.H. Fu and X.Y. Wei	1373
Linear Rock Cutting with SMART*[®]CUT Picks	
W. Shao, X.S. Li, Y. Sun and H. Huang	1378
Study on the Abrasive Wear of Ceramic Piston Rings and the Different Cylinder Bore	
W.W. Gao, Z. Zheng, Y.Q. An and S.B. He	1385
Study on Welding Deformation of 304 Stainless Steel Plate with Different Thickness	
L. Dong, C.Y. Zhou, C.X. Lin and S.Y. Chen	1389
Coating of Fe-Mn-Si Shape Memory Materials on AISI 304 Stainless Steel by Laser Cladding Method	
P. Xu, H. Ju, C.X. Lin and C.Y. Zhou	1393
Effect of Annealing on Properties of the TiN & TiAlN Coatings Deposited on Powder Metallurgy High Speed Steel (S790)	
C.L. Cao, X.L. Zhang, C.F. Dong and X. Zha	1397
A Novel Method for Preparing Biomimetic Oleophobic Surface on X70 Pipeline Steel	1403
Preliminary Study on Temperature Field of a Cylinder Circumferential Surface under Laser Spiral Scanning Quenching	
Z.X. Pan, H.W. Xu, D.G. Wen, L.F. Yan and S. Zhou	1407

Copper from Copper Smelting Slag by Oxidation Leaching M.S. Chen, X.M. Zhu, Z.R. Han, P. Ning and Y.X. Ma	1413
Numerical Research on Implosion of Condensed Liners Used in Study of Shock Adiabatic of Materials G.H. Wang, M.X. Kan and H.L. Zhao	1419
Preparation of Ceria from Bastnaesite with NaHCO_3 as Fluoride Retention Additive H. Zhong, K.H. Qiu, Y.C. Qiu, Y.T. Li and N.J. Fu	1423
Experiment on the Performance of Filtration by Ceramic Media C.H. Li	1428
The U-Bending Forming of Aluminum Foam Sandwich Panels S.G. Chen, H.B. Chen, Z.Z. Sun, R.Y. Li, W.F. He and S.Q. Zou	1432
Study on the Preparation of Rich Hydrocarbon Bio-Diesel from <i>Cornus wilsoniana</i> Vegetable Oil with High Temperature Catalytic Cracking H.Q. Zhang, Y.J. Zhang, A.H. Zhang, C.Z. Li, W.W. Jiang and Z.H. Xiao	1440
Catalytic Cracking of <i>Cornus wilsoniana</i> Oil to Liquid Bio-Fuel Oil Using KF/CaO as a Solid Base Catalyst Z.H. Xiao, W.W. Jiang, L. Lin, S. Vittayapadung, A.H. Zhang and C.Z. Li	1446
Measurement and Correlation for Solubilities of 2,4-D Acid in Ethanol-Water Y.F. Wang and L.S. Hu	1452
Study on the Catalyst Performance on <i>Cornus wilsoniana</i> Oil Catalytic Cracking Prepared Biological Fuel Oil D.M. Huang, W.W. Jiang, L. Lin, S. Vittayapadung, Z.H. Xiao, A.H. Zhang and C.Z. Li	1457
Composition - Property Relationships of Magnetic Inks for Screen Printing Y.L. Zhang, W. Jiang and L. Lin	1464
Catalytic Gasification of Lignin in Supercritical Water Q.Q. Guan, T.X. Mao, R.R. Miao, Q.L. Chen, P. Ning, J.J. Gu and S.L. Tian	1477
Microwave-Assisted Secondary Synthesis of NaA Zeolite Membranes Grown on ZrO_2 Substrate Z.L. Cheng and X.X. Qin	1481

Chapter 20: Information Technologies and Computational Algorithms

Study on Cloud Data Destruction Mechanism and its Application J. Wu, F.Z. Zhao and Y.D. Dong	1487
Study on Collaborative Learning System Design Based on Web Platform Y. Nan	1491
Preparation of Target CETP in Docking-Based Virtual Screening W.Y. Tao, L.Y. Wang, G.Q. Huang and M. Luo	1495
Existence of Anti-Periodic Solution for Delayed Cellular Neural Networks with Impulsive Effects L.L. Zhang, R.L. Fan, A.P. Liu and W.F. Yang	1499
A Windowed Range Migration Imaging Algorithm for Ground Penetrating Radar Applications W.T. Lei and Y.J. Shi	1504
An Improved Iteration Back Projection Imaging Technique for Surface Penetrating Radar Applications W.T. Lei and Y.J. Shi	1509

Chapter 21: Engineering Management

Multi-Level Automotive Service Performance Evaluation Model G.X. Yu, J.C. Fang, Y.M. Zhou and Q. Zhang	1517
Research on Cost Risk Identification of Metallurgical EPC Project Z.G. Yin and H.M. Li	1521
Manufacturing Industry Structure and Export-Import Development of Chinese (2007-2012) B.N. Liu	1525

Eco-Criticism and Urban Ecological Civilization D.B. Cao	1529
Development Trend of Food Packaging Materials L.X. Ma and K.Q. Wang	1533
The Optimization of Slotting Based on the Power Drive-Through Rack S. Yang, M.Z. Shi, Q. Zhang, Y. Yu, Y.M. Zhou and X.Y. Li	1537
A Case Study of English Language Learning Strategies for University Students of Engineering Design Specialty Y.H. Sun, X.W. Jiang, L. Zheng and X.D. Xu	1541