Table of Contents

Preface and Conference Organizers

Chapter 1: Materials

The Material Properties of Different Zones of Joints Welded Using a Laser I. Dzioba, T. Pala and R. Pała	3
Tribological Properties of Diamond-Like Carbon Coatings M. Madej	9
Influence Environment and Parameters Ablative Laser Texturing on Selected Properties Surface Layer Steel 100CrMnSi6-4 W. Napadłek	17
Quanitative Analysis of the Polymer/Metal Powder Magentic Composites Compacts Structure	
L. Paszkowski, D. Biało, J. Bucki and A. Skalski The Average Friction Coefficient of Laser Textured Surfaces of Silicon Carbide Identified by RSM Methodology	23
N. Radek, J. Pietraszek and B. Antoszewski Evaluation of the State for the Material of the Live Steam Superheater Pine Coils of V.	29
Evaluation of the State for the Material of the Live Steam Superheater Pipe Coils of V Degree	
K. Trzewiczek, A. Szczotok and A. Gądek-Moszczak	35
Fatigue Strength of Ductile Iron in Ultra-High Cycle Regime R. Ulewicz, F. Nový and J. Selejdak	43
Chapter 2: Technologies	
Influence of Laser Surface Texturing on Scuffing Resistance of Sliding Pairs B. Antoszewski	51
Contour Error of the 3-DoF Hydraulic Translational Parallel Manipulator R. Dindorf and P. Wos	57
The Impact of the Power Plant Unit Start-Up Scheme on the Pollution Load R. Dwornicka	63
Impact of the Parameters of Laser-Vibration Treatment on the Roughness of Aluminium Melts B. Grabas	71
Research of the Elastic Properties of Bellows Made in SLS Technology	/1
C. Kundera and T. Kozior	77
The Centrifugal Pump with the Impeller Supported in Sealing Clearances V. Martsynkovskyy, A. Korczak and C. Kundera	83
Enhancing Safety and Security of Networked FPGA-Based Embedded Systems P. Osocha	89
Laser Texturing, Spark Erosion and Sanding of the Surfaces and their Practical Applications in Heat Exchange Devices M. Piasecka	95
Electrospark Alloying of Carbon Steel with WC-Co-Al ₂ O ₃ : Deposition Technique and Coating Properties N. Radek, A. Sladek, J. Broncek, I. Bilska and A. Szczotok	101
The Influence of Electrospark and Laser Treatment upon Corrosive Resistance of Carbon	101
Steel M. Scendo, N. Radek and J. Trela	107
Laser Cold Ablation as a Cutting Edge Method of Forming Silicon Wafers Used in Solar	
Cells P. Sęk and S. Tofil	113

Laser Technologies in Microsystems M. Tomczyk, M. Walczak and P. Sęk	119
Chapter 3: Methods	
Modelling of the Mechanical State of a Diamond Particle in the Metallic Matrix J. Borowiecka-Jamrozek and J. Lachowski	127
Application the 3D Image Analysis Techniques for Assessment the Quality of Material	
Surface Layer before and after Laser Treatment A. Gądek-Moszczak, N. Radek, S. Wroński and J. Tarasiuk	133
Modeling of Errors Counting System for PCB Soldered in the Wave Soldering Technology J. Pietraszek, A. Gądek-Moszczak and T. Toruński	139
The Heuristic Approach to the Selection of Experimental Design, Model and Valid Pre- Processing Transformation of DoE Outcome	
J. Pietraszek and A. Goroshko	145
The Optimization of the Technological Process with the Fuzzy Regression J. Pietraszek and E. Skrzypczak-Pietraszek	151
Factorial Approach to Assessment of GPU Computational Efficiency in Surrogate Models J. Pietraszek, A. Szczotok and E. Kocyłowska	157
On the Possibility of the Estimation of the Depth of a Keyhole Formed during Laser	
Welding W. Zowczak	163