Advanced Materials and Computer Science II

Selected, peer reviewed papers from the 2012 2nd International Conference on Advanced Materials and Computer Science (ICAMCS 2012)

Advanced Materials Research Volume 659

Xiamen, China 27-28 December 2012

Editor:

Egui Zhu

ISBN: 978-1-62748-050-5

ISSN: 1022-6680

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2012) by Trans Tech Publications Ltd. All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact Trans Tech Publications Ltd. at the address below.

Trans Tech Publications Ltd. Laubisrutisr 24 CH-8712 Stafa-Zuerich Switzerland

Fax: +41 (44) 922 10 33 Fax: +1 (603) 632-5611

e-mail: sales@ttp.net

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com

Table of Contents

Preface and Organizing Committee

Chapter 1: Material Engineering and Technology

Tribology and Self-Repairing Nature of RE Nanophase Composite Material Z.C. Guo, M. Chen, D.B. Zhao and F.M. Zhang	3
Study on the Brush Plating Technology of Magnesium Alloy J.X. Li and L.C. Wang	7
Effects of Nano-TiO ₂ on Microstructure and Properties of Ceramic-Lined Composite Steel Pipes Produced by Centrifugal Self-Propagating High-Temperature Synthesis Y. Zhu, F. Huang, Y.X. Ge and H.J. Ni	10
Preparation and Properties Testing of Intelligent Color-Changing Camouflage Coating J. Zhang, J. Yu, J.F. Jiao, H. Chen and P. Liu	15
Analysis of Elastic Recovery Property Based on the Mesh Structure of Spun-Laced Nonwovens Y.J. Zhang, X.P. Xu, X.Y. Jin and Z.F. Zhang	19
Structure, Electrical and Optical Properties of the Polar ZnO(0001) Surfaces Q. Xiang, Z.H. Xiong, Y. Jiang, Z.Z. Qin and L.L. Chen	25
Structure and Optical Properties of Superlattices ZnO Doped with Mg Q. Xiang, Z.H. Xiong, Y. Jiang, Z.Z. Qin and L.L. Chen	30
Research on the Welding Technique of Quenching and Tempering Steel B.X. Guo and X.W. Du	36
Microstructure and Properties of Laser Cladding Fe-Al Intermetallics H. Ye, S.X. Peng, Z.L. Yan and X.B. Zhang	39
Chapter 2: Mechanical Engineering, Equipment and Industrial Technologies	
Research on Improvement Road Impedance Function Based on Vehicle Navigation System R. Wang and Z.T. Wang	45
Experiment Study on Spatial Magnetic Field of Large Gap Magnetic Drives System Y. Xu, Y.X. Pang, Y. Tan and W. Zou	49
Transformer Fault Diagnosis Method Based on Support Vector Machine and Ant Colony L.L. Mo	54
Multi-Objective Biogeography-Based Optimization Algorithm for the Control of Robotic Manipulator Z.D. Xu, H.W. Mo, Z.J. Xu and J.Q. Zhang	59
Tunable Wavelength Filter Based on Complex Period Photonic Crystal H.X. Yu, X.J. Gao and Y.L. Shi	64
Design and Application of SCM-Based Caller Information Identification System L.M. Hu	69
Research on Tropical Agricultural Products Quality Recognition and Detection System Based on Electronic Nose Technology K. Zhang, H.F. Wang and S.P. Dai	75
Research on Cooperative Relay Transmission in Power Line Communication Y.S. Li, Q.F. Shang and X.M. Li	79
Study on LDPC Coded SFH System with Multi-Tone Interference L.L. Jia, A.J. Liu, D.X. Guo and G. Chao	83
The Influence from Drainage System to the Overall Layout of the Residential Building in Village	
H. Chen, S.J. Cai, J. Zhang and F. Zhang	89

Chapter 3: Data Acquisition and Data Processing

A Novel Algorithm for Action Landmarks Extraction J.J. Zhao and Y.M. Yang	97
Classification Algorithm Based on Category Attribute's Mathematical Expectation L. Zhang and J.L. Zhang	103
An Iterative Algorithm on the Spectral Radius of a Kind of Centrosymmetric Matrix D. Zhao and H.Y. Li	108
A Simulation and Prediction Method of the Height of Wheat Based on BP Neural Networks and the Ant Colony Algorithm H.Y. Li, X.X. Wu, T. Wang and D. Zhao	113
Research on Data Assimilation Methods of Multi-Space-Time Meteroligical and Hydrological Data	
L. Kong, Y.Z. Song and D.M. You A Back Propagation Artificial Neural Network Applied to Body Constitution in Traditional Chinese Medicine Modeling	118
Z.B. Li Mining Methods Based on Vague Optimization Evaluation H.F. Wang, H.E. Ren, K. Zhang and H.X. Wang	123 128
Fire Detection Technologies Based on Video Image M.X. Li, W.J. Xu, Y. Zhang and J. Hou	134
Application of Snakes Model in Metal Fracture Images Processing Q. Wang and G.R. Weng	139
An Efficient View-Point Invariant Detector and Descriptor Z.G. Xu, C. Chen and X.H. Liu	143
Red Blood Cell Image Extraction Based on Mathematical Morphology L. Zhou and G.R. Weng	149
Mariculture Zones Extraction Using NDWI and NDVI H.J. Pan, X.X. Li, G.W. Wang and C.S. Qi	153
A Method of Determining the Pose of Planar Target in Vision Detection System S.N. Zhang, B.S. Wang and W.Q. Yuan	156
Research of Maneuver Ship Meteorological Instrument Data Real-Time Acquisition and Processing System Y.Z. Song, L. Kong and Z.J. Wu	162
Chapter 4: Information Technologies in Manufacturing	
Design and Implementation of Metric Multi-Core Functional Simulator Y. Wang, B.Y. Zhang, Z.C. Fu and W. Hu	169
LBS Hybrid Encryption Scheme Based on IMSI Pseudonym L. Li, A. Chen, J. Chen and Z.H. Zhang	174
Comparison of Model Checking Tools W. Gong and J.W. Jia	181
A Method of Micro-Blog Sentiment Analysis Based on PAD Model H.T. Cao, M.C. Li, D. Jiao and B. Feng	186
Cyber Security Datasets Research Z.G. Wang, C.Z. Hu, M.L. Hao and F. Lu	191
Analysis of Class Design Coupling Based on Information Entropy D. Jiang, H. Zhou and X.P. Sun	196
Data Classification in Internet of Things Based on Evolutionary Neural Network B.Y. Zhang, W. Hu, J. Feng and W.H. Sun	202
Web-Based Meteorological Information System Design and its Applications in Intelligent Hydroelectric	
Z.J. Wu, Y.Z. Song and H.S. Zhou Software Design and Implemention about the Automatic Mmunoenzymatic Analytic System	208
Y.L. Wen, L.Q. Zhu, J. Wang and M. Zhou	213

Research on Urban Digital Governance Framework Based on Grid Management L. Ding and L. Zhang	218
Research on the Integrated Management System of Supply Chain Based on Mobile E- Commerce Environment	
W.M. Zhao and Y.H. Luo	224
Research on Application of WMSNs in Ubiquitous Learning Environment J.H. Chen, J. Song and Y. Li	229

C

Advanced Materials Research Vol. 659