

Advance Materials Development and Applied Mechanics

Edited by

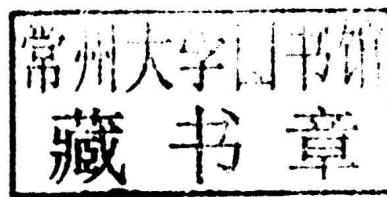
Keishi Matsuda, P.S. Pa and Wiseroad Yun



TRANS TECH PUBLICATIONS

Advance Materials Development and Applied Mechanics

Selected, peer reviewed papers from the
3rd International Conference on
Advanced Materials Design and Mechanics
(ICAMDM2014),
May 23-24, 2014, Singapore



Edited by

Keishi Matsuda, P.S. Pa and Wiseroad Yun



Copyright © 2014 Trans Tech Publications Ltd, Switzerland

All rights reserved. No part of the contents of this publication may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland
<http://www.ttp.net>

Volume 597 of
Applied Mechanics and Materials
ISSN print 1660-9336
ISSN cd 1660-9336
ISSN web 1662-7482

Full text available online at <http://www.scientific.net>

Distributed worldwide by

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland

Fax: +41 (44) 922 10 33
e-mail: sales@ttp.net

and in the Americas by

Trans Tech Publications Inc.
PO Box 699, May Street
Enfield, NH 03748
USA

Phone: +1 (603) 632-7377
Fax: +1 (603) 632-5611
e-mail: sales-usa@ttp.net

Applied Mechanics and Materials

ISSN: 1660-9336, ISSN/ISO: Applied Mechanics and Materials

Editors:

Publishing Editor: **Thomas Wohlbier**, 105 Springdale Lane, Millersville,
PA 17551, USA, t.wohlbier@ttp.net

Xi Peng Xu, Huaqiao University, Ministry of Education Engineering Research Center for
Brittle Materials Machining, Xiamen, 361021, China, xpxu@hqu.edu.cn

Aims and Scope:

Applied Mechanics and Materials is a book series specialized in the rapid publication of proceedings of international conferences, workshops and symposia as well as state-of-the-art volumes on topics of current interest in all areas of mechanics and topics related to materials science.

Internet:

The periodical is available in full text via www.scientific.net

Subscription Information:

Irregular: approx. 80-100 volumes per year. First volume in 2014: Vol. 440

The subscription rate for web access is EUR 1089.00 per year.

Standing order price for print copies: 20% discount off list price plus postage charges.

ISSN print 1660-9336 ISSN cd 1660-9336 ISSN web 1662-7482

Trans Tech Publications Ltd
Churerstrasse 20 • 8808 Pfäffikon • Switzerland
Fax +41 (44) 922 10 33 • e-mail: ttpl@ttpl.net
<http://www.ttp.net>
<http://www.scientific.net>

Advance Materials Development and Applied Mechanics

Edited by
Keishi Matsuda
P.S. Pa
Wiseroad Yun

Preface

Dear Distinguished Authors and Guests,

The Organizing Committee warmly welcomes you to 2014 the 3rd International Conference on Advanced Materials Design and Mechanics (ICAMDM2014) (TTP Conference ID: 1039), held on 23-24 May, 2014 in Singapore.

The aim of 3rd ICAMDM2014 is to present the latest research and results of scientists (professors, students, PhD Students, engineers, and post-doc scientist) related to Advanced Materials Design and Mechanics topics. This conference provides opportunities for the different areas delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration.

After the peer-review process, the submitted papers were selected on the basis of originality, significance, and clarity for the purpose of the conference. The selected papers and additional late-breaking contributions to be presented as lectures will make an exciting technical program. The conference program is extremely rich, featuring high-impact presentation. We hope that the conference results constituted significant contribution to the knowledge in these up to date scientific field.

The proceeding records the fully refereed papers presented at the conference. The main conference themes and tracks are Advanced Materials Design and Mechanics: Nanomaterials and Technologies, Advanced Material, Composite Materials and it's Applications and Technologies, Films, Coating and Surface Engineering and Other topics. Hopefully, all participants and other interested readers benefit scientifically from the proceedings and also find it stimulating in the process.

On behalf of the organizing committee, I would like to especially thank Dorthe, Sandra, Anne, Tanja and all the editors from Trans Tech Publications for their great support to 3rd ICAMDM2014. Without their excellent editorial work, 3rd ICAMDM2014 will not be published so timely and successfully.

Finally we wish all the authors and attendees of 3rd ICAMDM2014 a unique, rewarding and enjoyable memory at 3rd ICAMDM2014 in Singapore. We look forward to your participation in the 4th ICAMDM2015 in 2015.

With our warmest regards,

Keishi Matsuda, P. S. Pa, Wiseroad Yun
Conference Organizing Chair

June 10, 2014

Committees and Sponsors

Committees

Conference Chair

Jing Guo, Harbin (Dalian) Section CIS Chapter, China

Workshop Chairs

Wen-Fang Yen, Hwa Hsia Institute of Technology, Taiwan

Jing Guo, Harbin (Dalian)Section CIS Chapter, China

Ching-Kuo Wang, Taiwan Society of Android Robotics, Taiwan

Technical Program Committee Chairs

Ching-Chih Kuo, Hwa Hsia Institute of Technology, Taiwan

Wen-Jieh Wang, Hwa Hsia Institute of Technology, Taiwan

Technical Program Committee Chairs

XinSheng Peng, Zhejiang University, China

BaiDa Zhang, National University of Defense Technology, China

Hanchen Huang, University of Connecticut, USA

George Baciu,The Hong Kong Polytechnic University, HongKong

Daoheng Sun, Xiamen University, China

Xie Xiaohui, Shenzhen institutes of advanced technology, Chinese academy of sciences, China

Qing He, North China Electric Power University, China

Miaolei Zhou, Jilin University, China

Desheng Li, Anhui Science and Technology University, China

Zhixin Yang, University of Macau, Macau

International Program Committee Chair (UK)

James B.P.Lim, Queen's University Belfast, UK

International Program Committee Chair (Canada)

Quan Wang, University fo Manitoba, Canada

International Program Committee Chair (South Africa)

Ratnam Paskaramoorthy, University of the Witwatersrand, South Africa

International Program Committee Chair (Japan)

Keishi Matsuda, Matsuyama University, Japan (Guest Editor)

Tao Liu, Kochi University of Technology, Japan

Yasushiro Nishioka, Nihon University, Japan

Ikuro IHARA, Nagaoka University of Technology, Japan

International Program Committee Chair (Korea)

Kyoungjin Kim, Kumoh National Institute of Technology, Korea
Hwa-Young Jeong, Kyung Hee University, Korea
Hyun-Do YUN, Chungnam National University, Korea
Park Wan-Shin, Chungnam National University, Korea
Wiseroad Yun, Chungnam National University, Korea (Guest Editor)

International Program Committee Chair (Taiwan)

Chiung-Hui Chen, Department of Digital Media Design, Asia University, Taiwan
JiaShiun Chen, National Taipei University of Technology, Taiwan
Hao-En Chueh, Yuanpei University, Taiwan
Wen-Tsai Sung, National Chin-Yi University of Technology, Taiwan
Yung-Tse,Tsai,National Chiayi University,Taiwan

International Program Committee Chair (Malaysia)

CheeFai Tan,Universiti Teknikal Malaysia Melaka,Malaysia
Mohd Sapuan Salit, Universiti Putra Malaysia, Malaysia

International Program Committee Chair (India)

C.N.Ashok Kumar, VIT University, India
Sreenivasan M, GKM College of Engineering & Technology, India
Sukumar Puhan, GKM College of Engineering & Technology, India
M. Sreenivasan, GKM College of Engineering & Technology, India

International Program Committee Chair (Thailand)

Komson Jirapattarasilp, King Mongkut's University of Technology Thonburi, Thailand
Anuchit Uchaipichat, Vongchavalitkul University, Thailand



Table of Contents

Preface	v
Committees and Sponsors	vi

Chapter 1: Nanomaterials and Technologies

The Study of High Efficiency Photovoltaic Devices with Metal Nanoparticles L.Z. Hsieh, M.H. Lin and X.M. Duan.....	3
Thermal Bubble Nucleation in a Nanochannel: An Experiment Investigation M. Chen, K.P. Jiang, D.W. Jiang, D.D. Chen and Y.F. Zhao.....	7
Effect of Cosurfactants on Pore Sizes of Continuous Highly Ordered Mesoporous Silica Nanofibers Y. Zhou, W.P. Zhang, G. Wang, Y.Q. Zhang, J.H. Cao and D.Y. Wu	13
Influence of Uniaxial Stress on the Stress-Strain Curve Measured by Nanoindentation I. Ihara, K. Ohtsuki and I. Matsuya.....	17
The Preparation and Characterization of ZnO/Graphene Nanocomposites Z.P. Wang, G.L. Wu and Y. He	21
Study of Nano Coating Micron Calcite Reaction Process and Influence Factors N.B. Huo, S. Liu and X.J. Jia.....	28
Resistances of Nano-Titanium Dioxide on the Ultraviolet Aging of Poly(butylene succinate) L. Liu, Y.R. Wang, Y.P. Zuo, D. Liu and B.H. Guo	32
Advances of Study on the Developments and Applications of Carbon Nanotubes A.Y. Zhang.....	36
Monte Carlo Simulation of the Dispersion of Carbon Nanotubes in Cement Matrix B.M. Wang, Y. Zhang, M.L. Yu and Y. Han.....	40
Preparation and Antibacterial Activity of Silver Doping Nano Zinc Oxide Q. Li, X.H. Zhao, X.W. Li, L.P. Wang, Q.Q. Liu and C. Zhang.....	45
Preparation of Amorphous Silicon Carbide Nanostructures via Solvothermal Method H.X. Li, G.Y. Li, T.J. Hu, X.D. Li and Y.Q. Yang.....	49
Doped TiO₂ Nanotube for Lithium Ion Battery X.X. Hu, J.X. Liu, Z.Y. Wu, X.R. Zheng and M. Ma	53

Chapter 2: Advanced Material, Composite Materials and its Applications and Technologies

Information Systems for Composite Materials: Requirements and Challenges W. Dangelmaier, T. Sommer-Dittrich, J. Streichhan and M. Monhof.....	59
---	----

Mechanical Properties of DGEBA/Amidoamine Blend at Non-Stoichiometric Ratios	63
B. Satheesh, N. Warrior and K.Y. Tshai	
Research on Adsorption Kinetics Models' Fitting Values of H₂O₂ Oxidated Loofah Sponge on Methylene Blue	72
Y.H. Dou, Y.W. Wang, X.H. Zhao, Y. Wang, X.W. Li, M. Wang, Q. Li and Q. Li	
Thermal Tuning of Vibration Band Gaps in Thin Phononic Crystal Plates with Nitinol	78
H.J. Zhao, R.Q. Liu and H.W. Guo.....	
Synthesis of Cu₂ZnSnSe₄ Compounds Using Solvo-Thermal Method	84
C.S. Chou, J.W. Jhang, P. Wu and W.H. Lu.....	
The Effect of Guide Sleeves on Shear Behavior of 3D Weaving Composites	89
X.C. Wu, Z.D. Shan, F. Liu and Y. Wang	
The Microstructure and Mechanical Properties Research of FeCrWMoV-Series High Temperature Self-Compensation Lubricating Composite Materials	95
Y. Han, Y.J. Wang, S.R. Wang and G.J. Xue	
Continuously Large-Scale Preparation of Multi-Layer Graphene Grown on Polycrystalline SiC Microspheres	99
J. Ma, G.Y. Li, Z.Y. Chu, T.J. Hu, Y.H. Li and X.D. Li	
Effects of Mechanical Alloying on Microstructure and Properties of Powder Injection Moulded SiC_p-Reinforced Aluminium Composite	103
T. Patcharawit, S. Klahan, P. Rupkrathok and N. Chuankrerkkul	
Hydrothermal Synthesis and Upconversion Properties of Yb³⁺, Tm³⁺ Co-Doped Gd₆MoO₁₂ Phosphor with Regular Morphologies	109
J.Y. Sun, B. Xue, Q.M. Di, Q.G. Xu and L. Han.....	
A First-Principles Study of Electron-Phonon Coupling of OsB₂	113
Y.Q. Wang, J. Gao and S.P. Yan	
Photoluminescence and Energy Transfer from Sm³⁺ to Eu³⁺ in Na₃YSi₂O₇ Phosphor for Light-Emitting Diodes	117
J.Y. Sun, D.P. Cui, Q.M. Di, Q.G. Xu and L. Han	
Compressive Properties of Corevo® Foam under Uni-Axial Loading Based on Experimental and Numerical Analysis	121
M.A. Sulong, V. Mathier, T. Fiedler, I.V. Belova and G.E. Murch	
Fine Spin Filtering Effect in Co-Phthalocyanine Molecule Induced by the Spin Polarization of Co Atom	127
Y.H. Zhou, X.H. Qiu, L.L. Zhou and Y.L. Peng	
Recent Developments in Molecularly Imprinted Solid Phase Extraction Technology	131
G.J. Shen and H.Y. Pei.....	
Effect of Cooling Rate on the Microstructures and Mechanical Properties of Mg-Y Alloys	135
G.C. Sim, K.S. Tun, X.H. Tan, C.K.J. Weng, K.W.R. Onn, M. Gupta and T.K. Lee	
Observation of Corrosion Resistance of 13Cr-2Ni-2Mo Stainless Steel Quenched by Induction Heating	140
K. Kida, K. Okamoto, M. Ishida, K. Mizobe and T. Shibukawa	
Study on the Use of Fleshings-Derived Collagen in Post Tanning Operations	144
M. Puccini and D. Castiello	

Chapter 3: Films, Coating and Surface Engineering**Ionic Distribution in Plasma for the Process of Electron-Beam Physical Vapor Deposition**

C.Y. Ho and W.C. Wu 153

Flaking Initiation Life under Rolling Contact Fatigue of Ceramic Coated Steels Quenched after Coating Process

H. Tanabe, K. Ogawa, M. Nishizawa, Y. Izumi and T. Takamatsu 157

Preparation, Characterization and Dielectric Property of Novel Poly(cyanate ester) Thin Films

X.Y. Zhao, Z.Y. Sun and M.Z. Wang 161

The Influencing Factors for the Thickness of Silica Sol-Gel Film by the Dip Coating Process

J.H. Lei and R.D. Zhang 165

Preparation and Properties of Pyrolytic Carbon Coating on Carbon Materials Used in Czochralski Single Crystal Silicon Furnace

W. Zhao, B. Zhu and W.W. Cao 170

Effects of Laser Parameters on the Formation of Al₂O₃-TiC Coating by Laser-Assisted Combustion

C.X. Lu, H.P. Li, P. Chen, L.H. Xue and Y.W. Yan 175

A Study on the Resistive Switching of La_{0.7}Sr_{0.3}MnO₃ Film Using Spectromicroscopy

H.S. Lee, K.M. Kang, W.J. Han, T.W. Lee, C.S. Park, Y.J. Choi and H.H. Park 184

The Production of ITO Transparent Conductive Materials and the Development Prospect in the Field of Biological Information

J.J. Liu, H. Men, Q.T. Zheng, W.K. Jiang, H.H. Gao and X. Zhao 188

Chapter 4: Machining and Forming Materials Technologies, other Manufacturing Technologies**A Method to Select Optimal Cutting Force Model Using the Measured Process Transfer Function**

M. Zhu, X.X. Yu, W.W. Xiao and K.M. Mao 195

A Pre-Processing Method of ProCAST Based on Pro/E and HyperMesh

W. Huang, H.M. Shen, M.J. Hu, S. Li and X. Chen 203

Assessment of the Influence of Welding Parameters on Distortion

F.R. Locatelli, W.J.P. Casas and R.F.L. Filho 208

Design and Optimization of Honeycomb Corrugated Chaff Forming Roller

X.P. Yang, B. Zhong and C.J. Luo 213

Effect of Backplate Thermal Diffusivity on Mechanical Properties of Double Sided Friction Stir Welded Aluminum for Ship StructureA. Zubaydi, N. Muhyat, Sulistijono, M.Z. Yuliadi, B. Santosa,
D. Setyawan and S. Haqi 219

Study on External Grind-Hardening Experiments and the Analysis of Hardening Effects for 40Cr Steel	223
G. Yang, Z.T. Han and C.L. Du	223
Study of Spatial Ellipsoid Helix Interpolation Algorithm Based on Multi-Axis Lathe	228
X.P. Yang, Z.M. Zhou, Y.J. Gu and L.X. Wang	228
Research on Flange State during Spinning of AZ31 Magnesium Alloy Rotators	233
L.L. Li, Z.Y. Cai, H.Q. Xu, M. Wang, R. Zhang, D.L. Wang, Y.L. Zhang and X.F. Gao	233
Numerical Simulation and Analysis for Blow-Off Flow Field of a Wet Skin Pass Mill	238
H.J. Qiao and D.R. Gao	238
Molecular Dynamics Simulation of Two-Phase Structures of Copper Formed by Laser Grooving	242
P. Wen, G. Tao and P.J. Zhou	242
Study on Optimal Spacing and the Residual Height Parameter of Blade Part in MASTERCAM	249
S.H. Xiao and W.C. Zhou	249
Effect of Preheat Temperature on Friction Stir Welded Aluminum Alloy 5052 Joints	253
N. Muhyat, Triyono, B. Kusharjanta and R.T. Handika	253
FE Modelling of Residual Stresses and Validation Using Chip-Mechanism and Microstructural Analysis of Ultrasonic Vibration Assisted Turning of Ti Alloy Ti-6Al-4V	257
S. Patil, D. Sheed and R. Singh	257
Research on Performance of Foundry Sand under the Effect of Chemical Binder	262
Q.Z. Sun, J.G. Yan, P.Q. Zhang, Z.K. Zhao and H. Du	262
The Effect of the Initial Temperature of Ring Blank on Conical Ring Rolling Process	266
W. Meng, G.Q. Zhao and Y.J. Guan	266
Effects of External Magnetic Field on Intensity of Plasma Flow	272
C.Y. Ho, Y.H. Tsai and C. Ma	272
Formation and Distribution Mechanism of Intermetallic Compounds of Al/Mg Joint with Zn Transition Metal	276
Q. Gao, K.H. Wang, H. Ma and W.G. Feng	276
 Chapter 5: Applied Mechanics and Construction Engineering	
Concrete Strength Variability in Italian RC Buildings: Analysis of a Large DataBase of Core Tests	283
A. Masi, A. Digrisolo and G. Santarsiero	283
Buckling Behavior of Catheter Reinforced with Braids under Axial Compression after Torsion: Effect of Deformation Speed on Buckling Region	291
Y. Kato	291
Effect of Fiber Volume Fraction on Compressive and Flexural Properties of High-Strength Steel Fiber Reinforced Concrete	296
K.L. Ahn, S.J. Jang, Y.J. Yun, D.G. Yu and H.D. Yun	296
Analysis of Guyed Transmission Tower Dynamic Characteristic	300
F.L. Gan and X.B. Jia	300

Analysis of the Forms of Attachment Frame and Stress Characteristics	304
B. Li, J. Liu and K.W. Wang	304
Damping Analysis of Laminated Plates Using Complex Stiffness Method	308
Q.Q. Wu and M.Q. Wang	308
Influence of Axial Compression Ratio on Seismic Behavior of Reactive Powder Concrete (RPC) Beam-Column Joints	312
Y.Z. Ju, C.Y. Li and D.H. Wang.....	312
Influence of Curing Temperature on the Compressive Strength of High Performance Concrete	316
S.W. Kim, W.S. Park, N.Y. Eom, Y.I. Jang, H.D. Yun and D.G. Kim	316
Mechanical Properties of Reactive Powder Concrete Containing Fly Ash under Different Curing Regimes	320
D.H. Wang, Y.Z. Ju and W.Z. Zheng	320
Static Stress Changes and Triggering Imposed by Wenchuan Earthquake on Lushan M7 Earthquake	324
D.N. Lei, Y.J. Cai and H. Li	324
Structural Behaviors of Non-Ductile Reinforced Concrete Frames with Engineered Cement Composite (ECC) Wing Wall Elements	328
D.H. Kang, W.G. Lim, H.R. Kim, M.H. Lee and H.D. Yun	328
The Influence of Base Pre-Tilting on the Dynamic Properties of Angle Towers	332
Y.P. Li, L. Li and X.Y. Yang.....	332
Stress Analysis and Structure Improvement on Arm of Ladle Turret	336
X.Y. Zhang and L.K. Guan	336
Cathodic Prevention and Cathodic Protection of Concrete Slab with Zinc Sacrificial Anode	341
J.A. Jeong.....	341
Engineering Properties of Controlled Low-Strength Material Made with Residual Soil and Class F Fly Ash	345
Y.N. Sheen, L.J. Huang and D.H. Le.....	345
On the Multiple Linear Regression and Artificial Neural Networks for Strength Prediction of Soil-Based Controlled Low-Strength Material	349
L.J. Huang, Y.N. Sheen and D.H. Le.....	349
Measurement of Sliding Wear of Shot-Peened Partially Stabilized Zirconia Plate	353
H. Koike, K. Iwanaka and K. Takahashi	353
 Chapter 6: Robotics, Control System and Measurement Technologies	
Application of Fuzzy Control Theory in Obstacle Avoidance Simulation of Intelligent Wheelchair	361
F. Li.....	361
Research on Flexible Centroid Measurement Method for Segments of Large-Thrust Carrier Rocket	365
X.L. Zhang, L.S. Zhang, W.Y. Tang, C. Wang and W.C. Liu	365
Simulation Research on the Compound Control System of Internal Model Add Feed-Forward Compensator	372
S.B. Zhang.....	372

Wind-Induced Vibration Control for Transmission System Using Steel-Lead Viscoelastic Damper	376
F.L. Gan and H.L. Jiang.....	
Fuzzy PID Control of ABS Based on Real-Time Road Surface Identification	380
B. Wang, P.P. Lu, H. Guan and J. Jing.....	
The Application Research of Non-Nuclear Density Gauge Electromagnetic Technology in the Road Engineering	384
J.L. Chai and Y. Wang.....	
Lie Algebraic Structure and Poisson Conservation Law for One Class of Multi-Dimensional Coupled Oscillators	388
Y. Sun, B.Y. Chen and J.L. Fu.....	
Three-Level SVPWM Inverter with Li-Ion Battery Driven for Robot Motor	393
S. Chen and C.C. Chen	
Development of Practical Wrist Rehabilitation Robot by Mirror Effect	397
I. Yamamoto, M. Matsui, N. Inagawa, T. Tsuji, K. Hachisuka, F. Wada and A. Hachisuka.....	
K-MORE: Design of a Kinect Motion Oriented iRobotics Environment	401
H.H. Ku, T.S. Kao and C.H. Chi.....	
Dynamic Control of Gait and Posture Training on Robot	407
C.C. Chen, S.H. Ciou, Y.S. Hwang, Y.L. Chen and S. Chen	
Novel Strengthened Structure of Stair-Climbing Robots on Campus	411
C.K. Wang, Y.H. Wu and Y.S. Cheng.....	

Chapter 7: Electrical Devices and Embedded Systems, Machine Elements, Systems and Mechanisms

Computer Aided Design of a New Universal Clamping Mechanism	417
J.Z. Li	
Experimental Study of Corrosion Sensors for the Design Technology of Bridge Longevity	421
J.A. Jeong	
A Theoretical Study of the Phase Angle for the β Type Pulse-Steam Stirling Expander	425
G.J. Lai, C.K. Lin, Y. Kobayashi, M. Matsuo and M.C. Chiu	
Damage Identification of the Blade Based on Distributed Fiber Bragg Grating Sensors	431
Y.H. Zhang and W.Y. Yang.....	
Design of Electrochemical Biosensor on Naphthalene Content Detection in Water Based on SCM	435
Y. Liu, Y.P. Yu, H.Y. Wu and R.K. Chang.....	
Design of Reflective/Diffractive Objective Optical System for Handheld Low-Light Night Vision Google	439
N. Li and R.L. Zhang	

Fault Diagnosis of Mechanized Bridge's Electrical System Based on I²C-bus and Virtual Instrument Technology	444
Y.S. Sun, X.Q. Yang, L. Pei and S. Yan.....	
Meshing Efficiency of Involute Helical Gears Based on Elastohydrodynamic Lubrication	450
B. Wang and X.B. Chen.....	
Research about Deformations Identification for Globoidal Cam Machine Based on Multi-Body System Theory	454
L.P. Zhao, H.R. Chen, Y.Y. Yao, H. Zhao and P. Yan.....	
Selective Tension Apparatus Development of Vibration Membrane for Stereo Speaker Production	458
U.S. Kim, Y.J. Jung, B.W. Jeong, M.S. Kim, G.S. Yang and J.W. Park.....	
The Establishment and Weight Calculation Method of Evaluation Indexes for the Float Board Propulsion System	464
Y.Q. Cai, F.M. Zeng and J.L. Liu.....	
The Simulation Studies of PWM Voltage Source Rectifier under Unbalanced Grid Voltage	468
J.L. Zhang and Y.R. Li.....	
The Skimmer Selection Based on Fuzzy Decision in Response to Oil Spill	472
Y.D. Zhang and Y. Liu	
Research on Manufacturing of Blade Screw in Solid-Liquid Separator	476
J.J. Wang, K. Wang and Q. Wu	
VLC-LED Receiver Condenser with Optimized CPC	480
Z.X. Wu, Y.J. Nie, W. Jin, Z.X. Zhang, Q. Qiao and E.D. Gu.....	
300 MW Coal Tangential Boiler Furnace Numerical Simulation	484
H.X. Liu and B.X. Li	
Optimization Design Analysis on Electrical Performance of ITER Axial Composite Insulation Break	488
C.C. Yang.....	
Research on Overloading Protection of Permanent Magnetic Coupler in Coal Mine	492
W.Q. Yuan, Y. Liu, D. Li and G.Y. Meng.....	
The Research of Drive Roll's Dynamics Characteristics	498
S.H. Li	
Analysis and Research on the Picking Roller of the Half-Feed Peanut Combine Harvester	502
X.L. Lü, Z.C. Hu and B.L. Peng.....	
Statics and Grasp Stiffness Analysis of an Underactuated Cable-Truss Mechanism	507
N. Wu, R.Q. Liu and H.W. Guo.....	
An All-Digital, Cyclic and Synthesizable TDC in the ADPLL-Based Clocking Digital Systems for Multidomain Power Management	515
S.H. Chen and M.B. Lin.....	