

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Materials Science

Study on Forming Process of Plant Fiber Multilayer Decorative Board (I) - Effect of Fiber Content on the Properties H.C. He and C. Chen	3
The Application of CFRP Reinforced Concrete Beams Y.L. Liu, B.X. Du and J.L. Zhao	8
Properties of Oil Absorptive Resins and Swelling Kinetics X. Liu, Z. Wei, Y.S. Wang and H.W. Yu	12
The Influence of Corrosion Inhibitor BTA on Zinc Flux Y.Y. Xu, Y.F. Yan, Y.Y. Sheng and H.N. Wang	16
The Coupling Thermal and Mechanical Analysis of Machining Aluminum Alloy Work-Piece Based on FEM M.L. Wang, J.M. Hou and B.S. Wang	20
Study on Effect and Action Mechanism of Different Superplasticizer on Properties of Titanium Gypsum C.W. Du and G.Z. Li	24
The Preparation of Fiber-Reinforced Foaming Desulfurization Gypsum L.L. Li and G.Z. Li	28
Study on the Experimental Ratio of New Cement-Based Composite Insulation Board X.L. Li and G.Z. Li	32
Activator on Properties of Red Mud Lightweight Baking-Free Brick L. Ma and G.Z. Li	36
Modification of Colloidal Silica with Sodium Aluminate S.N. Gu, Y. Shi, L.Y. Wang, W.L. Liu and Z.T. Song	39
Grashof Number Effects on Nanofluids in Natural Convection Heat Transfer X.F. Li, X.J. Wang and Z.Z. Li	43
Investigation on Dispersive Behavior of TiO₂-H₂O Nanofluids X.J. Wang, X.F. Li, Z.Z. Li and F. Lin	49
Research on Oilfield Produced Water Treatment by Moderately Compressed Exfoliated Graphite Blocks L. Gao and H.B. Tu	53
Reutilization of RFA of Construction Waste in Cement Mortar F.X. Wang, G.Z. Li and J. Chen	57

Chapter 2: Chemistry Materials and Manufacturing

Mineral Slat of Mahai Salt Lake Dissolution Experiment and Numerical Simulation Y.G. Li, H. Jiang, X.R. Zhang and X. Wang	63
Synthesis and Application of 1-(2,5-dimethyl-3-thiazolyl)-2-[2-methyl-5-(4-hydroxymethylphenyl)-3-thienyl]perfluorocyclopentene Y.L. Fu, X. Li and G. Liu	67
Synthesis, Photochromic Properties of a Novel Unsymmetrical Hybrid Diarylethene Material with Benzene Unit H.J. Jia, J.J. Liu and S.Z. Pu	71
Synthesis and Properties of 1-[2-trifluoromethylphenyl-2-[2-methyl-5-(3,5-difluorophenyl)-3-thienyl] perfluorocyclopentene G.M. Liao, S.Z. Pu and Z.Y. Sun	75
Synthesis and Properties Study of 1-(2,4-dimethoxyl-5-pyrimidinyl)-2-[2-methyl-5-(2-chlorophenyl)-3-thienyl]perfluorocyclopentene J.J. Liu, H.J. Jia and S.Z. Pu	79

Synthesis and Photochromism Studies of 1-(2,4-dimethoxyl-5-pyrimidinyl)-2-[2-methyl-5-(2-methoxyphenyl)-3-thienyl]perfluorocyclopentene X.G. Tang, H.J. Jia and S.Z. Pu	83
Synthesis and Properties of 1-(2-cyanophenyl)-2-[2-methyl-5-(3,5-difluorophenyl)-3-thienyl]perfluorocyclopentene D.D. Xue, S.Z. Pu and Z.Y. Sun	87
Synthesis and Property of 1-(2,4-dimethoxyl-5-pyrimidinyl)-2-[2-methyl-5-(2-fluorophenyl)-3-thienyl]perfluorocyclopentene H.L. Liu, H.J. Jia and S.Z. Pu	91
Synthesis and Properties of a Novel Symmetrical Diarylethene with Bromine Atoms F. Duan, X. Li and G. Liu	95

Chapter 3: Applied Mechanics

PUSHOVER Analysis in the Application of the Framework Structure Reinforcement Y.L. Liu, J.L. Zhao and B.X. Du	101
Study of Wave Added Resistance on Wigley Ship T. Sun, M.H. Yuan, W. Wang and N. Ye	105
Excavation Mechanics Analyses for Shield Tunnels Considering Consolidation Material Property Impacts Z.G. Zhang, P. Pan and X.G. Xi	110
Identification of the Dynamic Properties of Mechanical Joints T.N. Guo, T.Y. Wu and X.L. Song	114
The Study on Cavitation Phenomena of Zoom Nozzle Based on Orthogonal Experimental and Spraying Mechanics X.Z. Zhao, H.L. Yan, Z.X. Yang and W.L. Xian Yu	119

Chapter 4: Manufacturing Engineering and Applied Technology

A Digital Control for Swinging Arc Narrow Gap MAG Welding System J. Zhu, W.Q. Xiong, W.H. Zhang, W.H. Li and J.Y. Wang	127
Design of Transformer Substation Low Frequency Sound Absorber and Test Study on Sound Absorption Property X. Zhang, S.N. Duan, M.G. Cao, J. Mo, Y.H. Sun, Y.C. Guo and G. He	134
Home Networking Technology Applied in Smart Home System S.H. Chen, Y.G. Liu and X. Fang	141
The Transformation of Traditional Air Compressor Based on Fuzzy-PID Control Strategy Y.Z. Hu and L. Zhang	145
AUV Buoyancy Regulating Device Design and Simulation Analysis R. Zheng, Y. Wang and J.G. Wu	150
Study on the Miter Gate Fault Diagnosis Methods Based on Vibration Signals M.Y. Zhao, J. Wang, X.X. Qin, X.N. Kang and R.F. Wang	158
Study on Manufacturing Engineering with Enterprise Standardization Management Maturity Evaluation Y.Y. Feng, S.L. Hao and R.J. Ding	163
Determinants of Organizational Innovation Performance in Chinese Manufacturing Enterprises: A Survey Study Y.M. Tao and Y. Hong	167