## **Table of Contents**

## **Preface**

## **Chapter 1: Mechatronics and Control**

Wear and Transmission Error between PEEK Bush and 7075 Aluminium Alloy Cam Plate Components in Robot Joints	
H. Kôike, K. Kanemasu, K. Itakura, K. Saruwatari, J. Rozwadowska, M. Uryu, E.C. Santos and K. Kida	3
$\begin{array}{c} \textbf{Analytical Target Cascading Method on Braking System Characteristics Optimization} \\ \textbf{H. Guan, W.T. Hao, J. Zhan and } X. \ Li \end{array}$	9
Design of a Single-Plate Electrowetting-on-Dielectric Device T. Chen, M.Q. Pan, Y.J. Wang, J.Z. Liu, L.G. Chen and L.N. Sun	14
Multi-Application and Large Shared Memory in a Mechatronic System for Massive Computation	
H.T. Kim and K.C. Jin	18
<b>GPU-Based Mojette Transform for High-Speed Reconstruction</b> K.C. Jin and H.T. Kim	23
PMSM Control System Based on a Improved Sliding Mode Observer Y.F. Zhang, S.J. Li, Y. Zhou and Q.X. Zhou	27
Computer Simulation and Modelling of 3D Travelling Wave Ultrasonic Motor Using a Flexural Vibration Ring Transducer	2.1
M. Shafik, B. Nyathi and S. Fekkai	31
Computer Simulation and Modelling of Standing Wave Ultrasonic Motor Using a Single Flexural Vibration Transducer M. Shafik, T. Wilmshurst and S. Fekkai	42
Time Optimal Control of Mechatronic Systems M.H. Pirahmadian	53
<b>Hybrid Controller Design for Two-Floors Structure against Northridge Earthquake</b> M. Tinkir, M. Kalyoncu and Y. Şahin	57
<b>Adjustment Mechanism of Node Transmission Power</b> H.S. Li and N.H. He	62
The Interactive Driving Profile Generation System J. Świder and A. Zbilski	66
<b>Research on Signal Transfer of GPR Used in Frontal Detecting of Tunnel Construction</b> F.M. Zhu, Y.F. Li and Q. Gan	75
<b>Design of Test Bench for Transmission Efficiency of AMT Actuator</b> J.J. Hao, X.H. Ding and J.W. Wei	79
Master/Slave Robotic System for Teaching Motion-Force Manufacturing Tasks R.d.J. Portillo-Vélez, C.A. Cruz-Villar, A. Rodríguez-Ángeles and M.A. Arteaga-Pérez	84
Numerical Study of Batoid with Asymmetrically Undulating Pectoral Fins Z.J. Wu, W.S. Chen, J.K. Liu and S.J. Shi	89
An Automatic Aeroponics Growth System for Bamboo Seedling and Root Observation J. Liu and Y.W. Zhang	97
The Remote Control a Tele-Robot 5R by Using Dual-Tone Modulation H. Aghili	103
Optimum Design, Manufacturing and Experiment of a Passive Walking Biped: Effects of Structural Parameters on Efficiency, Stability and Robustness on Uneven Trains S.M.H. Sadati, M. Borgheinejad, H. Fooladi, M. Naraghi and A.R. Ohadi	107
Design, Modeling and Optimization of a Novel Two DOF Polymeric Electro-Thermal Micro-Actuator	110
R. Sheikhbahaie, A. Alasty and H. Salarieh  Virtual Prototype Modeling of Biped Robot with Heterogeneous Legs	112
H.L. Xie, F. Li, N. Weng and Z.Q. Sheng	117

The Structure Design of the Mini Underwater Robot Y.F. Wei, F. Liu, F. Hu and F.R. Kong	121
Deflection Control of Two-Floors Structure Against Northridge Earthquake by Using PI Controlled Active Mass Damping M. Tinkir, M. Kalyoncu and Y. Şahin	126
Electro-Hydrostatic Actuator Modeling	120
Y. Song and S.R. Habibi	131
Chapter 2: Applied Mechanics and Mechanical Engineering	
Performance Calculation and Test Analysis of PDM Lining with Super-Elastic Constitutive Model	
J.L. Tian, R.M. Hao, L. Yang, X. Wang, Z. Fan, S.L. Su and G.W. Zhang	139
Changes in Magnetic Fields in Tool Steel (SKS93, JIS) under Single Tensile Load K. Kida, M. Uryu, T. Honda, T. Shimoji, E. Costa Santos and K. Saruwatari	144
FSI Research on the Noise Barrier of High-Speed Railway in the Composite Conditions H.C. Wang and J.F. Xie	149
<b>Explicit Formula for Estimating Aerodynamic Drag on Trains Running in Evacuated Tube Transportation</b>	
Y.P. Zhang	156
Applications of Multiple Objective Genetic Algorithms in the Optimization Design of Tracked Self-Moving Power's Layout H. Jin and J.F. Xie	161
Mixing Enhancement of Two Gases in a Microchannel Using DSMC M. Darbandi and E. Lakzian	166
Predictive Modeling of Turning Operations Using Response Surface Methodology	100
G. Kant, V. Rao V and K.S. Sangwan	170
Modeling of Stresses and Temperature in Turning Using Finite Element Method K.S. Sangwan, G. Kant, A. Deshpande and P. Sharma	174
Steady Streaming due to a Sphere in Incompressible Fluid M.A. Sadiq	178
<b>Influence of Bolt Joint on Dynamic Characteristic of Linear Rolling Guide</b> X.P. Li, Y.M. Liang, H.T. Yang, X. Ju and G.H. Zhao	182
Investigation on Aerodynamic Drag Reduction of Commercial Truck Based on External Styling of Cab	
P. Guo, X.J. Hu, Y.Y. Zhu, Q. Fu, X.Y. Wang, S.J. Fan and Q.Y. Fan	186
<b>Study on Automobile Door Closure Sound Quality Objective Evaluation</b> X.J. Zhang, Y. Liu, Z.C. Liu, Y.B. Qiu, L.B. An and B. Yang	192
Noise Test and Analysis of Automobile Engine Y. Liu, Y.B. Jia, X.J. Zhang, Z.C. Liu, Y.C. Ren and B. Yang	196
Research on the Sprocket Tooth Shape of Sintering Machine G.F. Tian, K.W. Wang and Y. Zhang	200
Study and Test Analysis of Engine 1/4 Vibration Model H.Y. Song, J.G. Ma and P.C. Sheng	206
Analysis on the Movement Effect of Lunar Rover Wheel D.W. Jin, J.Q. Li, S.C. Fan, H. Li and Y. Wang	211
Numerical Study of the Single-Phase and Two-Phase Flow in a Centrifugal Pump T. Ba, A.T.B. Lim and C.W. Kang	215
Quasi-Static Analysis on a Large-Sized Four Contact-Point Slewing Bearing with Negative	
Axial Play Y.S. Wang, Y. Wu and H.F. Zhu	219
Contact Stress Analysis on a Large-Sized Four Contact-Point Slewing Bearing with Negative Axial Play	
Y.S. Wang and H.F. Zhu	223
Analyzing Reentry Vehicle Control Vane Effect on Stability of a Vehicle in the Atmospheric Outgoing Phase V.B. Asl and S.D. Farahani	227
·	/

The Modeling and Magnetic Simulation of Resistance High-Voltage Divider Based on AutoCAD and Maxwell J.K. Song, D. Lv and H.H. Zhang	231
Numerical Simulation of Load Optimization in Multi-Dimension Vibration Test J. Hu and H.Y. Zhao	236
Research on the Calculation Methods of New Wharf Structure M.W. Liu, Y. Chen, X.L. Zhang and H. Liang	240
The Strength Analysis on the Gear Ring of Ladle Turret of the Continuous Caster D.C. Hu and Z.H. Qu	244
Effect of Perforated Tabs on the Noise Field of an Axisymmetric Jet G.F. Hussain, A.S. Nasser, M.M. Nawaz, B.K. Mondal and N. Karthikeyan	250
Reduction Vibration of Mechanical Systems A. Dymarek and T. Dzitkowski	257
A New Method of Track Approaching Based on Sectioned Polynomial for Crankshaft Tangential Point Tracing Grinding J. Li, N.Y. Shen and X.L. Wang	261
Regularized Lattice Boltzmann Simulation of Laminar Natural Convection in Entrance Region of 2D Channels	
M. Basha and C.S. Nor Azwadi  Measuring the Gravitational Acceleration by Hydrostatics	267
B.C. Zong and C.H. Nie  A Study on Modal Parameters of Cylindrical Grinding Machine Structure through	271
Experimental Test and FEM R. Barzegar, M. Mahboubkhah and M.M. Ettefagh	275
CFD Simulation of Natural Draught Cooling Tower Wind-Covering M. Darbandi, H. Salemkar, A. Behrouzifar and B. Abrar	279
A Fault Diagnosis of Suck Rod Pumping System Based on SVM W. Wu, Y. Zhou and H.X. Wei	285
<b>Load Analysis of Offshore Wind Turbine Tower Based on Multi-Physics Coupling Analysis</b> X. Huang, L.B. Zhu, Z.S. Zhu, G.R. Hua and C.Y. Ji	290
Active Synthesis of Discrete Systems as a Tool for Stabilisation Vibration T. Dzitkowski and A. Dymarek	295
Study on the Field Dynamic Balance of Diesel Engine Crankshaft S.X. Jiang, S.H. Zhang and Z.M. Yu	299
Investigation of the Hertzian Stress Distribution on the Surface of the Straight Bevel Gear A. Bahramighahnavieh, P. Mosaddegh and S. Akbarzadeh	304
Punch Forming Simulation Analysis of U Shape Steel Plate F.Y. Cao, X.W. Yin and B.S. Wang	308
Fault Diagnosis of Tolerance Analog Circuit Based on Wavelet Neural Network with PSO Algorithm	212
W. Cong, B. Jing and H.K. Yu  Experimental Investigation of Full-Order Observered and LQR Controlled Building-Like	312
Structure Under Seismic Excitation M. Tinkir, M. Kalyoncu and Y. Şahin  Phase Hammanian Mathed Based on Windows d Fermion Transforms	316
Phase Unwrapping Method Based on Windowed Fourier Transform Y.B. He, X.Z. Li, W.M. Chen and J.S. Wen	321
Adaptive BP Wavelet Neural Network Method for Soft Fault Diagnosis in Analog Circuit W. Cong, B. Jing and H.K. Yu	327
Chapter 3: Applied Materials Engineering	
Synthesis and Morphology of ZnO Films Prepared by Magnetron Sputtering S.C. Her and T.C. Chi	333
Surface Profile Observation of PTFE Radial Bearings under Rolling-Contact-Fatigue in Water	
S. Oyama, K. Kida, E.C. Santos, H. Koike and Y. Kashima	337

Observation of Crack Initiation Direction around Inclusions in SUJ2 under Single-Ball Rolling Contact Fatigue	
S. Hazeyama, J. Rozwadowska, K. Kida, E.C. Santos, T. Honda, K. Kanemasu and T. Shibukawa	342
Observation of Wear Surface between Pure PEEK and Counterpart Materials; Titanium and 7075 Aluminum Alloy, in Robot Joint K. Itakura, H. Koike, K. Kida and K. Kanemasu	347
Calorimetric Analysis of Precipitation in Undercooled Ni-Si Alloy K. Fan, F. Liu, B.Q. Fu, W.Z. Luo and Y.H. Zhou	352
Quantitative Research on Strength Characteristics of Phosphogypsum Consolidation Materials J.J. Hou, F.D. Mei and Z.H. Mei	358
Analytical Solution of Thermal Stresses in a Functionally Graded Solid Cylinder within Parabolic Continuous Grading	
A. Ozturk and M. Gülgeç  The Study of Specific Materials Used by the Copper Wiring CMP of GLSI Y.L. Liu, J. Wang and B.H. Gao	364 368
Fourier Transform Infrared Spectroscopy for Wear Debris Adhesion on PEEK Bearing Surface	
K. Mizobe, M. Takamiya, T. Honda, H. Koike, E.C. Santos, Y. Kashima and K. Kida Synthesis and Characterization of Functionalized Multi-Walled Carbon Nanotubes	372
S.C. Her and C.Y. Lai  The Effect of Temperature on the Stick-Slip Friction Behavior of Optical Glasses in	377
Precision Glass Molding P. Mosaddegh and J. Ziegert	381
Surface Stoichiometry and Oxidation of NiTi J.X. Zhu, D.W. Jin, J. Zhang and H.L. Zhao	387
Theoretical Study of the Mechanical Properties by Using the Acoustic Signature S. Bouhedja and F. Hamdi	391
Composite Model for Time-Relative Compressive Strength of Recycled Coarse Aggregate Concrete B.L. Yang, W. Wang, X.C. Chi and W.H. Bai	395
The Effect of the Fermi Energy on the I-V and G-V Characteristics of Molecular Wire A. Boudjella	399
$V_{th}$ Temperature Dependence in Bi-Dithiolbenzene in Parallel Arrangement-Impact of the Intermolecular Spacing A. Boudjella	404
The Quantization of the Structure of Fisheyes via Homology Method K. Nakane, K. Mizobe, E.C. Santos and K. Katsuyuki	409
Numerical Simulation and Experiment on Quenching Process of P20 Die Steel with New Online Pre-Hardening Equipment	41.7
G.Y. Liu, D.M. Zhu, S.J. Zhang, M.W. Li and S.C. Gong Study on the Tensile Mechanical Properties of Sympodial Bamboo Single Root	415
S. Hui and Y.W. Zhang	421
Chapter 4: Organization of Manufacture, Engineering Management and Information Technologies	
Fuzzy Synthetic Evaluation for Aviation Maintenance Support Ability X.S. Gan, J.S. Duanmu and J.G. Gao	429
The Dynamic Quality Control Method Based on Relation Analysis G.Z. Diao, L.P. Zhao and Y.Y. Yao	433
Motivation to Invest in Advanced Manufacturing Technology J. Hynek and V. Janeček	437
Robust Scheduling, a Production Scheduling Model of Failures I. Paprocka and B. Skołud	443
A Service-Oriented After-Sales Services System in Mechanical Engineering Industry S.P. Lu, K.K. Shao and K.S. Luo	447

Effective Design and Implementation of Distributed Business Information Systems P. Ocenasek	451
Research on the Development of the Coal-Electricity Integration Manufacturing Industry W.J. Wang, G.M. Lu, T. Liu and M.N. Wang	455
Solving Stereo Warehouse Storage Location Assignment Problem Based on Genetic Algorithm	
M. Jin, X.H. Mu, L.C. Li and F.P. Du	459
Preliminary Study on Voxel-Based Virtual Geographic Environment Representation B.C. Jiang, X. You, Q. Xia and W. Zhang	464
Predictive - Reactive Strategy for Real Time Scheduling of Manufacturing Systems K. Kalinowski, D. Krenczyk and C. Grabowik	470
PDF417 Barcode and its Application in Aviation Spare Parts Management X.S. Gan, J.S. Duanmu and J.G. Gao	474
On the Effective Internet Communication Filtering P. Ocenasek and M. Sveda	478
Research on Enterprise Security Management Mode Based on Animation Technology F.D. Mei, J.J. Hou and Z.H. Mei	482
<b>Efficient Inline Deduplication on VM Images in Desktop Virtualization Environment</b> G.Y. Zhao, H.F. Tang, L.M. Xiao and X.Q. Li	488
On China's Current Obstacles in the Development Process of Green Buildings W.H. Sun	494
Applying Multi-Agent Approach for the Disaster Rescue Process F. Jiang and L.T. Song	498
A Research on the Transmission and Variation of Tales to Build Korean <i>Yadam</i> Computer Aided Digital Archive	
W.H. Choi and D.K. Kim	502
<b>Manufacturing and Production Collaborative Customers Preference</b> Z.P. Ho and T.N. Pan	506
Study on Countermeasures of Coal Gangue Pollution Prevention and Regional Sustainable Development in China	
Y.G. Liu, L.N. Yu and H.C. Wang	510
Ecological Conception and Level Analysis in Planning and Design K.Z. Sun	514