

# Table of Contents

## Preface, Organizing Committee and Sponsor

## Chapter 1: Materials Behavior

<b>About the Study of the Springs Loaded with Uniform Radial Charge Density by Transfer-Matrix Method</b> M. Suciú	3
<b>Adsorption Kinetics of Zn(II) from Aqueous Solutions onto Epichlorohydrin Crosslinked Chitosan</b> M.Y. Dang, H.M. Guo and Y.K. Tan	7
<b>Analog Computation of Forms of Uranium Presence in Aqueous Solution</b> J.H. Lei	12
<b>Bending Study for Axially Symmetric Tapping Plates with Uniform Load at All Crown by Transfer-Matrix Method</b> M. Suciú	16
<b>Chemical and Structural Characterization of <math>\gamma/\gamma'</math> Interfaces</b> K. Zhao	20
<b>Composition Typomorphic Characteristics of Pyrite in Various Genetic Type Gold Deposits</b> Y.T. Yan, S.R. Li, B.J. Jia, N. Zhang, L. Jiang and L.N. Yan	25
<b>Crashworthiness Optimization of Thin Walled Cylindrical Tubes with Annular Grooves under Axial Compression</b> R. Emami, E.S.A. Moghadam and M. Sohrabi	30
<b>Crystal Morphology of Hydroxyapatite Modulated by Glutamic Acid at Different Hydrothermal Temperatures</b> C.F. Li, X.L. Ge, S.G. Liu and F.Y. Liu	36
<b>Effect of Low Temperature Aging on Internal Friction of AA2024</b> D.D. Rianti and S. van der Zwaag	41
<b>Effects of Co-Existing Anions on Fluoride Adsorption onto Magnesia-Amended Activated Carbon</b> Z.L. He, Z.F. He, Z.X. He and Y.Y. Chen	47
<b>Effects of Cu on Microstructure, Mechanical Properties and Damping Capacity of As-Cast Mg-3%Ni Alloy</b> S.Q. Chen, X.P. Dong, X.Q. Xiong, R. Ma and Z.T. Fan	52
<b>Effects of Eva-Hot Melt Adhesive Polarity and Rheology on 3PE Modes</b> X.R. He, S.R. Zheng, R. Zhang, C.F. Xiao and C.Y. Yang	58
<b>Evaluation of Different Geometry of Received Pulses from CdZnTe Semiconductor Detectors</b> V. Fayaz and M. Amirabadi	63
<b>Experimental Investigation of the Volatilization of Asphalts under Different Conditions</b> M. Yu, S.P. Wu and M.Z. Chen	69
<b>Experimental Study on Bending Creep Behavior of Modified Fast-Grown Poplar Wood in Uncontrolled Condition</b> K. Yue, W.Q. Liu, X.N. Lu and W.D. Lu	76
<b>Impact Test in Working Space of Milling Center</b> D. Marin, N. Predincea and D.M. Marin	81
<b>Influences of Final Processing Methods on Surface Physical Properties and Fatigue Life for Railway LZ50 Steel</b> B. Yang and Y.X. Zhao	85
<b>Investigation the Adsorption of Heavy Oil from Solution by Low-Cost Material</b> K.F. Al-Sultani	90
<b>Low Cycle Fatigue Behaviour of Al-Mg-Si Alloy AA6061 Processed by Equal Channel Angular Pressing</b> C.V. Venkatesh, S. Ganesh Sundara Raman and C. Uday	97

<b>Microstructure and Tensile Properties of Forged High Nb Containing Tial Alloy on Large Scale</b>	
X.J. Xu, J.P. Lin and Y.L. Wang	102
<b>Monitoring Nugget Size of Micro Resistance Spot Welding (Micro RSW) Using Electrode Displacement-Time Curve</b>	
K.H. Tseng and K.J. Chuang	107
<b>Morphology Evolution and Luminescence Properties of YF<sub>3</sub>: Sm Nano-/Microcrystals</b>	
F. Tao, G. Zhu, Z.J. Wang, F. Pan, Y.F. Sun and Z. Fang	112
<b>Numerical Analysis of Crack Propagation in Brittle Materials under Uniaxial Compression</b>	
X.X. Guo and Z.B. Su	119
<b>Reaction Mechanisms of Li<sub>5</sub>La<sub>3</sub>Ta<sub>2</sub>O<sub>12</sub> Powder with Ambient Air: H<sup>+</sup>/Li<sup>+</sup> Exchange with Water</b>	
W.G. Wang, Q.F. Fang and G.L. Hao	123
<b>Research on Adsorption of H<sub>2</sub>S by Modified Activated Carbon</b>	
H. Qin, D.X. Wu and Q. Wang	128
<b>Research on Adsorption of H<sub>2</sub>S by Oil Shale Ash</b>	
H. Qin, Z.J. Tan and Q. Wang	133
<b>Research on Effect of Paper Containing OBA on Color Reproduction</b>	
W.G. Bai, X.S. Ma and Y. Jing	138
<b>Structural and Electronic Properties of Pt<sub>3</sub> and Pt<sub>3</sub>M Clusters (M=Au, Ag, Sn, Fe)</b>	
D.M. Li	143
<b>Studies Regarding the Movement on the Cochleoid</b>	
L. Luca, S. Ghimiși and I. Popescu	147
<b>Study of an Inorganic Ion Exchanger Al<sub>2</sub>Ti(PO<sub>4</sub>)<sub>3.3333</sub></b>	
H. Li	151
<b>Study of Circular Tapping Plates, with a Circumferential Vertical Load at the Interior Boundary by Transfer-Matrix Method</b>	
M. Suciu	155
<b>Synthesis and Characterization of CeO<sub>2</sub>-ZrO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> with High Thermal Stability and Oxygen Storage Capacity from Pseudoboehmite Precursor</b>	
D. Zhang	160
<b>Synthesis of Al<sub>1.6667</sub>Ti(PO<sub>4</sub>)<sub>3</sub> and its Selectivity to Li<sup>+</sup> Exchange</b>	
H. Li	165
<b>The Experimental Study on Engineering Characteristics of Improved Clay</b>	
Y. Zhao, J. Liu and H.J. Wu	169
<b>The Flexural Behavior Study of Composites Material in Static Three-Point Bending Test</b>	
M. Chaouche, B. Merzoug and A. Bezazi	175
<b>The Study of Epoxy Resins Modified By PPESK</b>	
Y.J. Xu, Q.C. Cao and X.G. Jian	181
<b>The Synthesis and Ion-Exchange Property of Li<sup>+</sup> Memorized Inverse Spinel Al<sub>2.6667</sub>Ti(PO<sub>4</sub>)<sub>4</sub></b>	
J.H. Jiang	185
<b>The Synthesis of Iron Oxides with Different Phases or Exposure Crystal Planes and their Catalytic Property for Propene Oxidation</b>	
K.Z. Li, M. Haneda and M. Ozawa	189
<b>Thermodynamics of Organic Dyes Adsorption onto Thermal Modified Rectorite</b>	
J.Y. Song and L.R. He	194
<b>Variation of Microstructure and Properties of Re-7075 Al Alloy after Homogenizing Annealing</b>	
J.G. Zhang and H.B. Zhu	198

## Chapter 2: Casting and Solidification

<b>Analysis of Thermomechanical Behavior in Continuous Casting Mould and Design of Breakout Prediction System</b>	
Y. Wang and X.J. Ma	205
<b>Chiral Inorganic Solid Material Development</b>	
L. Min, G.L. Xu, Y.M. Liu and W.H. Yao	210

<b>Design of Rubberized Asphalt Concrete by Means of Coarse Aggregate Void Filling Method</b> K.H. Wu, G.L. Yang and A.Y. Zeng	215
<b>Effect of Physical Properties of Manufactured Sand as Fine Aggregate in Elastic and Shrinkage Properties of Concrete and Mortar</b> P.M. Shanmugavadivu and R. Malathy	221
<b>Evaluation of Direct Rapid Prototyping Pattern for Investment Casting</b> M.F.M. Omar, S. Sharif, M. Ibrahim, H. Hehsan, M.N.M. Busari and M.N. Hafsa	226
<b>Load Carrying Capacity and Ductility of CFRP-Reinforced Earthquake Waste Filled Circular Steel Tube Columns</b> D. He, J.F. Dong, S.C. Yuan and Q.Y. Wang	234
<b>Pier Form Selection and Parameter Analysis of Reinforced Concrete Thin-Wall High Pier</b> X.M. Dong and Y. Wen	239
<b>Properties of Cold Pressure Welded Aluminium and Copper Sheets</b> M. Sahin and C. Misirli	244
<b>Shear Behaviour of RC Beams Strengthened with FRP Materials</b> J.F. Dong, D. He, S.C. Yuan and Q.Y. Wang	249
<b>The Influence of Reinforced Concrete Beams Crack on Size Effect</b> Y. Qin	254

### **Chapter 3: Powder Metallurgy and Ceramic Forming**

<b>A STATIC-LEACH WSNs for Hazardous Materials Monitoring</b> F. Hui, X.L. Wang and X. Shi	261
<b>Advancing Ceramics Glaze Formulation with Existing Software Technology Using Locally Available Raw Materials in Nigeria</b> O.S. Adelabu	266
<b>CdTe@SiO<sub>2</sub> Particles Prepared via Reverse Microemulsion Method: A Linear Connection between Shell Thickness and Tetraethylorthosilicate</b> X.W. Peng, X.P. Fan, D.C. Zhu, J. Wei and Y. Li	271
<b>Dielectric Properties of Barium Titanate Ceramics Modified by CuO in Different Methods</b> D. Su, Y. Wang, W.P. Chen, H.L.W. Chan and L.N. Bing	276
<b>Experimental Study of PTFE Powder Size Impact to Mg/PTFE Pyrotechnic Composition</b> X. Chen, J. Zhao, G.P. Pan and H.P. Lv	281
<b>Gold Nanoparticle's Temperature Effect in Photoacoustic Tomography</b> J. Rong, L. Huang, L.X. Liu, K. Lu, B.Z. Chen and X.C. Zhong	286
<b>La and/or Y Doped TiO<sub>2</sub>: Facile Synthesis and Enhanced Photocatalysis</b> H.T. Gao and W.C. Liu	290

### **Chapter 4: Surface, Subsurface and Interface Phenomena**

<b>A Study of the Effect of the Inertia Force of the Vanes on the Performance of the Hydraulic Vane Pump with Hypertrochoid Curve in the Inner Surface of its Stator</b> M. Ebrahimi and S.A. Jazayeri	297
<b>A Theoretical Study of the Internal Forces in a Hydraulic Vane Pump with Hypertrochoid Curve in the Inner Surface of its Stator</b> M. Ebrahimi and S.A. Jazayeri	301
<b>Comparison Study of the Geomagnetically Induced Current Level of Power Grid in Different Latitude</b> F. Yang, L.G. Liu, Q. Li and D.M. Yang	305
<b>Corrosion Failure Analysis of L80 Oil Tube</b> R. Cai, X.R. Kuang, G.F. Lin and Z.Q. Bai	310
<b>Influence of Surface Mechanical Attrition Treatment on Fretting Wear Behaviour of Ti-6Al-4V</b> S.A. Kumar, S.G.S. Raman, T.S.N.S. Narayanan and R. Gnanamoorthy	316
<b>Surface Measurement of GLSI Wafer with Copper Interconnects after CMP</b> R. Wang, G.F. Pan, J. Wang, R.X. Yang and Y.L. Liu	321

<b>Synthesis, Characterization and Emission Properties of a Mixed Metal Complex of Europium (III) and Terbium (III) with a Tripodal Heptadentate Schiff Base Ligand</b> M. Kanesato, K. Nagahara and M. Goto	326
<b>The Application of FDM in Solving Problem of Electromagnetic Field</b> P.N. Zhao and M.Y. Zhang	331
<b>The Sliding Frictional Contact Problem in Two Dimensional Graded Materials Loaded by a Flat Stamp</b> R. Khajehtourian, S. Adibnazari and S. Tashi	336
<b>Transition in the Fretting Phenomenon Based on the Variable Coefficient of Friction</b> S. Ghimişi, L. Luca and G. Popescu	343

## Chapter 5: Coatings and Surface Engineering

<b>A Two-Step Method to Prepare Stable Superhydrophobic Surface on Steel Substrates</b> F. Guo, X.J. Su, G.L. Hou, Z.H. Liu and H.P. Jia	349
<b>Aluminium Alloy Matrices Reinforced with Coated Particulate Silicon Carbide</b> P.Y. Yang, Y.H. Chen and B. Chen	354
<b>Comparative Solid Particle Erosion Characterization of Conventional and Nanostructured Al<sub>2</sub>O<sub>3</sub>-13wt.%TiO<sub>2</sub> Ceramic Coatings Fabricated by Plasma Spraying Process</b> D.S. Wang, Z.J. Tian, S.L. Wang and L.D. Shen	359
<b>Damage Patterns of the Hexagonal Aluminum Honeycomb Sandwich Plate Subjected to Fragment Impact</b> T. Wang, F. Li, W.L. Yu, J.T. Wang and T. Wang	364
<b>Effects of Surface Pretreatment to the Properties of Aluminum Oxide (Al<sub>2</sub>O<sub>3</sub>) Cutting Tool Coated Amorphous Graphite</b> J. Ramli, D.N.A. Sh'ri, N.A. Alang, Y. Nor Imrah and M.M. Mahat	369
<b>Electroless Ni-P Coating of Cenospheres Using Copper Sulfate Activator</b> A.X. Zeng, K.L. Hu and L. Luo	375
<b>Electron Spectroscopic Studies of Homogenous (GaMn)As Layers</b> I. Ulfat, J. Adell, P. Pal, J. Sadowski, L. Ilver and J. Kanski	380
<b>Fabrication and Characterization of ZnO Nanorod Arrays Grown on Nickel-Coated Polyester Fiber</b> C.P. Wong and C.L. Mak	385
<b>Influence of Addition of Tungsten-Iron Powder on Microstructure of WC/Steel Composite Coatings</b> Z.L. Li, Z.H. Chen, Y.H. Jiang, R. Zhou, Q. Shan and Q.L. Song	394
<b>Optimization of Pre-Treatment Parameters before Diamond Coating Using Non-Dominated Sorting Genetic Algorithm (NSGA-II)</b> A. Golshan, M.R. Shirdar, S. Gohari and M. Alvansazyazdi	399
<b>Oxide Layer Modification of Mg-Al Alloy Coated by Plasma Electrolytic Oxidation Using Zirconia Particles</b> D.Y. Choi, J. Hwang, K.M. Lee, K.R. Shin, Y.G. Ko and D.H. Shin	406
<b>Preparation and Electrochemical Characterization of an Activated Carbon Material of High Surface Area for Supercapacitor</b> J. Li and X.D. Zhao	410
<b>Research on Corrosion Resistance of the GTAW Joint of Duplex Stainless Steel</b> G. Tian, M. Yang, D.Z. Zeng, Y.H. Lin, D.J. Zhu and F. Liu	415
<b>Tribological Properties of Plasma-Sprayed 20 wt. % ZrO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>-17 wt.% TiO<sub>2</sub> Coatings on Plain Carbon Steel Substrate</b> S.M. Du, Y.P. Niu and Y.Z. Zhang	420

## Chapter 6: Composite Materials

<b>A Method to Determine the Optimal Solids Content of TiO<sub>2</sub> in DSSC Working Electrode</b> H.M. Tian, A.H. Chen, R.X. Yang, W.F. Duan and F.L. Tian	427
<b>Cancellation Effect in Three-Phases TiO<sub>2</sub>/(PVDF+Fe<sub>3</sub>O<sub>4</sub>) Composites</b> H.Q. Shan, X.M. Wang and W.P. Li	431

<b>Comparison of Oscillography Impact Properties between a New Type Drilling Collar Steel and 4145H</b>	
F. Liu, D.Z. Zeng, J.H. Fu, X.M. Li, F.Z. Lv and J.J. Tu	435
<b>Correlation of Mechanical Properties of Cast Al 3xx Alloys to Processing Variables and Alloy Chemistry Using Regression Analysis and Artificial Neural Network Techniques</b>	
D. Emadi and M. Mahfoud	439
<b>Effect of Rolling on Microstructure and Wear Behavior of Hot Rolled Al6061-Beryl Composites</b>	
H.N. Reddappa, K.R. Suresh, H.B. Niranjana and K.G. Satyanarayana	444
<b>Effect of Surface Treatment on Interfacial and Properties of Water Hyacinth Fiber Reinforced Poly(Lactic Acid) Composites</b>	
A. Buasri, N. Chaiyut, T. Petsungwan, Y. Boonyuen and S. Moonmanee	449
<b>Effects of La<sub>2</sub>O<sub>3</sub> and Nb<sub>2</sub>O<sub>5</sub> Doping on the Dielectric Properties of Ba<sub>0.9</sub>Sr<sub>0.1</sub>TiO<sub>3</sub> Ceramics</b>	
W. Chen, S.H. Qu and W.Q. Cao	453
<b>Experimental Study of the Compressive Performance of Life Jacket Use Polyurethane Foam for Blast Wave Protection</b>	
M.H. Li, C.H. Bai, M.W. Shi, Y.P. Wei, H. Zhou and Y.H. Shen	457
<b>Fabrication and Mechanical Properties of ZrO<sub>2</sub>/Ni Functionally Graded Materials</b>	
M.S. El-Wazery, A.R. El-Desouky, O.A. Hamed, N.A. Mansour and A.A. Hassan	463
<b>Ferroelectricity of PZT-Based Thin Films Doped with Mn and Nb</b>	
T. Zhang, H.W. Ma, J. Liu, P.L. Zhang and P. Liu	472
<b>First-Ply Strength of Thick Circular Cylindrical GRP Composite Shell Subjected to Static External Pressure via Finite Element Simulation and Analytical Approaches</b>	
S. Gohari, A. Golshan, M. Hashemzadeh and N. Hosseini-neshad	477
<b>Germanium Adsorption on SrTiO<sub>3</sub> (001) 2×1 Surface: A Density Functional Theory Study</b>	
J.J. Wang and I. Lefebvre	484
<b>Influence of Liquid Structure Change on Microstructure and Properties of SnZnBi Solder Alloy</b>	
Z.H. Chen, W. Zheng, F.Q. Zu, X.B. Zhu and Y.F. Sun	489
<b>Microstructure and Wear Property of Zn-Al Alloy Reinforced with Carbonized Rice Husks</b>	
S.Q. Jia, Y.H. Ma, J. Tong and G.J. Liu	494
<b>Modeling of Viscoelastic Solid Polymers Using a Boundary Element Formulation with Considering a Body Load</b>	
H. Ashrafi, M.R. Bahadori and M. Shariyat	499
<b>Nucleation and Growth of Cr<sub>7</sub>C<sub>3</sub> of Brazing Diamond with Ni-Cr Alloy in Protective Atmosphere Furnace</b>	
J.B. Lu, P. Meng, B. Zhao and J.J. Liu	505
<b>Preparation and Photoluminescence Properties of ZnO-Covered Carbon Fibers</b>	
J. Zeng	510
<b>Preparation and Properties of Halogen-Free Flame Retardant Blending Modification Polyester</b>	
S. Chen, M. Su, J.W. Lan and Q.K. Zheng	515
<b>Preparation and Properties of Nanocomposites Based on Poly(Lactic Acid) and Modified TiO<sub>2</sub></b>	
A. Buasri, N. Chaiyut, C. Kritsanakun, C. Phatkun and T. Khunsri	519
<b>Preparation of Poly[4-Diacetoxyiodo] Styrene by Microwave Reactor</b>	
X.C. Wang, Z.C. Dong and X.Z. Fu	523
<b>Synthesis and Characterization of Polystyrene-Graphite Nanocomposites via Surface Raft-Mediated Polymerization</b>	
H.M. Etmimi and R.D. Sanderson	527
<b>Synthesis of FeC<sub>2</sub>O<sub>4</sub>-Graphene Composites and their Application in Removal Dyes</b>	
S.S. Wu, Y.M. Wang, Q.M. Jia, L.L. Gu and Y.L. Sun	533
<b>Synthesis of Fullerene-Acid Conjugates</b>	
J. Zhang, L. Yuan and Y.D. Zhang	538
<b>Synthesis of Novel Core-Shell Structured Hydroxyapatite/Meso-Silica for Removal of Methylene Blue from Aqueous Solutions</b>	
C.F. Li, X.L. Ge, S.G. Liu and F.Y. Liu	543

<b>Synthesis, Characterization of Electrospun Mesoporous ZnO/SnO<sub>2</sub> Composites Nanofibers and their Photocatalytic Property</b>	
R.L. Liu, P.Z. Chen, J.S. Liu, H.H. Jiang and L.B. Chen	548
<b>Synthesis, Characterization, and Electrochemical Properties of Mn<sub>3</sub>O<sub>4</sub>/Cr<sub>2</sub>O<sub>3</sub> Composite</b>	
F. Ran, L.R. Wang, L. Zhao, Y.T. Tan, L.B. Kong and L. Kang	555
<b>The Effect of N Vacancy on GaN Doped by Fe</b>	
Y.F. Wang, C. Yang and T.T. Guo	560
<b>Thermo-Chemical Evaluation of Wood Plastic Nanocomposite</b>	
H.Z. Tabari, F. Rafiee, H. Khademi-Eslam and M. Pourbakhsh	565
<b>Two-Dimensional Modeling of Functionally Graded Viscoelastic Materials Using a Boundary Element Approach</b>	
H. Ashrafi, M.R. Bahadori and M. Shariyat	570

## Chapter 7: Materials Forming

<b>Assessment on Screw Fixing Failure Mode for Kitchen Cabinet Particleboard</b>	
F. Abu and M. Ahmad	577
<b>Comparative Study by Numerical Analysis on the Formability of Deep-Drawn Tailor-Welded Blanks</b>	
M. Tera, C. Deac, V. Oleksik, O. Bologna, R. Breaz and C. Biris	582
<b>Design of Optimization Parameters with Hybrid Genetic Algorithm Method in Multi-Cavity Injection Molding Process</b>	
W.J. Chen and J.R. Lin	587
<b>Investigation of Deposition Parameter Effects on Energy Bandgap of Silicon Thin Film Prepared by Plasma Enhanced Chemical Vapor Deposition via Factorial Experiment</b>	
L. Zhao, B.D. Zhao, B.J. Yan, H.W. Diao and W.J. Wang	592
<b>PLM System for Complex-Shape Aircraft Gas Turbine Parts</b>	
M.D. Ionescu, D. Marin and N. Predincea	597
<b>Preparation and Analysis of Sputtered Cu<sub>2</sub>ZnSnSe<sub>4</sub> Thin Films</b>	
D.H. Kuo and H.P. Wu	602
<b>Tap-Changer Sliding Gear Urgent Stop Device of Main Transformer Integrated with RTU</b>	
X.L. Zhang, Z.T. Sun and S.Y. Xu	607
<b>The Effect of N<sub>2</sub> Gas Pressure during the Rapid Thermal Process on the Structural and Morphological Properties of Cigs Films</b>	
X.L. Zhu, Y.M. Wang, A.M. Li, L. Zhang and F.Q. Huang	614
<b>The Finite Element Simulation of Lamb Wave Propagation in a Cracked Structure with Coupled Fied Elements</b>	
S. Tashi, A. Abedian and R. Khajehtourian	618
<b>The Influence of Annealing Temperature on ZnO Thin Films by Oxidating Zinc Films Deposited with Magnetron Sputtering</b>	
H.B. Sun, Z.C. Sun and C.S. Xue	624
<b>Unified Stresses Solution for Sheet Forming</b>	
X.W. Li, J.H. Zhao and Q.Y. Wang	629

## Chapter 8: Machining

<b>Based on ABAQUS Five Axis Milling Process Dynamics Modeling and Analysis</b>	
G.S. Chen and Y. Lv	637
<b>Comparison of Different Residual Stress Models of FSW Butt Joints for Thin Aluminum Alloy Plates</b>	
X.J. Wang, N. Li, Z.K. Zhang and G.J. Ruan	642
<b>Contour Errors during Milling Process</b>	
D. Marin and N. Predincea	647
<b>Development of an Efficient Haptic System for Tooth Processing</b>	
R.E. Sofronia, A. Davidescu and G.G. Savii	651
<b>Discussion of Nonlinear Constitutive Models for Aluminium Alloy Material Engine Piston</b>	
Y.T. He	655

<b>Estimation and Optimization Cutting Conditions of Surface Roughness in Hard Turning Using Taguchi Approach and Artificial Neural Network</b> A.A. Abdullah, U.J. Naeem and C.H. Xiong	662
<b>Oxidation Behaviors of Dusts Generated in Different Cutting Processes of Silicon Ingots</b> C.Q. Yin, X.Q. Wei, Y.H. Xiong, P.B. Zhou, G.X. Zhong and L. Zhou	669
<b>Prediction and Optimization of Dimensional Shrinkage Variations in Injection Molded Parts Using Forward and Reverse Mapping of Artificial Neural Networks</b> P.G.C. Manjunath and P. Krishna	674
<b>Prediction of Surface Finish and Optimization of Machining Parameters in Turning</b> D. Prasad, P. Krishna and S. Rao	679
<b>Regarding the Optimization of Measurement Systems for Grinding Forces in Case of High Speed Industrial Robots</b> D. Popescu, S. Buzatu, R. Gavrilă and M. Popescu	684
<b>Solving Load Phase Balancing Problem in LV Distribution Networks by Chaotic Simulated Annealing</b> C.G. Fei	689
<b>Study on Anti-Galloping Mechanism and Experimental Effect of the Rotary Clamp Spacer</b> C. Ye, L.G. Liu, J.S. Yao, J. Chou and X.Q. Zhu	694
<b>Study on Influence of Paper Fillers on Ink Transfer</b> Q.F. Liang, G.H. Ding and H.M. Zhong	699
<b>Study on Processing Properties of Epoxy Resin System in VARI</b> C.H. Zhao, G.C. Zhang, W.M. Sun and A.H. Shi	704
<b>System to Surface Control in Robot Machining</b> T. Mikolajczyk	708
<b>The Influence of Circulation Quenching on Temper Brittleness of Steel EA4T</b> L.M. Kang, M. Lei, J. Zou, Y.L. Liang and X.P. Tang	712
<b>The Influence of Paper Brightness on Color Reproduction of Printed Matter</b> J.G. Hu, L.L. Wang and Z. Liu	717

## Chapter 9: Nanomaterials and Nanomanufacturing

<b>Annealing Effect on Synthesis of VO<sub>2</sub> (M) Nanopowders by a Novel Solution-Based Process</b> L.H. Chen, C.M. Huang, J.H. Zhou, G. Xu, L. Miao and X.D. Xiao	725
<b>Effect of Fluorine Content on the Electrochemical Properties of PVDF-Derived Carbons for Lithium Ion Battery</b> L. Shi, C.L. Miao, G.R. Chen, B. Xu and S. Chen	730
<b>Effect of Poly(vinyl alcohol)/Chitosan Ratio on Electrospun-Nanofiber Morphologies</b> T. Jammongkan, A. Wattanakornsiri, P.P. Pansila, C. Migliaresi and S. Kaewpirom	734
<b>Fabrication of Nanomaterial Devices for Field Emission Applications</b> Y.H. Choi and K.H. Kim	739
<b>Hydrogen Generation from CDS Modified-Titania Nanotube Arrays</b> Y.C. Chen, J.Y. Liou, W.J. Lan, J.Y. Chen and H.W. Wang	743
<b>Nanomechanical Properties of Vimentin Intermediate Filament</b> K.L. Wong, A.H.W. Ngan, D.K.Y. Shum and W.W. Lu	748
<b>Preparation and Performance of 100Ah Li-Ion Battery with LiFePO<sub>4</sub> as Cathode Material</b> J. Li and Y.L. Song	753
<b>Preparation of Cr<sub>2</sub>O<sub>3</sub> Nanoparticles via Hydrothermal Reduction of CH<sub>3</sub>OH</b> Z.Z. Pei, H.B. Xu and Y. Zhang	760
<b>Research on Metallic Silicon Used as Lithium Ion Battery Anode Material</b> R. Zhang, A. Li, L. Zhang and X.Y. Jiang	764
<b>Research Progress on Preparation Methods of PMIA Fiber</b> S.G. Wu, Y.R. Fan and J. Zhou	769
<b>Research Progress on Ultraviolet Resistance Performance of PMIA Fiber</b> S.G. Wu, J. Zhou and Y.R. Fan	773
<b>Sodium Nitrate Assisted Hydrothermal Synthesis of Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> Nanoflakes</b> L.L. Yang, Y.G. Wang and Y.J. Wang	777

<b>Synthesis of Barium Titanate Nanoparticles from Decomposition of Barium Titanyl Oxalate Tetrahydrate with Aid of Supercritical Water</b> J.T. Huang, T. Imura and N. Sakamoto	781
<b>Synthesis of Self-Aligned Titanium Oxide Nanotube Arrays in Ammonium Fluoride-Ethylene Glycol Electrolytes with Different Water Contents</b> S. Thongyoy and A. Aeimbhu	788
<b>The Effects of Heteroatom-Doping in Stone-Wales Defects on the Electronic Properties of Graphene Nanoribbons</b> Z.Y. Wang	793
<b>The Mean Projected Range and Range Straggling of Er Ions Implanted in 6h Silicon Carbide</b> X.F. Qin, H.N. Wang, Z.W. Ji, F.X. Wang and G. Fu	798
<b>TiO<sub>2</sub> Nanowires/Nanobelts Originating from Anodically Grown Nanotube Arrays</b> H.J. Tao, J. Tao, T. Wang and Z.G. Bao	802

## Chapter 10: Biomedical Manufacturing

<b>A Theoretical Framework for Healthcare Innovation Management Using Wiki Based Digital Ecosystem</b> H. Fasihuddin, G. Skinner and R. Athauda	811
<b>An Application of Finite Element Modeling to Pneumatic Artificial Muscle from FESTO</b> A.L. Visan, N. Alexandrescu and I. Nita	818
<b>Application of Lignin from Oil Palm Biomass as a Fluid Lost Reducer</b> F.F.S. Taleb and M.N.M. Ibrahim	822
<b>Assisted Research and Optimization of the Proper Neural Network Solving the Inverse Kinematics Problem</b> A. Olaru, S. Olaru, D. Paune and O. Aurel	827
<b>Bioconjugates Containing Ferritin and Metal Nanoparticles</b> B. Zheng, M. Uenuma, Y. Uraoka and I. Yamashita	833
<b>Effect of HF Concentration on Corrosion Resistance of Biomedical Implants</b> M. Assadian, M.H. Idris, S. Mehraban, S. Jafari and M.R.A. Kadir	837
<b>Effect of Zr Addition on Mechanical Properties of Ti-Nb-Zr Alloys for Biomedical Applications</b> W. Sungtong and A. Khantachawana	841
<b>Effects of Different Neutralizing Agents on D-(-)-Lactic Acid Fermentation by <i>Escherichia coli</i> W</b> J.F. Zhao, K.P. Li, Y.Z. Wang, J.H. Wang and S.D. Zhou	845
<b>Efficiency Improvement of Three-Junction Photovoltaic Cell Based on Gallium-Phosphide-Oxide, Indium-Gallium-Arsenide and Indium-Gallium-Antimonide</b> M. Abdulla-Al-Galib, K.M.A. Salam, M.A. Awal and K.A. Sayeed	850
<b>Functional Properties of Ultrasonically Treated Wheat Gluten</b> L. Zhao, G.Q. Liu, B. Li and L. Li	855
<b>Improvment the Cooperation Feature in Distributed Healthcare Information Systems Based on the Fractal Approach: An Empirical Study</b> N.S. Ahmed and N.M. Yasin	861
<b>Laboratory Study on a Novel Self-Diverting Gel Acid System Thickener</b> Q. Zhu, P.L. Liu, L.Q. Zhao, J.M. Chen and Y.F. Cao	868
<b>Prehensile and Stepping Mchanisms for Rbots, Based on Bomechanisms</b> L. Luca, I. Popescu and S. Ghimiş	877
<b>Preparation of Precursor of Lini0.5mn1.5o4 with High Density</b> C.L. Miao, L. Shi, G.R. Chen and D.M. Dai	881
<b>Review State of Biomass Energy in Iran</b> M.R. Asadi, M. Moharrampour and H. Abdollahian	885
<b>Static Balancing of Mechanical Systems Used in Medical Engineering Field – Continuous Balancing</b> L. Ciupitu, I. Simionescu and A. Olaru	890



<b>Synergistic Effect of Lysozyme and Vitamin B1 on the Corrosion Inhibition of Carbon Steel in Sulphuric Acid</b>	
F. Wang, X.D. Ji and X.L. Liu	895
<b>The Application of Learning Impedance Control to Exoskeleton Arm</b>	
J. Liu, Y. Wang, H.T. Tong and R.P.S. Han	900
<b>The Effect of Denser Material than Air in Front of Clinical Radiotherapy X-Ray Beam</b>	
V. Fayaz and M. Amirabadi	905
<b>Ultrasonic Ion Pumps in Bio-Battery's Electrolyte</b>	
A. Amjadi, A. Ebrahimi, A. Sherafati, N. Khalilgharibi, M.K. Zand, M.S.S. Dibazar and S. Omid Sobhani	909

## **Chapter 11: Environmentally Sustainable Manufacturing Processes and Systems**

<b>A Hybrid TS-SVM Model for Evaluation of Lake Eutrophication</b>	
L. Xu, J.Y. Wang, B. Zhang and Z.Y. Li	917
<b>A New PSO-RBF Model for Groundwater Quality Assessment</b>	
B. Zhang, J.Y. Wang and S.L. Zhang	922
<b>A Virtual Geographic Environment for Simulation Analysis of Dam-Break Flood Routing</b>	
J. Zhu, Y. Li and Y. Hu	926
<b>Design and Anaysis of Thermoacoustic Air Conditioning System as Environmental Friendly Device</b>	
M. Mat Salleh, R. Hamidon, M.Z.M. Zain and H.S. Khee	932
<b>Evaluation of State Equations of Natural Gas in Pipeline Transportation</b>	
H.Y. Ren, C.J. Li and G. Xie	936
<b>Future of Wind Energy in Iran</b>	
M. Moharrampour, M.R. Asadi and H. Abdollahian	940
<b>Global Structure Analysis of a Class of Power System with Zero Characteristic Root</b>	
X.M. Cheng	945
<b>Investigation of Radon in Campus Air</b>	
M.L. Weng	949
<b>Marine Environment Problems Caused by the Development of the Coastal Cities and the Solutions for them</b>	
X.H. Shen and F.P. Xiao	953
<b>New Technologies of Energy Saving and Low CO<sub>2</sub> Emission for Iron Making</b>	
X.W. An, J.S. Wang, X.F. She, Y.G. Ding and Q.G. Xue	957
<b>Optimization Design for Production Logistics System of Corrugated Box</b>	
Z.S. Li, C. Jian and J.Y. Xiao	962
<b>Photocatalyst TiO<sub>2</sub> Supported on Bentonite for Water Organic Pollutants Purification: A Literature Review</b>	
M.J. Lin, M. Song and X.Y. Shen	967
<b>Research on the Influence of Solar Radiation, Sky Background Radiation and Sea Surface Emission to Infrared Search</b>	
Y. Chen, Y.A. Hu, Y.T. Zhao, Y.X. Xie and C.H. Cheng	975
<b>Review of Renewable Energy in Iran</b>	
M.R. Asadi, M.B. Torgadri and M. Moharrampour	980
<b>Review State of Geothermal Energy in Iran</b>	
M.R. Asadi, M. Moharrampour and M.S. Ali	985
<b>Solar Home System: A Feasible Solution to the Energy Crisis in Bangladesh</b>	
A. Hassan, S. Rahman, S.A. Onik, F.T. Khan and A.A. Habib	990

## **Chapter 12: Manufacturing Process Planning and Scheduling**

<b>A New Type of Walking Robot Based upon Jansen Mechanism</b>	
F. Moldovan, V. Dolga and C. Sticlaru	997
<b>Considerations on Decisions Making Process under the Risk of Terrorism</b>	
C. Cioaca and M. Boscoianu	1002

<b>Dynamic Optimization of a Plane Manipulator</b> I.D. Geonea, A. Margine and A. Ungureanu	1006
<b>Optimization of the Neural Network by Using the LabVIEW Instrumentation</b> A. Olaru, S. Olaru, D. Paune and O. Aurel	1011
<b>Proportional Pneumatic Distributor</b> M. Avram, C. Bucşan and V. Constantin	1017
<b>Structure and Kinematics of Mechanisms for Position and Control from Farming Machine</b> I.D. Geonea, A. Margine and A. Ungureanu	1021
<b>The Empirical Research of Energy Utilization Efficiency in Industrial Sectors Based on DEA-Malmquist</b> M.X. Lu, G.W. Ma, Y.L. Hu and J. Wang	1025
<b>The Role of Information Sharing and Joint Transportation Process for Empty Run Reduction</b> C. Peetijade and A. Bangviwat	1030
<b>Using an Object-Oriented Approach for Scalable Flexibility in Manufacturing</b> I.O. Popp and I. Barsan	1035

## **Chapter 13: Meso/Micro Manufacturing Equipment and Processes**

<b>Impact of 3D Seismic Technologies on Sedimentology Study</b> R.T. Duan, Z.K. Jin and C.H. Suo	1041
<b>Prediction of Rupture in Gas Forming Process Using Continuum Damage Mechanic</b> M. Rahafrooz, M. Sanjari, M. Moradi and D. Ghodsiyeh	1047
<b>Study of Sol-Gel Auto-Combustion Method Prepare <math>\text{Ni}_{0.6-x}\text{Zn}_{0.4}\text{Mg}_x\text{Fe}_2\text{O}_4</math></b> A.X. Zeng and J. Yuan	1052
<b>Study on the Microstructures and Properties of the Lead-Free Easy-Cutting Bial-Brass</b> L. Li, Y.Q. Chen, Q. Li and G.J. Huang	1057

## **Chapter 14: Modeling, Analysis and Simulation of Manufacturing Processes**

<b>A Model for Predicting Flowing Gas Temperature and Pressure Profiles in Buried Pipeline</b> G.C. Liang, L.L. Tan and H. Tian	1065
<b>A Survey on the Evolution of Nonconventional Pneumatic Actuators</b> A.L. Visan and N. Alexandrescu	1069
<b>A Web-Lab Environment for the Study of the Job Shop Problem</b> H. Alvares, E.P.L. Aude and E.P. Lopes	1073
<b>Algorithm for Selection of Simulation Software</b> J. Hlubeňová and D. Hlubeň	1077
<b>An Analysis Method of the Electro-Hydraulic Rotational Module</b> I. Barsan and I. Popp	1081
<b>An Approach for Simulation Design of Mechanical Assembled Units</b> G. Dinev	1085
<b>Analysis &amp; Modelling Options of Elastic Actuators for New Robotics Uses</b> V. Dolga and L. Dolga	1089
<b>Assisted Research of the Dynamic Neural Networks with Time-Delays and Recurrent Links</b> A. Olaru, S. Olaru and D. Paune	1094
<b>Assisted Research of the Neural Network</b> A. Olaru, S. Olaru, D. Paune and A.L. Ghionea	1098
<b>Computers Modeling and Simulation</b> N. Daneshjo	1102
<b>Facility Layout of Manufacturing System and Design of Optimization Model</b> C.R. Zhao, X.H. Guo and X.L. Zeng	1106
<b>Increasing the Operating Safety of the Machine-Tools by Using Hydro-Pneumatic Accumulators. Modeling - Simulation</b> D. Prodan, A. Bucuresteanu and E. Balan	1111

<b>Modeling and Simulation of A 6 Dof Robot</b> M.L. Enescu and C. Alexandru	1116
<b>Modelling and Experimentation of Solid Lubrification with Powder MoS<sub>2</sub> through Self-Repairing and Self-Replenishing</b> F. Ilie and C. Tita	1120
<b>Multimode Vibrations Suppression Compensators Design Using Specified Dynamic Performance Reference Models</b> M.S. Rusu and L. Grama	1125
<b>Optimal Design of the Mechanical Systems Using Parametric Technique &amp; MBS (Multi-Body Systems) Software</b> C. Alexandru	1129
<b>Optimization by Simulation of Fabrication in Manufacturing Robotized Systems</b> C. Dumitru, V.C. Contoloru and D. Popescu	1133
<b>Optimization of the Hydraulic Bellows Engine Parameters Used to Drive Irrigation Reel Hose Machine - IATF 300</b> I. Biolan, G. Sovaiala and A.L. Visan	1137
<b>Providing a Pattern to Evalute CRM Systems Based on EFQM Model in SMEs</b> P. Reihanifard, M. Aminilari, R.A. Moghadam, D. Vahdat and S. Mozaffari	1141
<b>Real-Time Gesture Recognition for Controlling a Virtual Hand</b> C.C. Moldovan and I. Staretu	1147
<b>Research of the Neural Network by Back Propagation Algorithm</b> A. Olaru, S. Olaru and L. Ciupitu	1151
<b>Research on the Application of Virtual Reality Technology on Industry Automatic Simulation</b> Y.M. Jiang	1155
<b>Risk Priority Analysis for Engine Based on Fuzzy Weighted Geometric Mean</b> Y.K. Gu, X.C. Luo and S.Y. Tang	1160
<b>Software Module for Objects Shape Tracing and Recognition before Gripping</b> I. Staretu and A.M. Itu	1165
<b>Substructure-Joint Based Approach to Damped FE Model Updating of Complex Assembly Structure</b> P. Soleimanian, M. H.Sadeghi and A. Tizfahm	1169
<b>The Application of the Minimum Cut Sets in Reliability Evaluation of Power Transmission and Transformation System</b> J. Cai, F. Li, N. An, J.J. Lu and L. Sun	1175
<b>The Model of Wax Precipitation and Experimental Validation</b> B.Q. Zhang, D.S. Xue and J.C. Yang	1182
<b>Using the Web by Finnish SME's for Corporate Social Responsibility Activities</b> E.S. Lakatos, R.M. Gazdac and V. Dan	1186

## **Chapter 15: Computer-Aided Design, Manufacturing and Engineering**

<b>Aspects of Lag's 5-Dof a Biped Robot Stabilization</b> M. Csaba Zoltan, F. Erzsebet and C. Luciana	1193
<b>Aspects Regarding the Disc Brake's Thermal Stress Simulation by Using Infrared Thermography</b> C. Spulber and Ș. Voloacă	1197
<b>CAD Optimal Design, Documentation and Automated Assembly of Mechanical Product</b> G. Dinev, I. Malakov and D. Dotsev	1202
<b>CAD-Geometrical Modeling of a Hydro Mechanical Product</b> G. Dinev and L.I. Baltova	1206
<b>Comparative Analysis of ZMP for Biped Robot and Human Plantar Pressure</b> A. Dobra	1210
<b>Design and Modeling of a Ball Wheel Mobile Robot</b> H. Ghariblu, A. Moharrami and B. Ghalamchi	1215
<b>Design of Digital Controllers for Permanent Magnet Torque Motors</b> M. Ebrahimi and S.A. Jazayeri	1219

<b>Design of Humanoid's Lower Limb Model for Walking</b> M. Hajduk, M. Sukop, L. Marko, J. Varga and V. Baláz	1224
<b>Design of Power Quality Monitoring System</b> Y. Li and M. Li	1228
<b>Designing Arms and Hands for the Humanoid Robot ROMAN</b> J. Hirth, K. Berns and K. Mianowski	1233
<b>Distributed Task Allocation in Multi-Robot Systems Using Argumentation-Based Negotiation</b> I. Lolu, A. Stanescu, M. Moisesescu and I.S. Sacala	1238
<b>Dynamic Analysis of a Mobile Mechanical System with Deformable Elements</b> N. Dumitru, R. Malciu, M. Calbureanu, S. Dumitru and G.C. Marinescu	1242
<b>Effect of Intermediate Location and Time-Varying End Mass on the Dynamic Response of a Flexible Robot Manipulator in Tracing Multi-Straight-Line Path</b> M. Kazemi and M. Ghayour	1246
<b>GA Based Trajectory Generation for a 7-DOF Biped Robot by Considering Feet Rotation during Double Support Phase</b> F. Farzadpour and M. Danesh	1252
<b>Hardware-Software Co-Design for BLDC Motor Speed Controller Design</b> B. Alecsa and A. Onea	1256
<b>Mathematical Modeling of Management Decision Activities with Maximum Risk in the Intelligent Robotic Systems</b> C. Dumitru, V.C. Contoloru and M. Cherciu	1260
<b>Measurements Methods of Industrial Robots Accuracy and Workspace Determination</b> I. Cimpoeu	1264
<b>Mechanical Design and Control Issues of a Dexterous Robotic Hand</b> C. Berceanu and D. Tarniță	1268
<b>Mechanical Loading of R-R-T Dyade</b> D. Ilincioiu, C.M. Mirițoiu, J.P. Jimenez and C. Roșu	1272
<b>On Improving the Performances of Hydraulic Incremental Positioning Units with Mechanical Position Feedback</b> C. Bucșan and M. Avram	1277
<b>Optimum Design of Multi-Links Finger Grippers</b> I. Simionescu and L. Ciupitu	1281
<b>Probabilistic Finite Element Prediction of the Active Lower Limb Model</b> A. Corneliu	1285
<b>Problems of Loading Capacity of Suction Cups in the Radial Direction</b> F. Novotný and M. Horák	1291
<b>Researches Regarding the Use of Electrohydraulic Servosystems at Industrial Robots</b> I. Barsan and I. Popp	1295
<b>Stealth Target Location Algorithm for Low Altitude Based on Microwave Radiometer</b> L.N. Liu, X.M. Zhao, T. Huang and B. Yang	1299
<b>Study upon the Dynamic Answer of Plane Manipulators</b> I.D. Geonea, A. Margine and A. Ungureanu	1304
<b>The Design and Implementation of Integrated Backup System for EMS Base on the Cloud Computing Technology</b> R.C. Yuan, L.X. Li, Q. Li, F.C. Di, Y.K. Zhu and Z.J. Li	1309
<b>The Dynamic Behavior of the Elevation Movement Mechanism of One Transfer Manipulator with Electro-Hydraulic Acting</b> C. Cristescu, P. Drumea, L. Dumitrescu, I. Ilie and C. Chiriță	1313
<b>The Use of Sensors in a Working Area of a Mobile Robot</b> M.A. Bitea and V. Dolga	1317
<b>Towards the Development of Internet of Things Oriented Robot to Object Interaction Framework</b> A. Stanescu, M.A. Moisesescu and I.S. Sacala	1321

## Chapter 16: Semiconductor Materials Manufacturing

<b>Design and Implementation of Embedded Wireless Smart Gateway Based on PXA270</b> H.Y. Kang	1327
<b>Efficient Heat Dissipation Design of High-Power Multi-Chip Cob Package Led Modules</b> L. Wu, X.Y. Xiong and D.X. Wang	1332
<b>Methods to Improve Properties of Gate Dielectrics in Metal-Oxide-Semiconductor</b> C. Liu and X.L. Fan	1341
<b>Photoacoustic Imaging Based on Limited-Aperture of Transducer</b> J. Rong, K. Lu, X.C. Zhong, B.Z. Chen, L.X. Liu and L. Huang	1346
<b>Simulation and Experimental Study of FRD Snubber Circuits in Buck Converter</b> Z.Y. Wang, Z.M. Chen and J.G. Zhang	1350
<b>Study on the Technology of MPLS in Wide Area Protection System</b> Y.M. Cai and Z. Li	1355

## **Chapter 17: Laser Based Manufacturing**

<b>Effect of 7050 Aluminium Alloy Microstructure on Residual Stress by Laser Shock Processing</b> M.L. Zhang, J.M. Wang, Y.F. Jiang, Q.L. Zhang and Q.L. Zhou	1363
<b>Inkjet Printing of UV Curable Character Ink and Control of the Dried Droplets Size</b> J.Z. Hang, Y.Y. Cheng, J. Li, L.Y. Shi and M.H. Zhang	1368
<b>Investigation of the Scanning Angle and the Orientation of the Absorber Effects on the Photoacoustic Tomography Imaging</b> J. Rong, L.X. Liu, X.C. Zhong, K. Lu, L. Huang and B.Z. Chen	1373
<b>MMA-Grafted PE Separators of Lithium-Ion Battery Prepared by UV-Radiated Grafting</b> Z.Q. Zhang, H. Li, X.Y. Lv, H.Z. Liu and L.X. Theng	1378
<b>Multiband Techniques of LED and UV Materials on Visualization of Needle Marks</b> L.J. Wang, D.Q. Tao, Z.Y. Yin and H. Zhao	1382
<b>Structural Variation of Transition Metal - Fullerene Thin Films Modified by Thermal Annealing and Ion or Laser Beam Bombardment</b> J. Vacik, V. Lavrentev, P. Horak and R. Fajgar	1387
<b>The Analysis of Wave Form for 3-D Wave Tank</b> Y. Wang, B.N. Li, Z.Y. Xu and Y.K. Zhang	1392
<b>The Computer Calibration Modeling of Radial Distortion Based Weld System with Parallel Planes</b> P. Peng	1397

## **Chapter 18: Precision Molding Processes**

<b>Brazing of Aluminum Tubes Using Induction Heating</b> K. Demianová, M. Behúlová, O. Milan, M. Turňa and M. Sahul	1405
<b>Macroporous Silicon Fabricated by HF Electrochemical Etching for Antireflective Application in Solar Cells</b> W.Y. Ou, L. Zhao, Z.C. Li, H.W. Diao and W.J. Wang	1410
<b>Preparation of Pure Anatase TiO<sub>2</sub> Thin Films by DC Sputtering Technique: Study on the Effect of Oxygen Partial Pressure</b> P.P. Pansila, N. Witit-Anun, T. Jamnongkan and S. Chaiyakun	1415

## **Chapter 19: Nontraditional Manufacturing**

<b>A Pilot Study of Readers of Freely Charged Newspaper</b> F.B. Zeng and R. Zhang	1423
<b>Weighting of Goods by Means of DC Motor</b> R. Matousek, Z. Namec and T. Marada	1427

## **Chapter 20: Nanofabrication, Nanometrology and Applications**

<b>A Density Functional Theory Study on the Ultra Long Single Walled Armchair (3, 3) (Bn)<sub>x</sub>C<sub>y</sub> Nanotubes</b>	
Y.L. Wang, K.H. Su and X. Wang	1435
<b>Application of Adaptive RBF-SMC for Electro-Hydraulic Position Servo System</b>	
W. Wang and Z.Y. Zhao	1440
<b>Effects of Adding Multiwalled Carbon Nanotube into Dielectric when EDMing Titanium Alloy</b>	
S. Izman, D. Ghodsiyeh, T. Hamed, R. Rosliza and M. Rezazadeh	1445
<b>Enhancement of TiO<sub>2</sub> Thin Film UV Detectors by Study of Electromagnetic Effects of Silver Nanoparticle</b>	
S. Mohammadnejad, A. Bazmara and M.H. Hajigholam	1450
<b>Gearbox with Worm Face Gear Coated with Nanostructured Multilayer</b>	
V. Bolos, D. Biro, G. Strnad and C. Bolos	1455
<b>Investigation of Plasmon Resonances of Ag Nanoshells for Sensing Applications</b>	
P.F. Zhang and P.H. Cheng	1459
<b>Mechanisms of 1D Crystal Growth in Chemical Vapor Deposition: ZnO Nanowires</b>	
X.Y. Li	1463
<b>Microwave Sintering of Barium Ferrite Nanoparticles Processed via Sol-Gel Method</b>	
N.S. Waluyo, A.A. Almajid and M.A. Soliman	1468
<b>Preparation of Nanosized Molecularly Imprinted Polymer Spheres for Atrazine</b>	
R. Xie, W.J. Gui and G.N. Zhu	1473
<b>Reducing Microbially-Influenced Corrosion on Aluminum by Using Organosiloxane Sol Film with Silver Nanocrystals</b>	
B. Yin, T. Liu, L.H. Dong, L. Zhang and Y.S. Yin	1479
<b>Study of Polarization and Relaxation on Pb(Zr,Ti)O<sub>3</sub> Thin Films by Scanning Probe Microscopy</b>	
J. Shen and D. Zhang	1484
<b>Studying of B, N, S, Si and P Doped (5, 5) Carbon Nanotubes by the Density Functional Theory</b>	
Y.L. Wang, K.H. Su and J.P. Zhang	1488
<b>Synthesis of Anatase-Based Titania Nanostructures Using Extreme Hydrothermal Conditions</b>	
V. Loryuenyong, P. Sooksaen and P. Sanitchai	1493
<b>Synthesis of Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> Microcubes via a Cr<sup>3+</sup>-Assisted Hydrothermal Route</b>	
L.L. Yang, Y.G. Wang and Y.J. Wang	1497
<b>Hydrothermal Synthesis of CeO<sub>2</sub> Nanocrystals Using Oleate-Modified Precipitation Method</b>	
K. Kobayashi, M. Haneda and M. Ozawa	1501

## Chapter 21: Metrology and Measurement

<b>Application of the Measurement and Control Network on Rewinder</b>	
P. Liu, X.P. Liu and B.P. Wang	1509
<b>Automatised Line Used for the Assembly/Test Subsystem-Carcass</b>	
D. Telea and S. Barbu	1513
<b>Experimental Setup for Harmonic Drive Efficiency Determination</b>	
C.I. Rizescu, C. Udrea and D. Rizescu	1518
<b>Nondestructive Evaluation of Material Damage Using Nonlinear Rayleigh Waves Approach</b>	
G.S. Shui and Y.S. Wang	1522
<b>Stability Analysis of an Aeroelastic System with Actuator Saturation</b>	
A.M. Stoica, M. Stoia-Djeska and G. Stroe	1527
<b>Study on the Safety Assessment of the Mobile Scaffolding System Metal Structure Based on the Onsite Inspection</b>	
Z.B. Zhang	1533
<b>Temperature Determination of St-Al Joints during Friction Welding</b>	
M. Cenk, S. Mumin and K. Hilmi	1538
<b>Wrist Mounted Camera for Colour and Shape Recognition</b>	
M. Tilneac, S. Grigorescu, V. Paléologue and V. Dolga	1543

## Chapter 22: Mechanical and Electronic Engineering Control

<b>A New Approach to Popov Criterion for Stability Analysis of Nonlinear Control Systems</b> I. Svarc	1549
<b>Antropomorphe Robot with 4 Degrees of Freedom for Didactic Use</b> G. Popescu and S. Ghimiși	1553
<b>Application and Research on the Model of Saturated-Unsaturated Porous Material Coupling Hydro-Thermal-Mechanical Process</b> Y.H. Xu and C.W. Liu	1559
<b>Applications of the Flexible Wing Concept at Small Unmanned Aerial Vehicles</b> V. Prisacariu, M. Boscoianu, I. Circiu and C.G. Rau	1564
<b>Bending-Torsional Flutter of a Composite Rectangular Cantilever Wing Subjected to Engine Thrust</b> M.R. Amoozgar and S. Irani	1568
<b>Classification of Power Quality Problems by Wavelet Fuzzy Expert System</b> N. Karthik, S.A. Gafoor and M. Surya Kalavathi	1573
<b>Contribution to Stability Control of Nonlinear Systems</b> I. Svarc and R. Matousek	1579
<b>Design Consideration of Bio-Inspired Contractible Water-Jet Propulsor for Mini Autonomous Underwater Robot</b> M.F. Shaari, S. Zahurin, M.E.A. Bakar and M. Mariatti	1583
<b>Designing the Tracking System for a String of Photovoltaic Modules</b> N.I. Tatu and C. Alexandru	1589
<b>Electronic Interface for Pneumatic Grippers Using USB Port</b> C.I. Rizescu, D. Rizescu and G. Ionascu	1593
<b>Failure Process and Mechanism Analysis for the Connecting Rod of Diesel Engine</b> Y.K. Gu, K. Hu and J. Li	1597
<b>Finite Element Analysis and Design Exploration of a Bolted Joint</b> I. Piscan, N. Predincea and N. Pop	1601
<b>Fluctuation-Suppression Pitch Control Strategy Study for Wind Turbine</b> L. Dong, M.F. Liao, M. Qin and L.X. Sun	1605
<b>Fuzzy Thrust Staging Kinematics for the NERVA Strap-On Boosters</b> R.D. Rugescu, S. Staicu and S.M. Mahmoudian	1611
<b>Global Fast Terminal Sliding Mode Control for Wind Energy Conversion System</b> H. Zhang and W. Wang	1616
<b>Hydraulic Positioning Unit with Internal Mechanical Position Feedback</b> M. Avram, C. Bucșan, D. Duminiță and V. Constantin	1621
<b>Identification of Tight Spots to an Automatic Mechanical Assembly Line, by Simulation WINQSB</b> G. Popescu and S. Ghimiși	1625
<b>Implementation of RFID-Based Access Control Management System</b> H.Y. Lin, Y.J. Wang and J. Bi	1630
<b>Indoor Navigation and Guidance of an Autonomous Robot Vehicle by Using Wireless (ZigBee) Communication</b> L. Mutlu and E. Uyar	1634
<b>Logic Design of Improved Backup Power Automatic Switching Considering the Influence of Small Hydropower Stations</b> C.J. Zhou, Y. Xiong, L. Qin and X.M. Zha	1638
<b>Manufacturing Using Robot</b> T. Mikolajczyk	1643
<b>New Inverter Fault Current Limiting Method by Considering Microgrid Control Strategy</b> K. Najafzadeh and H. Heydari	1647
<b>Off-Line Programming of Industrial Robots Using Co-Located Environments</b> F. Gîrbacia, M. Duguleana and A. Stavar	1654
<b>Performances Evaluation for a Reversed Quasi-Carnot Cycle (Refrigeration Machine) by Using the Direct Method from Finite Speed Thermodynamics</b> S. Petrecu, C. Dobre, G. Tirca-Dragomirescu, M. Costea, C. Stanciu and M. Feidt	1658

<b>PID Parameters Tuning Based on Wavelet Neural Network for Automatic Voltage Regulator Control System</b> H.N. Hu and W. Wang	1663
<b>Research on Engineering Machinery Manufacturing PDM and CAD Integration Solutions</b> C.R. Zhao, X.H. Guo and X.L. Zeng	1668
<b>Research on the Vacuum Attachment System of a Cleaning Robot with Vertical Displacement</b> N. Alexandrescu, C. Udrea, D. Duminičă and T.C. Apostolescu	1673
<b>Researches on a New Type of Rotating Thermic Motor</b> N. Băran, D. Duminičă and D. Besnea	1678
<b>Robot - Turner</b> T. Mikolajczyk	1682
<b>Spatial Information System for Management and Control of Electrical Substations</b> D. González-Aguilera, S. del Pozo, A. Holgado and G. López	1686
<b>Technical Options for Off-Grid Electricity Supply</b> N. Altawell	1693
<b>The Design and Implementation of Intelligent Community Monitoring System</b> Y.L. Wang, J.X. Wang and Y.H. Li	1701
<b>The Dynamic and Lightweight Design of the Support Structure of Electric Vehicle's Power System</b> W.H. Zhu, J.Y. Liu and J.Z. Feng	1706
<b>The View to the Current State of Robotics</b> M. Vagaš, M. Hajduk, J. Semjon, L. Koukolová and R. Jánoš	1711
<b>Torque Control and Pitch Control Strategy in VSCF Wind Turbine above Rated Wind Speed</b> R. Ma, S.J. Hu, X.B. Fu, H.H. Xu and N.H. Li	1715
<b>Using the Microcontroller and the PLC in a RPP Robot Control</b> L. Bogdan	1721
<b>Vibration Diagnosis of Electric Motor's Bearings</b> L. Ciupitu, A. Tudor, D. Turcan and D. Sandor	1725
<b>Voltage Stability Enhancement Considering Operation of Smart Loads</b> M. Hadizadeh, M.R. Haghi Fam and J. Olamaei	1729