

# Table of Contents

## Preface and Conference Committees

## Chapter 1: Materials Science and Materials Processing Technology

<b>Improvement of TA Cloning Method to Facilitate Direct Directional Cloning of PCR Products</b>	
J.G. Li, G.Y. Han, X.M. Li, J.J. Sun, K.J. Song and T. Zhang	3
<b>High-Temperature Antioxidant Screening for Silicone Oil</b>	
H.J. Yang, H.Z. Wang, L. Zhong, J.Q. Zhang and Y.J. Liu	9
<b>Transverse Stiffness Prediction of Fibrous Metal Matrix Composites</b>	
G.W. William, S.N. Shoukry and J.C. Prucz	14
<b>Gold Ball Wire Bonding Energy Transfer Mechanism and Experimental Studies</b>	
Q.Q. Wu, L.G. Chen, M.Q. Pan and L.S. Chen	20
<b>A Preliminary Study on the Sound Absorption of Self-Facing Date Palm Fibers</b>	
E.A. Khidir, N. Nikabdullah, M.J.M. Nor, M.F.M. Tahir and M.Z. Nuawi	25
<b>Study of Thermal Analysis for Monitoring of Liquid Metal in Production of Aluminum Casting</b>	
P. Saohin, J. Kajornchaiyakul and C. Banjongprasert	31
<b>Tool Wear Monitoring of High Speed Milling Based on Vibratory Signal Processing</b>	
H. Abdechafik, K. Mecheri and A. Aissa	36
<b>Neural Network Monitoring Strategy of Cutting Tool Wear of Horizontal High Speed Milling</b>	
K. Mecheri, B.H. Aissa, A. Aissa and H. Abdechafik	46
<b>Influence of Welding Speed over Dilution for Circular Grid Plate Hardfaced with Colmonoy-5</b>	
S. Balaguru, K. Deenadayalan, Murali Vela and P. Chellapandi	53

## Chapter 2: Aerospace and Mechanical Engineering, Applied Mechanics

<b>Quasisolution of the Inverse 3D Aerohydrodynamics Problem</b>	
P.N. Ivanshin	61
<b>Modeling and Simulation of Solar Array Drive Assembly Disturbance Driving a Flexible Load</b>	
J.P. Chen, W. Cheng and Y.F. Wang	67
<b>Modeling of Atmospheric Processes Based on the Averaged Navier-Stokes Equations</b>	
B. Zhumagulov, D. Zhakebaev and A. Abdibekova	74
<b>Exploration of Navigation Simulator Applying in Maritime Trial</b>	
J.L. Wu and H.L. Guo	80
<b>Estimation of Critical Performance Parameters of the Thermocouple in a Bypass Device, Made of SME Alloy, Designed for LIABs on Spacecraft</b>	
Z. Blednova and N.A. Protsenko	85
<b>Sensitivity Analysis of Airdrop Condition Parameters Based on Response Surface Method</b>	
J.Y. Li, H.Y. Wang, Q. Rui and H.J. Hong	92
<b>Quadrotor Position Control Using Cascaded Adaptive Integral Backstepping Controllers</b>	
Y.A. Younes, A. Drak, H. Noura, A. Rabhi and A.E. Hajjaji	98
<b>Asymmetrical Lateral Jet Interaction on a Slender Body in Supersonic Flow</b>	
S.J. Luo	107
<b>Simulation and Testing Verification of Tracked Vehicle's Steering Process Considering Track Skidding</b>	
H.Y. Wang, J.K. Li, H.Z. Li and Q. Rui	113
<b>A Development of Human Machine Interface in a Miniature 3-Axis Milling Machine Prototyping</b>	
P. Pratumswan and A. Suebsomram	120

<b>Long Guide Straightness Error Measurement Based on Laser Interference</b> C.D. Hu, Y.Q. Li, J. Gao, P. Fu, H.P. Min and N. Ye	126
<b>A High Accuracy of Magnetometer by Using Independent Directional Magnetic Field Measurement Technique</b> A. Mano and W. Titiroongruang	133
<b>Radiation Degradation Modeling of Bipolar Operational Amplifier Input Offset Voltage in LTSpice IV</b> A.S. Bakerenkov, V.S. Pershenkov, A.V. Solomatin, V.V. Belyakov and V.V. Shurenkov	138
<b>Mechanism of the Saturation of the Radiation Induced Interface Trap Buildup</b> V.S. Pershenkov, A.S. Bakerenkov, A.V. Solomatin, V.V. Belyakov and V.V. Shurenkov	142
<b>Experimental Study of Wind Driven Scroll Pump</b> C. Wiroonritichai and P. Kritmaitree	147
<b>The Study of Flaws of High-Viscosity Fluids in Interaction with Peripheral Annular Water Flow in Complex Pipelines</b> A.V. Malozemov and S.N. Kharlamov	152
<b>Numerical Prediction of Erosive Potential of Unsteady Cavitating Flow around Hydrofoil</b> M. Sedlář, P. Zima and M. Komárek	156
<b>Study on the Stiffness of Positioning Platform with Large Trip and High Precision under Thermal to Structure Coupling</b> W.W. Yang, J.Z. Liu, M.Q. Pan, T. Chen, L.G. Chen, L.S. Chen and L.N. Sun	164

### **Chapter 3: Computation Methods and Information Technologies**

<b>New Observations from Comparison between the Benner et al. and the Ainley and Mathieson Models for Profile Losses</b> Z.W. Yuan, D.S. Zhu and J. Zhang	173
<b>Study on TEA Encryption for Public Communication Network Wireless Remoter</b> Y.T. Ge, X.M. Liu and X.T. Yin	179
<b>Educational Opportunities via Distance Learning System</b> I. Mimorov, I. Livshits and V. Vasiliev	183
<b>United Estimation of Time Delay and Frequency Drift in XNAV</b> Z.N. He, B.J. Fei, G.Z. Yao and J. Du	187
<b>Task-Level Learning from Demonstration and Generation of Action Examples for Hierarchical Control Structure</b> A. Gorbenko	194
<b>Single-Machine Rescheduling of New Orders with Learning and Deterioration Effects Consideration</b> C.M. Pai, Y.L. Liu and C.J. Hsu	198
<b>The Output Competition Game between FDI Port Enterprises and Incumbent Port Enterprises</b> W.F. Zhang, M. Tu and W.F. Sun	205
<b>Research on Parameterized Modeling Technology for the Bolted Joints Structure</b> X. Zhai, Q.G. Zhai, J.J. Wang and X.G. Fu	211
<b>GNSS RAIM Performance Analysis for World Wide Area</b> Z.L. Wang and B. Wu	217
<b>Emulator of Communication of SATEX-II Satellite with Earth Station</b> H. Vargas, J. Aguilar and M. Alonso	223
<b>Errors of Timing Diagram of Automatic Machine</b> A. Jomartov	228
<b>Complication Evaluation of Methods of Naval Battlefield Electromagnetic Environment Based on Combat Effectiveness</b> X.F. Shao and Q. Chen	233
<b>Research of a New Method to Predict Ocean Wave Spectra</b> X.Y. Zhang, B. Zhou, A.G. Shi and M. Liu	238
<b>Particle Swarm Optimization Technique for Task-Resource Scheduling for Robotic Clouds</b> V. Popov	243

<b>Study on the Grasping Ability and Optimization of Multi-Fingered Robot Hands under Different Postures</b> H.J. Mo, J.J. Zhou and H.R. Qiu	247
<b>Construction of Point Set Surfaces through Quadric Polynomials</b> Y. Liu	253
<b>Research on Safe Shipment of the Cargoes which May Liquefy</b> J.W. Xiao	260
<b>The Research on Methods of Complicated Electromagnetic Environment Construction</b> X.F. Shao and N. Jiang	265