

Materials Engineering and Automatic Control III

Selected, peer reviewed papers from the 3rd International Conference on Process Engineering and Advanced Materials (ICPEAM2014), June 3-5, 2014, Kuala Lumpur, Malaysia

von
Shoujun Wang

1. Auflage

Trans Tech Publications 2014

Verlag C.H. Beck im Internet:
www.beck.de

ISBN 978 3 03835 140 5

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Advanced Materials Engineering and Materials Processing Technologies

Modeling of TiN Coating Thickness Using ANFIS A.S.M. Jaya, A.S.H. Basari, S. Razali, M.R. Muhamad and M.N. Abd Rahman	3
Effect of Secondary Cooling Configuration on Microstructure of Cast in Semi-Continuous Casting of Copper and Brass A.H. Hameed and A.T. Abed	8
Optimization of Products Yields from the Pyrolysis of Palm Kernel Shells Using Response Surface Methodology E.B. Lucas, O.E. Itabiyi and O.O. Ogunleye	13
Study on the Effect of Wear Resistant Materials Applications in Reducing Wear Damage of Gas Turbine Combustor Components A.A. Pauzi and S. Husin	17
Type of Failure of Zirconia-Based Ceramics in Dental Laboratory in Misurata, Libya M.M. Aboras, A. Muchtar, C.H. Azhari and N. Yahaya	22
Surface Morphology and Mechanical Properties of Chitosan Film Incorporated with Marine Macroalgae by Casting Method N.F. Idrus, N.M. Manshor and B.G. Davis	26
Effect of Thermodynamic Properties on Porosity of Ceramic Membrane Prepared by Phase Inversion Z. Harun, S. Hubadillah, S. Hasan and M.Z. Yunos	31
Green Synthesis of Silver Nanoparticles Using <i>Elaeis guineensis</i> (Palm Leaves): An Investigation on the Effect of Reaction Time in Reduction Mechanism and Particle Size N.A. Ramli, J. Jai and N.M. Yusof	36
Energy Balance in Al-Co Open-Celled Foam of Transpiration Cooling B. Krittacom, P. Amatachaya and R. Sangchot	41
Effect of Fiber Treatment on Stress-Strain Behavior of Kenaf Fibers Reinforced Thermoplastic Polyurethane Composites Y.A. El-Shekeil and S.M. Sapuan	46
Potential of Integrated Membrane Bioreactor in Batik Dye Degradation - A Review N.A. Ramlee, M.N. Muhd Rodhi, A.D. Anak Brandah, A. Anuar, N.H. Alias and T.A. Tengku Mohd	50
Effect of Calcination Temperature on Synthesis of N-Fe-TiO₂ for Photocatalytic Degradation of Methylene Blue under Visible Light A. Sikirman and J. Krishnan	55
Dye Decolourization of the Remazol Dye in Textile Effluent by Using <i>Bambusa heterostachya</i> C.R. Nurhaslina, H.R. Nur and K.H. Ku Halim	60
The Potential Use of <i>Tacca leontopetaloides</i> as Green Material in Manufacturing Automotive Part N.S. Mohd Makhtar, N. Hamdan, M.N.M. Rodhi, M. Musa and K.H. Ku Halim	65
Numerical Simulation on Moulded Thin-Walled Parts via Injection Moulding Process M.D. Azaman, S.M. Sapuan, S. Sulaiman, E.S. Zainudin and A. Khalina	73
Feedstock Characterization of Elemental Nickel and Titanium Powders Mixture for Metal Injection Moulding Process R. Razali, Z. Abdullah, I. Subuki, M.H. Ismail and N. Muhamad	78
Materials Development and Hardness Properties of Aluminum Alloy M.H.A. Hasa, Masrukan and A.S. Adhi	83
The Effect of Zr Content in the U-ZrH_x Alloy Powder on Density, Heat Capacity, and Morphology Masrukan, M.H.A. Hasa and E. Yusnitha	88

Effect of Co Doping on the Properties of Ce_{0.75}Zr_{0.25}O₂ Nanocatalyst S.H.M. Nor, M.N.A. Shah, A. Hadi and K.N. Ismail	93
Overview: Modification of Cerium Oxide in Three-Way Catalysts M.N.A. Shah, S.H.M. Nor, K.N. Ismail and A. Hadi	97
Specific Heat and Volumetric Heat Capacity of Granular Materials as Affected by Moisture and Density N. Abu-Hamdeh	103
Wavelet-Based FDTD and High Resolution Spectral Estimation for Calculation of Band Structures in Two-Dimensional Phononic Crystals Z.Z. Yan	108
The Accurate Prediction Method of Tension Modulus for Nylon Cord/Rubber Composite Material J. Ren and J.L. Zhong	115
Study on the Grinding Process of Ceramic Zirconia Oxide Rod S.L. Chang, D.J. Juan, B.Y. Lee and Y.J. Lin	121
Rheological Study of Nanosilica Based Drilling Fluid N.H. Alias, N.F. Mohd Tahir, T.A.T. Mohd, N.A. Ghazali, E. Yahya, M.Z. Shahrudin, N.A. Ramlee and A. Azizi	128
Effect of Chemical Vapor Deposition Process Parameters on Graded SiC-SiO₂ Coating Z.Q. Fu, Y.L. Yu, W. Yue, C.B. Wang and C.H. Tang	134
The Theoretical Study of TM Transmittance and Contrast Ratio for Sub-Wavelength Metallic Gratings R.C. Jin, Y. Rui, J.K. Chu and Y.J. Zhang	138
Effect of Auxiliaries on Pore Structure of Foam Glass Z.X. Wu, S.F. Zhu and R. Guo	142
Chemical and Thermal Characterization of Dilute Sulfuric Acid Hydrolysis of Coconut Dregs B. Normah, M.R.M. Najwa, M. Mohibah, S. Fuzieah, I. Norazlina and K.H. Ku Halim	148
Microwave-Alkali Activation on the Morphology and Structure of Bamboo Activated Carbon F. Hamzah, M. Sarif, F.N.Z. Zulkifli, N.H. Ismail, S.F.A. Manaf, A. Idris, W.A. Ibrahim and J. Krishnan	154
Effect of Powder Particle Size of Tin Based Alloy Sintered via Hybrid Microwave and Conventional Furnace A. Azrina, S.A. Ismail, A. Nurulhuda, Y. Suhaila and A. Rafidah	160
Effect of Hydrochloric Acid (HCl) Treatment on FTIR Profile of Agarwood Waste from Hydrodistillation Process N.A.S. Zainuddin, K.H. Ku Halim, M. Musa and M.N.M. Rodhi	165
Corrosion Resistance by Sodium Metavanadate for AZ91D Magnesium Alloy T.N. Fadzilah, S. Norbahiyah and M.Z.M. Zamzuri	170
Synthesis and Characterization of CuO/SnO₂ Nanocomposites S. Pukird, D. Polsongkram, S. Noothongkeaw, K. Jantasom and K.S. An	175
Effect of Ultrasonic and Sonothermal Treatment on Weight Reduction and Particles Size Distribution of Raw Palm Oil Mill Effluent (POME) S.R. Abd Rahman, K.H. Ku Halim, R. Alias and M. Musa	180
Evaluation of Buckling Performance of Fibre Metal Rectangular Plates: Experimental and Numerical Investigation M. Vasumathi and V. Murali	185
Inorganic Nanotube-Polymer Composites for Novel Separation Platforms D.Y. Kang	191
Study on Resistivity Changes of Local Material Silicon Wafer Doped with Neutron Transmutation Doping (NTD) Using Multi Purpose Nuclear Reactor (MPR-30) U. Sudjadi	195
Automated Metamaterial Design with Computer Model Emulation and Bayesian Optimization B. Liu and C.L. Ji	201
Comparative Inhibition Effect of Synthesized Fatty Amides Mixture, Pyridine and Pyrrole on Carbon Steel in Saline Environment I.M. Ibrahim, J. Jai and M.A. Hashim	206

Study on the Impact of Welding on the Corrosion Properties of AA 6061 T6 E.S. Mahdi and E.O. Eltai	210
Development of Maskless-Curing Slurry Stereolithography for Fabricating High Strength Ceramic Parts H.J. Hsu, S.Y. Lee and C.P. Jiang	214
Surface Properties and Cell Response of Bioactive Thermally Grown TiO₂ Nanofibers A.W. Tan, B. Pingguan-Murphy, R. Ahmad and S. Akbar	219
Effects of Fibre Loading and Interfacial Modification on Physical Properties of Rice Husk/PE Composites A. Bilal, R.J.T. Lin and K. Jayaraman	223
Thermal Stability of an Axial-Compressed Open-Tip Carbon Nanocone M.L. Liao	227
Effects of Ca Addition on Chemical Composition, Microstructure and Dielectric Properties of BaTiO₃ O. Jongprateep, T. Khongnakhon, P. Jantaratana and S. Rugthaicharoencheep	231
Research on the Microstructure and Performance of Asphalt after the Salt Freezing Cycle J.W. Han, Y.N. Cui, Z. Li, C. Li and Z.Z. Liu	238
The Application of Anti-Corrosion Materials in the Oil and Gas Field Development M. Zhou, H.Y. Peng and Q.Y. Du	245
Linear and Angular Displacement Relationship of Natural Rubber Engine Isolator M.A. Abdullah, M.A. Salim and P. Azma	250
Optimization in Synthesis of ITO Thin Films Fabricated by DC Magnetron Sputtering Method H.J. Zheng, C. Zhang and Z. Ruan	254
Characteristics of Electrophoretic Deposition-Assisted Polishing Using Bamboo Charcoal H.M. Lee and K.L. Wu	264

Chapter 2: Mechanical Engineering and Dynamics, Liquids and Gases Mechanics, Applied Mechanics in Technological Processes, Structural Design

Optimum Shape and Dies Design for New Thin Metal Gasket by Using Simulation Experiment M.A. Choiron and A. Purnowidodo	271
Thickness Increasing Characteristics of Steel Pipe during Die Forming M. Dohi, H. Kamiyama, S. Nishida and H. Watari	276
Estimating Correlation of Effective Thermal Conductivity on the Spherical Packed Bed Porous Media R. Peamsuwan and B. Krittacom	282
Parameters Design of Shaving Cutter with Novel Relief Portion S.L. Chang, C.S. Chu, P.Y. Wang, F.Y. Tsai and T.C. Yang	287
Diamond like Carbon (DLC) Thin Films: Preparation and Characterization S.C. Ray, W. Mbiombi and P. Papakonstantinou	292
Application of Finite Element to Spur Gear Stress Reduction Using Stress Relieving Feature N. Abu-Hamdeh and M. Alharthy	296
Parametric Study of Drag Force on a Formula Student Electric Race Car Using CFD L. Patidar and S.R. Bhamidipati	300
Comparative Study of Motorcycle Helmets Impact Performance A. Hamzah, A.H. Ariffin, M.S. Solah, M.H. Md Isa, Y. Ahmad and W.S. Voon	306
Novel Design of Valve Stem to Eliminate Buckling D. Sharma, P. Kumar, P.P. Date and P.R. Apte	311
Effect of Annealing Temperature on Microstructures and Properties of Warmly Deformed SCRAM Steel Y. Mou, L.H. Xue, Q.L. Zhou, C.X. Lu, J.P. Suo, L.P. Guo and Y.W. Yan	315
Thermal Characteristics of a Circular Finned Thermosyphon Using Different Working Fluids N. Alagappan and N. Karunakaran	322

Static Analysis of Variable Cross-Section Beam Carrying a Moving Heavy Load Z.F. Liu and B.H. Zhang	329
The Design Research of Millimeter-Wave Homing Empty - Empty Ammunition Ballistics W.S. Xie, Z.H. Xiao and J. Tang	337
Structural-Acoustic Topology Analysis Based on Evolutionary Structural Optimization L.Y. Chen	343
Experimental Evaluations of High/Ultra-High Speed Grinding of Tungsten Carbide Z.T. Shang and Y. Jia	350
Influence of Gas Condensability on Labyrinth Seal's Sealability J. Jiang, Y.Y. Yang, Y.J. Li and W.F. Huang	355
Optimum Design Based on Damage Tolerance for Overall Beam Structure F. Chang, S.L. Li, J.J. Yin, X.P. Shi and B. Zhou	363
Cascade Aerodynamic Loss Correlations Accounting for Turbine Disk Inclination Z.W. Yuan, J. Zhang and D.S. Zhu	370
Mechanism of the Strip Surface Chatter Marks with 1220 Cold Rolling Mill C.G. Xie and H. Zeng	376
Study of Hygrothermal Environment Effect on Compressive Strength of Stiffened Composite Panel F. Chang, S.L. Li, X.P. Shi, J.J. Yin and D.L. Bian	382
Preliminary Design and Computational Analysis of a C-D Nozzle with By-Pass System M. Nandakumar, D. Dharmasheelan and N. Elavarasan	389
On the Kinematic and Meshing Efficiency Analysis of Planetary Gear Reducer with Two Ring Gears L.C. Hsieh, T.H. Chen and H.C. Tang	395
Tensile, Hardness, and Torsion Behavior of Welded AA E.O. Eltai and E.S. Mahdi	400
Research on Hydrodynamic Performance of Three-Dimensional Airfoil with Tubercles on Leading-Edge X. Chang, X.N. Wang and X.R. Cheng	405
Effect of Geometric Parameters on Mass Transfer Characteristics for Pulsatile Flow in Wavy-Walled Tubes Y.N. Bian and C.L. Li	414
Characterization of Interfacial Stresses of a Coating/Substrate System due to Underneath Periodic Eigenstrains H.W. Wang and X.J. Chen	419
Performance of Transient Temperature in Hot Spot Ignition Q. Gao	425
On the Influence of the Speed-Feed Interaction on the Wear Rate and Life of Multiple Coated Carbide Inserts Considering Rough Turning Process M.S. Alajmi and S.E. Oraby	431
Optimization of Milling Process for Aluminum Alloy Frame Part Based on Milling Force Analysis Y.S. Hao, G.Q. Tang and M. Zhang	437
Study of Solidification Time and Solidus Velocity on Porosity Formation in High Strength Aluminum Alloy Castings Y.S. Kuo	442
Characterization of Local Bolt (C= 0.071%) after Surface Hardened at a Temperature of 400 °C for 7 Hours with RF Plasma Nitrocarburizing Apparatus U. Sudjadi	446
Tensile Testing of Hybrid Composite Joints G. Lamanna, R. Sepe and A. Pozzi	452
A Method of Earth Gravity Environment to Imitate LRV Steering on the Lunar Surface Z. Liu, Z.C. Liang, H.B. Gao, L. Ding and Z.Q. Deng	457
Application of Bispectral Analysis in Vibration Fault Detection: A Review M.S.S. Alfatih, M.S. Leong and M.H. Lim	464
Using CFD Technique to Investigate the Effect of Tire Rolling-Noise with Different Pattern Design C.J. Chen, Y.D. Kuan, C.F. Chen and M.F. Sung	469

Analysis of Shape Memory Alloy Hybrid Composite Plates under Low Velocity Impact Y.L. Chen, H.W. Chen and Y.C. Lin	473
Response Surface Approach for Sensitivity Study of Neck Forces in Restrained Child Occupant during Side-Impact Crash S. Shasthri, V. Kausalyah, Q. Shah, K.A. Abdullah, M. Idres and S.V. Wong	477
Surface Morphology Study: Effect of Electrolyte pH on the Electrodeposited Sn-Ag-Cu (SAC) Solder Alloy S.M. Yusof, J. Jai, M.A. Hashim, R. Ismail and A. Hadi	481
The Application of Nonlinear Dynamics in Hazard Prediction Y.B. Zhang, J. Li, X.X. Liu and B.Z. Tian	486
An Ensemble Approach of Machine Learning in Evaluation of Mechanical Property of the Rapid Prototyping Fabricated Prototype A. Garg and K. Tai	493
Finite Element Analysis of Vacant Tubular Members under Static Loading Considering the Tip Shapes of Load M.K. Effendi, S. Zaitso, H. Kawaguchi, A. Kawano, S. Matsuo, K. Tsuda and M. Kido	497
Structure Based Grading of Kinematic Chains S. Sanyal and G.S. Bedi	501
Characteristics of Underexpanded Co-Flow Jets T. Srinivasarao, P. Lovaraju and E. Rathakrishnan	507
Application of Uniform Design and Kriging Interpolation in Optimization of ITI Dental Implant with Dynamic Chewing Loads Y.C. Cheng, D.H. Lin, C.P. Jiang and C.K. Lee	512
Comparison of Thermal Fatigue Test Methods for Die Casting Process: A Finite Element Study C.R. Chen, Y. Wang and H.G. Ou	516
An Assessment of Carrying Capacity for Substructure of Offshore Modular Drilling Rig F. Guan, C.X. Zhou, J. Xu, B. Zhou and X.Z. Yi	521
 Chapter 3: Instrumentation, Measurement and Testing Technologies, Analysis and Calculations Methodology	
Detection and Compensation of Positioning Accuracy Based on the Laser Interferometer W.D. Ren, Q. Cheng and L.G. Cai	529
Measurement Uncertainty Research on Current Operation Humidity Sensor L.N. Wu and H.G. Lu	533
Feasibility Analysis of DC Digital Voltmeter Automatic Test Equipment W. Zhang, F.Z. Liu and H.L. Zhang	537
The Design and Implementation of Matlab Simulation in Optical Aberration Z.H. Lao	541
Research on the Vibration Characteristics of the Explosion Vessel Using Wigner-Ville Distribution H.L. Liu, P. Guo, G.L. Dong, J. Liu and Y. Mu	545
Investigation of Incoherent Gamma-Ray Scattering Potential for the Fluid Density Measurement R. Wirawan, M. Djamal, A. Waris, G. Handayani and H.J. Kim	549
Study and Design of Checking and Testing Car for Whole Circuit Z.M. Ding and J.F. Liu	554
Research on Project Site Sampling Method of Quality Supervision Sampling Inspection for Corrugated Sheet Steel Beams for Guardrail Y.H. Lu, B.Y. Gong, J.Y. He and G.L. Tan	558
Research on Electronic Implementation, Circulation Process in PDM System H.J. Yin, X. Pan, X.D. Li and X.M. Su	562
Analysis of the Concentration of Pollutants Based on Wavelet Analysis L. Yu and J.Q. Wang	566
Transport Parameters of Electrons in N₂-O₂ Streamer Discharge G.M. Faraj	570

Hardware Design of Nature Gas Engine ECU Based on Single Chip X.L. Wang and X. Ping	576
Fabrication of 1-3 Cement-Based Piezoelectric Ultrasonic Sensors for NDE Applications X.C. Xie, J.S. Zhang, D.Y. Xu, X.J. Guo, F. Sha and S.F. Huang	580
A New Kind of Texture Synthesis Method Based on Best Match Y.M. Xie, Z.H. Pan, D.G. Zhang and H.T. Peng	585
The Study on High Way Traffic Capacity Based on the Maximum-Flow Algorithm K.N. Wang and H.X. Wang	589
Monotonic Convergence Analysis for 2-D Rössler Systems via a LMI Approach Z.F. Li and Y.M. Hu	594
Creation of Coherent Superposition State by Stimulated Raman Adiabatic Passage in Serial Multi-A-Type System X.Q. Shu, C. Deng, Y. Kuang, J.H. Yang and Y.D. Liu	598

Chapter 4: Technologies of Power Systems, Energy and Thermal Engineering, its Applications

Study and Analysis of Power System Stabiliser Performance Using Artificial Neural Network M.A. Magzoub, N.B. Saad and R.B. Ibrahim	605
Tidal Current Turbine and Related Development Problems for Indonesia I. Darmawi	610
Gas-Liquid Mixer Design of Multiphase Flow Experimental Apparatus H.Y. Peng, M. Zhou and M.X. Li	615
Thermal Characterization of Lithium Polymer Battery Module for Electric Vehicle Application T. Maruvada, L. Patidar and M. Patel	620
Bio-Diesel from Almond Oil as an Alternative Fuel for Diesel Engines N. Abu-Hamdeh and K.A. Alnefaie	624
Biofuels Produced from Hydrothermal Liquefaction of Rice Husk H. Syamsul, Suyitno, J.K. Kinastryan, A. Zainal and K. Hery	628
Faults Location of Cascaded Inverter Based on Artificial Intelligence P.K. Liu, W. Jiang and H.J. Ren	635
A Small Concentrating Solar Power Tower System N. Abu-Hamdeh and K.A. Alnefaie	640
Electricity Generation with Camphor as Fuel G. Santhosh, P.R. Palaniappan, N.S. Krishnan, R.D. Kumar and D. Muruganandam	644
A Way to Determine the Economic Operation Mode of Substation Transformer D.L. Zhao, H.L. Zhang, F.Z. Liu and X. Zhao	649
SUPEL Scenario for PWR Spent Fuel Direct Recycling Scheme A. Waris, S. Pramuditya, I.K. Aji, R. Wirawan and Nuha	653
Application of the Improved Grey Model in Power Load Forecasting Y.L. Wang and Q.Y. Li	658
Phase Change Material as Pump in an Organic Rankine Cycle B.S. Hariharan and K. Suresh	662
The Design of Battery Management System Based on MC9S08DZ60 and the Monitor Backstage Based on VB6.0 J.G. Lin and S. Zhao	668
Numerical Simulation of Heat Transfer for the Ethyl Benzene Dehydrogenation Catalyst in the Kiln Z.T. Wang, W.W. Liu and J.J. Xu	672
To Study Different Losses and Loss Co-Efficient on Solar Flat Plate Collector at 900 Yaw Angle M.K. Bhatt, B.M. Sutaria, S.N. Gaderia and S.A. Channiwala	677
Electrical and Structural Properties of P-Type Monocrystalline Silicon Solar Cell with Phosphorus Screen-Printed N+ Emitter C.J. Choi and V. Janardhan	682

Optimization Parameters and Synthesis of Fluorine Doped Tin Oxide for Dye-Sensitized Solar Cells	
Suyitno, A. Zainal, A.S. Ahmad, T.S. Argatya and Ubaidillah	689
The Quantitative Forecast and Suppression on the Electromagnetic Radiation from Low Voltage Frequency Converter	
C.H. Gao, J.R. Wan and J. Li	696
The Effect of the Material of the Body of a Solar Still on its Performance	
P.K. Srivastava, S.K. Agrawal, K.M. Gupta and M.K. Pandey	704

Chapter 5: Mechatronics and Robotics

Design of a Redundantly Actuated Asymmetric Linear DELTA Parallel Mechanism for Singularity-Free Mode Changes	
T. Harada	711
Fabrication and Characterization of IPMC Actuator for Underwater Micro Robot Propulsor	
M.F. Shaari, S.K. Saw and Z. Samad	716
Design and Failure Analysis of Track Tensioner Unit for Mobile Robot Using Solidworks	
K. Hasnan, Q. Bakhsh, B. Aisham and A. Ahmed	721
A Preliminary Study of the HPN Robot	
H. Sun, B. Cheng, N.Y. Wang and X.P. Chen	726

Chapter 6: Control Technologies, Automation and Simulation of Manufacturing

Development of the Self-Propelled-Gun's Fire Extinguisher Bottle Test Equipment Based on Pump-Valve Combined Control Scheme	
X.B. Liao, Q.B. Cui, J. Lei and H.Q. Shan	733
Exploitation and Verification of the Engine Controller Virtual Test System	
J.K. Wan, B. Zhou, Z.Y. Liu and J. Yang	738
Research on Inverse Control of Active Magnetic Bearing Based on Fuzzy Inverse Model	
W. Jiang, Y.X. Su and D.H. Zhang	744
Combined CNF with LQR in Improving Ride and Handling for Ground Vehicle	
N. Zulkarnain, H. Zamzuri and S.A. Mazlan	749
Mechanical Design of Mini Automated Storage and Retrieval Warehouse System for Electronic Components	
K.S. Sim and E.F. Ng	753
The Numerical Analysis of the Thermo-Siphon Self-Injection Refrigeration System	
A.F. Hu	757
Wheel Synchronization Control in Steer-by-Wire Using Composite Nonlinear Feedback	
S.A. Saruchi, H. Zamzuri, S.A. Mazlan, S.M.H. Fahami and N. Zulkarnain	762
Modeling and Optimization of Laser Polishing Process	
B. Rosa, J.Y. Hascoet and P. Mognol	766
Research of Automobile Driving Simulator Control System	
S.J. Zhang and Z.Y. Xu	771
Air Transport Flight Program Performance of Navigation Based on the Continuous Automatic Control and Monitoring	
J. Huang	775
The Variable Steering Ratio for Vehicle Steer by Wire System Using Hyperbolic Tangent Method	
S.M.H. Fahami, H. Zamzuri, S.A. Mazlan and S.A. Saruchi	781
Mathematical Modeling of Electromagnetic Levitation Based Active Suspension Using Bond Graph	
A.K. Mishra, R. Kumar and S. Sarangi	785
Numerical Simulation of Hydraulic Jump Using the Improved Space-Time Conservation Element and Solution Element Method	
H.T. Toh	790

Intelligent Detection System of Illegal Appliances' Malignant Load of Campus Electrical Grid	
Q. Li, K. Yang and T.J. Wu	800
Remote Monitoring Technology and its Application to Control of Industrial Power Supply	
J.H. Zhu and Z.G. Wei	805

Chapter 7: Data Mining, Detection, Monitoring and Fault Diagnosis Technologies

A Bank of Finite Memory Filters for Fault Detection and Adjusting Detection Latency	
P.S. Kim, E.H. Lee, M.S. Jang and K.S. Song	811
Effective ACPS-Based Rescheduling of Parallel Batch Processing Machines with MapReduce	
B. Zhang, J.J. Le and M. Wang	820
Analysis on Bidirectional Reflectance Distribution Function of Rough Earth Surface in Remote Sensing Imaging	
Q. Li, K.C. Pan, K. Xing, N.J. Ruan and H.J. Feng	825
Introduction of Fingerprint Recognition Method for Machinery Faults Diagnosis	
M.K. Zakaria, L.M. Hee, M.S. Leong and K.H. Hui	829
Machine Learning Tools in Machinery Faults Diagnosis: A Review	
K.H. Hui, L.M. Hee and M.S. Leong	833
Experimental Study of Electric Bicycle Charging Fault Simulation	
Y. Wu	837

Chapter 8: Networks and Information Technologies, Systems Design

Process Sequencing Modeled as TSP with Precedence Constraints – A Genetic Algorithm Approach	
N.M. Razali	843
Research on Data Modeling for Management System of Alignment Information	
K. Zhang, G.X. Li, J.Z. Gong, B.Z. Wu, M. Zhang, X. Yin and F. Wan	848
The Local Approximation Method for Structural Optimization	
Y. Nie, Y. Wang, W. Sun, Y. He, J. Hao and T. Huang	854
Research of Information System Engineering	
S. Lu and Y.P. Yang	859
Measurement and Analysis Topological Characteristics of Video-Sharing Network	
W.L. Ji and X.X. Cao	863
A Study on the Hardware Configuration Impact on Client-Server	
T. Liu and S.X. Zhang	869
A Novel Application for the Emulation of Sensor Net-Works	
X.J. Song and J. Pan	873

Chapter 9: Product Design, Planning, Projects Management and Industrial Engineering

Design and Analysis of Lean Production Planning and Control System for NPF Company	
M.D. AL-Tahat	879
An Immune Based Ontology Implementation of Hazard and Operability Analysis in Production Systems	
N. Bayar, S. Darmoul, S. Hajri-Gabouj and H. Pierreval	884
Integrating AHP Application for Project Management	
W. Alzoher and A.R. Yaakub	895
An Investigation for the Potential of Improving the Performance of Pattern Making Process in Steel Foundries: Case Study	
M. Hayajneh, M.D. AL-Tahat, S. Alshobaki and W. Khraisat	900

The Effectiveness of Value Stream Mapping (VSM) as an Improvement Tool for the Manufacturing Operation	
M.N. Che Ani, M.A. Razali and K.A. Rhaffor	905
Product Life Cycle: VAVE Impact in Manufacturing Cost Reduction	
S. Mekid	910
Problems in the International Standard Model Method and Empirical Study	
R.X. Suo and F.L. Wang	917
A Hybrid Discrete Firefly Algorithm for Multi-Objective Flexible Job Shop Scheduling Problems with Maintenance Activity	
S. Karthikeyan, P. Asokan and M. Chandrasekaran	922
Scheduling with Discretely Compressible Processing Times to Minimize Makespan	
S.X. Zhang and Y.Z. Zhang	926
Three-Dimensional Reconstruction of Three Real Roots Included Periodontal Ligament and Implant Study	
Q. Wang, L. Chen, Z. Zhang and X.H. Niu	931
Equipment Aging, Aging Detection, and Aging Management: A Review	
K.H. Hui, L.M. Hee and M.S. Leong	935
The Design of the Agricultural Equipment Integrated Device	
Y.X. Lin, S.P. Wang and H.W. Du	939
Research and Implementation of Electric Power Market Analysis and Forecast System	
C.M. Jiang	943
Electrolytic Simulation Experiment of Multilateral Horizontal well	
Y. Huang, R.Q. Liao, W. Luo and X.W. Xie	948
The Head Injury Mitigation of an Adult and Child Pedestrian in a Frontal Vehicle Impact Using Response Surface Methodology	
K. Venkatasen, S. Sivaguru, K.A. Abdullah, M.M. Idres, Q.H. Shah and S.V. Wong	952