

Table of Contents

Preface

Chapter 1: Tribology of Metal Processing

Effect of Normal Load and Bulk Strain on Real Area of Contact in Aluminum Sheet Forming

F. Jalali Moghadas, M. de Rooij, T. van den Boogard and J. Hazrati 3

Analysis of Tool Wear Rate during a Rotation of Cutter in Fly Cutting

T. Matsumura, S. Tamura and A. Toshiharu 10

Improved Process Efficiency with Microtextured Blanking Punches Using MHP

P. Schumann, V. Arne and P. Groche 18

Optimization of Precision Boring Conditions to Enhance the Surface Integrity of a Landing Gear Component

W. Jomaa, J. Levesque and A. Gakwaya 27

Image-Based Machine Learning of *In Situ* Captured Images of Die-Workpiece Interface in Forging

R. Matsumoto, S. Kunisawa, Y. Nakamura and H. Utsunomiya 36

Tribo-Corrosion Wear Mechanisms of NiTiNOL60 Alloy in Aqueous Sodium Hydroxide

A. Okoani, N. Ashveen and M. Ramezani 41

Evaluation of the Hot Tribological Properties of the AZ80 Alloy by a V-Groove Friction Test

T. Funazuka, S. Hosaka, K. Yamazaki and K. Dohda 49

Chapter 2: Functional Nanoparticles

Laser-Induced Fabrication of Pd Nanostructures: A Correlation Study between their Size and Plasmonic Properties

C. Awada and F. Ruffino 59

Enhancing Epoxy Polymer Composites with Mxene Nanosheets for Improved Thermal Performance

A.A. Janjua, M.S. Saharudin, A.E. Okechukwu, M. Younas and N.H. Faisal 65

Chapter 3: Protective Coatings

Dynamic Mechanical Properties and Corrosion Resistance of Epoxy Coatings Enhanced with MXene and Diverse Nano-Fillers

M.S. Saharudin, N.A. Che Nasir, A.A. Janjua, A.E. Okechukwu, N.H. Faisal and E.Z. Ahmad 77

Influence of PTFE as Thin Top Layer on Hydrophobicity and Wear Behaviour of HVOF Sprayed TiC+50%NiCr Coating on SS410 Steel

A. Bansal, V. Singh and A.K. Singla 85

Investigating the Corrosion Resistance of Ti-Al Coating on Structural Steel Components

T.Z. Deng, S. Ramhormozian and M. Ramezani 93

Micro-Raman Spectroscopic Study of the Tribology of AlCrN Coated Cemented Tungsten Carbide Pins Dry Sliding on Hardened Steel Discs

K.C. Solasa, A. Bhattacharyya, P. Roy Choudhury and N.V. Venkataraman 102

Surface Wettability Response of Hydroxyapatite-Doped Coatings on Metallic Biomaterials: A Concise Review

I.A. Gul, A.M. Abdul-Rani, A. Ahmad, M. Al-Amin, A.A. Aliyu and E. Garba 112

Comparison and Sustainability Enhancement of Oxide Coatings by Reactive and Non-Reactive Radio Frequency Magnetron Sputtering Technique

R.R. Srivastava, S. Ghosh and P.V. Rao 124

Functional Tool Surfaces with Smooth Diamond-Based Tool Coatings for the Wear-Free Forming of Aluminum Sheets	
P. Scholz, C. Stein, K. Weigel, M. Höfer, M. Frankiewicz, M. Cwikla, M. Kempa and S. Baron	131
Tribological Performance of AlCrN and TiAlN Coatings in Aluminum Forming Process at High Temperature	
P. Soranansri, A. Dubois, P. Moreau, T. Funazuka, K. Dohda and L. Dubar	139

Chapter 4: Lubricants

Effect of Stress during Press-Fitting on Tribological Behavior of Self-Lubricating Composite Liners in Spherical Plain Bearings	
H.T. Chen, L.L. Zhu, X.R. Huang, J.J. Zhang and C.L. Hu	151
Effect of Micro-Dimples on Lubrication in Ironing of Stainless Steel	
K. Kitamura, T. Makino and M. Nawa	159
Graphene Nano-Lubricant for the Improved Rolling Contact Fatigue (RCF) Life of AISI 4140 Steel under Rolling with Slip Conditions	
M.R. Ranju and D. Kesavan	166
Use of Liquid Lubricant with Glass Microspheres in Suspension to Permanently Improve the Tribological Behavior of PPS	
S. Garcia Carrasco, S. Sanchez-Caballero, M.A. Selles, S. Montava-Jorda and A.d.l. Calle Salas	174
Development of Oil Free Lubricants for Cold Rolling of Low-Carbon Steel	
L. Jacobs, D. Reche, A. Ban, V. Colla, O. Toscanelli, M. Raulf, M. Schlupp, B. Smeulders, M. Cook and W. Filemon	181
Effects of Various Cooling and Lubrication Methods on the Tool Life and Hole Quality of Deep Drilled Small Holes in AISI 304L	
J.M. Scholey, K.K. Wika, A. Wright and T.S. Sihra	190
Enhancing Machinability of Nimonic 90 Alloy by Micro-Texturing Based Solid Lubricant on AlTiN Coated Carbides: A Sustainable Approach towards Commercialization	
G. Kumar, S. Ghosh and P.V. Rao	199
Temperature Sensing in Cold Forging with Thermochromically Enhanced Lubrication Systems	
C. Kuhn and P. Groche	208
About the Possibility to Assess Cutting Fluids Efficiency Using an Instrumented Tribological Approach	
V. Burnichon, C. Courbon, F. Salvatore, M.A. Cruz Gracia, U. Masciantonio and J. Rech	216
Enhancement of Mixed-Lubrication Models for Cold Rolling	
L. Jacobs, V. Pater and M. de Rooij	224

Chapter 5: Additive Manufacturing

Exploring the Impact of 3D Printing Variables on Gear Surface Finish and Wear Behavior	
S. Montava-Jorda, S. Garcia Carrasco, S. Sanchez-Caballero, A.d.l. Calle Salas and B. Eixeres Tomas	235
Influence of Post Heat Treatment on Slurry Erosion Behavior of Wire Arc Additive Manufactured (WAAMed) Inconel-625	
J. Singla, V. Singh, J. Singh and R.S. Rooprai	241
Tribological Study on Burnished Surface of Additive Manufactured C300 Metal	
A. Travieso-Disotuar, R. Jerez-Mesa, J.A. Travieso-Rodriguez and M. Vilaseca	249