

# Table of Contents

## Preface

## Chapter 1: Applied Materials Engineering and Materials Processing Technologies in Mechanical Engineering

|                                                                                                                                                                                           |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>A Simple Method for Identification of the Alloy's Non-Crystalline Structure</b><br>H.X. Xiao                                                                                           | 3  |
| <b>Characteristics of TVOC, Aldehydes and Ketones Emitted from Fiber Hot-Pressing in Manufacturing of MDF made from Poplar and Pine</b><br>Y.L. Wang, Z.G. Lu, P.P. Zhang and H.D. Zhou   | 9  |
| <b>Experiment Study on Micro-Cylindrical Electrode Fabrication in Electrochemical Machining</b><br>Y.G. Wang, Z.Y. Li, H.L. Liu and Z.P. Duan                                             | 15 |
| <b>Experimental Investigation for Characteristics of Localized Dissolution of Micro-Holes in Electrochemical Machining Aided by Ultrasonic Wave</b><br>Z.Y. Li, Z.W. Niu and L. Li        | 21 |
| <b>Experimental Study on Performance of CBN-Coated, CBN-Uncoated and PCD Tools in Turning Al 2124 SiC (45%wt) PMMC</b><br>M.J. Njuguna and D. Gao                                         | 27 |
| <b>Finite Element Analysis of Ultrasonic Vibration Assisted Turning of Ferrous Metals</b><br>L. Zou and M. Zhou                                                                           | 33 |
| <b>Study on the High Speed Jet-Electrode Position Ni-P Alloy</b><br>Y. Wang, M. Kang, Y. Yang and X.Q. Fu                                                                                 | 39 |
| <b>The Homogeneous Design of Large Area Film Hollow Cathode Plasma Graft Polymerization</b><br>Y.F. Wen, C. Chen, X. Chen, Y.N. Rui and N. Ding                                           | 45 |
| <b>Research on the High-Efficiency Turning Tool for Rough Machining of Large Hydrogenated Cylindrical Shell Forging</b><br>G.H. He, X.L. Liu and F.G. Yan                                 | 53 |
| <b>Dynamic In-Process Stock Based Tool Path Generation for High Surface Finish Rough Machining</b><br>S.L. Ding, J.P.T. Mo and D. Yang                                                    | 59 |
| <b>Parameters Optimization and Experimental Study of Aero-Engine Blade in Electrochemical Machining Based on High-Risk Machining Parameter Elimination</b><br>Z.Y. Li, Z.W. Niu and L. Li | 67 |
| <b>Study on Modeling and Virtual Machining for Monolithic Multi-Frame Component Based on Aluminum Alloy 7075-T7351</b><br>H. Guo, D.W. Zuo, G.X. Tang and J. Xu                           | 73 |
| <b>The FEM Numerical Simulation of Die Spinning with Three-Dimensional</b><br>Z. Yang and W.L. Zhou                                                                                       | 81 |
| <b>Preparation and Characterization of Nano Zinc Borate/Epoxy Resin Composite</b><br>P.Q. Gao, W.H. Song and X. Wang                                                                      | 87 |
| <b>A Study on Distribution Rules of Dynamics Temperature and Pressure in Plain Bearing</b><br>Y.F. Jin                                                                                    | 91 |

## Chapter 2: Other Related Topics

|                                                                                                                                                                     |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Control and Monitor Model of the Critical State of Corporate Strategic Decision Making Based on the Chaotic Neural Networks</b><br>W. Wang, Y.W. Fan and X.H. Qi | 101 |
| <b>Multisensor Information Fusion Based on D-S Evidence Theory and BP Neural Network</b><br>C. Zhao, C.R. Tang and S. Wan                                           | 113 |

|                                                                                                                                                                 |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>On Construction Wastes Recycling and its Economy</b><br>Y.Q. Tang                                                                                            | 119 |
| <b>Research on the Synergy of “Big Q” System</b><br>J.J. Li                                                                                                     | 123 |
| <b>Adaptive Dynamic Clone Selection Strategy for Optimization</b><br>H.B. Wu, P.H. Lou and D.B. Tang                                                            | 133 |
| <b>The Electro-Hydraulic Control Directional Valve Based on Magneto-Rheological Fluid</b><br>D.D. Liu, C.R. Tang and C. Zhao                                    | 139 |
| <b>Evaluation of Green Cement Manufacturing Seeking Joint Treatment for Urban Refuse</b><br>Y.Q. Tang                                                           | 143 |
| <b>Design of Sinusoidal Grating Projection Depicts Transmission</b><br>J.T. Cheng, W.L. Zhao, C. Zhao and W.H. Wu                                               | 149 |
| <b>Fault Diagnosis System of Engineering Equipment's Electrical System Using Dedicated Interface Adapter Unit</b><br>Y.X. Ren, X.Q. Yang, Q.X. Li and J.D. Chen | 155 |
| <b>On-Line Fault Diagnosis of Main Reducer Based on the Noise Characteristic Parameters</b><br>F. Xie, X.B. Lei and J.F. Yan                                    | 161 |
| <b>Effect of the Impact Load on the Main Welding Outer Cylinder of Large Aircraft Landing Gear</b><br>H.F. Wang, W.W. Song, J.L. Wang, D.W. Zuo and X.L. Duan   | 169 |
| <b>Research on Balancing of a Multi-Link High-Speed Precision Press</b><br>X.J. Lu, S.H. Zhu, L. Kang and M.H. Xiao                                             | 175 |