

Table of Contents

Preface and Organizing Committee

Chapter 1: Materials Science Engineering and Materials Processing Technology in Manufacturing

Effect of Different Concentrations of Nitric Acid on the Conductivity of Single-Walled Carbon Nanotube Transparent Films J. Gao, W.Y. Wang, L.J. Cui, L.T. Chen, X.Y. Hu, H. Li and H.Z. Geng	3
Graft Polymerization of L-Lactide onto Cellulose in Ionic Liquid via Twin Screw Extruder X. Zhong, X.T. Tong, M.H. Yu, H.F. Li, H. Li, X.D. Li, M.E. Gibril, Y. Zhang and K.Q. Han	8
Synthesis and Characterization of Nanoscale Fe/Ni Alloy Particles by Hydrothermal Method Y. Cao, N. Gu and J.L. Zhang	13
Effect of Carboxymethylcellulose on Plasticized Polylactide C. Yamoum and R. Magaraphan	19
Performance of Dye-Sensitized Solar Cells Using ZnO-Natural Dyes from Sappan Wood, Noni Leaves, Safflower and Black Rice R. Magaraphan and J. Joothamongkhon	25
The Anti-Inflammatory Effects of Tetrandrine-Loading Poly(L-Lactic Acid) Film <i>In Vitro</i> Q.S. Wang, X. Li and Y.L. Cui	30
Flexural Toughness of Sprayable Strain-Hardening Cement Composite (SHCC) for Seismic Retrofit of Non-Ductile Reinforced Concrete Frames S.J. Han and H.D. Yun	34
Shear Reinforcing Influence of GFRP Shear Connectors in the Concrete Sandwich Wall Panel (CSWP) for Exterior Envelopes of Buildings T.S. Oh, S.J. Jang and H.D. Yun	38
Effect of Cement Matrix's Type on the Shear Performance of Lightly Reinforced Squat Shear Walls Subjected to Cyclic Loading S.W. Kang and H.D. Yun	42
Effect of GFRP Shear Ties on Shear Behavior of Interfaces between Precast Concrete Panel and Extruded Polystyrene Special Insulation S.J. Jang, Y.C. You and H.D. Yun	46
Nanosilica and its Future Prospects in Concrete G. Fares and M.I. Khan	50
Study on Cross-Linking Degree of Polyethylene L.Q. Zou and G.F. Wu	56
Cytocompatibility Comparative Study of Hydroxyapatite Coating on Titanium Alloy Treated with Two Chemical Routes Q.Z. Si, X.L. An, Y. Li, B. Liu and J.Q. Wang	61
Microstructures and Mechanical Characteristics of Enamel and Dentin of Primary and Permanent Teeth Q.Z. Si, X.L. An, Z.G. Wang, M.X. Li, B.P. Zhang and B. Liu	67
Study on Corrosion Resistance and Cytotoxicity of the Fluoropolymer Thin Films on Titanium Alloy Surface G.T. Zhao, Q. Zheng, Y.T. Du, B. Liu and J.Y. Zhang	73
Effect of Different Graft Polymerization Systems on Surface Modification of Aramid Fibers with Γ-Ray Radiation L.X. Xing, L. Liu, M. He, Z.J. Wu and Y.D. Huang	80
Physical Properties and Mechanical Behavior of Cement Mortars Containing Waste Tire Rubber Particles X.P. Li, D. Huang, X. He, H.L. Lin, K. Sun and Q. Ye	85
Application of Adaptive Wavelet Thresholding to Ultrasonic Signal Compression of Aluminum Alloy Forgings S.S. Liu, C.J. Wang, L.J. Bi and C.Z. Lv	89

Fabrication of Multi-Level Photoresist Patterns in One-Step Lithography by Using Cr/Ni Multi-Film Thickness Mask	
N. Siwarakrangsun, N. Atthi, S. Porntheeraphat, J. Jantawong, K. Leksakul and A. Poyai	93
Effect of NiO Nanoparticles on Magnetic Polymer Electrolyte for Dye-Sensitized Solar Cells	
Y. Yang, J.R. Cui, P.F. Yi, S. Xiao and X.Y. Guo	97
Aging Behavior of Semi-Solid Mg-10Al-0.3Mn Alloy by the Hot Extrusion	
D.H. Kim, H.Y. Kim and S.G. Lim	102
Effect of Al₂O₃ Capping Layer in ZnO TFT Fabricated by Atomic Layer Deposition	
K.S. Jeong, Y.M. Kim, H.J. Yun, S.D. Yang, S.Y. Lee, H.D. Lee and G.W. Lee	108
RF Characteristics of SiO₂/HfO₂/SiO₂ MIM Capacitor	
H.M. Kwon, S.K. Kwon, W.I. Choi, S.Y. Sung, J.K. Shin, C.Y. Kang, R. Jammy and H.D. Lee	112
Dielectric Relaxation and Reliability of Al₂O₃-HfO₂-Al₂O₃ Sandwiched Metal-Insulator-Metal (MIM) Capacitor	
H.Y. Kwak, H.M. Kwon, S.K. Kwon, J.H. Jang, S.Y. Sung, S. Lim and H.D. Lee	116
Polycrystalline Silocon-Oxide-Nitride-Oxide-Silicon Flash Memory on SiO₂ and Si₃N₄ Buffer Layer for System on Panels Application	
S.Y. Lee, J.S. Oh, S.D. Yang, H.J. Yun, K.S. Jeong, Y.M. Kim, H.D. Lee and G.W. Lee	120
Estimation of Tension Force in Short Hangers Using Added Mass Method	
Y.G. Shen, X. Xie, L.F. Sun and S.H. Huang	124
A Novel Patternable Electrophoretic Polymer Coating for Sidewall Packaging in Microelectronic Devices	
Y.B. Wu, G.Y. Liu, H. Wang and G.F. Ding	134
Investigates of Fabric Coating Approaches: Process and Observation	
T.Y. Wan and G.K. Stylios	140
Investigates of Fabric Coating Approaches: Parameters for Fabric Performance	
T.Y. Wan and G.K. Stylios	147
Chemical Recycling of Epoxide-Anhydride Hardened Networks Using Near-Critical Water	
Y.Y. Liu, S.Q. Wu, L. Li, Y.T. Liu and G.H. Shan	153
Structure and Performance of Fe-Al Alloy Layer for Twin Wire Surfacing on the Steel Substrate	
J. Yu, Y.Z. Huang, B.W. Wu and H.X. Zhou	158
Morphology of PANI on Paper	
J.H. Yan and Y.G. Wang	165
The Thermal Hysteresis of the Type I Antifreeze Protein ‘HPLC-6’: The Effect of Small System	
L.F. Li and X.X. Liang	169
Performance of Granular Media from Blast Furnace Slag on Beer Wastewater Treatment	
S.P. Li, Y.Y. Jiang, X.Y. Zeng and X.R. Ma	174
Optimization on Parameters of Resistance Spot Welding Process for Galvanized Steel Plate	
Z.W. Wang, Y.L. Wang and D.D. Zhang	178
Study on Nonlinear Cutting Forces Phenomenon of Difficult-to-Machining Materials	
K. Qiu and Z.H. Long	182
Residual Stress Profile of Ultra High Strength Low Alloy Steel Induced by High Speed Milling Process	
K. Qiu and Z.H. Long	188
Research on Plasma Spray Particle Impact Matrix Process Simulation	
C.S. Liu and H.P. Zeng	194
A Study of the Effect of Mineral Particle Shapes on Breakage Rate in Ball Mill Using DEM	
H.C. Li, W.M. Dong and X.P. Xie	198
Tensile Strength of Cu Sheets Welded by Ultrasonic Metal Welding	
D.S. Park, H.S. Jang and W.Y. Park	202
Experiment on the Fabrication of the Ni-Fe Micro Structure	
X.H. Zheng	209
Experiment on Electroforming Ni-Fe Property for Micro Fabrication	
X.H. Zheng and G. Feng	213
Slow-Release Carbon Source Composite Materials’ Preparation and Used for Denitrification in Groundwater	
F. Yang and H.L. Wang	217

Machining Conditions Effect to Machining Temperature and Forces in Orthogonal Machining of Bone	223
D. Kurniawan, N. Jiawkok and M.Y. Noordin	
Numerical Analysis of Debonded Honeycomb Sandwich Structure under Compressive Load	227
T. Zhu, J.L. Chen and W.R. Gong	
In-Fiber Mach-Zehnder Interferometer Fabricated by Femtosecond Laser	232
Z.L. Ou, Y.Q. Yu, J.R. Zheng, J.S. Wang, X. Chen, P.G. Yan and C.L. Du	
Effect of Polyaniline Doping on Structural and Vapor Sensing Properties of Tungsten Organometallic Thin Film	237
I.S. Zaine, Z.M. Zabidi, A.N. Alias and M.H. Jumali	
Investigation of Honeycomb Sandwich Composite Structure with Pre-Damage under Uniaxial Compression	242
H.M. Yan, B. Liu, F. Xu and Y.G. Liu	
Twinning Stress in Fcc Metals from the Classical Nucleation Theory	247
Y.J. Wu and R. Zhu	

Chapter 2: Design, Modelling, Simulation in Manufacturing and Mechanical Engineering Applications

Effects of Grinding Parameters on Creep Feed Grinding	255
X.F. Bi	
Explorative Study and Prediction of Overtempering Region of Disc Heated by Induction Process Using 2D Axisymmetric Model and Experimental Tests	259
N. Barka, A. El Ouafi, P. Bocher and J. Brousseau	
Simulation of Helical Gear Heated by Induction Process Using 3D Model	266
N. Barka, A. Chebak and A. El Ouafi	
Apply of Industrial Engineering Techniques for Cost Reduction in Frozen Food Industry	271
V. Laemlaksakul, S. Kaewkuekool and T. Wangnoorak	
Numerical Simulation of Flow and Heat Transfer during Filling Process Based on SPH Method	276
W.J. Cao, D.Z. Yang, X.W. Lu, Y. He and Z.Y. Zhou	
Simulation Study and Application on HPDC Process with Automobile Part	281
K.K. Seo and H.K. Kwon	
Error Modeling and Iterative Algorithm for Compensation Instructions of Five-Axes NC Machine Tools Based on the Multi-Body System Theory	287
L.G. Cai, H.Q. Lu, R. Luo, Q. Cheng and P.H. Gu	
Nonlinear Dynamic Modelling of Weld Penetration in Gas Tungsten Arc Welding Process	292
Y.K. Liu, S.J. Chen, W.J. Zhang and Y.M. Zhang	
A Myoelectric Controlled Prosthetic Hand Modelling and its Transmission Mechanism Dynamic Load Based on a Two-Stage Planetary Gear Transmission	298
R.P. Shao, J. Li, X.N. Huang and L.Q. Chen	
Coupling Analysis on Dynamics and Tribology for Cycloid Transmission Used in Robot Joint	305
R.P. Shao, W. Wang, J. Li and X.N. Huang	
Force Transfer Mechanism of the Hinge Joint of Multi-Adjacent Hollow Slab Precast Bridge	311
G. Wang, Y.G. Shen and X. Xie	
Interference Fit Design Assessment and Improvement for the Railway Wagon Wheelset with 30 Ton Axle Weigh	318
A.S. Xue, Y.X. Zhao and B. Yang	
Design Reliability Assessment on the Railway Wagon Axle with 30 Ton Axle Weigh	323
A.S. Xue, Y.X. Zhao and B.B. Du	
The Statics and Dynamics Analysis of High-Dynamic Flight Simulator Based on Substructure Method	327
H.Y. Xu, L.W. Guan and L.P. Wang	
Strength Analysis of the Seat Structure for Large Passenger Vehicles by Using Finite Element Method	335
S. Siwadamrongpong, S. Rooppakhun, P. Burakorn and N. Murachai	

Strength Analysis of the Seat Anchorages for Large Passenger Vehicles Using Finite Element Method	
S. Siwadamrongpong, S. Rooppakhun, N. Murachai and P. Burakorn	340
The Weight Reduction Design of the Regenerator CA Nozzle in FCC Unit Using the FEA	
I.T. Lee, H.S. Kim, N.Y. Choi and D.P. Hong	345
Block Shear Behaviors of Angle Two-Bolted Connections with Austenitic Stainless Steel – Experiment and Finite Element Analysis	
T.S. Kim, M.S. Kim and S.W. Shin	350
Comparison of Experimental and Numerical Failure Criterion for Formability Prediction of Automotive Part	
J.S. Yoon, H.G. Noh, W.J. Song, B.S. Kang and J. Kim	354
Design on the Drag Reduction Surface of an Arc-Shaped Revolution Body with the Phyllotactic Pattern	
H.P. Huang, Y.S. Lu and J. Wang	361
Design and Fabrication of the Lubricating Dimple of the Headface Sliding Bearing with Phyllotactic Pattern	
Y.S. Lu and H.P. Liu	367
Heat Resistant Turbine Wheel Development of Automobile	
D.S. Kang, K.D. Woo, D.G. Kim, S.M. Kim, D.Y. Kim, W.J. Kang and E.J. Jo	372
Some Properties of the Pneumatic Artificial Muscle Expressed by the Nonlinear Differential Equation	
A. Macurova and S. Hrehova	376
Finite Element Analysis of Piston under Mechanical Load	
L.Z. Wen, M.F. Zheng and X.J. Wang	380
The Visualization Manufacturing System Research Based on Three-Dimensional Process Model of Full Information	
B. Meng and Y.J. Yan	384
Research of Automotive Airbag Automatic Folding Device	
W. Zhang, Z.G. Guo, X.D. Wang, L.D. An and H. Chen	390
Study on Watercraft Driving Simulator	
D.J. Hu, M. Liu and L. Gong	395
Finite Element Analysis and Structure Optimum Design of Lifting Padeye	
Z.C. Liu, B. Zhou and S.K. Tan	399
Effects of Aerodynamic Force on Strength Characteristics of Turbocharger Blades	
Q.G. Luo, D.Y. Si, X.D. Wang and G.Z. Ran	404
Strength Analysis of Chassis Structure for Double Deck Bus	
P. Boonpuek, S. Rooppakhun, S. Siwadamrongpong and S. Bua-Ngam	408
Study of Key Technologies of Monitoring in Stage Hydraulic System	
R.G. Fu, Y. Dong, H.Y. Xiao, C.Z. Wang and X.X. Zhang	414
Spatial Filtering Effect of Tip Clearance Using Capacitance Displacement Sensor	
H.H. Xie, H.P. Yan and Y.Q. Huang	420
Thermodynamic Feasibility of Cogeneration Gas/Steam Combined Cycle	
M.A. Elhaj, J.S. Yassin and A.E. Hegaig	425
Thermal Analysis of Combined Cycle Power Plant with Desalination Unit	
M.A. Elhaj, M.M. Mahgub and K.K. Matrawy	430
Simulation of Solar Energy Storage System	
M.A. Elhaj, J.S. Yassin and A.A. Mutordi	437
The Velocity Decay Property of Different Shape Fragments for Explosive Anti-Riots Munition	
D.H. Ou Yang	446
Affection Mode of Temperature on the Lithium-Ion Battery Performance Used in Electric Vehicle	
C. Li, Z.C. Sun and W.J. Gu	450
An Assembly Simulation Optimization Method Based on View Transformation	
J.J. Tang, X.T. Tian, J.H. Geng, M.X. Bai and X.W. Liu	455
Research on Manufacturing Engineering Change Implementation Planning	
Y.L. Yin and T. Tang	460

Finite Element Analysis of High-Decker Bus Frontal Impact Based on ECE-Regulation No.29	
S. Rooppakhun and S. Bua-Ngam	464
3-D Modeling the Magnetic Field due to Ocean Tidal Flow O1	
Y. Xu, J. Xu, W.H. Zhu, X. Feng and H.Y. Xie	471
Load Curve Analysis and Load Errors Modeling of Long Span and Heavy Load Crossbeam	
W.T. Yang, R. Luo, H.Q. Lu, Q. Cheng and P.H. Gu	475
Calculation Methods of the Local Structure Behavior of Unbonded Flexible Pipes	
Z.B. Li, H. Xu and G.Z. Zhang	481
Research of Slider-Crank Massager Noise Fault Diagnosis and Treatment	
Y.H. Lv, J.B. Li, G.W. Zhong, J.L. Yang, C.S. Wang and H.X. Wang	487

Chapter 3: Detection, Monitoring and Image Processing Technologies, Information Technologies, Control and MEMS

A Novel Intelligent Network Booting System	
L. Fei, J.J. Yi and C. Lin	497
Variable Deadband Sampling and T-S Fuzzy PID Co-Design for Optimizing QoS and QoP of Wireless Networked Control Systems	
G.F. Tang and Y.X. Zhang	502
Influence of Clique Potential Parameters on Classification Using Bayesian MRF Model for Remote Sensing Image in Dali Erhai Basin	
H.J. Duan, G.M. Wu, D. Liu, J.D. Mai and J.M. Chen	508
Software Reliability Demonstration Testing Plan Based on Bayesian Theory	
Q.Y. Li and H.N. Tong	513
A Novel Virtual Vector Field Method for Image Segmentation Inspired by Physical Electro-Static Force	
X.D. Zhuang, X.P. Ji, Z.Q. Wei and H.P. Wang	518
Obstacles Detecting on Blind Sidewalk System Based on Image Processing Scheme	
J.Y. Fu, Z. Gong, X.R. Cheg, R.M. Cai and W. Wang	522
DC Power Dynamic Management System in Digitalized Transformer Substation	
P.Y. Li, Y.T. Pan and Q.Z. Qin	527
CATIA Based 3D Product Information Definition and Organization	
Q.Z. Zhou and D.Q. Liu	532
Blind Adaptive Channel Equalization Using Modified CMA	
S. Shouyu	537
A Method for Multi-Attribute Decision-Making with Complementary Preference Information on Alternatives	
H.A. Zhou	541
The Contour Size Detection of Driver Airbag Based on Image Processing Technology	
X.D. Wang, X.W. Chen, W. Zhang, B. Liu and L.D. An	546
The External Thread Detection of Liquefied Gas Valve Based on Image Processing Technology	
X.D. Wang, B. Liu, X.W. Chen, W. Zhang and Z.G. Guo	551
Coefficient Identification of Steam Network Model Based on Genetic Algorithm	
X.F. Zhu, Y. Zhang, Z.F. Lu and Y. Ma	555
The Emergency Rescue and Path Optimization of Dangerous Goods Based ArcGIS	
Y.G. Chen, Q.J. Wang, B.P. Zheng and C.Z. Liu	560
Design and Realization of Smart Home Environmental Monitoring System Based on Wireless Sensor Networks	
L. Zhong, D.G. Yang, Y. Jiang and H.W. Feng	565
A New Adaptive UPF Algorithm through Improved Relative Entropy	
W.T. Yu, J. Peng and X.Y. Zhang	569
The Research of CR's Application for Bluetooth Network	
Q.Z. Du, Y. Peng, X.M. Yang and Q.P. Yang	574
Integration Research of Thermoelectric Enterprise Marketing Management Information System	
Z.G. Li, Z.T. Fu, J.Y. He, Q. Qi and D.Q. Zhu	578

Data Imputation for Regional Traffic Index Based on GSO-NN Y. Zhang	587
A New Local and Global Model to Iris Recognition X.W. Xu	592
An Efficient Iris Segmentation Method for Non-Ideal Iris Images X.W. Xu	597
Mixed H_∞/H_2 Output Feedback Stability Control for Dual-Motor Independent Drive Electric Vehicle C. Lin and C.L. Peng	602
High Sensitivity Refractive Index Sensor Based on Long Period Fiber Gratings in Line Mach-Zehnder Interferometer J.R. Zheng, Y.Q. Yu, Z.L. Ou, C.L. Du, P.G. Yan and J.S. Wang	609
Development of a Hybrid Life Cycle Cost Model for Estimating Product Design Alternatives in Cloud Computing Based Collaborative Design Environment H.K. Kwon and K.K. Seo	614
Amplifier Design on 16-Channel High-Frequency Current Drive X. Yu	620
Design of Automatic Detection System for Temperature Sensor Based on LabVIEW R. Sun, L.D. An, W. Zhang, X.W. Chen and Z.G. Guo	626
Design of a Multi-Mode Asymmetric Waveform Generator for FAIMS X.W. Xu and Y.J. Guo	631
Analysis of Displacement Monitoring Measurement in Tunnel Construction Y. Liu and J. Hu	635
Study on Fuzzy Inference Method for Fault Diagnosis Expert System X.D. Song, W. Shao, Z.Z. Qiu and Y.X. Chen	639
A Novel Preprocessing Method for Palm Vein H. Zhang and D.J. Hu	643
Research on Recognition of Pathological Voice by AD Tree J.J. Zhu, X.J. Zhang, J.H. Gu, H.M. Zhao, Q. Zhou and Z. Tao	647
A Modified MUSIC Algorithm for DOA Estimation S.J. Su and W.Q. Zheng	652
The analysis of 3-Level Charge Pumping in SOHOS Flash Memory S.D. Yang, H.J. Yun, K.S. Jeong, Y.M. Kim, S.Y. Lee, J.S. Oh, H.D. Lee and G.W. Lee	658
Application Research of rCOS-Based Trusted Requirement Engineering G.Y. Duan and J. Yang	662