

Table of Contents

Preface

Chapter 1: Metalworking Technologies

A Study on Calculation of Optimum Exchanged Grinding Wheel Diameter when Surface Grinding Stainless Steel	
T.T. Hong, L.A. Tung, Q.T. Nguyen, L.H. Ky, T.D. Hoang, V.T. Lien, X.H. Le and V.N. Pi	3
Analysis of Effects of Machining Parameters on Surface Roughness in Electrical Discharge Machining Tablet Shape Punches Using Taguchi Method	
T.T. Hong, T.D. Hoang, L.H. Ky, D.T. Tam, T.H. Bui, N.M. Cuong, L.A. Tung and V.N. Pi	12
A Study on Cost Optimization of External Cylindrical Grinding	
T.T. Hong, X.T. Hoang, L.H. Ky, Q.T. Nguyen, T.T. Nguyen, N.T.T. Nga, G. Jun and V.N. Pi	18
Optimization of Machining Time and Surface Quality of AISI D2 Tool Steel in WEDM Using Taguchi Methodology and Desirability Analysis	
C. Camposeco-Negrete and J.d.D. Calderón-Nájera	27
Application of Queuing Theory in Production Efficiency of Direct Rolling Process of Long Product	
H.L. Zhang, G.H. Feng, B.S. Wang, X.M. Liu and X. Liu	34
Study on a New Kind of Magnetic Abrasive Finishing by Using Alternating Magnetic Field for Ultra-Precision Plane Finishing	
C.W. Dong, Y.H. Zou and H.J. Xie	42
Friction Stir Forming of Aluminum Alloy Gear-Racks with Semi-Closed Dies	
T. Ohashi, H.M. Tabatabaei, T. Ikeya and T. Nishihara	50

Chapter 2: Functional Materials and Special Technologies

Characterization of Electrically Conductive Hydrogels - Polyaniline/Polyacrylamide and Graphene/Polyacrylamide	
X.Y. Lee, H.W. Fan and H.J. Koh	59
Sealing Performance and Mechanism of a High-Temperature Near-Neutral Sealing Adhesive in the Ternary System of ZrO_2-Al_2O_3-SiO_2	
L.B. Xiao, D. Zhang, Y.J. Liu, L.M. Pan and Q.H. Xue	65
Microstructure Formation and Characterization of Nano-Tin Oxide Thin Films Prepared Using Different Concentration	
M.H. Xu, F. Wang, C. Yang, R.H. Wang, S.B. Li, D.M. Du, J.G. Song and L. Chen	72
The Interlayer Effects of Nitrogen Implantation in the TiN/N_2- Film Synthesis on the NAK80 Steel	
U.H. Hwang	78
Effect of NaOH Concentration on the Microstructure and Mechanical Properties of the PEO Coatings on Mg-Al3-Zn1 Alloy	
Z.U. Rehman, C. Jeong and D.J. Choi	83
Solution Strengthening the Ti-6Al-4V Joints were Brazed by Ti-15Cu-15Ni and Ag-26.7Cu-4.5Ti Filler Foils	
K.H. Lee and S.Y. Yang	90
Preparation and Characterization of Al_2O_3-B_4C Coated Composite Powder by Hydrothermal Method	
F. Wang, R.H. Wang, M.H. Xu, X.B. Bai, A.X. Chen, D.M. Du, S.B. Li, J.G. Song and L. Chen	96
Synthesis and Characterization of Phosphorus-Containing Flame Retardant Polyamide 66	
Y.L. Zheng, S. Chen, J.H. Wang and R. Xiao	102
Study on Affecting Factors and Mechanism of Oil Tubing Corrosion in Northern Shaanxi Oil Field	
Y. Ma, S.T. Liu, H. Zhang, Y.H. Feng, S.C. Gou and H.T. Bai	108

Evaluation and Field Test of Corrosion Inhibitors of Oil Tube Carbon Steel from Shaanbei Oilfield

J. Xie, X.W. Jia, H.J. Huang, X. Jia, G.D. Huang, N.S. Gao and Y. Ma

115

Chapter 3: Computational Procedures for the Materials Properties Research and Behavior Simulation

Numerical Investigation of the Derivative Cutting Effect of Micro-Textured Tools in Dry Cutting of Ti6Al4V

Y. Liu, X. Liu, L. Li and Y. Tian

123

A Finite Element Model for Temperature Prediction in Laser-Assisted Milling of AerMet100 Steel

H.H. Zeng, R. Yan, W. Wang, P.L. Du, T.T. Hu and F.Y. Peng

130

Simulation Study of Deep Drawing Process

J. Abu Qudeiri, A. Ziout, M. Alsayyed, A. Alzarooni, F. Safieh, A. Al Hatti and A. Al Hassan

139

Simulation Research on Double-Side Grinding Method with Variable Position Rotation

W. Yan, Y.M. Huang and W.Y. Mu

148

The Research of Processing Methods of Thin-Walled Waffle Constructions Taking into Account Technological Deformations

R.V. Zuev and A. Zhargalova

157

Back Propagation Artificial Neural Network Approach to Predict the Flow Stress in Isothermal Tensile Test of Medium Carbon Steel Material

M. Murugesan and D.W. Jung

163

Chapter 4: Applied Biotechnologies and Waste Recycling

Fundamental Investigation of Ferrosilicon Production Using Rice Husk and Rubber Tree Bark at 1550°C: Implication for Utilization of Agricultural Waste in Steelmaking Industry

M. Boonyaratchinda and S. Kongkarat

171

Preparation, Characterization and *In Vitro* Release Study of Microcapsule Simvastatin Using Biodegradable Polymeric Blend of Poly(L-Lactic Acid) and Poly(-Caprolactone) with Double Emulsifier

F.C. Kusumasari, L. Hakim Samada and E. Budianto

178

Interfacial Behaviors of Transmembrane Peptides in Lipid Bilayer Studied by X-Ray and Neutron Reflectivity

D.J. Choi and Z.U. Rehman

184

Iron Collector Recycling by Electrochlorination Method

A. Antonov, N. Samotaev, A. Tietz, D. Veselov and A. Kirichenko

190

Characterization and Evaluation of Ca/Al LDHs Adsorbents Synthesized by a One-Step Hydrothermal Method for Congo Red Removal

H.T.T. Nguyen, D.T.T. Uyen, D.C. Nguyen, V.T. Tran, T.D. Lam, L.G. Bach, D.V.N. Vo, D.H. Nguyen, S.T. Do and T.D. Nguyen

195

Effects of Extraction Conditions on Antioxidant Activities of Roselle (*Hibiscus sabdariffa* L.) Extracts

N.Q. Duy, T.N. Pham, M.L.T. Binh, M. Thuan, N.T.T. Van, T.D. Lam and P.T.N. Nguyen

201

Extraction and Determination of Antioxidant Activity of Vietnamese Butterfly Pea (*Clitoria ternatea* L.)

N.Q. Duy, T.M.H. Nguyen, T.D. Lam, T.N. Pham and T.T. Thanh

207

Preparation and Characterization of Naturally Scented Candles Using the Lemongrass (*Cymbopogon citratus*) Essential Oil

H.D. Pham, T.N. Pham, D.T.K. Nga, N.T.T. Nhung, T.D. Lam and T.Q. Toan

212

Effective Method for the Platinum Group Metals Extracting from Spent Diesel Autocatalysts

A. Antonov, N. Samotaev, A. Tietz, G. Tsarev, D. Veselov and A. Kirichenko

218

Synthesis of Hercynite from Aluminium Dross at 1550°C: Implication for Industrial Waste Recycling

C. Chobtham and S. Kongkarat

223

Chapter 5: Materials and Technologies for MEMS Production

Technology of SMD MOX Gas Sensors Rapid Prototyping	
N. Samotaev, K. Oblov, D. Veselov, B. Podlepetsky, M. Etrekova, N. Volkov and N. Zibilyuk	231
Parameter Studies of Ceramic MEMS Microhotplates Fabricated by Laser Micromilling Technology	
N. Samotaev, K. Oblov, M. Etrekova, D. Veselov and A. Gorshkova	238
A Flexible Piezoelectric Nanogenerator Based on Free-Standing Polydimethylsiloxane / ZnO Nanowire Hybrid Film	
Y.F. Wang, W.L. Yang, Z.Y. Hou and Y. Wang	244
UV Nonvolatile Sensor Using SANOS Capacitor Device	
W.C. Hsieh, W.T. Tseng, F.C. Jong and H.T.D. Lee	250
Improvement of Field Effect Capacity Type Gas Sensor Thermo Inertial Parameters by Using Laser Micromilling Technique	
N. Samotaev, K. Oblov, M. Etrekova, D. Veselov, A. Ivanova and A. Litvinov	256
Progress in the Application of Rare Light Metal Beryllium	
L.F. Zheng, X.G. Wang, L.N. Yue, Y.J. Xie, B.P. Wu and J.M. Zhong	261
Thin Platinum Films Topology Formation on Ceramic Membranes	
N. Samotaev, K. Oblov, M. Etrekova, A. Ivanova, D. Veselov and A. Gorshkova	272
Fabrication, Characterization and Investigation of Novel PVDF/ZnO and PVDF-TrFE/ZnO Nanocomposites with Enhanced β-Phase and Dielectricity	
M.R. Liu	277