

Table of Contents

Preface

I. Materials Analysis

Microstructure and Properties of Ti-47Al-2W-0.5Si Cast Alloy A. Szkliniarz and W. Szkliniarz	3
Determination of Nickel in Welding Fume by Gravimetric Method Using Dimethylglyoxime J. Matusiak and A. Wyciślik	7
Estimation of Carbon Balance in Reaction Zones of a Submerged-Arc Furnace during Ferrosilicon Smelting B. Machulec and G. Kopeć	11
The Origin of the Ferroelectricity in the Bismuth Titanate $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ with Perovskite-Like Layered Structure J.A. Bartkowska, J. Dercz and D. Michalik	17
Thermal Stability of Ti-6Al-4V Alloy with Carbon Content A. Szkliniarz	23
Biomechanical Analysis of Selected Endoprostheses of Hip Joint by Means of Finite Element Methods M. Basiaga and J. Przondziono	29
Effect of Heat Treatment on the Microstructure and Mechanical Properties of Sintered Stainless Tool Steel K.J. Ducki, J. Jasiewicz, G. Junak and L. Wojtynek	33
The Influence of Addition of the Rare Earth Elements on the Structure and Hardness of AlZn12Mg3.5Cu2.5 Alloy R. Michalik and T. Mikuszewski	39
Effect of Autogenous Laser Weld on Microstructure and Mechanical Properties of Inconel 617 Nickel Alloy J. Adamiec and R. Kocurek	43

II. Processing Technologies

Strength–Energy and Structural Effects of Dynamic Deformation of Aluminum Alloy A. Płachta, J. Pawlicki and K. Rodak	49
Influence of the Materials Combination for the Surface Temperature of the Bimetallic Wire Deformed in the Cold Drawing Process D. Halaczek and E. Hadasik	53
Preparation of SiC_w-ZTA Composites by Two-Step Sintering or Spark Plasma Sintering E. Czerska, W. Pyda, N. Moskała, A. Huczko and A. Dąbrowska	59
Tests of Welded Joints of New Generation Austenitic, Stainless Steel HR3C S. Lalik	65
Fatigue Behaviour of Carbide Precipitation Hardened Austenitic Steels K.J. Ducki, M. Cieśla, G. Junak and L. Wojtynek	69
Influence of the Thermo-Mechanical Treatment on the Properties and Microstructure of High Manganese Austenitic-Ferritic Steel M. Jabłońska, D. Kuc, G. Niewielski and B. Chmiela	75
Durability of Tube Bends Made of the 14MoV6-3 Steel under Low-Cycle Fatigue Conditions and Creep at a Temperature of 500°C M. Cieśla, R. Findziński and G. Junak	79
Cracking of 7CrMoVTiB10-10 (T24) Steel Weld Joints M. Stopyra and J. Adamiec	87
The Influence of the Solutionizing and Ageing on the Structure and Hardness of the ZnAl40Cu3 Alloy R. Michalik and B. Chmiela	91

Evaluation of Susceptibility to Hot Cracking of Inconel 617 Nickel Alloy Welds in Transvarestraint Test	
R. Kocurek and J. Adamiec	95
Microstructure and Mechanical Properties of High Manganese TWIP Steel after Thermo-Forming Processes	
M. Jabłońska, D. Kuc, K. Horzelska and A. Śmiglewicz	99
The Causes of Low Impact Strength of T23 Steel Weld Joints	
J. Adamiec, I. Pikos and M. Stopyra	103
Welding Duplex Steel Type X2CrNiMoN25-7-4 with Analysis of Ferrite Content Measurements in Welded Joints	
S. Lalik and J. Gucwa	107
Usefulness of Quartzites for the Production of Ferrosilicon	
G. Kopeć and R. Przeliorz	111
Porosity of Solid and Cored Turbine Blades of Aircraft Engines	
S. Roskosz, J. Nawrocki and K. Kubiak	115

III. Surface Engineering

Laser Remelting of Silicide Coatings on Mo and TZM Alloy	
G. Moskal, A. Grabowski and A. Lisiecki	121
Profilometric Assessment of Surface Condition of Zinc Coatings Formed by the Continuous Galvanizing Method	
J. Mendala and J. Wieczorek	127
The Influence of Si Content in Steel on Growth Kinetics and Structure of Hot Dip ZnAl23Si Coatings	
H. Kania	133
High Temperature Cyclic Oxidation of Coatings on Ni-Based Superalloys	
M. Kianicova and J. Trník	137
Zinc Coatings Obtained by Hot Dip Method on the High Strength Steel for Link Chains	
P. Liberski	143
The Influence of High Velocity Thermal Spraying Methods on Top Surface Topography of WC-Co Coatings	
H. Myalska, J. Wieczorek, K. Szymański and G. Moskal	149
The Structure of Coatings Obtained in a ZnAl23Si Bath by the Batch Hot Dip Method	
H. Kania	155
Characteristics of Selected Tribological Properties of New Thermally Sprayed Coatings	
K. Szymański and B. Szczucka-Lasota	161
The Possibility of the LME Phenomenon in Elements Subjected to Metallization in Zn Bath with Bi Addition	
J. Mendala	167
Zinc-Aluminum Coatings Obtained by Hot Dip Method on High Strength Steel for Link Chains	
P. Liberski and J. Mendala	173
A Study of Hot Corrosion Behaviour of NiAl Coatings in an Aggressive Environment	
M. Kianicová and J. Kafrik	177

IV. Materials and Environment

Client in the Center Metallurgical Enterprise Organization	
B. Gajdzik and M. Kuczyńska-Chałada	185
Industrial Experiments Filtration of Steel	
K. Janiszewski, B. Gajdzik, K. Gryc, L. Socha and A. Bogdał	189
Characteristics of the Structure and Corrosion Resistance of New Elaborated Coatings for Energy Industry	
B. Szczucka-Lasota and K. Szymański	193

The Use of Trapezoidal Fuzzy Numbers in the Model to Optimize the Batch of Electric Arc Furnace	
B. Machulec and A. Kuźnik	199
Strategic Investments of Restructured Metallurgical Companies in Sustainability Business	
B. Gajdzik, K. Janiszewski and J. Szymshal	205
Thermal Analysis Results and the Theoretical Determination of Solidus and Liquidus Temperatures for the Grain Oriented Electrical Steel	
K. Gryc, B. Smetana, K. Janiszewski, M. Žaludová, M. Tkadlečková, L. Socha, K. Michalek and L. Válek	209
Analysis of the Possibilities Using of the Post-Reaction Gases Enthalpy from the Ferrosilicon Smelting Process	
W. Bialik and B. Machulec	215