

# Table of Contents

## Preface, Committees and Sponsors

## Chapter 1: Advanced Materials Engineering and Materials Processing Technologies

<b>Modeling of TiN Coating Thickness Using ANFIS</b> A.S.M. Jaya, A.S.H. Basari, S. Razali, M.R. Muhamad and M.N. Abd Rahman	3
<b>Effect of Secondary Cooling Configuration on Microstructure of Cast in Semi-Continuous Casting of Copper and Brass</b> A.H. Hameed and A.T. Abed	8
<b>Optimization of Products Yields from the Pyrolysis of Palm Kernel Shells Using Response Surface Methodology</b> E.B. Lucas, O.E. Itabiyi and O.O. Ogunleye	13
<b>Study on the Effect of Wear Resistant Materials Applications in Reducing Wear Damage of Gas Turbine Combustor Components</b> A.A. Pauzi and S. Husin	17
<b>Type of Failure of Zirconia-Based Ceramics in Dental Laboratory in Misurata, Libya</b> M.M. Aboras, A. Muchtar, C.H. Azhari and N. Yahaya	22
<b>Surface Morphology and Mechanical Properties of Chitosan Film Incorporated with Marine Macroalgae by Casting Method</b> N.F. Idrus, N.M. Manshor and B.G. Davis	26
<b>Effect of Thermodynamic Properties on Porosity of Ceramic Membrane Prepared by Phase Inversion</b> Z. Harun, S. Hubadillah, S. Hasan and M.Z. Yunos	31
<b>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</b> N.A. Ramli, J. Jai and N.M. Yusof	36
<b>Energy Balance in Al-Co Open-Celled Foam of Transpiration Cooling</b> B. Krittacom, P. Amatachaya and R. Sangchot	41
<b>Effect of Fiber Treatment on Stress-Strain Behavior of Kenaf Fibers Reinforced Thermoplastic Polyurethane Composites</b> Y.A. El-Shekeil and S.M. Sapuan	46
<b>Potential of Integrated Membrane Bioreactor in Batik Dye Degradation - A Review</b> N.A. Ramlee, M.N. Muhd Rodhi, A.D. Anak Brandah, A. Anuar, N.H. Alias and T.A. Tengku Mohd	50
<b>Effect of Calcination Temperature on Synthesis of N-Fe-TiO<sub>2</sub> for Photocatalytic Degradation of Methylene Blue under Visible Light</b> A. Sikirman and J. Krishnan	55
<b>Dye Decolourization of the Remazol Dye in Textile Effluent by Using <i>Bambusa heterostachya</i></b> C.R. Nurhaslina, H.R. Nur and K.H. Ku Hamid	60
<b>The Potential Use of <i>Tacca leontopetaloides</i> as Green Material in Manufacturing Automotive Part</b> N.S. Mohd Makhtar, N. Hamdan, M.N.M. Rodhi, M. Musa and K.H. Ku Hamid	65
<b>Numerical Simulation on Moulded Thin-Walled Parts via Injection Moulding Process</b> M.D. Azaman, S.M. Sapuan, S. Sulaiman, E.S. Zainudin and A. Khalina	73
<b>Feedstock Characterization of Elemental Nickel and Titanium Powders Mixture for Metal Injection Moulding Process</b> R. Razali, Z. Abdullah, I. Subuki, M.H. Ismail and N. Muhamad	78
<b>Materials Development and Hardness Properties of Aluminum Alloy</b> M.H.A. Hasa, Masrukan and A.S. Adhi	83
<b>The Effect of Zr Content in the U-ZrH<sub>x</sub> Alloy Powder on Density, Heat Capacity, and Morphology</b> Masrukan, M.H.A. Hasa and E. Yusnitha	88

<b>Effect of Co Doping on the Properties of Ce<sub>0.75</sub>Zr<sub>0.25</sub>O<sub>2</sub> Nanocatalyst</b> S.H.M. Nor, M.N.A. Shah, A. Hadi and K.N. Ismail	93
<b>Overview: Modification of Cerium Oxide in Three-Way Catalysts</b> M.N.A. Shah, S.H.M. Nor, K.N. Ismail and A. Hadi	97
<b>Specific Heat and Volumetric Heat Capacity of Granular Materials as Affected by Moisture and Density</b> N.H. Abu-Hamdeh	103
<b>Wavelet-Based FDTD and High Resolution Spectral Estimation for Calculation of Band Structures in Two-Dimensional Phononic Crystals</b> Z.Z. Yan	108
<b>The Accurate Prediction Method of Tension Modulus for Nylon Cord/Rubber Composite Material</b> J. Ren and J.L. Zhong	115
<b>Study on the Grinding Process of Ceramic Zirconia Oxide Rod</b> S.L. Chang, D.J. Juan, B.Y. Lee and Y.J. Lin	121
<b>Rheological Study of Nanosilica Based Drilling Fluid</b> 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
<b>Effect of Chemical Vapor Deposition Process Parameters on Graded SiC-SiO<sub>2</sub> Coating</b> Z.Q. Fu, Y.L. Yu, W. Yue, C.B. Wang and C.H. Tang	134
<b>The Theoretical Study of TM Transmittance and Contrast Ratio for Sub-Wavelength Metallic Gratings</b> R.C. Jin, Y. Rui, J.K. Chu and Y.J. Zhang	138
<b>Effect of Auxiliaries on Pore Structure of Foam Glass</b> Z.X. Wu, S.F. Zhu and R. Guo	142
<b>Chemical and Thermal Characterization of Dilute Sulfuric Acid Hydrolysis of Coconut Dregs</b> B. Normah, M.N. Mohd Rodhi, M. Mohibah, F. Subari, I. Norazlina and K.H. Ku Hamid	148
<b>Microwave-Alkali Activation on the Morphology and Structure of Bamboo Activated Carbon</b> F. Hamzah, M. Sarif, F.N.Z. Zulkifli, N.H. Ismail, S.F.A. Manaf, A. Idris, W.A. Ibrahim and J. Krishnan	154
<b>Effect of Powder Particle Size of Tin Based Alloy Sintered via Hybrid Microwave and Conventional Furnace</b> A. Azrina, S.A. Ismail, A. Nurulhuda, Y. Suhaila and A. Rafidah	160
<b>Effect of Hydrochloric Acid (HCl) Treatment on FTIR Profile of Agarwood Waste from Hydrodistillation Process</b> N.A.S. Zainuddin, K.H. Ku Hamid, M. Musa and M.N.M. Rodhi	165
<b>Corrosion Resistance by Sodium Metavanadate for AZ91D Magnesium Alloy</b> T.N. Fadzilah, S.N.M. Badari and M.Z.M. Zamzuri	170
<b>Synthesis and Characterization of CuO/SnO<sub>2</sub> Nanocomposites</b> S. Pukird, D. Polsongkram, S. Noothongkeaw, K. Jantasom and K.S. An	175
<b>Effect of Ultrasonic and Sonothermal Treatment on Weight Reduction and Particles Size Distribution of Raw Palm Oil Mill Effluent (POME)</b> S.R. Abd Rahman, K.H. Ku Hamid, R. Alias and M. Musa	180
<b>Evaluation of Buckling Performance of Fibre Metal Rectangular Plates: Experimental and Numerical Investigation</b> M. Vasumathi and M. Vela	185
<b>Removed at authors request.</b>	191
<b>Study on Resistivity Changes of Local Material Silicon Wafer Doped with Neutron Transmutation Doping (NTD) Using Multi Purpose Nuclear Reactor (MPR-30)</b> U. Sudjadi	195
<b>Automated Metamaterial Design with Computer Model Emulation and Bayesian Optimization</b> B. Liu and C.L. Ji	201
<b>Comparative Inhibition Effect of Synthesized Fatty Amides Mixture, Pyridine and Pyrrole on Carbon Steel in Saline Environment</b> I.M. Ibrahim, J. Jai and M.A. Hashim	206

<b>Study on the Impact of Welding on the Corrosion Properties of AA 6061 T6</b> E. Mahdi and E. Eltai	210
<b>Development of Maskless-Curing Slurry Stereolithography for Fabricating High Strength Ceramic Parts</b> H.J. Hsu, S.Y. Lee and C.P. Jiang	214
<b>Surface Properties and Cell Response of Bioactive Thermally Grown TiO<sub>2</sub> Nanofibers</b> A.W. Tan, B. Pingguan-Murphy, R. Ahmad and S. Akbar	219
<b>Effects of Fibre Loading and Interfacial Modification on Physical Properties of Rice Husk/PE Composites</b> A. Bilal, R. Lin and K. Jayaraman	223
<b>Thermal Stability of an Axial-Compressed Open-Tip Carbon Nanocone</b> M.L. Liao	227
<b>Effects of Ca Addition on Chemical Composition, Microstructure and Dielectric Properties of BaTiO<sub>3</sub></b> O. Jongprateep, T. Khongnakhon, P. Jantaratana and S. Rugthaicharoencheep	231
<b>Research on the Microstructure and Performance of Asphalt after the Salt Freezing Cycle</b> J.W. Han, Y.N. Cui, Z. Li, C. Li and Z.Z. Liu	238
<b>The Application of Anti-Corrosion Materials in the Oil and Gas Field Development</b> M. Zhou, H.Y. Peng and Q.Y. Du	245
<b>Linear and Angular Displacement Relationship of Natural Rubber Engine Isolator</b> M.A. Abdullah, M.A. Salim and A. Putra	250
<b>Optimization in Synthesis of ITO Thin Films Fabricated by DC Magnetron Sputtering Method</b> H.J. Zheng, C. Zhang and Z. Ruan	254
<b>Characteristics of Electrophoretic Deposition-Assisted Polishing Using Bamboo Charcoal</b> 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**

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

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

<b>Analysis of Shape Memory Alloy Hybrid Composite Plates under Low Velocity Impact</b> Y.L. Chen, H.W. Chen and Y.C. Lin	473
<b>Response Surface Approach for Sensitivity Study of Neck Forces in Restrained Child Occupant during Side-Impact Crash</b> S. Shasthri, V. Kausalyah, Q. Shah, K.A. Abdullah, M. Idres and S.V. Wong	477
<b>Surface Morphology Study: Effect of Electrolyte pH on the Electrodeposited Sn-Ag-Cu (SAC) Solder Alloy</b> S.M. Yusof, J. Jai, M.A. Hashim, R. Ismail and A. Hadi	481
<b>The Application of Nonlinear Dynamics in Hazard Prediction</b> Y.B. Zhang, J. Li, X.X. Liu and B.Z. Tian	486
<b>An Ensemble Approach of Machine Learning in Evaluation of Mechanical Property of the Rapid Prototyping Fabricated Prototype</b> A. Garg and K. Tai	493
<b>Finite Element Analysis of Vacant Tubular Members under Static Loading Considering the Tip Shapes of Load</b> M.K. Effendi, S. Zaitso, H. Kawaguchi, A. Kawano, S. Matsuo, K. Tsuda and M. Kido	497
<b>Structure Based Grading of Kinematic Chains</b> S. Sanyal and G.S. Bedi	501
<b>Characteristics of Underexpanded Co-Flow Jets</b> T. Srinivasarao, P. Lovaraju and E. Rathakrishnan	507
<b>Application of Uniform Design and Kriging Interpolation in Optimization of ITI Dental Implant with Dynamic Chewing Loads</b> Y.C. Cheng, D.H. Lin, C.P. Jiang and C.K. Lee	512
<b>Comparison of Thermal Fatigue Test Methods for Die Casting Process: A Finite Element Study</b> C.R. Chen, Y. Wang and H.A. Ou	516
<b>An Assessment of Carrying Capacity for Substructure of Offshore Modular Drilling Rig</b> 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**

<b>Detection and Compensation of Positioning Accuracy Based on the Laser Interferometer</b> W.D. Ren, Q. Cheng and L.G. Cai	529
<b>Measurement Uncertainty Research on Current Operation Humidity Sensor</b> L.N. Wu and H.G. Lu	533
<b>Feasibility Analysis of DC Digital Voltmeter Automatic Test Equipment</b> W. Zhang, F.Z. Liu and H.L. Zhang	537
<b>The Design and Implementation of Matlab Simulation in Optical Aberration</b> Z.H. Lao	541
<b>Research on the Vibration Characteristics of the Explosion Vessel Using Wigner-Ville Distribution</b> H.L. Liu, P. Guo, G.L. Dong, J. Liu and Y. Mu	545
<b>Investigation of Incoherent Gamma-Ray Scattering Potential for the Fluid Density Measurement</b> R. Wirawan, M. Djamal, A. Waris, G. Handayani and H.J. Kim	549
<b>Study and Design of Checking and Testing Car for Whole Circuit</b> Z.M. Ding and J.F. Liu	554
<b>Research on Project Site Sampling Method of Quality Supervision Sampling Inspection for Corrugated Sheet Steel Beams for Guardrail</b> Y.H. Lu, B.Y. Gong, J.Y. He and G.L. Tan	558
<b>Research on Electronic Implementation, Circulation Process in PDM System</b> H.J. Yin, X. Pan, X.D. Li and X.M. Su	562
<b>Analysis of the Concentration of Pollutants Based on Wavelet Analysis</b> L. Yu and J.Q. Wang	566
<b>Transport Parameters of Electrons in N<sub>2</sub>-O<sub>2</sub> Streamer Discharge</b> G.M. Faraj	570

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

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

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

## **Chapter 5: Mechatronics and Robotics**

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

## **Chapter 6: Control Technologies, Automation and Simulation of Manufacturing**

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

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

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

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

## **Chapter 8: Networks and Information Technologies, Systems Design**

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

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

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



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