

# Table of Contents

## Preface and Organizing Committees

## Chapter 1: Civil and Building Engineering, Applications

<b>Numerical Simulation of Domestic Gas Deflagration Explosion and Verification of Computational Techniques</b> G. Kashevarova and A. Pepelyaev	3
<b>The Ventilation and Thermal Performance of the Patio Space in Shanghai Shikumen House</b> X.Y. Luo, J. Ge and Y. Cai	8
<b>Nighttime Monitoring and Assessment Technology of Subgrade Settlement for Chengdu-Guanxian Line during Operation Period</b> Q. Su, W. Jiang, K. Jiang, Y.J. Li and L.L. Yang	13
<b>High Velocity Impact Deformation of a Laser Welded Sandwich Panels</b> Y.P. Sun, Z.E. Du, H. Li and J.M. Li	19
<b>Numerical Simulation of Bending Performance of Laser-Welded I-Core Sandwich Plates Considering Weld Material Properties</b> Y.P. Sun, W.L. Zhou, H. Li and J.M. Li	24
<b>Implementation of Low Impact Development Concept for New Town Construction in the Republic of Korea</b> R.H. Kim, J.H. Lee, M.Y. Kim and H.D. Lee	30
<b>Seismic Behavior of Damage-Reduction Based, Energy Dissipation Composite Shear Walls</b> H.Y. Dong, W.L. Cao, H.P. Wu and F.F. Xu	34
<b>Study on Low Frequency Horizontal Motions of a Large Caisson in Severe Current</b> Y.H. Yang, S.B. Wu and Z. Niu	40
<b>The Research on Modified Park-Ang Damage Model Based on Effective Energy Dissipation</b> G. Fu and B.Q. Liu	46
<b>The Research on Ultimate Displacement Angle of Concrete Columns with High-Strength Materials</b> G. Fu	51
<b>Mechanical Performance between the Embedded Steel Plate and the Concrete in Composite Shear Walls</b> W.L. Cao, H.Y. Dong, W.J. Zhang and J.W. Zhang	56
<b>A Numerical Evaluation of Insulated CFRP-Strengthened RC Beams Exposed to Fire</b> B. Sayin and E. Damci	62
<b>Continuous Strength Method for Aluminium Alloy Structures</b> M.N. Su, B. Young and L. Gardner	70
<b>Study on Flexural Resistance of Corroded Reinforced Concrete Walls</b> S.B. Zhao, F.L. Qu, S.M. Zhang, C.M. Li and P.B. Hou	76
<b>Experimental Study on Expansion Characteristics, Frost Heaving Characteristics of EPS Beads Improved Expansive Soils</b> L.L. Xu, X.M. Qu and L.J. Liu	80
<b>Evaluation of the Rutting Deformation Data of Asphalt Mixtures during Continuous Cycle Testing Based on Short-Cycle Wheel Tracking Testing</b> S.P. Hadiwardoyo	85
<b>Effect of Fibers Content on the Tensile Properties of Coconut Fibers Reinforced Cement Mortar Composites</b> R.H. Lumingkewas, G. Ausias, T. Lecompte, A. Perrot, I. Katili, H. Purnomo and S.P. Hadiwardoyo	92
<b>An Empirical Analysis of Risks, Involved in Marketing of Civil Engineering Products</b> M. Fiaz, S. Younas, M.Z. Ullah and N.D. Yang	98
<b>Relationship between International Roughness Index and Power Spectral Density of Asphalt Pavements in China</b> S.W. Liu and X. Zhang	104

<b>Evaluation of Resilient Modulus Test Protocols for New Mexico Subgrade Soil</b> M.T. Rahman, A.S. Cabrera and A.T. Rafiqul	109
<b>The Discussion on Land Layout Mode of Low Carbon Block Based on Inhibiting Mobility</b> J.F. Chen, C. Luo and L.W. Sun	116
<b>Historical Changes in the Design of Beijing Social Housing</b> X.J. Li and Y.W. Cui	122
<b>Visual City's Colour Design-Taking the Studying of Wuhan City Colour as an Example</b> S. Zhang and J. Li	127
<b>Interpretation of Transparency in the Design of Green Office Buildings</b> J. Ren, Y. Liu and G. Zheng	131

## **Chapter 2: Material Engineering and Technology**

<b>Controlled Fabrication of the CdS Nanocrystals Films and its Application in Hybrid Solar Cells</b> W.W. He, H.M. Jia and Y. Lei	139
<b>Investigation of Plasma Electrolytic Oxidation of Magnesium Alloy under Pulse Power Supply</b> X.H. Song, J.H. Lu, X.J. Yin, J.P. Jiang and A.T. Lai Kuan	143
<b>The Preparation and Properties of Chloroprene Rubber (CR)/Organic Montmorillonite (OMMT) Nanocomposites</b> C.H. Sun, Z. Gu, P.Y. Li, G.J. Song and C.P. Shan	147
<b>Effect of Antimony Doping on the Properties of a Green Energy Cathode Material <math>\text{LiFePO}_4</math> for Lithium Ion Batteries</b> G.T.K. Fey, K.P. Huang, P.Y. Peng, Y.C. Lin, Y.D. Cho and H.M. Kao	152
<b>One Step to Prepare Ag/PPy Composites with Different Soft Templates</b> M. Li, H.W. Teng, W.G. Li, J. Liu and Y.K. Liu	158
<b>The Test of Limestone Concrete Renewable Micromicropowder in Cement Production</b> X.K. Zhang and E.Y. Sun	162
<b>Study on Performance of New JJH Soil Solidifying Agent</b> E.Y. Sun and X.K. Zhang	166
<b>Influence of Heat Treatment Process on Tensile Fracture Behavior of Cu-Based Metallic Glass</b> L. Zhang, D.C. Luo and X.B. Yi	170
<b>Investigation of Mechanical Properties and Microstructure Development of AZ61 Alloy during Rolling, Forging and ECAP</b> L. Kunčická and R. Kocich	175
<b>Creep of Cementitious Materials with Addition of Fly Ash in Time</b> P. Padevĕt and P. Bittnar	182
<b>High Temperatures - Influence on the Material Properties of Cement Paste with Fly Ash</b> P. Padevĕt and R. Lovichová	187
<b>Preparation and Dyeing of Ethylated Wood Plastic Composites</b> J.F. Tang, Y. Zhao, X.Y. Tan, X.Q. Wan and Y. Dai	192
<b>Study on Stressed MSFAC Attacked by Sodium Sulfate Solution</b> F.L. Li, L.Y. Pan and Y.W. Guo	197
<b>A Theoretical Study on the Vibrational Spectra and Thermodynamic Properties for the Derivatives of HNS with <math>-\text{CH}_3</math>, <math>-\text{N}_3</math>, and <math>-\text{NF}_2</math> Groups</b> G.X. Wang, X.D. Gong and H.M. Xiao	202
<b>Optimization of Stepped Elastic Plastic Plates</b> J. Lellep and B. Vlassov	209
<b>FT-IR Analysis of Molecular Structure Evolvment of Poly(Ether urethanes) in Ozone Atmosphere</b> H.Y. Wang, Y.W. Liu, J.F. Tian, B. Sun and S.J. Huang	215
<b>Effect of Nano Materials on Durability of High Performance Concrete</b> Y.X. An	220
<b>Mechanical and Chemical Stabilisation of Carbonatesand</b> K. Grine	224

<b>Studies of Mechanical Properties and Absorption of Lightweight Concrete with Brazilian Expanded Clay</b>	
A.F. Angelin, R.C.C. Lintz and L.A. Gachet-Barbosa	231
<b>Microstructural Characteristics of Polyurea and Polyurethanexerogels for Concrete Confinement with FRP System</b>	
M. Fakharifar, Z.B. Lin, C.L. Wu, S. Mahadik-Khanolkar, N. Leventis and G.D. Chen	237
<b>Research on Strength of Steel Fiber Reinforced Concrete at Low Fiber Volume Fraction Based on Binary Variance Analysis</b>	
J.S. Yuan, D.Y. Gao and L. Yang	243
<b>Transformation of Minerals in Coal and Biomass upon Heating and their Impacts on Co-Firing</b>	
T. Wu, J.F. Yan, K.Q. Shi, H.T. Zhao and Y.D. Wang	249

### **Chapter 3: Environmental Sciences and Engineering, Waste and Recycling Technologies**

<b>The Research of Micro-Flocculation Suspended Sludge Filtration Technology in the Treatment of Oilfield Wastewater</b>	
J.L. Feng, L. Zhang, S. Wang and Y.M. Zeng	257
<b>The Tank Bottom Oily Sludge Characteristics Studying and Treating Processing Researching</b>	
L. Zhang and H.L. Liu	262
<b>Study on Surface Subsidence and Separation Range Thick Seam Mining of Daping Mine</b>	
M.L. Xu, X.G. Zhu and D.S. Zhao	268
<b>Water-Fertilizer Coupling Effects and Efficient Utilization under Peanut-Millet Interplanting Conditions</b>	
L.S. Feng, Z.X. Sun and J.M. Zheng	272
<b>Endogenous Water System Pollution Kuznets Curve in China</b>	
H. Zuo and D.X. Ai	278
<b>The Investigation and Countermeasures Research on Farmland Abandonment</b>	
L. Luo, S.Y. Zhang, J.H. Zhang, D.M. Tang, Q. Fang, Y. Cai and S.T. He	284
<b>Comparative Assessment of Urban Drainage Systems in Different Cities Based on Substance Flow Analysis</b>	
H. Bai, S.Y. Zeng, X. Dong and J.N. Chen	290
<b>Study on the Application of 3D Laser Scan Technology in Landscape Ecology</b>	
C. Zhu and B.Q. Zhao	300
<b>Effect on Compressive Strength of Paste/Mortar/Concrete by Changing Bottom Ash Content and Activator pH</b>	
W.K. Lee and J.H. Lee	304
<b>Effects of Different Micro-Catchment Mulching Methods on Water Consumption and Requirement Law of Corn Field</b>	
Z.X. Sun, L.S. Feng, J.M. Zheng and Y.X. Zhang	310
<b>Pollution Characteristics and Spatio-Temporal Variation of Polycyclic Aromatic Hydrocarbons in Atmospheric Particulate Matter in Jinan, China</b>	
Z.C. Liu, H.J. Cheng, X. Ge, G.Q. Zhang, S.Y. Du and Z.F. Wang	317
<b>Removal of NO from Gas by Corona Discharge with H<sub>2</sub>O<sub>2</sub> Solution Oxidation</b>	
J.W. Li, Z.P. Tang and J. Yu	323
<b>Arsenic Release from Highly Contaminated Sediment during Resuspension</b>	
H.X. Yu, Y.P. Chen and Y.F. Jia	327
<b>Analysis on Coupling Degree among Crop Evapotranspiration, Effective Precipitation and Water Requirement of Corn on Southern Kerqin Sandy Land in China</b>	
N. Yang, Z.X. Sun, J.M. Zheng and D.C. Chi	331
<b>Research on the Controlled Ecological Risk of Reservoir Operation</b>	
T. Gao, K. Yang, B. Wu, L.L. Zhang, Z.C. Zhao, T. Xu and W.N. Xu	337
<b>Research and Development on Membrane Technology in Natural Gas Desulfurization</b>	
S.L. Wang, J. Wang, E.T. Li and L. Ma	341

<b>Syntheses and Characterizations of Cobalt Doped Mesoporous Alumina Templated by Rubber Latex and its Adsorption of Acetaldehyde</b>	346
W. Zhe, B.K. Zhu, T.G. Liao, Z.Q. Li, H.Y. Yang, X. Luo, X. Wang and J.Q. Wang	
<b>Enhanced Adsorption of Toxic Compounds from Cigarette Mainstream Smoke by the Al-Ca-SiO<sub>2</sub> Composite Material</b>	351
L. He, W. Zhang, M.F. Wang, F.G. Yuan, J.P. Zhang, Y.Q. Duan, B.B. Ren and J.Q. Wang	
<b>A New Method Using Liquid Chromatography Tandem Mass Spectrometry to Detect NDMA in Water</b>	355
C.J. Zhang, G. Zhang, L.T. Chen, Q. Chen and Q. Zhou	
<b>Measurements of Dissolved Organic Nitrogen in Wastewater Samples with Nanofiltration Pretreatment</b>	359
C.J. Zhang, X.Y. Zhao, X.X. Qi, Q. Chen and Q. Zhou	
<b>Regulation of the Absorption of Cu with Various of Pollutants in Sediment through Fractional Factorial Design</b>	363
Y. Li, C. Meng, M. Wang, B.C. Cheng and C.Z. Zhou	
<b>Application of Fuzzy Cluster Methods to Atmospheric Functional Regionalization in Baotou, Inner Mongolia</b>	367
Y.H. Du, D.Z. Wang, W. Wang, C.G. Lai, Y.H. Zhu and Y. Li	
<b>Standardization as a Driving Force of the use of Recycled Coarse Aggregate in Concrete</b>	371
D.R. Robles, J.G. González, A.J. Valdés, J.M. Morán del Pozo and M.I.G. Romero	
<b>Influence of Moisture States of Recycled Coarse Aggregates on the Slump Test</b>	379
J.G. González, D.R. Robles, A.J. Valdés, J.M. Morán del Pozo and M.I.G. Romero	
<b>Kinetics of Chromium Ion Removal from Wastewater with Internal Circulation Foam Flotation</b>	384
D.J. Wang and N. Lin	
<b>Effect of Enhanced Conditions (C, N and Ultrasonic Power) on the Biodegradation of Mixed Endocrine Disrupting Compounds by <i>Pseudomonas putida</i></b>	388
Y. Li, C.Z. Zhou, C. Zhang, X.Y. Cai and C. Meng	
<b>Effects of Different Micro-Catchment Mulching Methods on Growth and Water Use Efficiency of Corn</b>	392
J.M. Zheng, Z.X. Sun, L.S. Feng and Y.X. Zhang	
<b>Policy Effects Assessment System Dynamic Model of Regional Low-Carbon Development</b>	398
Y.Y. He and X. Tan	
<b>Statistical Analysis of the Development Tragedy of Low Carbon Economy of Hi-Tech Industry in Shandong Province</b>	404
Z.Q. Huang, W. Wang and T. Yan	
<b>Green Construction Management Mode Based on the Sustainable Development</b>	410
J.X. Deng and D. Li	
<b>Study on Aerosol Optics Thickness Retrieval over Chuxiong Prefecture from MODIS Image</b>	414
W.J. Xi, P. He and W.Z. Yang	
<b>A Study of the Potential of CO<sub>2</sub> Emission Reduction in China's Construction with Scenario Analysis</b>	420
X.H. Gan, W. Wang and S.M. Liu	
<b>Assessment of Ecosystem Health of Panlong River, an Urban River in Kunming City</b>	427
J.M. Li, Z.L. Wu, Y. Fei, S.Z. He and J. He	
<b>Sustainable Development of the Rural Ecological Environment Planning Studies: A Case Study on Dongbaizhuangbeidui Village</b>	432
W. Fan and G.Z. Shang	
<b>Ecological Strategy of Architectural Design</b>	437
L. Yong	
<b>Effects on the Land Leveling Project Investment</b>	443
Y.C. Chen, J.S. Zhang, W.M. Liu and J.X. Yu	
<b>Mesoporous TiO<sub>2</sub> Prepared by Using Lac Red as Template Synthesis, Characterization, and Adsorption of Gaseous Acetaldehyde</b>	448
M.F. Wang, T.G. Liao, B.K. Zhu, Y. Wang, Y.Q. Duan, Y.M. Shi, Y.M. Wang and J.Q. Wang	
<b>Cerium-Doped Microporous-Mesoporous Silica Composite: Synthesis, Characterization, and Ammonia Adsorption</b>	452
G.L. Zi, F. Yu, F.G. Yuan, J. He, M.F. Wang, Y.M. Shi, D.L. Duan, Z.Y. Yan, B. Li and J.Q. Wang	

<b>Evaluation of the Behaviour of Mortar with the Addition of Rubber</b> I.K. Ferreira, L.A. Gachet-Barbosa, R.C. Cecche Lintz, M.R. Russo Seydell and L.C.L. Jaquiê Ribeiro	456
---	-----

## **Chapter 4: Manufacturing Technology and Engineering**

<b>Taxi Intelligent Dispatch System Based on GPS</b> Z.M. Yao, Z.P. Long and Q. Li	463
<b>An Investigation into the Effect of Design Parameters on Plasma Density in Dielectric Barrier Discharges (DBD)</b> J.B. Kim and M.S. Shin	469
<b>Numerical Research of Shear Strain in an Extreme Case of Asymmetric Rolling</b> M. Sverdlik, A. Pesin, D.O. Pustovoytov and A. Perekhozhikh	476
<b>Influence of Rolling Temperature on Fatigue Life of Calibrated Rolls</b> Ž. Domazet and F. Lukša	482
<b>Study on Vacuum Degree of Mechanical Cleaning System for Product Oil Tank</b> X.H. Li, G.W. Zhang, P. Zhang and D.J. Li	488
<b>Simulation and Optimization of Gasoline Vapor Absorption Separation</b> W.Q. Huang, Z.N. Zheng, L. Shi and Z.L. Hu	492
<b>Application of Entropy-Weight Hierarchy Analysis on Study of Height Prediction of Water Conducted Zone</b> M.L. Xu and D.S. Zhao	497
<b>Numerical Simulation Research on Coal Combustion</b> L.X. Ren, H.W. Lu and P. Du	501