

Table of Contents

Preface and Organizing Committee

Chapter 1: Materials Engineering and Technologies of Material Processing

Effects of Process Parameters on Material Removal Rate and Arithmetic Surface Roughness in Rubber Carbon Black Cutting by EDM P. Potejana, E. Thavorn and C. Thongchattu	3
Mechanical, Metallurgical Characteristics and Corrosion Properties of Equal Channel Angular Pressing of Duplex Stainless Steel P.M. Ajith, P. Sathiya, K. Gudimetla and B. Ravishankar	9
Optical Properties of $\text{Cu}_{0.95}\text{Pt}_{0.05}\text{Fe}_{0.97}\text{Sn}_{0.03}\text{O}_2$ for <i>p</i>-Type Transparent Conducting Oxide Materials C. Ruttanapun, S. Kahatta, B.J. Boonchom, N. Vittayakorn, M. Thongkam, S. Kongteweelert, S. Woramongkonchai and P. Chaivasit	15
Recycling of Kaolin Processing Waste as Aggregate in Asphalt Concrete M.d.P.D. Ingunza, O.F.d.S. Júnior and C.G. Costa	21
Phase Structure, Microstructure and Electrical Properties of BiMnO_3-Doped $(\text{Na}_{0.515}\text{K}_{0.485})_{0.96}\text{Li}_{0.04}(\text{Nb}_{0.8}\text{Ta}_{0.2})\text{O}_3$ Lead-Free Ceramics P. Bomlai	27
Hydrothermal Synthesis of LiMnO_2 with Orthorhombic Structure as Cathode Materials H.Z. Hu, B.W. Pan and X.J. Hao	33
A New Synthesis of BaHPO_4 Precipitated by $\text{BaCO}_3\text{-H}_3\text{PO}_4\text{-NaOH}$ System at Room Temperature B.J. Boonchom, C. Ruttanapun, M. Thongkam, P. Chaivasith, S. Woramongkonchai, S. Kongteweelert and N. Vittayakorn	37
A Simple Route to Synthesize Ferromagnetic Binary Calcium Iron Pyrophosphate CaFeP_2O_7 Using Aqueous-Acetone Media C. Pachernchaipat, R. Chesta, T. Montree, K. Samart, W. Somsak and B. Banjong	44
Facile, Alternative Synthesis of Spherical-Like $\text{Ca}(\text{H}_2\text{PO}_4)_2\cdot\text{H}_2\text{O}$ Nanoparticle by Aqueous-Methanol Media S. Kongteweelert, C. Ruttanapun, M. Thongkam, P. Chaivasith, S. Woramongkonchai and B.J. Boonchom	49
Synthesis and Characterization of Poly(Ethylene Terephthalate) / Al_2O_3 Nanocomposites S.K. Lim, W.M. Choi, H.J. Choi, S.H. Hong, S.H. Hwang, S.H. Kim, S.H. Lee and K.W. Kim	54
Investigation of Nanostructures Materials from Rice Husk Ash by Thermal Process K. Jantasom, P. Somrud, S. Noothongkeaw, K.S. An, U. Tipparach and S. Pukird	58
Optimization of Post Weld Aging on Duplex Stainless Steel UNS31803 Grade with 2^3 Factorial Designs P. Peasura and N.A. Santirat	62
Influence of Microporosity Morphology on Hot Compression Behavior of 6063 Alloy X.H. Li, Y.H. Cao, L.Z. He, Y.P. Guo and J.Z. Cui	67
Influence on the Productivity of Modern Thermoset Preheating in the Compression Molding Technology T. Duranik, J. Ružbarský and M. Stopper	74
Phase Transformations and Photocatalytic Activity of TiO_2 Powders Preparation via Microwave-Assisted Sol-Gel Method W. Sangchay, P. Chantawee and W. Madtharak	79
Surface Properties of Different Travel Speeds and Powder-Feeder Rates for Plasma-Sprayed Coatings on Aluminum Substrates M.D. Jean and M.T. Sheen	84
Chemical Grafting of New Poly(Aminophenyl Bornoic Acid) Chains onto the Surface of Silica Nanoparticles B.H. Chang, S.H. Lee, A.I. Gopalan and K.P. Lee	90

Photocatalytic Activity of Fe/Ti Mixed Oxide for Degrading Humic Acid in Water I.H. Kim, W.S. Kim and D.S. Rhee	95
Preparation of Titanium-Oxide-Coated Polypropylene Granules for Photooxidation of Organic Pollutant H.S. Shin and D.S. Rhee	101
Preparation and Characterization of Silica Aerogel Immobilized with Cyanex 301 for Extraction of Zn(II) N. Begum, M.F. Bari, S.S.B.C. Abdullah, K.R. Ahmad and N. Ahmed	108
Study on Schottky Diode Characteristics Improving by X-Ray Irradiation S. Klinsanit, I. Srithanachai, S. Ueamanapong, S. Khunkhao, B. Nararug, C. Suriya-Amaranout and S. Niemcharoen	113
Carrier Lifetime of Platinum Doped P-N Diode after Irradiation by Soft X-Ray B. Nararug, I. Srithanachai, S. Ueamanapong, S. Khunkhao, S. Janprapha, T. Thongnak, N. Atiwongsangthong and S. Niemcharoen	117
The Effect of X-Ray Irradiation on the Electrical Properties of Pt-Doped P-N Diode S. Janprapha, I. Srithanachai, S. Ueamanapong, S. Khunkhao, T. Thongnak, S. Klinsanit and S. Niemcharoen	121
Effect of Junction Shape on Diode Properties A. Chalamnongnoot, W. Itthikusumarn and W. Titiroongruang	125
Physical Properties of $KY_{1-x}Er_xF_4$ Investigated by Photoluminescence T.R. Park	129
Synthesis and Characterization of $ALaFeNi_{0.5}W_{0.5}O_6$ (A= Sr or Ca), a New Structure Distorted Double Perovskite A.A. Allah, M. Elhadi and O.A. Yassien	133
Radiolytic Synthesis of Pt-M@MWNT Catalysts (M=Ru, Sn, and Au) for Biosensors H.D. Kwen and S.H. Choi	139
The Effect of the Central Metal Atom on the Structural Phase Transition of Indium Doped Metal Phthalocyanine S. Rojanasuwan, P. Prajuabwan, A. Chanhom, A. Jaruvanawat, A. Rangkasikorn and J. Nukeaw	146
Guided Modes of Positive and Negative Group Index in the Honeycomb Photonic Crystal Waveguides W. Amorntep and P. Wanchai	153
An Improvement of the Breakdown Voltage Characteristics of NPT-TIGBT by Using a P-Buried Layer P. Manosukritkul, A. Kerdpardist, M. Saenlamool, E. Chaowicharat, A. Poyai and W. Titiroongruang	158
Optimization of Mechanical Properties of Plasma Spraying Ceramic Coatings Using Artificial Intelligent Approaches M.D. Jean	164
Research Progress on Water-Using System Integration Methods C.H. Pan, Z.Y. Zhao, H.Y. Wang and C.F. Dong	170
Multiscale Analysis and Morphology of TiC Films Deposited by Pulsed Laser Ablation L. D'Alessio, G. Pace and R. Teghil	177
Melting Temperature of FeO under Pressure S. Zhang and L. Chen	184
A Study on the Shear Characteristics of Fine Blanking for Al 5052 and Eco-Al 5052 Sheet J.D. Kim, Y.M. Heo, S.T. Won and H.K. Kang	188
Slurry Erosion Model for Wear Performance Prediction of Tool Steel P. Nunthavarawong	194
Flow Stress Model Based on Internal Variables D. Svyetlichnyy, J. Nowak and A. Mikhalyov	200
Research on the Preparation Technology of GaN Ultraviolet Photoelectric Detector Y.Y. Sun, X.H. Zhang, Q.R. Jia, Z. Li and S.B. Liu	205
Microstructure Analysis of Post Weld Aging in Duplex Stainless Steel Welds S. Nansa-Arng and P. Peasura	210
Analysis on the Residual Stresses in Functionally Gradient Fe360/Glass-Ceramic Coatings L.M. Zhou, W. Gong and E.Z. Wang	215

Influence of Grain Size and Rolling Direction on Stress Measurement by Ultrasonic Surface Wave (Part 2)	
P. Preedawiphat, A. Prateepasen and M. Noipitak	221
Influence of Material Coating on Stress Measurement by Ultrasonic Surface Wave (Part 1)	
P. Preedawiphat, A. Prateepasen and M. Noipitak	227
Polar Probe Study of Water-Organic Solvent-Macromolecule Emulsifier Aggregates Structure	
H.J. Zhang	233
The Potential Application of Light-Emitting Diode on Biodecolorization of Azo Dye	
W.T. Wu	240
Binding as a Rate-Limiting Step for Substrate Recognition of ADAM17	
L. Sen and X.H. Ma	244
Osteosynthesis Material Failure: Poor Fixation or Material Defect	
C. Cirstoiu, R. Ene, D. Popescu and M. Cirstoiu	249

Chapter 2: Materials and Technologies in Construction

Sensitivity Analysis of Factors Affecting Asymmetric Deformation of Roadways in Steep Inclined Coal Seam	
L. Fan, J.C. Zhong, B. Han and M. Dong	255
The Effect of Cast-In-Place Floor Slab on Strong Column-Weak Beam Mechanism of RC Frame Structures	
H. Jin	261
The Design and Analysis of the H Beam Structure Cup Support for Weighing Large Structure	
J.B. Zhang	266
Theoretical and Numerical Study on a New Hybrid FRP Wrapped Anchor	
K. Zhang, B.L. Zheng and Q. Yang	271
Experimental Studies on Transfer Beam Supported Frame Equipped with Fiber Reinforced Plastics Bars	
J. Chen, S.Y. Jiang, Z.K. Lin, Y.T. Li, X.R. Zeng, W. Wang and S.N. Zheng	277
Fiber Concrete Research on Different Fiber Volume Dosage	
S.G. Wen	283
Early Strength Fiber Mortar Test Research	
A. Teng	287
Analysis of Deformation in Widening Project of Expressway by Finite Element Method	
T. Ai	290
Evaluation on Quality of Cement Concrete in Pavement of Highway	
L.H. Yu, S.X. Zhou and W.W. Deng	295
Seismic Fragility Analysis of RC Industrial Frames Based Stochastic Vibration	
P.J. Chang and J. Zhu	301
Analysis on Thermal Measuring of Rooftop Farming Garden a Case Study of Julong Residential District in Zhongshan	
J.Y. Wu, M.X. Liu and L. Xiao	306

Chapter 3: Mechanical Engineering

Study on Defect Detection Based on D-S Evidential Reasoning in Natural Gas Pipeline	
J. Li and H.W. Guo	315
Experimental Testing of the Composite Energy Absorber	
V. Štáňel, V. Kulíšek and M. Růžicka	320
Application of Antiwear Pipelines in Thermal Power Plants	
C.H. Pan, L.J. Diao, H.Y. Wang and M.M. Fu	325
Comparison of IMD Symmetry and Asymmetry Model in Power Amplifier Based on Multisine Excitation	
Y.K. Park, M.G. Lee, K.K. Jung and J.J. Yoo	328

Discuss of Unmanned Plane Braking Experiment Base on Eddy Current Technology W. Chen, C.Z. Su, X. Zhang and Y.F. Song	333
A Study of Design and Application of Solar Energy Power Supply System in Highway Tunnel Lighting X.D. Chen, D.F. Chen and F.J. Zhang	338
Numerical Simulation of Chemical Non-Equilibrium Flow in Hydrocarbon Fuel Scramjet Nozzle B. Zhang, B. Yu, H. Liu and F. Chen	342
Analysis of Fault Diagnosis Methods of Machine Tool Hydraulic System C.H. Pan and H.D. Wang	347
Study on Flywheel Rotating System Using Aerodynamic Energy of Running Vehicle J.J. Lee, J.W. Kim and J.K. Lim	350
Numerical Simulation of Filling Process in HPDC by Lattice Boltzmann Method W.J. Cao, S.B. Dong, X.W. Lu and Z.Y. Zhou	354
Improved Calibration Method of Amplitude and Phase Errors Based on Diagonal Loading M.R. Anjum, P.L. Yin, P.F. Shi and F. Ismail	359
Methods Development for Realization of Local Vibration S.H. Kang	365
Improving the Performance of Content-Locality Based Storage Management K.K. Jun, K.R. Lee, S.H. Kang and G.G. Jeon	370
Maintenance of Hydraulic Systems on Machine Tools H.Y. Wang and C.H. Pan	375
Development of Method for Measurement Sound Pressure Level to Use Earphone S.H. Kang and H. Moon	378
Application of Portable Ultrasonic Phased Array Instrument for Rail Welds Ultrasonic Inspection J.J. Lao and C. Lu	384
Analysis of Data-Driven Prediction Algorithms for Lithium-Ion Batteries Remaining Useful Life L. Jiang, W.M. Xian, B. Long and H.J. Wang	390
An Elastic Solution of a Functionally Graded Cantilever Beam with Different Modulus in Tension and Compression under Uniform Pressure Q. Yang, B.L. Zheng, K. Zhang and J.X. Zhu	396
Numerical and Experiment Study of Residual Stress and Strain in Multi-Pass GMA Welding R.R. Chand, I.S. Kim, J.H. Lee and J.S. Kim	403
Flexural Response Analysis of Partly Overlapped Piezo Sensor and Actuator on an Infinite Beam Y.S. Lee	410
The Predictor-Corrector Method for One-Dimensional Stiff Detonation Capturing B. Zhang, J.H. Wang, H. Liu and F. Chen	415

Chapter 4: Artificial Intelligence, Data Mining and Data Processing

Research on Gas Load Forecasting Using Artificial Neural Network W.Y. Shi	423
A Java-Based Package for Genetic Algorithm S.P. Qiao and B.Q. Yan	428
A Novel Hybrid Optimization Method of Shuffled Frog Leaping Algorithm and Particle Swarm Optimization M.J. Lin, F. Luo, Y.G. Xu and L. Luo	433
Emotion Intelligence Computation Based on Matrix Description of State Machine X.F. Shi and T. Feng	439
Research and Implementation of Vehicle-Logo Recognition Based on Modified Invariant Moments M. Huang, G.F. Yang, Y.Q. Ma and Y.M. Wang	444
Quantitative Models for Computing Distance and Directions: A Raster-Based Approach Z.Y. Sha	449

Bio-Inspired Algorithm for the Shortest Path According to the Maximum Time for Each Trial	
S.G. Lee and S.W. Lee	455
Multi-Objective Optimization of Order Oriented Mixed-Model Assembly Line Sequencing Problem	
Z. Li, Z.L. Jiang and Y.M. Liu	460
A Priority-Based Weighted Inner Products Matching Coarsening Algorithm on Multilevel Hypergraph Partitioning	
Y.Y. Zeng, W.T. Zhao and Z.H. Wang	466
A Multi-Language Speech Recognition Method Based on Confidence Bayesian Decision-Making	
Y. Jie	475
The Application of Matrix Partial Order in the Comparison of Linear Model	
S.Y. Liu	481
Multi-Scale Seamless Visualization of the Global Terrain Based on DQG	
H.J. Yu, Y.L. Li, Z.J. Chen and T. Xiong	486
Image Reconstruction on Quincunx Patterned Green Channel	
G.G. Jeon	493
Performance Analysis on Yamanaka Patterned Color Filter Array	
G.G. Jeon	497
Optimally Determined Modified Bayer Color Array for Imagery	
G.G. Jeon	501
A New Error-Diffusion Dithering Kernel for Image Halftoning	
G.G. Jeon	506
Face Alignment for Robust to Background and Occlusion Using Variation of 3D Reference Shape	
S.H. Kang	511
Differences of Human Reading Mode between Reading a Story and Statistical Information: An Eye Movement Study	
Z. Liu, S.F. Lu, M. Li, Y. Zhou, K.M. Wang, X. Tan, T. Shang and N. Zhong	517
A Solution for Image Matching Error in SURF	
X. Xiong and B.J. Choi	523
Sensor Noise Assessment Approach in a Patterned Region	
G.G. Jeon	529
A Neural Network-Based Algorithm for Group Technology	
K.S. Choi	533

Chapter 5: Applied Solutions in Automation, Control and Mechatronics

Effect of Integral Feedback Control Forbeam Tip Pointing	
Y.S. Lee	541
An Improved AIMD Algorithm for Wireless Cellular Video Transmission	
C.N. Dai, C.Y. Zhang and Y.B. Wang	546
Synthesis Method of Fault Tolerant Control System for Manipulators	
V. Filaretov, A. Zhirabok, A. Zuev and A. Procenko	551
A Hybrid of Force and Position Control with Energy Saving in the Electro-Hydraulic System	
P. Pornjit and J. Aphaiwong	557
Method of AC Servo System Based on Genetic Algorithm and Neural Network PID Control	
W.C. Chang and C. Chen	563
Research on the Design of Smart Home Control System	
X.B. Wang, S.J. Wang, W.S. Yu and Q.J. Wang	568
Method of Semiautomatic Position Control by Manipulator Using Telecamera which Changes its Orientation	
V. Filaretov and A. Katsurin	573
Kanembedded Control of Sub Cyclic Ac Chopperwith High Speed and Low Switching Losses	
E. Kanniga and M. Sundararajan	579

Design of Intelligent System for Soccer Goal Detection Based on Opto-Electronic Technology Q.L. Zhang, X.M. Tian and Z.L. Meng	585
Active Visual Sensor Based Weld Seam Tracking for Underwater Wet Welding B. Chen, C.B. Jia and J.C. Feng	588
Development of Exoskeleton Suit for Rehabilitation S. Panich	592
Modeling for a System Operating Characteristic for Wide Area Mines Y.J. Rong, P. Sun and S.S. Li	598
Research Based on the Position Control Wizard of S7-200 L.X. Wang, Z.R. Feng and Z.M. Liu	603
The Electronic Counting System Design Based on Single Chip Microcomputer X.L. Wang and B. Wang	608
Optimization of Industrial Processes in Reactors M. Berdiyeva, A. Ospanova and M. Othman	613
Estimation of Reduced Standby Power in Household Considering Occupancy Information M.G. Lee, Y.K. Park and K.K. Jung	619
Extensive Particle Swarm Ant Colony Algorithm for the Optical Fiber Phase Sensor with ZnO Coating X.T. Zhang, L. Zhou and Y. Zhou	625

Chapter 6: Information Technologies and Computer Technics

Utilizing the Binary Field to Optimize the Performance of the Relational Database Y.X. Zhou and X. Wang	633
Developing a Cause and Effect Model of ISSM and TAM in Ecotourism Virtual Communities by Applying DEMATEL Method H.M. Chuang, C.K. Lin and Y.S. Chen	638
An Implementation of Teaching Process Control System Based on Java S.P. Qiao, P. Wu and L. Zhao	644
Design and Implementation of Collaborative Editing System Based on Web X.X. Wang, J.C. Pan and X.X. Zhang	649
Malicious Information Jamming Algorithms of Content Attack C. Yang, X.G. Zhou and Y. Sun	655
Statistical Analysis of the Massive Traffic Data Based on Cloud Platform H.F. Sun, Y. Li and H. Lv	662
An Algorithm of XML Algebraic System Based on the Distributed Open Computing Model Y. Li and H.F. Sun	667
Application of Computer Virtual Technology in Metal Packaging Design L. Dan and H.W. Ping	672
TCLOUD: A Reliable Data Storage Architecture for Cloud Computing S. Ullah, X.F. Zheng and F. Zhou	677
TCLOUD: Inter - Node Communication Model Based on Social Trust Framework for Cloud Computing S. Ullah, X.F. Zheng and F. Zhou	688
A Method for Mobile Photo Recommendation S.H. Kang	696
Proposal of Mashup Framework for End Users T. Koita and S. Nomura	702
Personalized Mobile Catering Recommender System Based on Context Ontology Model and Rule Inference D.X. Ai, H. Zuo and J. Yang	708
A Novel Three-Dimensional Recommendation Approach for C2C E-Commerce Platform D.X. Ai, H. Zuo and J. Yang	714
Digital Image Watermarking Program Q.J. Wang and X.B. Wang	720

Research on the Web Service Selection with Constraints Based on QoS S.J. Qin and W. Li	726
A Novel Qt-Based FMECA Platform: Methodology and Architecture S.K. Yang and G.Q. Li	732
Research on Construction of Database Domain Ontology X. Jiang, Y. Liu, Y. Zhang, Z. Fang and D.P. Dang	736
Process-Based Assembly Technical Annotation Management in 3D Assembly Instruction J.H. Geng, X.T. Tian and B. Yang	742
Cache-Enabled Metadata-Aware Storage in Linux Systems K.K. Jun and S.J. Myung	749
Modified TZ Search Method for Motion Estimation in Multi-View Video Coding H.S. Yoon and M.Y. Kim	754
Analyzing Push Schemes for Social Networking Services in Wireless Networks by Using Monte Carlo Simulations K.K. Jun	760
A Cloud-Based Tele-Rehabilitation System for Frozen Shoulder S.C. Yeh, S.H. Lee, Y.J. Fank, Y.H. Gong, J.H. Lin and Y.C. Hsieh	766
Intra and Inter Language Control for French to Arabic Machine Translation in the Security Domain M. Beddar	772
Collaborative Learning in Social Networking Sites: A Case Study on the Use of Mahara G.S. Ching	778
Application of the Multimedia Teaching in Martial Arts Training Y. Peng	784
A Multi-Server Erasure Code Algorithm Based on the Degree of Restriction J.W. Ge, A.H. Miao and Y.Q. Fang	789
Design of Hardware Trojan Applying on Cryptogrammic-Board for PC H.T. Sun, J. Liu, Z.P. Liu and X.L. He	794
An Improved CAMSHIFT Tracking Algorithm Applying on Surveillance Videos S.H. Yen, J.C. Chien and H.T. Lin	797
The Research on Label Propagation Algorithm and Improvement Based on Local Information Mechanism Y.J. Deng	803
A Study on Rumor Propagation Model on Micro-Blogging Platforms Y. Zhang and Y. Guo	808
The Practice of Constructing the Characteristic Database of the Library under the Network Environment J.Y. An	812
Data Collection for Medical Data Warehouse Research Y.K. Chen and T.X. Zhao	816
The Study of Construction Bill of Quantities Pricing System Based on Software Reuse-Based X.B. Wang, S.J. Wang and Q.J. Wang	820
Security Evaluation on Speech Biometric Authentication System K. Inthavisas and N. Sungprasert	826
Research on the Design Method of Combat Action Military Concept Model in Digital Battlefield Z.P. Liu, S. Li and J. Liu	832
Research and Development of the Computer Aided RCM Analysis System Database Z.P. Liu, Z.H. Cheng and S. Li	838
Zero Based Research on Text Watermark Algorithm Q.J. Wang and S.J. Wang	844
Hardware Rules and Improved S-Box on AES S.Y. Zhang, G.L. Chen, L. Fan and J.H. Li	849
Design and Implementation of Workflow Creation and Scheduling Mechanism on Collaborative System X.X. Zhang, J.C. Pan and J. Wang	854

Research on Intrusion Clustering in the Cloud Platform Based on Kohonen Neural Network T.Y. Zhou	859
Understanding the Responsiveness of Open Loop Rate Adaptation Algorithms of IEEE 802.11 WLAN K.K. Jun	864
Transmission of Accurate Time Information Using Photonic Services J. Vojtech, V. Smotlacha and P. Skoda	870

Chapter 7: Engineering Management

Whole Life Cycle Costing and Quality Satisfaction: Public Housing Floor Material N.A. Mat Noor	877
The Application of Task-Driving Method in the Teaching of Mechatronics Design X.L. Wang	884
Reliability of Safety Instrument System Based on Markov Model and D-S Evidence Theory D.B. Pan, H.L. Yuan, P.F. Xu and F. Liu	888
On the Application and the Development Trend of Mechatronics Technology H.Y. Wang and C.H. Pan	895
Thermal Power Plant Bidding Strategies IDSS Analysis and Design H.F. Sun, W. Hou, Y.Y. Wang and R.L. Lu	899
Research on the Evaluation Index System of ERP Implementation Performance Based on the Fuzzy Algorithm H. Lv and L.L. Dong	904
Application of Water Poverty Index in the Reclamation Regional Water Security Evaluation N. Jiang, X.F. Yu and L.L. Chu	909
Study on the Structure of Program Management Information System J.C. Feng, Z.S. Dong and D.H. Zhuo	914