

Table of Contents

Preface, Sponsors and Committees

Chapter 1: Nanoscience and Nanotechnology

Effect of Pd Nanocrystals on Resistive Switching Characteristics in HfO_x Memory Devices T.K. Kang, C.K. Wang and Y.Y. Yang	3
Nanostructured Doped Silica Films Application as Sensitive Layers for Chemical Sensors S. Krutovertsev, A. Tarasova, O. Ivanova and L. Krutovertseva	7
Development of Nanoemulsion Formulations of Ginger Extract C. Uthumpa, R. Indranapakorn and R. Asasutjarit	12
Characterization of Plasmonic Silicon Solar Cells Using Indium Nanoparticles/TiO₂ Space Layer Structure W.J. Ho, Y.Y. Lee and Y.T. Chen	16
Fabrication of ZnO Nanowall-Based Hydrogen Gas Nanosensor T.P. Chen, S.P. Chang and S.J. Chang	21
Effects of Grooved Surface with Nano-Ridges on Amplification of Hydrophobic Property D.K. Lee, J.H. Lee and Y.H. Cho	26
New Two-Step Preparation and Characterization of Submicron ZnO Rods Arrays R.X. Liu, Z. Zhang and J.Z. Huang	32
The Study on Deposition Process and Mechanical Properties of Deposited Cu Thin Films Using Molecular Dynamics J.C. Huang, Y.C. Liao, H.S. Liu and F.J. Cheng	37
Progress on Cytotoxicity <i>In Vitro</i> of Carbon Nanotubes Z.H. Xing	42
Synthesis of Nanosized Pseudoboehmite and γ-Al₂O₃ by Control Precipitation Method Z.Q. Jiang, H.W. Ma, J. Yang and L. Wang	46
Progress on Chitosan Nanoparticles as Drug Delivery Carriers Z.H. Xing	53
Preparation and Characterization of Folate-Decorated Chitosan Microspheres as a Sustained-Release Drugs Carrier Z.H. Xing	57
Effect of Thermal Treatment on the Texture and Structure of Sol-Gel Derived Carbon Nanotube/Silica Composites C. Zheng, X.Y. Ye and X.Q. Xiao	63
Effect of SiO₂ Particle Size on Optical Properties of TiO₂-SiO₂ Nanocomposite Thin Films J.H. Kim, H.G. Choi, T. Zhang, C.H. Kwon, Y.H. Kim and D.H. Kang	67

Chapter 2: Chemical and Materials Engineering

Processing, Thermal Behavior and Tensile Properties of PLA/Thermoplastic Starch/Montmorillonite Nanocomposites E. Jalalvandi, T. Ghanbari, H. Cherghibidsorkhi, E. Zeimaran and H. Ilbeygi	75
Electrochemical Study of Speek/Cloisite 15A[®]/TAP Membrane at Moderate Temperature for DMFC Application H. Ilbeygi, A.F. Ismail, M.M. Nasef, J. Jaafar, E. Jalalvandi and P. Panahi	80
High Performance Transparent Conducting Sb-Doped SnO₂ Films Fabricated by Spray Pyrolysis Q. Zhao, X.Q. Xu and G. Xu	85
Modified Nafion Membranes by Catalytic Materials for Direct Methanol Fuel Cells Applications A.H. Tian and D.H. Shen	90
Solvents-Induced Structure Transitions in Copolymer Films L. Zhou, Y. Liu and B.H. Sun	94

Chapter 3: Construction and Materials Science

Experimental Study of Suffusion in Granular Soils D.M. Nguyen, O. Plé and J. Monnet	101
Software Implementation of the Algorithm the Statistical Straggling of the Mechanical Properties of Materials in the Design of Structures G.G. Kashevarova and A.S. Martirosyan	106
Structural Performance of Disaster Relief Housing Units Subjected to Cyclic Loading T.H. Ha, D.J. Kim and C.H. Han	111
Assessment of the Corrosion Characteristics of the Carbon Steel under Different Atmospheric Environments Y.S. Jeong, S. Kainuma and J.H. Ahn	116
Assessment of Shear Behaviors of a Web Panel with Free Lower Boundary J.H. Ahn, S. Kainuma, I.T. Kim and Y.S. Jeong	120
Minimum Weight Design of Pre Engineered Steel Structures Using Built-up Sections and Cold Formed Sections M.U. Saleem, Z.A. Siddiqi and H. Qureshi	125
Rigid-Body Contact Using Finite Particle Method Y. Yu and M. Wu	130
Influence Law of Middle Tower on Mechanical Performance of Three-Tower Self-Anchored Suspension Bridge C. Zhang, Y.J. Chen, Z.Z. Fang and S.P. Wu	134
The Effects of Applied Stress and Test Temperature on the Environment-Induced Cracking Behavior of Carbon Steel in NH_4NO_3 Solution K. Koide, A. Iwase and R. Nishimura	139
Experimental Research on Performance Change Regularity of Road Asphalt with Multiple Aging and Regeneration P. Liu, Y.H. Nie and Y.L. Zhang	144
Non-Coaxial Plasticity Constitutive Modeling of Sands P. Hu, M.S. Huang and D.G. Wu	150
Influence of Bentonite Content on the Static Liquefaction Behavior of Sand X.W. Tang, L. Ma and S. Dieudonné	154
Preparation of Coal Gangue Cement Mortar W.X. Li, D.L. Wang, J.S. Niu and X.W. Ma	159
Evolution Model of Concrete Failure Surface under the Action of Load and Freeze-Thaw Cycles S.J. Chen, X.B. Song, X.L. Liu and J.C. Zhang	163
Application of the Phase Change Material in Building Energy Efficiency Y. Pan, X.D. Zhao and X.F. Zhao	168
The Effect of Fly Ash on Lime Mortar on Elevated Temperature A. Ghaffari and A. Ghaffari	172
Retrofitting Bond of Damaged Concrete Surface in Harbour Structures A. Ghaffari and A. Ghaffari	177
Preparation and Characterization of Organically Modified Sepiolite by Octadecyl Dimethyl Ammonium Chloride K. Ma, B.C. Lan and Z.H. Guo	182

Chapter 4: Environmental Engineering and Materials Science

A Study on Hydrogen Sulphide as Potential Tracer in Landfill Gas Monitoring T.N. Tengku Izhar, Z.S. Mohd Odli, I.A. Zakarya, F.N. Mohd Saad, N.M. Ibrahim, R. Che Amat and T.L. Binn	189
Kinetic Study of Methyl Orange Adsorption from Solution by IOCZ Y.K. Li, B.L. Zhao, W. Xiao, R.P. Han and Y.Q. Li	194
Removing Lead Ions from Aqueous Solutions with Sulfur-Impregnated Adsorbents T. Wajima	198

Accumulation and Distribution of Soil Organic Carbon in <i>Phragmites communis</i> Wetlands Restored with Ecological Engineering	
H. Wang, B.S. Yang and S.H. Dai	203
A Strategy of Sustainable Environment Management: The Case Study of Wutai Township in Taiwan	
S. Taiban, H.S. Gau, C.Y. Chung, S.W. Liao and W.L. Lai	207
Assessment of the Influence of Carbon Absorption Efficiency of Plants with High Concentration Sulfur Dioxide	
C.Y. Chung, P.L. Chung, H.S. Gau, S.W. Liao and W.L. Lai	212
To Recognize Sources of Pollution in Dapeng Bay by Sediment Quality in Southern Taiwan	
W.L. Lai, H.S. Gau, C.Y. Chung, S.C. Chen and S.W. Liao	217
Study on the Technology for Underground Treatment of XingFu Mine Water	
J.P. Wang and T. Mei	222
Research for Biodegradation and Bioaugmentation of Drilling Wastewater	
F. Xu, J.C. Gu and J. Bao	226
Implementation of Microbial Fuel Cells (MFCs)-Based Wastewater Treatment	
Y.H. Ahn	230
A Software for Estimating Cosmic Radiation Exposure of Aircraft Crew	
Q. Li, S.F. Zhang, Y.J. Feng and W.R. Chen	234
A Critical Evaluation of Nuclear Power Plant Project in China	
H.F. Li, Z.Q. Qu, A.Q. Gong and X.H. Wu	238
The Application Analysis of Sprinkling and Drip Irrigation Technology in the Ecological Environment Construction	
F.H. Li, X.L. Liang and K. Chen	242
Analysis on Variation Characteristics of Precipitation Time Series in Weihe River Basin during the Past 55 Years	
S. Wang, X.H. Lei and F. Zhang	246
Experimental Analysis for Piezoelectric Transducers Applications into Roads Pavements	
S. Cafiso, M. Cuomo, A. Di Graziano and C. Vecchio	253

Chapter 5: Electronics and Materials for Electronics

Optimizing and Analysis for the Microchannel Heat Sink of High-Power LED Array	
R.C. Li, X. Zhang and Q. Zheng	261
Photocurrent Enhancement between Two Coplanar Schottky-Barriers on Silicon MSM Photodetector	
N. Atiwongsangthong and S. Niemcharoen	265
Two-Diode Model Analysis and Experimental Verification for Photovoltaic Cells	
E.S. Shang and T. An	269
Enhanced Photoluminescence of $\text{YInGe}_2\text{O}_7\text{:Eu}^{3+}, \text{Li}^+$ Phosphor Prepared Using the Solid-State Method	
H.Y. Chen, R.Y. Yang and S.J. Chang	274
Influence of Annealing Atmosphere on the Characteristics of Sol-Gel Derived ITO Thin Films	
Y.M. Peng, Y.K. Su and R.Y. Yang	279
Generation of Dense Lying Ga(As)Sb Quantum Dots for Efficient Quantum Dot Lasers	
T.H. Loeber, E.A. Hein, D. Hoffmann, C. Heisel and H. Fouckhardt	285
Experiments with Phase-Delay and Time-Delay Methods for Slow Light in Photonic Crystal Waveguide	
H. Lu, L.J. Zhang, Z.Q. Zheng, Y.H. Zhang and Y.Q. Leng	290
Comparative Study on Off-State Breakdown Characteristics in Nanowire Junctionless and Inversion Mode Multiple Gate MOSFET	
S.M. Lee, H.J. Jang and J.T. Park	295
Preparation of 100 GHz InP Transferred Electron Devices	
D.Q. Wu, R. Jia and Y. Bai	299
Optimum Patch Dimension Ratio of T-Shaped Microstrip Antenna	
E. Rhee and J.H. Lee	303

Characteristics of Lead Free Ferroelectric Thin Films Consisted of $(\text{Na}_{0.5}\text{Bi}_{0.5})\text{TiO}_3$ and $\text{Bi}_4\text{Ti}_3\text{O}_{12}$	
K.A. Hee, Y.H. Kim, K.G. Sang, S.P. Dong and D.H. Kang	307
Fabrication of Simple GaAs Solar Cell by Zn Diffusion Method	
S.P. Chang	312
Synthesizable Digital Phase Locked Loop Implementation	
R. Imran, M. Islam and A. Al Kafi	317

Chapter 6: Material Processing. Technologies and Solutions

Effect of The Sigma Phase on the Mechanical Properties of a Cast Duplex Stainless Steel during the Ageing Treatment at 850°C	
T. Liang, X.Q. Hu, X.H. Kang and D.Z. Li	325
Study on the Desulphidation in Basic Electrode Welding	
Z. Xiong, D.H. Tang and H.W. Wang	330
Rolling Process for the Continuous Forming of Curved Surface Parts Based on Bended Rolls	
Z.Y. Cai, M. Wang and M.Z. Li	334
The Effect of Directional Flow of Metallic Melt on the Structure of Cast Metal	
R. Apakashev and N. Valiev	338
Friction and Wear Properties of Aluminum Matrix Composites Reinforced by Coated Carbon Fibers	
X.Y. Deng, G.H. Zhang, C.W. Qiang, Z.M. Cairang and T. Wang	342
Effect of Molding Temperature Conditions upon Titanium Mesh MEA Performance for Direct Methanol Fuel Cell	
X.X. Wang, Z.Y. Li, Y. Zhu, M.Y. Huang and H.J. Ni	347
The Effect of Substrate on Continuous Electrohydrodynamic Printing	
N.B. Bu, Y.A. Huang and Z.P. Yin	352
Analysis of the Necking Behaviors with the Crystal Plasticity Model Using 3-Dimensional Shaped Grains	
J.B. Kim and J.W. Yoon	357
Influence of the Milling Weld Toe and WIG Remelting Reconditioning Technology to Welded Pieces in the Case of Fatigue Testing	
G. Amza, D.F. Nitoi, C. Babis, C. Amza and Z. Apostolescu	362

Chapter 7: Mechatronics, Measurements and Control

A New Intelligent Fault Recognition Method for Gearbox	
W.B. Zhang, Y.P. Su, Y.J. Zhou and Y.S. Pu	369
Intelligent Rotor Fault Identification Method Based on HWD Energy Distribution and Grey Relation Degree	
W.B. Zhang, Y.P. Su, Y.S. Pu and Y.J. Zhou	373
New Estimation Method of Sample Properties in Dynamic AFM	
C.B. Lee and G. Mohan	377
Model and Simulation of Six-DOF Parallel Platform Based on Direct Drive Volume Control	
X.L. Dai and H. Zheng	381
Research of Roll Processing Instrument Upgrading and Improvement	
W.Q. Liao, L.M. Ling and J. Zhou	386
An Improved DV-HOP Localization Algorithm Based on Simulation Curve Fitting	
L. Chen, Z.Y. Fang, W. Lv and Z. Liu	390
Review and Prospect for the Land Seismic Data Acquisition System	
Y. Yang, Z.B. Chen, Y. Zhang and Y.J. Du	394
The Design of Acquisition System of Compact Seismic Recorder	
Y. Zhang, Z.B. Chen, Y. Yang and T. Yu	398
Image Reconstruction Based on TV Minimization and OS-EM Method in Linear Scan CT	
B. Yan, A.L. Cai, F. Wei, L. Li and X.Q. Xi	402

A Smart Access Control System Based on ARM Y.Z. Tian, Z.X. Jin, S. Wang, Y. Xu and M. Zhang	406
A Path Recognition Algorithm Based on Image Process for Smart Car P.C. Wang, Y. Xu, Q.N. Cai, S. Li and Y.Z. Tian	410
Research on Motion Compensation for Airborne SAR Interferometry System Y. Gao, J.S. Du, Y.Y. Liu and X. Bi	414
Design and Realization of New Vehicle Attitude Measurement System S.B. Fu, L. Zhao and Y. Yu	420
Using Single-Cycle-Related Electromagnetic Vector Sensors to Estimation DOA and Polarization Parameters L.X. Zhu, Y.W. Shi, Y.R. Shi and L.F. Deng	424
Uncertainty Evaluation in Distance Measurement by CMM Based on Monte Carlo Method H.L. Li, X.H. Chen and H.T. Wang	429
A Novel Type Compact FBG-Based Micro-Displacement Sensing Machine Using a Temperature-Bias Self-Compensating Technique F.F. Liu, H.J. Xia, L.J. Chen, H.L. Li and Y.T. Fei	434
A Fabrication for Ameliorating Pyroelectric Harvesting Converters C.C. Hsiao and A.S. Siao	438
High-Q Silicon-on-Insulator Micro-Ring Resonator with Silica Covering C. Liu, C.Y. Xue, D.F. Cui, J.B. Zang, Y.H. Wang and J.X. Wang	443
Single Camera Stereo with Planar Mirrors Y. Yan and B.W. He	447
Research and Simulation on the Maximum Power Tracking Control of the Wind-Light Complementary Power Generation System G. Wang	451
Path Planning Based on EMD and Partial Distance Feature Vector Matching with Fuzzy Logic for Indoor Robotic Z.J. Zhang and S. Yang	456
Design and Analysis of Two Gun Salute Control Systems Based on Singlechip and PLC Y.Q. Wang	460
A Novel Closed-Loop Time-Delayed Filter for Unstable System F. Liu and J.S. Yang	465
The Presentation of the Quarternary Super-Wavelet Wraps and Applications in Material Science J.G. Shen	469
Movement Measurement Systems for fMRI Motion Studies H.S. Kim, H.W. Yeon, M.H. Choi, H.J. Yoon, H.J. Kim, I.H. Lee, J.H. Yi and S.C. Chung	473
Seismic Data Collection Circuit Design of Seismograph Used in Complex Mountainous Area T. Yu, Z.B. Chen, Y.J. Du and Y. Zhang	477
The Algorithm to Measure Crack Width with Incircle B.Z. Ge, Q.J. Luo, B. Ma, Y.J. Wei, B. Chen and S.Z. Jiang	481
Research on Monitoring of Moisture Content in Transformer Oil by Using Sensors Q. Fu, M.J. Wang, W. Su, Y.H. Qian and G.H. Lu	486
Image Fusion Method Based on Universal Hidden Markov Tree Model in the Contourlet Domain X. Cai, G. Han and J.K. Wang	491
Evaluation Method for Band Selection Algorithms of Hyperspectral Image B.H. Wang, S.Q. Huang and Y.H. Li	495

Chapter 8: Networks Communication and Information Technologies

Efficient Beacon Collision Detection/Avoidance Mechanism in WLAN-Based Mesh Networks J.H. Lee and E. Rhee	501
A Detection Model of Customer Alive in Information Management Application H.H. Huang	505

An Android-Based Interactive Museum Exhibit System Using Wireless Sensing and Augmented Reality Technologies	
C.M. Lin, C.Y. Huang, D.Y. Yang, T.C. Lin, C.C. Chung and J.H. Lin	509
Using Portable-Profile to Support Context-Aware Services in the UPnP Networks	
J.H. Lin, C.R. Dow and C.C. Lin	513
Electric Field Uniformity Characteristic of a Reverberation Chamber with a Composite QRD	
E. Rhee and J.H. Lee	518
A Study of Biorthogonal Four-Variable Wavelet Wraps with Three-Scale and Applications in Finance Management	
Y.G. Li and X.F. Wang	522
Application of Web Data Mining in On-Line Education	
L.N. Huang and G.X. Liu	526
A Lightweight Serverless RFID Tag Search Protocol	
Y. Tian, G.L. Chen and J.H. Li	531
Region-Based Efficient Beam Handover Scheme in IEEE 802.11 Wireless Networks	
J.H. Lee and E. Rhee	535
Remote Access the ZigBee Sensor Network through the IP Network	
C.C. Chung and W.S. Weng	539
DPRoPHET Routing in Delay Tolerant Network	
P. Sok, S.H. Lee and K.C. Kim	543
The New Mechanism to Detect and Prevent BlackHole Attacks on AODV-Based MANET	
S.V. Tan, M.Y. Choi and K.C. Kim	547
Application of WLAN Information Transmission and System Security Technology in the Smart Substation Network	
X. Xu and J.X. Lu	551
Improvement of the Expert System Shell Pro/3 Sentence Input Function and Exploration of Batch Computers Security Assessment	
Q.M. Cui, S.G. Hu, R. Zhao, J. Liu, S.W. Liu, H.X. Liu and Z.Q. Fu	555
Experiment Research of Dynamic Load Balancing Algorithm Based on Task Classification for Data Retrieval	
Z. Liu, G. Dong, H.W. Yang, G.N. Qu, H.B. Wang and L. Chen	559
UML Modeling of Diagram Document Online Approval Process	
Y.M. Wang and S.P. Wang	563
Word Segmentation Method Based on Conditional Random Fields in China's Stock Market Arbitrage Analysis: A Case Study of Shanghai a Share Market	
H. He and W.G. Che	567
Performance of Two Space-Time-Frequency the Coding Schemes in Frequency Selective Channel	
C. Shao, C.C. Zhang, C.Y. Xu and Y.M. Liu	571
Disjoint Network Reliability Index Algorithm in the Application of the Power Communication Network	
S.H. Sun, Z.D. Zhao and L.H. Yang	575
Mean Square Asymptotic Stability of Neutral Stochastic Neutral Networks with Multiple Time-Varying Delays	
X.D. Shi	579
Development of an Internet of Civil Infrastructure Framework	
D.C. Liaw and T.H. Lin	583
Research on the Technology of XML Faceted Search Based on User's Cognitive	
L.H. Yang, X.Y. Li and S.H. Sun	588
A Geographic Flooding Scheme for Air-Dropping and Node-Assembling Applications Using MANETs	
Z.R. Shao and C. Shao	592
Design and Implementation of Wireless Communication System Based on CC1101	
X.Y. Zi, Y. Wang and L. Zhao	596
Double Sideband Suppressed Carrier Performance with Optical Balanced Detection	
K.C. Lang and H.K. Teng	600
Time-Space Characteristics Distribution of Traffic Accidents Based on Clustering Analysis	
Y. Zheng and L. Wang	604

Chapter 9: Engineering Management

The Application and Research of Value Engineering for International EPC Project L.S. Wang, T. Yu, J. Zhou, H.Y. Dong and J.C. Zhu	611
Management and Compilation for Shop Drawing T. Yu, Z. Kang and L.S. Wang	616
Research on Vehicle Schedule Problem for Drop and Pull Transport of Port H.L. Zhong, W.X. Guo, G.X. Zhang and W.X. Cai	621
An Empirical Analysis of the Regional Influence of FDI on Energy Efficiency in China Z.F. Guo, J.H. Lin and J. Luo	626
The Research of Test System of Notebook Use Reliability Y. Xu, M. Li and C. Li	630
Multiple Deliveries of Two-Warehouse Deteriorating Production-Inventory Model H.C. Chen and Y.H. Hsieh	634
Developing a Model for Risk and Responsibility Management Share Amongst Stakeholders Consortium in Construction Projects A. Ghaffari	639
Concepts of Risk in Construction Projects A. Ghaffari	644

Chapter 10: Other Topics

FIR Digital Filter Design Based on Virtual Instrument Y.J. Du, Z.B. Chen, T. Yu and Y. Yang	653
Building the Model of Near-Level Coal Deposit Q. Wang, X.C. Xu, X.W. Gu and Y.Y. Zheng	657
The Traits of Canonical Banach Frames Generated by Multiple Scaling Functions and Applications in Applied Materials J.L. Gao and S.H. Cheng	663
Stagnant Nonuniform Acoustic Wave K. Tolipov	667
Comparison of Three Short Term Wind Power Forecasting Methods W.Y. Chang	671
Probabilistic Reactive Power Optimization of Distribution Network Considering Stochastic Wind Speed and Load S.H. Chen, L. Chen and Y. Chen	676
An Overview of Osmotic Power: A Viable Power Generation Technology for Present and Future M.S. Islam, T. Ali, A.U. Ahmed, S.A. Karim and H. Mursalin	680