ISBN(softcover): 978-3-03785-345-0 ISBN(eBook): 978-3-03813-788-7

Table of Contents

Preface, Committees and Reviewers

Chapter 1: Multifunctional Materials

Facile Synthesis of $LnPO_4$: Tb (Ln = Ce, Gd) Green Emission Phosphors at Specific Temperature (80 or 680°C)
Q.M. Wang, Z.Y. Zhang and Y. Li 3

Ionic Liquid-Based Luminescent Gd_2SiO_5: Tb Submicro-Meter Phosphors
Y.H. Zheng, X.T. Ni and Q.M. Wang 8

Low-Density InAs Quantum Dots Growth by Molecular Beam Epitaxy
Z.G. Li, M.H. You, G.J. Liu, X. Gao, L. Li, Z.P. Wei, M. Li, Y. Wang, X.H. Wang and L.H. Li 12

Improved Resistivity of GaN with Partially Mg-Doped Grown on Si(111) Substrates by MOCVD
Y. Wang, N.S. Yu, M. Li and K.M. Lau 16

On Preparation of High Permeability Mn-Zn Ferrite
W. Zhu 21

Growth and High Pressure Investigation of $(C_{60})_n$@SWNT
Y.G. Zou, X.H. Ma, Q.L. Shi, G.J. Liu, Q.X. Sui and Z.M. Zhang 26

Effect of Sintering Temperature on Electrical Properties of ZnO Varistor Ceramics
C.Q. Xia, Q.B. Liu and M. He 31

Applications of Nanotechnology in Green Energy Manufacturing
J.R. Chen and Q. Hong 35

Effect of Conservation Cultivation on Accumulation and Distribution of Soil Organic Carbon in Paddy Fields Located in Southwest China
E. Ci, J. Zhu, J. Peng and Z.W. Fu 40

China's Chemical Industry Materials Based on the Content and Security Planning Research
H.Y. Wu 45

Study of an Inorganic Ion Exchanger $Mg_2Ti_{1.25}(PO_4)_3$
H. Li 50

Synthesis of $Li_{0.6}Zn_{1.2}PO_4$ and its Selectivity to Li^+ Exchange
H. Li 54

Study of Building Energy-Saving Based on TRIZ
J. Luo 58

Dynamic Simulation of the Boron Isotopes Separation by Chemical Exchange Method
J. Cui, W.J. Zhang and F.H. Miao 62

Teaching Reform of General Chemistry in Independent College
X.Y. Wang, X.R. Kan, L.F. Zhang and R.Y. Bai 67

Evaluation on Biocompatibility of Materials of Goose-Head Nail Steel Plates
M. Gao, Q.F. Liu and Y. Zhao 71

Investigation of Promoting Professional Practical Ability of Undergraduate Students in Materials Majors
G.L. Du and X.X. Feng 76

A Nano-SiO_2 Form-Stable Phase Change Material for Building Thermal Energy Conservation
W.J. Lin 81

UI Analysis and Style Design
J.C. Zhang and H.H. Shen 87

Application Research of Computer Technology in the Decision Making of China's Supermarket Logistics Centers
Y. Teng 92

Chapter 2: Devices and Integrated Systems

Effect of Y_2O_3 on Room Resistivity of Honeycomb Ceramics
Q.B. Liu and M.S. Yuan 99

Engineering Rules-Based Orthogonal and Variable-Steps Pipe Routing Algorithm for Aero-Engines
X.L. Bai and Y. Zhang 104

Adaptive *hp*-Finite Element Method for Electromagnetic Field Logging Problems
Z.H. Ma, D.J. Liu and Q. Feng 109

Research on Mechanism for Virtuous Circle of Technological Import
H.P. Wang and F.Y. Wang 114

Design of the High-Precision SPR System
R.C. Sun, Y. Chen and X. Hu 119

The Multi-Component Jaulent-Miodek Hierarchy and its Multi-Component Integrable Coupling System with Two Arbitrary Functions
J.Y. Ge and T.C. Xia 124

The Study on Component Composition Based on Extend UML 2 Component Diagrams
Y.Y. Liu 129

Numerical Simulation and Optimization of the YKK355-4 Motor Shaft Welding Structure
Y.X. Shi, Y.L. Shen, W.H. Pan and J.P. Liu 134

Temperature Investigation of High Speed Milling High Manganese Steel
L.Y. Xu, Q. Wu and Y.Z. Li 139

Technology Forecasting Methods with Emphasis on Bibliographic Analysis and Curve Fitting: A Photocatalytic Case Example
P. Jaranyagorn and C. Chansa Ngavej 144

Analysis on the Feet-Pressure between Flatfoot and Normal Foot
W.F. Fang 149

Chapter 3: Novel Manufacturing Technologies

Study on Fouling of Nanofiltration Membranes when Treating the MBR Effluent
X.T. Zhang and K. Sun 157

Finite Element Analysis on Structural Stress of 8×8 Infrared Focal Plane Array Integrating with Microlens Arrays
L.W. Zhang, M. Shao, Q. Yu and P.F. Li 162

Comparison of Three Rainfall Products from Microwave Imagers during Development of Typhoon Ma-on
X.Q. Li, F.S. Zhao, Y.L. Qiao, H. Yang and R. You 167

Development Status and Competitiveness Analysis of Automobile Industrial Cluster in Xiangyang
F. Wang 172

Improved Modeling and PID Control Algorithm for Three-Tank Liquid Level System
Y.X. Yu and X. Song 176

Design Method of the Flexible Smart Driving Mechanism
X.Z. Jing, L. Li and C. Li 180

Design and Fabricate InGaAlAs Quantum Well Device for Future Optoelectronic Integration
T. Li, E.J. Hao, Y. Wang, P. Lu, Y. Qu and G.J. Liu 188

Design and Implementation of Group2 only Slave Node Based on DeviceNet
Z.P. Chen and Q. Wang 193

Development of Ultra Fast Cooling Variable Frequency Control System in Hot Strip Mill
L.G. Peng, Y. Gao, X.M. Zhao, D. Wu, Z.P. Zhang, Y. Liu, L. Sun and L.X. Ren 199

The Study on Embedded Systems Capstone Design
D.T. Ma 204

Study on Method of Knowledge Acquisition and its Application in the Design of Vehicle Clutch
Y.H. Xu 209

Control Technique Research of Key Quality Characteristic during the Mechanical and Electrical Production Manufacturing Process
H. Yang 215

Teaching Platform Construction of Mining Engineering after Recovering Recruit Student
X.W. Chai, D.J. Zhang, Y.P. Xu, D.B. Ji and S.F. Ren 220

Simulation Research of Engine Cooling System
X.J. Chen 224

Network Construction of Environmental Performance Auditing against Engineering Projects
S.H. Qin 229

Chapter 4: Mechanical Vibration

Research on Dynamic Characteristic and Experiments of Double-Disc Rotor System with Oil Film Support
C.F. Li, J. Liu, Q.L. Li and B.C. Wen 235

Design and Motion Analysis of Double-Rocker Mechanism with Horizontal Uniform Rectilinear Motion
Z.D. Huang, Y.P. Du and Y. Wang 240

Dynamic Fatigue Simulation of Engine Block Based on Virtual Prototype Technology
N. Liu, G.X. Li, T.T. Wang, Y.P. Hu and X.R. Liu 246

A Method for Real-Time Estimating Pose of Large Aircraft Component in Process of Pose Adjustment Based on the Unscented Kalman Filter
Z. Ying 251

Construction Energy Conservation Application Research Based on Swarm Intelligence Algorithm
Y.J. Zhang 256

Research on Fault Diagnosis of Marine Diesel Engine Based on KFDA
Y.Y. Chai, X.Y. Peng and X.J. Man 262

Effect of Coating Thickness of Laser Strengthening on Repeated Impact and Deformation of *1Cr18Ni9Ti* Low Stress
X.H. Huang and G.Y. Fu 267

Design of SPR Spectrometer Automatic Sampling Control System
Y.X. Yu, Y. Chen and X. Hu 272

High-Precision Locating Technology of Automatic Port High-Speed & Heavy Load Rail Power-Driven Trolley
X.X. Huang and X.P. Kong 276

Fatigue Strength Analysis of Internal Combustion Engine Crankshaft Based on Dynamic Simulation
N. Liu, G.X. Li, S.G. Lang, Y.P. Hu and X.R. Liu 281

Study on Influence of Freeze-Thaw Cycles on the Physical-Mechanical Properties of Loess
G.Q. Bi 286

A Novel Method to Realize the Many-to-Many Mapping in Lifting Appliances' Safety Evaluation
H. Rao, X.R. Dong and H.W. Gong 291

Integral Fracturing Optimization of Rectangular Five-Spot Well Network in WUNAN Oilfield
X.B. Bian, S.C. Zhang, T.K. Guo and Z.X. Wei 295

The Design and Research of the Flight Simulator Motion System and Visual System
C.G. Wang and S. Yue 300

A Portable Detecting and Analytic Instrument of Vibration Signal
J.W. Li, L. Wang and H.M. Zhang 305

Optimization and Setting of Content and Structure of Soil Mechanics
Q. Feng, Y. Chen and G.D. Zhang 309

Chapter 5: Green Manufacturing and Control

The Application of Fractional Order Calculus in Closed-Loop System Control
Y.F. Feng 315

Dynamic Voltage and Frequency Scaling Under an Accurate System Energy Model
S. Xu, J.S. Li and J.F. Jiang 321

Research on Educational Methods of High-Quality Medical Students Based on Tacit Knowledge Construction
Z.G. Liu and S.Y. Wu 326

Plastic Classification by Trademark Based on near Infrared (NIR) Spectroscopy Data
J.J. Wang, D.X. Hou, B.L. Wu, S.L. Ye and H. Yang 331

The Design of Intelligentized Safety Monitoring System in Residence Based on ARM
D. Zhang, Y.Q. Hou and G.F. Ma 336

The Research of Construction Project Risk Management Based on Monte Carlo Method and Fuzzy Mathematics
S.D. Xu, X.L. Cai and W. Liu 341

Design and Implementation of Bridge Structural Health Monitoring System
H. Rao, H. Zhao, S. Li and M.Z. Li 346

Comprehensive Evaluation of Fuzzy Matter Element Based on Entropy Weight in Urban Water Use
C.J. Li, B. Li and T.L. Wang 351

Research on Inorganic Medical Capsule Derived from Novel Emulsion Route
Y.P. Xu, X.M. Yu, Y. Ji, N. Zhang, Y. Hong and H.Z. Yang 356

Based on RSSI Ranging Technology for DV-Hop Localization Algorithm of Wireless Sensor Network
Y.J. Zhong 360

Development and Application of Hot Rolling Lubrication Control System Based on Expert System
L.G. Peng, X.L. Hu, X. Li, D.H. Zhang, G.L. Yang and Z.L. Wu 366

A Fuzzy Controller Design of Seam Tracking for Welding Robot
Y.Q. Wu, Z.H. Yuan and J.H. Wang 370

A Modification of Pragmatical Generalized Synchronization of Chaotic Systems with Uncertain Parameters by Adaptive Control
W.G. Zhang, J.W. Lei and G.Q. Liang 375

Research of Machine Vision Based Recognition of Burning through Point of Sintering
Z.K. Chen, Y. Wang, Y.T. Wang and Y. Li 379

Chapter 6: Engineering Management Information Systems

Laser Welding on Material Used for Automobile Lightweight
Q. Wu, L.Y. Xu and Y.Z. Li 389

Surface Emission of InxGa1-x N/GaN Espaliers Grown by MOCVD under Different Optical Excitation
Y.Z. Zhu, Y. Liu, H.X. Wang, Z. Sun and J.S. Yuan 393

The Research on Ship Intelligence Navigation in Confined Waters
Y.Z. Xue, Y. Wei and Y. Qiao 398

Effect of Equivalence Ratio on Propagation Process of Combustible Gas in Venting Tube
S.F. Ren, X.F. Chen, Y.J. Wang and Y. Zhang 402

The Building of Home Automation Electricity Distribution System Based on PLC
A.R. Zhang and J.L. Zhang 407

The Application of Computer Design Tools in Building and HVAC System Design
X.W. Chen and B. Tian 412

The Application of Software Engineering in Intelligent System Validating
G.L. Feng, W.D. Liu and S.H. Wang 418

The Study on Electric Power System Based on Swarm Intelligence
Z.S. Xu, Z.F. Ma, X.W. Di, T. Luo, H.Y. Guo and B.C. Niu 424

The Influence of Initial Error to the Rate Azimuth Platform Inertial System
F.L. Wang, X.L. Wen and D.H. Sheng 430

Time Complexity Analyses on Fast Grid Layout Algorithm
S. He, Y. Pan, Q.F. Zhou, B. Zhou, D. Chen and G.B. Liang 436

The Design of Vehicle Integrated Navigation System Based on FPGA
Y.S. Wei 441

A Method of Layout Rearrangement for Enterprise Logistics System
J.H. Yang 446

The Design of 2D Bar Code Recognition Software on Android
Y. Yi 453

The Using of Combination Algorithm to the Gastric Carcinoma Nucleus Segmentation
H.Y. Cai, D.X. Li and X. Wang 458

The Research of Face Recognition Method Based on Wavelet Transform
L.H. Bi, Y.F. Ma and L.H. Piao 463

Design of the Remote Liquid-Level Real-Time Monitoring System Based on Virtual Instrument
Y.X. Yu, Y. Chen and X. Song 468

Synchronization Controlling for a Permanent Magnet Synchronous Motor via Linear Feedback with Single State
J.G. Jian, Z.H. Zhao and W.W. Wang 472

Design and Control of a Mini Quad-Rotor UAV Based on Embedded System
M.M. Du and F. Jin 477

A New DYC Control Strategy Based on Feedforward Control in the Linear Region
Q.D. Wang, H. Huang and W.W. Chen 482

Control System of Moving Target Simulator
R.C. Sun and X. Song 488