

Table of Contents

Preface

Chapter 1: Surface Topography and Coatings

Formation of the Surface Layers of a Material with Shape-Memory-Based TiNiCo Diffusion Metallization P.O. Rusinov and Z.M. Blednova	3
The Surface Treatment Influence on the Occurrence of the Critical State Relating to the Needle as the Operating Tool F. Pešlová, A. Pavůčková, M. Ďurovcová, L. Hajdúchová, M. Janeková, D. Košťaliková and S. Krum	7
X-Ray Diffraction Analysis of Zn-Mg Coating in Dependence on Deformation L. Zuzánek, O. Ridky, P. Solfronk, M. Kolnerová, J. Sobotka and N. Ganev	11
The Study of Parameters of Surface Roughness by the Correlation Analysis D. Draganovská, G. Ižariková, J. Brezinová and A. Guzanová	15
The Effect of Shot Peening on the Surface Topography and Fatigue Strength of Selected Sheets Ł. Bąk, M. Bucior, F. Stachowicz and W. Zielecki	19
Adhesive Bonding Technology at Car - Body Structure – Application of New Coating with Layer Zn/Mg M. Kolnerová, J. Sobotka, P. Solfronk and L. Zuzánek	23
Testing of PVD Hard Coatings Applied to Coining Dies D. Jakubéczyová, D. Kalincová and R. Kaštan	27
Study of Selected Properties of Coatings Devoted to Extreme Tribo-Corrosive Conditions A. Guzanová, J. Brezinová, J. Bronček, P. Maruschak and M. Landová	32
Influence of Electrodeposited Coatings on Ultra-High-Cycle Fatigue Life of S235 Structural Steel F. Nový, L. Trško, R. Ulewicz and S. Dundeková	37
Non-Destructive Surface Diagnostics of Tools M. Džupon, J. Balko and J. Brezinová	41
Surface Finish Techniques for FDM Parts I. Gajdoš, E. Spišák, L. Kaščák and V. Krasinskyi	45
Evaluation of AlTiCrN Coatings Surface after Tribological Tests J. Brezinová, D. Jakubéczyová and M. Landová	49
Assessment of the Properties of Paint Films Containing Surface-Treated Silicates K. Nechvilová and A. Kalendová	53
Influence of Deformation on the Damage of Zn-Mg Based Protective Coating P. Solfronk, J. Sobotka, M. Kolnerová and L. Zuzánek	57
Properties of the Electro-Spark Deposited Coatings - Technology and Applications N. Radek, J. Bronček, P. Fabian, J. Pietraszek and K. Antoszewski	61
Morphology Characteristics of Coatings for Forming Applications D. Draganovská, E. Evin and M. Tomáš	65
Tribological Properties of Coatings for Sheet Metal Stamping Dies E. Evin, B. Antoszewski, M. Tomáš, J. Tkáčová and D. Draganovská	69
Influence of Pressure in the Nozzle Combustion Chamber on the Porosity and Hardness of WC - Co Coatings Created by HVOF Technology J. Moravec and V. Kaška	74
Properties Evaluation of Renovation Coatings Created by Thermal Spraying Technology A. Mareš, J. Brezinová and D. Draganovská	78
Investigation of Statically Deformed Aluminum Alloy Surface P. Maruschak, I. Konovalenko, J. Brezinová and I. Zakiev	83
Short-Term Corrosion Protection of Materials Using Nanocoatings D. Pavelková, L. Koldová, J. Podjuklová, R. Siostrzonek, Z. Pěnička and V. Menshikov	89

Change of Tribological Properties of Zn-Mg Coating in Dependence on Deformation J. Sobotka, P. Solfronk, M. Kolnerová and L. Zuzánek	93
Sorption Capable Film Coatings with Variable Conductivity O. Grytsenko, E. Spišák, L. Dulebová, V. Moravskii and O. Suberlyak	97
The Influence of Modifying HDPE on Properties of the Surface L. Dulebová, T. Garbacz, V. Krasinskyi and B. Duleba	101
Heat-Resistant Coatings on the Basis of Phenol-Formaldehyde Compositions V. Krasinskyi, E. Spišák, I. Gajdoš and T. Garbacz	105
Analysis of Changes in the Surface Quality of a UD Prepregs Composite due to Mechanical Loading M. Petřů, M. Surovátková, T. Martinec and P. Lepšík	109

Chapter 2: Corrosion Processes and Corrosion Properties of Materials

Study of Calcium Phosphate (OCP) Electrodeposition Process on Elektron 21 Magnesium Alloy Surface M. Omasta and B. Hadzima	115
The Causes of Corrosion Formation of Packaging Sheets after Plastic Deformation E. Spišák, J. Majerníková and E. Spišáková	121
The Corrosion Characteristics of AlSi1MgMn P. Lacková, M. Mihalíková, J. Cervová and A. Lišková	125
Corrosion of Dry - Bottom Boiler Evaporator in Power Industry R. Maršál, J. Podjuklová, R. Siostrzonek, D. Pavelková, L. Koldová and Z. Pěnička	129
Some Possibilities of Evaluation of Corrosive Resistance of Metal and Non-Metal Coatings M. Hagarová, Z. Fečková, P. Lacková and J. Cervová	133
Release of Metals from Cans during Short-Term Storage M. Halama, T. Beyreder, D. Vasilková and D. Halamová	137
Evaluation of Corrosion Resistance of Galvanized Steel Sheets Used in Automotive Production L. Kašćák, J. Brezinová and J. Mucha	141
Electrochemical Characteristics of Mechanically Treated Metallic Surfaces J. Brezinová, A. Guzanová, D. Draganovská and J. Koncz	145
Electrochemical Characteristics of Anodized Ti-6Al-4V Alloy M. Ivašková, M. Lovíšek and K. Miková	149
Defectometry Analysis of Surface Condition Damaged with Corrosion Pitting P. Maruschak, I. Konovalenko, A. Guzanová, P. Sydor and S. Panin	153
Impact of Cathodic Protection on Selected Polymeric Coatings M. Lovíšek, T. Liptáková, S. Dundeková and P. Šimko	158
Corrosion Protection of Structural Steelwork by a Duplex Coating System R. Siostrzonek, D. Pavelková, L. Koldová, J. Podjuklová and P. Strzyż	162
The Influence of Substrate Surface Cleanliness on the Corrosion Resistance of Coating Systems M. Hanák, J. Podjuklová, R. Siostrzonek, D. Pavelková and L. Koldová	167
The Effect of Polypyrrole on Corrosive Properties of Organic Coatings Containing High Amounts of Zinc Metal Particles M. Kohl and A. Kalendová	171

Chapter 3: Surface Treatment of Wood

Morphological Changes on Spruce Wood Surface, Induced by Treatment with Dry Ice J. Kúdela, L. Mrenica, I. Čunderlík and P. Šmíra	177
The Sodium Water Glass in Surface Treatment of Chordophones A. Danihelová, E. Ružinská and D. Spišiak	181
The Evaluation of Specific Environmental and Degradation Characteristics of Surface Treated Wood E. Ružinská, V. Hagara, P. Jakúbek and K. Krajewski	185

Activity of Bacteria and Moulds on Surfaces of Commercial Wooden Composites Z. Vidholdová, J. Izdinský, L. Reinprecht and J. Krokošová	190
Modified Method of Evaluation the Effect of the Protection Retardant Coatings Applied on the Surface of the Wood Building Construction E. Ružinská, I. Mitterová, M. Zachar, A. Majlingová, V. Hagara and P. Jakúbek	194
Photostability of Transparent Surface Coatings of Wood G. Slabejová and Z. Vidholdová	198
Adhesion of UV-Curable Coatings to Beech Wood M. Štrbová, D. Tesařová and J. Kúdela	202

Chapter 4: Technological Properties of Materials for Mechanical Engineering

Tribological Research of Properties of Heat – Treated Cast Irons with Globular Graphite J. Bronček, P. Fabian and N. Radek	209
Measurement of the Limit Strains on TS 245 Tinplate M. Tomáš, J. Slota, E. Spišák and J. Hudák	213
Clinching - An Innovative Trend in Joining of Combined Materials in Car Body Production L. Kaščák, E. Spišák, E. Spišáková and I. Gajdoš	217
Quality Analysis of Welding Joints on Helically Welded Pipes M. Gatíal, J. Viňáš and J. Pořák	221
Evaluation of Welded Joints of Automotive Sheets Š. Kender	225
Analysis of Welds Made by Delta Spot Method J. Viňáš and L. Kaščák	229
Analysis of Thrust Force and Torque in Drilling Process of Particle Board K. Szwajka	233
Analysis of Laser Welds on Automotive Steel Sheets J. Viňáš and M. Ábel	239
Analysis of the Delamination in Drilling of Particle Board K. Szwajka	243
Evaluation of Limit Deformations of Zn Coated High Strength Steel M. Tomáš, E. Evin, S. Németh and J. Hudák	248
Wrinkling Prediction and Optimization of Sheet Metal Forming Process by Numerical Simulation J. Slota and M. Šiser	252
Ultrasonic Inspection of Thin Duplex Steel Welds by Phased Array E. Hodúlová, I. Kovaříková, B. Šimeková and K. Ulrich	256
Parameters of Laser Welding and their Influence of Weld Seam P. Balog, J. Brezinová and P. Pastorek	260
The Influence of Punch-Die Clearance on Blanked Edge Quality in Fine Blanking of Automotive Sheets E. Spišák, J. Majerníková and E. Spišáková	264
The Evaluation of Surface Quality for Particular Parts of Forging Die P. Ižol and J. Beňo	268
The New Knowledge of Environmentally Friendly Joints Made by Thermal Drilling L. Sobotová and M. Badida	272
The Analysis of the Shape and Mass of the Frames of Assembly Presses M. Stupavský and J. Bronček	276
RP Technology Used for the Production of Metal Parts V. Čapková and I. Zetková	280
Modification of Milling Tools and their Coating for Machining Sandwich Materials T. Kroupa, T. Bakša, P. Hanzl and M. Zetek	284
Analysis of Pearlitic Cold Drawn Steel Wire M. Mihalíková, P. Lacková and A. Lišková	288

Chapter 5: Plastics and Composites

X-Ray Microtomograph Detection of Internal Defects for a UD Prepreg Composite M. Petřů, M. Syrovátková, M. Kolínová and O. Novák	295
Possibility of Increasing the Mechanical Strength of Carbon/Epoxy Composites by Addition of Carbon Nanotubes B. Duleba, F. Greškovič, L. Dulebová and T. Jachowicz	299
Analysis of the Reason of Non-Homogeneity of Molded Part from Semi-Crystalline PPS E. Spišák, B. Duleba and I. Gajdoš	303
Analysis of Short Glass Fiber Orientation in Injection Moulded Components B. Duleba, F. Greškovič, J. Sikora and L. Dulebová	307
Application of Natural Fibers in Hybrid Composite Materials M. Dúbravčík	311