

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Advanced Materials and New Materials

Blue Upconversion Luminescence from Phosphor Tm^{3+}/Yb^{3+} Co-Doped $Gd_2Mo_3O_9$	3
J.Y. Sun, B. Xue, G.C. Sun, D.P. Cui and H.Y. Du	
Microstructure and Magnetic Properties of Fe-Si-Al Soft Magnetic Composite	7
Y.D. Peng, J. Ma, W.J. Zhang, C.X. Bao, J.W. Nie and J.M. Ruan	
Preparation and Purification Properties of Poly(Vinyl Alcohol) Nano-Fibers Based Sandwich Structure Material	11
R.X. Liu, T.Q. Liu, B.B. Cao, F.R. Ma, N. Zhao, X.L. Zhao and N. Gao	
Investigation for the Fracture Process of WC_p/Cu Functionally Graded Materials under Three-Point-Bending	17
H.T. Xia, R.X. Guo, F. Yan, H. Yu and Y.B. Zhang	
Properties and Performance Analysis of Woven Roving Composite Laminates for Automotive Panel Board Applications	21
R.R. Niranjan, S.J. Kokan, R.S. Narayanan, S. Rajesh, C. Elanchezhian and B. Vijaya Ramnath	
Study on Synthesis of Cyclotriphosphazene Containing Aminopropylsilicone Functional Group as Flame Retardant	25
L.L. He, Y. Zhang, Z.L. Qin, Y.H. Lan, D.H. Li and R.J. Yang	
Synthesis of SiO_2/CeO_2 Nanoparticles with Core/Shell Structure and Their Polishing Performance	30
L.J. Mu, Z.Y. Zhang, L.Y. Zhang, C.D. Chen and Z.Q. Zhao	
Design, Synthesis and Biological Activity Evaluation of Novel N-Acylation Substituted Isatin Derivatives	34
B. Zeng and X.H. Zhu	
TiO₂ Immobilized in RPF-AA Fiber for Photocatalytic Degradation of Low Concentration Methylene Blue in Aqueous Solution	38
L.X. Zhang, H.W. Xu, X.L. Wang and L. Zhao	
Study on the $ZnO-B_2O_3-SiO_2$ Glass-Ceramic with DTA, XRD and SEM	42
M. Li, M. Wang, M.T. Wang, M.R. Hao, Z.G. Liu, Y.H. Hu and P. Yue	
A Review on the Methods of Improving Fiber Distribution of Engineered Cementitious Composites (ECC)	46
H.M. Niu, Y.M. Xing and Y.R. Zhao	
The Influence of Tread Material Oil Aging on Tire Performance	51
Y.S. Wang, Z.B. Cui, Q. Liu and S.S. Jiang	
Room Temperature Magnetocaloric Effect of the $Co_x(MnSb)_{1-x}$ Compounds	56
J.H. Lin, S.D. Li, L.L. Wang, J. Qiu, Z.Y. Cai, X.Q. Cao, H.L. Du, Q. Xue and S.M. Xie	
Microstructure and Electrochemical Behavior of $Sm_{0.5}Sr_{0.5}CoO_3$ Deposited by Solution Precursor Plasma Spraying	60
X.M. Wang, L.Y. Zhang, M.Y. Chen and L.L. Wang	
Characteristics of $BiFeO_3$ Thin Films on a $LaAlO_3$ Substrate by RF Sputtering	64
J. Cao, J. Xing, B. He, Z.Y. Zhang, Y.T. Duan and J.F. Gu	
Magnetic Concentration Phase Transitions in Ultrathin Films	69
L. Afremov and I. Ilyushin	
Synthesis and Characterization of Surface Modified Red Pigment 48:2 for Electrophoretic Display	73
C. Sun, B. Zhang, X.G. Li and Y.Q. Feng	
Relationship between Life, Load and Rotation Speed of UHMWPE Bearing under Dry Rolling Contact Fatigue	77
S. Hazeyama, S. Oyama, K. Kida, T. Honda, K. Mizobe, H. Koike, K. Itakura, Y. Kashima and K. Kanemasu	

Mechanical Properties at High Temperatures and Microstructures of a Nickel Aluminum Bronze Alloy	
B. Thossathepitak, S. Suranuntchai, V. Uthaisangsuk, A. Manonukul and P. Mungsuntisuk	82
Effect of PTFE Retainer on Friction Coefficient in Polymer Thrust Bearings under Dry Contact	
K. Mizobe, T. Honda, H. Koike, E.C. Santos, Y. Kashima and K. Kida	90
Sintering and Dielectric Properties of Sr-Rich Barium Strontium Titanate (BST) Ceramics Fabricated by a Mixed-Phase Method	
L.X. Zhou, D.R. Jin, C.J. Xie and J.R. Cheng	94
Application of Photocatalytic Concrete Paint and its Effect of Decomposing Vehicle Exhaust	
X.L. Wang, L.P. Liu and H.M. Xu	98
Phase-Change Materials and Building Energy Saving	
X.G. Zhao and Y. Pan	106
Second-Order Non-Linear Optical Properties of Y-Type S-Triazine Based Derivatives	
Z.R. He, Z.R. Chen and Y.H. Xu	110
Developing a Wearable Multifunctional Composite Component	
N. Makki and R. Pop-Iliev	116
Effect of Dynamic Strain Aging on the Mechanical Performance in Ti/STS439 Clad Materials	
J.S. Ha, I.K. Kim and S.I. Hong	120
Preparation of Carbon Fiber Reinforced SiC Matrix Composites by PIP Process	
Q.Q. Zhang, T. Zeng and S. Cheng	124
Interfacial Microstructure of Diffusion-Bonded Cu/Cu-Ag/Al Hybrid Alloy	
I.H. Lee, K.H. Lee and S.I. Hong	128
Effect of Size on Average Molecular Weight of Poly(Methyl Methacrylate) Micropattern during Hot Embossing	
C.B. Lin, Z.C. Chang, J.S. Ho and C.F. Hsiao	133
Mechanical and Biological Characteristics of Electrospun PCL Meshes – the Influence of Solvent Type and Concentration	
J. Dias, A. Gloria and P.J. Bárto	137
Evaluating the Properties of an Alginate Wound Dressing for Skin Repair	
R. Pereira, A. Mendes and P.J. Bárto	141
Ageing Effect on Mechanical Properties of Machined Nanostructures	
X.L. Hu, Y.Z. Sun, Y.C. Liang and J.X. Chen	145
Density Functional Theory Studies of Substitutionally Si-Doped Single-Walled Carbon Nanotubes	
N.N. Yuan, H.C. Bai, Y.H. Wu, J. Li and Y.Q. Ji	150
Synthesis of SnO₂ Nanotubes as High Performance Energy Storage Material for Photocathodic Protection of Metals	
N. Zhang and M.J. Zhou	154
Surface Morphology in Milling Multidirectional Carbon Fiber Reinforced Polymer Laminates	
Y.H. Gong, N.H. Yang, S. Han, Y. Chen, Y.C. Fu and S.C. Han	158
Studies on the Bioceramic Coating on Titanium Substrate Including Silicon and Calcium by Micro-Arc Oxidation and Osteoblast's Adhesion and Proliferation on the Coating	
D.C. Li, X. Liu, L. Han, J.L. Li and S. Cheng	163
PCL and PCL/PLA Scaffolds for Bone Tissue Regeneration	
T. Patrício, A. Gloria and P.J. Bárto	168
Quantum Cutting Downconversion in Tb³⁺,Yb³⁺ Codoped Sr₃AlO₄F Phosphor	
J.Y. Sun, Y.N. Sun, J.H. Zeng, J.C. Zhu and H.Y. Du	172
Elastic Ply Damage Mechanics Modeling of Glass/Epoxy Laminated Composite	
Y. Chen, B.J. Pang and W. Zheng	176

Chapter 2: Engineering Materials Research

Investigation on Transmittance and Uniformity of Light Diffuser Plate of Filling Coefficient of Microstructure	
X.L. Gao, D.M. Wu, Y.J. Zhang, X.T. Zheng and Y. Liu	185

The Yield Effect on Soil Improver and Straw Mulch Coupling in Inland Saline Areas G.H. Yin, J. Gu, Z.X. Liu, Y. Sun, L. Hao, P.F. Cong and Y. Ming	191
Application of HVFA Concrete in Massive Structure X. Li, J.J. Yan and S.S. Peng	195
Luminescence Properties and Energy Transfer from Eu²⁺ to Tb³⁺ in Sr₅(PO₄)₃F Phosphor J.Y. Sun, D.P. Cui, B. Xue, G.C. Sun and H.Y. Du	199
Synthesis and Characterization of SrSO₄:Sm³⁺ Phosphor with Hierarchical Structures J.Y. Sun, G.C. Sun, D.P. Cui, B. Xue and H.Y. Du	203
Design and Analysis of Optical-Communication-Band Sub-Wavelength Grating Polarizer E.F. Cai, Y.Q. Huang, X.F. Duan and X.M. Ren	207
The Effect of Spin-Orbit Coupling on the Electronic Structures and Half-Metallicity of Heusler Compounds: V₂ReZ (Z=Al, Ga, In) H.Y. Jia, X.F. Dai, L.Y. Wang, F. Wang, L. Chen, X.C. Liu and G.D. Liu	211
The Effects of Initiator Content on Sago (<i>Metroxylon rottb.</i>) Starch-G-PAN Hydrogel N. Omar and Z. Ahmad	218
Study on the Hydrolysis of Pollen in Pure Water under Microwave Irradiation H. Wang, L.L. Geng, B. Wu, N. Liu and D. Zhang	222
Study on a Structure of 2,6-Pyridine-Dicarboxylic Acid Lead, Pb(C₇H₃NO₄) H.X. Liu, P. Yang, H.M. Guo, Z.X. Yu, Q.H. Zhang and G. Zeng	226
Application and Research on Luminescent Coating in Interior Design H.C. Li, W.P. Hu and Y.L. Wang	230
Microstructure and Texture Characteristics of a Near-Alpha Titanium Alloy Tube Y.T. Zuo, S.F. Liu, Z.H. Zhang, H.N. Ma, W. Xia, Y. Liu and Q.Q. Zhao	234
Characterization of Contact Resistance between Carbon Nanotubes Film and Metal Electrodes K.B. Han and Y.H. Choi	238
Analysis of the Effect of Temperature on Thermal Conductivity of the Insulation Block Made from Secondary Raw Materials A. Kalužová, J. Pěnčík, L. Matějka, L. Matějka, T. Pospíšil and D. Dostálková	242
Experimental Investigations on the Characteristics of Biomass and Coal-Biomass Fuel Briquettes C.Y. Sing, M.S. Aris and H.H. Al-Kayiem	246
Medium Optimization for Active Substance Production of <i>Streptomyces alboflavus</i> TD-1 Using Response Surface Methodology Z.F. Wang, H. Zhang, C.L. Wang, Z.J. Li, F.J. Li, M.H. Chen, Y.R. Wang and Y.F. Huang	250
Molecular Weight and its Distribution of PET Depolymerization Catalyzed by Zn(Ac)₂ under Microwave Irradiation K.W. Shu, Q.H. Tang, H. Wang, N. Liu and D. Zhang	254
Experimental Research on Properties of Low-Density Foaming Concrete J.W. Yue, T.T. Yue, Y.F. Wang and L.H. Gu	258
Numerical Simulation and Monitoring of Mass Concrete Wall Temperature Field Y. Wang, E.B. Pang, H.C. Zhang and L. Yang	262
Photo Polymerization of Thiol-Hyperbranched Polysilazanes J.L. Song, P.W. Hao, C.Q. Ye, L.X. Chen and W.G. Li	266
In Situ Modulation Excitation IR Study on the Dominant Product of Pt-Catalyzed Aromatic Ketone Hydrogenation M.M. Chen, N. Maeda, A. Baiker and J. Huang	271
Numerical Simulation of the Transient Temperature Field during Gas Quenching Z.L. Li and M.H. Liu	275
Synthesis of sp³C1-Bridged Constrained Geometry Complexes and their Application for Copolymerization of Ethylene and 1-Octene P.K. Mi, X.J. Kong, S. Xu, Y.L. Zhu and L. Cheng	280
Rheological Properties of Polysulfonamide Spinning Solutions with Higher Ratios of p-Phenylene Segments H.M. Li, X.J. Peng and J.X. Zhao	289
Optimization of Micro-Arc Oxidation Electrode Structure by Finite Element Analysis G. Wang, J.Y. Xu, Y. Tang, C. Gao and X.C. Shi	293

The Study on the Synthesis and Luminescent Properties of the Phosphor La₂O₃: Dy³⁺ W.W. Tang, W.Y. Zhao and B. Fan	297
Investigation of Hot Deformation Characteristics of AISI 4340 Steel Using Processing Map A. Sanrutsadakorn, V. Uthaisangsuk, S. Suranuntchai and B. Thossatheppitak	301
Synthesis and Electrochromic Properties of Crystalline 3D Urchin-Like Nanostructures J.J. Jung and D.H. Kim	307
Cyclic Stress-Strain Response and Dislocation Configuration of a Beta Phase Containing TiAl Alloy during Isothermal Fatigue Tests under Different Strain Rate H.F. Xiang, J.H. Tao, J.H. Wang, H. Li and A.L. Dai	314
Mechanical Properties and Microstructure of Cu-Ni-Zn/Cu-Cr/Cu-Ni-Zn Clad Plate Processed by High Pressure Torsioning (HPT) H.Y. Kim, J.S. Ha, K.H. Oh and S.I. Hong	318
Solvothermal Synthesis and Detailed Analysis of Hydroxyapatite Nanostructure A.J. Nathanael, I.H. Lee, K.H. Lee and S.I. Hong	322
Research on the Electro-Exploding Mechanism of Semiconductor Bridge Y. Li, B. Zhou, Z.C. Qin, X. Jia and L.M. Wen	326
Wear Resistance of Graphite / Aluminium Composites that Prepared by Stirring Casting L.L. Wu, W.J. Yang, J.R. Xu and G.C. Yao	333
Coordination of Polyacrylic Grafted Polytetrafluoroethylene Fiber with Fe (III) Ions in Aqueous Solution B. Li and Y.C. Dong	339
Adsorption of Zearalenone by Montmorillonite L. Zeng and S.P. Wang	343
Molecular Dynamics Simulation of Structural Changes of Ag₉₆₅ Clusters during Freezing J.H. Xia, Z.F. Cheng and X.Y. Xiao	348
Study of the Erosion-Corrosion Behavior of P110, N80 and VM140 Steel in 3.5wt.%NaCl Solutions with Sand Y.H. Dou, Y. Li, Z.G. Wang and Z. Li	353
Crystal Structure of Ytterbium Chloride Phenanthroline: [YbCl₄]·[C₁₂H₈N₂]·(H₂O) H.X. Liu, J.Z. Xiao, P. Yang, Z.X. Yu, Q.H. Zhang and G. Zeng	357
Effect of Transition Metal on the Thermal Degradation of Cotton Cellulose Modified with THPC C.F. Sun and M. Gao	361
Analysis on the Non-Arrhenius Life Prediction Method of Rubber Y.S. Wang, W. Wang, Q. Liu, Z.B. Cui and J. Wang	366
The Application of Large Particle Size Hot Mix Asphalt Macadam Roadbase Structure in the Maintenance Overhaul Engineering H.Y. Xia, Z.J. Yang, X.W. Yi and J. Tan	372
Magnetic Dual-Phase State of Superparamagnetic Particles in the Field of Mechanical Stresses L. Afremov and I. Ilyushin	377
Experimental Study on Bonding Interface between CFRP and Concrete under Fatigue Load X.H. Zheng, P.Y. Huang, X.Y. Guo and Q. Han	381
Observation of Wear on PEEK-PTFE Hybrid Radial Bearings H. Koike, K. Mizobe, S. Oyama, Y. Kashima, K. Kanemasu and K. Kida	385
Surface Profile Observation of PTFE Thrust Bearings under Rolling Contact Fatigue in Water K. Itakura, T. Honda, S. Oyama, K. Kida, S. Hazeyama and Y. Kashima	391
Study on the Flow- Induced Corrosion of P110 Oil Tube with an Electrochemical Method Z.G. Wang, Z. Li, X.Y. Liu and Y.H. Dou	396
Experimental Research of Foam Concrete with Different Fly Ash Level J.W. Yue, Z.L. Sun and Y.F. Wang	400
Research Status and Prospect of Constitutive Relation for Concrete after Freeze-Thaw Damage J. Xu, B. Tian, G. Xu and X.C. Lu	404
Surface Morphology Investigation of Poly(ether ether ketone) Immobilized with Heparin and Bovine Serum Albumin H. Sun, R.C. Chen, B. Yang and G.Z. Xu	409

Analysis of Relationship between Porosity and Roughness of Surface Based on Fractal Model		
J.Q. Chen, X.Z. Liu, L. Ridolfi, B. Du, H.M. Wang and F. Zhang		413
Two Dimensional Photonic Crystal Biosensors		
H.B. Wang, K. Tong, C.C. Gu, W.Z. Zeng and J.R. Lu		419
Flex Fatigue of Side Emitting Optical Fiber		
J. Huang, D. Kremenakova and J. Militký		425
Experimental Research of Foaming Concrete Performance at Different Water Temperature		
Y.F. Wang, Y.J. Wang and J.W. Yue		431
Experimental Research of Foaming Concrete Performance with Different Ash Calcium		
L.H. Gu, Y.F. Wang and J.W. Yue		435
Influence of Load and Rotation Speed on Life of PPS Radial Bearings under Water Lubricant Conditions		
S. Oyama, H. Koike, Y. Kashima and K. Kida		439
Environmental Assessment of Production of Thermal Insulation Block from Secondary Raw Materials		
K. Struhala, Z. Stránská, L. Matějka and J. Pěnčík		444

Chapter 3: Materials Processing Technology

Research on the Super Rapid Strength Repairing Material Effects Resistance to Water Damage Performance of Cement Stabilized Macadam		
J. Yang and J. Li		453
Isothermal Transformation of Wustite for Low Carbon Micro-Alloyed Steel		
S. Liu, D. Tang, H.B. Wu and Z.X. Cai		457
The Research of the Application of Smart Coatings on Architectural Ornaments		
J.J. Wang, W.P. Hu and X.P. Yang		464
Effects of Niobium and Titanium on the As-Cast Microstructure of Cr₈Mo₂VSi Cold Work Die Steel		
J.L. Cao, Y.L. Chen, R. Ding and Y. Han		468
Research on Sol-Gel Transition Process of Gelatin		
X.L. Chen and Q.N. Shi		474
Feasibility Study for Copper/Zirconium Oxides as Oxygen Carrier in Chemical Looping Air Separation (CLAS)		
K. Wang, Q.B. Yu, Q. Qin and J.C. Li		479
Study on the Preparation and Catalytic Property of Sulfonated Ordered Mesoporous Carbon		
X.J. Zhang, Y.Y. Wang, C. Hao, P.T. Wu and Z.C. Jiang		484
Research on Dynamic Recrystallization Behavior of 20CrMo Alloy Steel during Hot Deformation		
A. He, L. Chen, S. Wang and L.X. Huangfu		488
Meshless Modeling of the Breakage Process of a Coal Prism within Vertical Roller Mills		
Y.L. Liu and Y.D. Zhou		492
Development and Application of Prediction Model for End-Point Manganese Content in Converter Based on Data from Sub-Lance		
B. Zhang, Z.L. Xue, K. Liu and W.B. Xiao		497
Effect of Sb Substitution on the Crystal Structure and Multiferroic Properties of BiFeO₃		
B. He, J. Xing, Z.Y. Zhang, J. Cao, Y.T. Duan and J.F. Gu		504
The Pozzolanic Activity of the Coal Gauge and its Evaluation		
J.Y. Chen, T. Sun, X.Y. Zhu and X.R. Lei		509
Effect of Feedstock Type on Microstructure and Polarization of Plasma Sprayed LSM Cathode for Solid Oxide Fuel Cells		
X.M. Wang, C. Fang, Z.C. Zhu and N. Li		514
Preliminary Research on Brazability of SiC Particulate Reinforced Aluminium-Based Composites		
D.X. Xu, L. Chen, B. Xu and F. Han		518

The Impact of Porphyrin Meso-Position Steric Effect on Porphyrin Density on TiO₂ Surface of DSSC	
Z. Zeng, B. Zhang, X.J. Liu, X. Peng, S.X. Meng and Y.Q. Feng	522
Calculating of the Beating-Up Force for 3D Weaving	
J. Li, G. Chen and S.J. Li	526
Kinetics and Thermodynamic Investigation of Phosphate Adsorption on AlCl₃ Modified Palygorskite	
Y. Zhang, X.J. Lv and X.Y. Kou	530
Preparation of Hydrotalcites Derived Ni/Co/Cu/Fe Nanocomposite Oxides and their Catalytic Activities for Thermal Decomposition of Ammonium Perchlorate	
H.B. Liu, Z.Y. Huang, B.Z. Guo and Q.Z. Jiao	534
The Research of Konjac Glucomannan Fracturing System	
Y. Su, Y.D. Shen, L. Wang, X.R. Wang, X.J. Lai, F.S. Zhang, G.J. Liu and Z.Q. Wei	540
OPTIMALMOULD Cooling System Influence in Injection Moulding Cycle Time Optimization	
C. Ramos, P. Carreira, P.J. Bárto and N. Alves	544
Finite Element Simulation on Tire Rubber Extrusion Process	
J. Wu, Q. Liu and Y.S. Wang	548
Influence of Forming Velocity on Service Performance of Resistance Wall Structural Die	
L. Li and F. Wang	552
Modeling and Simulation of High Speed Intermittent Cutting Based on the Finite Element Method	
B.B. Jiao, F.S. Yu, Y.J. Li, R.L. Zhang, G.L. Du and T. Li	556
Choice of Materials and Application of New Materials in Industrial Design	
W. Chen	560
Separation Test of Copper-Zinc-Sulfur Mixed Concentrate in Kazakhstan	
W.H. Pang, Q.J. Liu and P. Ding	565
Study on Melting Properties of CaO-Al₂O₃-SiO₂-MgO System Calcium Aluminate Flux	
W.P. Li, J.H. Chen, C. Wohrmeyer, H.Y. Guan and J.L. Sun	569
Effect of Spark Plasma Sintering Temperature on Microstructures and Properties of Copper-Diamond Composites	
A.R. Niazi, S.K. Li, Y.C. Wang, J.X. Liu, Z.Y. Hu and U. Zahid	573
Study on the Formation Mechanism of Micro-Arc Oxidation Layer in Aviation	
L.M. Song, S. Li, X.J. Liu, D. Jin and T.Y. Hu	577
Study on the Surface Roughness of Titanium Alloy Machined by WEDM	
S.G. Zhao, R. Li and X.M. Yao	581
Technical Principle and Working Properties of Sludge Dredging by Airlift Water Jet	
X.F. Yang, Y. Kang, X.C. Wang, D. Li and Z.F. Liao	585
Arbitrary Curvature Radius of the Optical Parts Precision Polishing Technology	
M. Yang, Z.D. Guo and Z.Q. Yang	589
Experiment Research on Preparation Pigment Type Magnetic Iron Oxide Powder Utilizing Magnetic Separated Slag	
Y.Y. Cui, M.F. Jiang, P.Y. Shi and C.J. Liu	595
Thermal Stress Analysis for Local Heating Variable Cross-Section Roll Forming	
J.F. Gao, Q. Li and W. Zhao	599
Finite Element Analysis and Fracture Forecast of U Channel Flexible Roll Forming	
W. Zhao, Y. Yan, H.B. Wang and J.F. Gao	604
Analytical Investigation on the Aging Process of Vegetable Insulating Oil	
N. Zhang, Y.H. Han, X. Yang, S. Zhang and S. Wei	608
The Controlled Powders Morphology of Bismuth Niobium Titanate Depending upon the Isothermal Annealing	
X.C. Liu, B.R. Li and L. Wang	612
Sapphire Substrate Ring-Belt Magnetorheological Polishing Processing	
W.J. Guo and Z.D. Guo	616
Research on Flotation Mechanism of Quartz Using Magnesium Ion as Activator	
R.M. Yin, L.Z. Chen, Q.L. Hou, J. Li and T.R. Liu	621
Effect of Forced Convection on Grain Refinement of S32205 Duplex Stainless Steel	
X.R. Chen, H.G. Zhong, C.J. Song and Q.J. Zhai	626

Selection of Process Parameters for Laser Assisted Machining of Al₂O₃ Ceramics	631
X.H. Zhang, C. Yan, G.Y. Chen, W.K. An, T.M. Huang and W. Liu	
Comparative Study of Different Types of Flashes on the Flange Open-Die Forging	635
L. Li and F. Wang	
Effect of Premelted Calcium-Magnesium-Aluminate Flux on Magnesia Carbon Brick	639
W.P. Li, J.H. Chen, C. Wohrmeyer, H.Y. Guan and J.L. Sun	
Effect of Microalloying on Structures and Properties of Aluminum Alloy	643
Z.P. Fei, X.M. Huang and R.R. Dai	
Controlled Synthesis of Calcium Carbonate Crystals with Superstructure on the Templates of Bamboo Leaves /Mg²⁺	647
Y.P. Wu	

Chapter 4: Other Engineering Solutions for Manufacturing

3-D CFD Modeling the Straight Blade Vertical Axis Wind Turbine	653
Q.P. Yang, R. Galbraith and D.K. Xi	
The Design of the Mechanical Heart Valve by Using the Parametric Method	657
Y. Zhang, L.L. Wu, F. Zhou, T.X. You, G.J. Wan and N. Huang	
Hardware System Design of the Control System for Three Dimensional Variable Cross-Section Roll Forming	661
G.J. Wang, Q. Li, B. Qian and Y.Z. Guan	
Analysis on Factors to Cause the Price Change of Building Materials	668
H. Zhou and J.H. Zhao	
Monitoring of Blast Furnace Hearth Erosion	672
F. Kong	
A Design Method Using SOA Paradigm for Mobile Cloud Computing Services over Multimedia Convergence Networks	676
J.W. Kim and B.J. Park	
Research on Auto Matching of Measuring Points Data with CAD Model for Hull Blocks	680
G. Ren, P.L. Qin and Y. Lin	
Application of Analytic Hierarchy Process in the Steel Industry	686
Y. Liu and G.P. Cheng	
Experimental Device of Drilling String Dynamics in Horizontal Well and its Application	690
D.D. Shao, Z.C. Guan and X. Wen	
Research on Experiment Modal Parameters Identification of Parallel Manipulator	694
C.X. Zhu, B. Liu, Z.W. Chen and J. Wang	
A Reconfigurable MES Model Based on Hierarchy	698
R. Dong, W.P. He, Y.J. Li, J.L. Chen and Y.L. He	
Dynamic Simulation Analysis of the Vibratory Sinking Piling System Based on AMESim	704
X.P. Li, G.H. Zhao, X. Ju, H.T. Yang and Y.M. Liang	
Optimization of Multiresponse Performance Measure in Slider-Rocker Compliant Mechanism Using Fuzzy-Taguchi Method	708
T.P. Dao and S.C. Huang	
A Method to Measure the Station of Artificial Mechanical Heart Valves	712
F. Zhou, L.L. Wu, Y.Y. Cui, Y. Chen, J. Yang and N. Huang	
Research on the Fuzzy Control for Vehicle Semi-Active Suspension	716
X.M. Hu and W.L. Li	
The Influence of Material Optical Properties on Temperature Distribution in an Automotive Lamp	720
Z.X. Fei, S.G. Tong and C. Wei	
Underwater Wet Weld Seam Tracking Based on Passive Visual Sensor	725
B. Chen, C.B. Jia and J.C. Feng	
Characterization of Metal-Semiconductor Schottky Diodes and Application on THz Detection	729
H.R. Liu and J.S. Yu	
Analysis on the Incompleteness of Moral Hazard Model	733
Y.F. Tang, A.H. Wang, Y. Li and Y.M. Hu	

Graph-Theoretic Models for the Module of Safe Planning for Control Systems of Mobile Robots	737
A. Gorbenko	
The Application Research of Six-Axis Force Sensor Used by Trans-Femoral Prostheses	741
H.L. Xie, F. Li and G.C. Kang	
Structure Design of a Novel Triaxial Micro-Accelerometer	745
F. Yang, Y. Yuan, Z.Y. Ma and X. Liu	
The Comparative Model Analysis of Electronic Button-Sewing Machine Shell Based on Simulation and Experiment	750
L. Zhang, G.Y. Nie, H. Wu and J. Chen	
Cybernetics in Planning and Design	754
K.Z. Sun	
Research on the Relationship between the Transaction Cost and the Corporate Governance	758
G. Wang and W.Y. Chen	
System Dynamics Mechanism Analyses on Building Materials Enterprise Factoring Risk	762
G.P. Cheng and D. Tang	
Research on Co-Branding Strategy in New Materials Industry	767
G. Wang and W.Y. Chen	
Bio Inspired Algorithms for Injection Moulding Optimization	771
P. Carreira, N. Alves, C. Ramos and P.J. Bárto	
Functionally Graded Structures through Building Manufacturing	775
F. Craveiro, H. Bárto and P.J. Bárto	
Nonlinear Natural Frequencies of Rotating Composite Thin-Walled Beam with Geometrical Nonlinear	779
Y.S. Ren, S.S. Sun and C.J. Zhang	
Estimation and Analysis for the Fatigue Life of Rail Joint Bolt	783
X.P. Li, X. Ju, G.H. Zhao and Y.M. Liang	
Design of Cylinder Positioning System Based on Proportional Valve	787
Y.X. Shan	
Analysis and Judgment of the Local Loss Based on the Entropy Gradient	792
L.J. Wang, Q.S. Li and Y.P. Qian	
Mapping Matrix of Variable Cross-Section Roll Forming Based on Visual Detection	797
L.P. Sun, B. Qian and Y.Z. Guan	
Research on Mars Surface Image Visual Feature Extraction Algorithm	801
Y. Hou and G.C. Wang	
Reconfigurable Control Software for Additive Manufacturing Machines	805
J. Liu, Y.Q. Yang and Q.H. Lu	
A Quantitative Analysis of Lake Tourism Resource Value Based on AHP-Fuzzy Comprehensive Evaluation Method	809
Y. Zeng and X.P. Bao	
Reliability Enhancement Test of Detection and Control Unit	815
Q. Su, Y.Y. Hu and J. Yao	
Numerical Study of Droplet Formation Time on Solid Surface	820
B. Dwiyantoro	
Dynamic Target Tracking Based on Particle Filter in Actual Environment	824
T.D. Chen, C. Lu and J. Hu	
Sea Bottom EM Field of M2 Tidal to Probe Upper Mantle Conductivity	828
Y. Xu, J. Xu and W.H. Zhang	
Research on Accounts Receivable Financing Model Based on E-Commerce Platform	832
G.P. Cheng and J.P. Tu	
Research on Electronic Equipment Fault Diagnosis Expert System Based on Embedded Linux	837
J.H. Zhang, L. Lei, J.F. Li, X.Y. Cui and Y. Wu	
A Multi-Tip Turning Tool Structure for Thin and Long Pieces	841
S.H. Wang and W.B. Chen	
Research on Dynamic Characteristics for Large Span Cable-Stayed Suspension Bridges with CFRP Cables	845
R.G. Liu, G.Y. Feng and B. Chen	

Research on the Parametric Design System for the Excavator Working Device	851
Y. Ding, M.H. Yuan and Z.Y. Dai	
COM Component Based on Matlab Algorithm for Speckle Processing	855
R.L. Zhang, F.S. Yu, T. Li, B.B. Jiao and G.L. Du	
Design and Analysis of a Novel Wavelength-Selective Waveguide Photodetector	859
F. Liu, Y.Q. Huang and F.Q. Hu	
An Ultrasonic Motor Precision Adjustable Speed Scheme Study and Analysis	865
M.F. Chen, P. Zou, G. Han and B.M. Hou	
Simulation of Airflow Motion in Jet Nozzle with Different Geometric Parameters	869
G.C. Zhu, S. Ibrahim, J. Militký, Y. Wang and D. Kremenakova	
Modeling, Analysis and Simulation of Bluetooth Process Based on SystemView	877
M. Chen	
The Motor Fault Diagnosis Based on Neural Network and the Theory of D-S Evidence	881
C.F. Sun, Z.S. Duan, Y. Yang, M. Wang and L.J. Hu	
Study on MR Imaging of Endothelial Progenitor Cells Labeled with the Complex of Super Paramagnetic Iron Oxide and Transfection	885
N. Chang, J. Zhang and J.S. Zhang	
Capillary Effects during Droplet Formation on the Solid Surface	889
B. Dwiyantoro	
Design for Laser Beam Cutting Machine Tools Integrated NC System	894
R.J. Lu, Z.J. Xu, Y. Liu, J.L. Shen and P. Li	
A Study on Fault Diagnosis of Gears Based on Local Mean Decomposition Method	899
Q. Pan, D.H. Xiao and T. He	
Soil-High-Rise Building Group Dynamic Interaction Considering Site Effect	903
Q. Ge, F. Xiong and Q.Y. Huang	
Self-Learning of Robots and the Model of Hamiltonian Path with Fixed Number of Color Repetitions for Systems of Scenarios Creation	909
A. Gorbenko and V. Popov	
Numerical Simulation for Effects of Running Surface Profile Structure in Piston Ring Group on Blow-By and LOC	913
D. Tang, H.M. Lv, M. Hu and S.D. Yao	
Mass Customization in the Tourism Industry of China	917
Z. Han and G.P. Cheng	
Application of AHP in Material Selection in Slope Protection Project in Riverway	921
C. Zhao and G.P. Cheng	
Electronic Equipment Fault Diagnosis Expert System Based on PDA/HPC	925
L. Lei, J.H. Zhang, W. Peng, Y. Wu and L.T. Li	
Study of Milling Thickness and Milling Force on Two Directions Ultrasonic Vibration Assisted Milling	929
Z.D. Li, B. Zhao, J.L. Tong and P. Duan	
Optimization of Electrode Structures of PZT Acoustic Energy Harvesters Fabricated on SOI Substrate	933
K. Tomii, S. Tomioka, S. Iizumi, K. Tsujimoto, Y. Uchida, T. Matsuda, S. Hagiwara, S. Miyake and Y. Nishioka	
A Magnetic-Assistance System as a Super Finishing Following Turning Machining	937
P.S. Pa	
Analysis of Coal Gangue Pollution Control Technology	941
Y.G. Liu, L.N. Yu and A.G. Zhou	