

Table of Contents

Preface and Committees

Chapter 1: Materials and Related Industrial Technologies

An Analysis of the Microstructure and Mechanical Properties of Rapidly Solidified Al-1Fe-1Ni-5Mg Alloy A. Kula, L. Blaz and M. Sugamata	3
Structural Characterization of Mechanically Alloyed AlMg-CeO₂ Composite T. Skrzekut, A. Kula, L. Blaz, G. Wloch and M. Sugamata	10
The Effect of Heat Treatment on Static and Dynamic Mechanical Properties of Rapidly Solidified and Plastically Consolidated RS442 Aluminium Alloy M. Motyka, T. Tokarski, W. Ziaja and M. Wedrychowiec	17
Light Metals Chips Recycling by Plastic Consolidation T. Tokarski, M. Wędrychowiec and M. Wiewióra	24
Microstructure and Tribological Properties of Aluminum Matrix Composite M. Suśniak, J. Karwan-Baczewska and I. Sulima	30
Burnishing of Aluminium Alloy Surface Using Diamond Matrix Composite Tools M. Szutkowska, D. Toboła and K. Czechowski	39
Research into the Aluminum-Zirconium Alloys Dedicated for Electirical Purposes M. Piwowarska-Uliaz, T. Knych and P. Uliaz	47
Influence of Casting Velocity on Structure and Properties of AlFe0,5 Alloy M. Jablonski, T. Knych, A. Mamala and M. Palczewski	56
Research into the Impact of Magnesium Content in the AlSi7Mg Aluminum Cast Alloys on the Strength and Electrical Properties of the Material after Different Parameters of Heat Treatment Operations J. Wiecheć, P. Uliaz, T. Knych and J. Tatarczuch	63
Corrosion Resistance and Tensile Property of Al-Coated Mg-Li Alloy Produced by Hot Extrusion K. Tomita, K. Matsuura, M. Ohno, T. Tokunaga, R.Z. Wu and M.L. Zhang	69
Studies on Copper – Activated Carbon (CWZ14) Metallurgical Synthesis with the Use of Continuous Casting Method P. Kwaśniewski, G. Kiesiewicz, T. Knych, A. Mamala, A. Kawecki, B. Smyrak, W. Ścieżor, K. Korzeń and E. Sieja-Smaga	81
Research in the Field of Manufacturing of Layered Brazing Materials W. Kazana, L. Ciura and M. Karpiński	88
Production and Properties of AgW50 Composites Designated for Electric Contacts M. Osadnik, M. Czepelak and M. Kamińska	93
Silver Based Brazing Composites for Trimetalic Components M. Karpiński	99
Effect of Plasma Gases on the Structure and Properties of WC-CrC-Ni Coatings M. Richert, I. Nejman, M. Poręba, J. Sieniawski and Ł. Kuczek	105
The Possibility of Deposition of Diamond and DLC Coatings by PACVD Method M. Poręba, P. Zawadzka, M. Richert, J. Sieniawski, T. Strączek and C. Kapusta	111
The Role of the Deformation Conditions in the Evolution of the Microstructure of the Ti-6Al-2Sn-4Zr-6Mo Alloy J. Krawczyk, A. Łukaszek-Solek and R. Dąbrowski	116
Influence of the Ageing Temperature on the Selected Mechanical Properties of the Ti6Al7Nb Alloy R. Dąbrowski, J. Krawczyk and E. Roźniata	120
Influence of Process Parameters on Cooling Conditions in Nickel Base Superalloy Investment Casting J. Nawrocki, D. Szeliga, K. Kubiak, H. Matysiak, M. Motyka and W. Ziaja	124

The Influence of Microstructure of Medium Carbon Heat-Treatable Steel on its Tribological Properties	
R. Dziurka, M. Madej, M. Kopyściański, M. Malyszko and M. Dziadosz	132
Characteristics of the G200CrNiMo4-3-3 Cast Steel in as Cast State	
E. Roźniata, J. Krawczyk, R. Dąbrowski and J. Pacyna	136
Infiltration as a Method of Fabrication of HSS Based Composites	
M. Madej	141
Electrochemical Codeposition of Nickel and Tin from Gluconate Solutions	
E. Rudnik	149
Modification of Electrodeposited FeNi Alloys by Applying External Magnetic Field	
A.M. Białostocka and P. Żabiński	157
Surface Tension in a Cu-Pb-Fe Liquid Alloy ($X_{Cu}=0.9$)/Al₂O₃/Gaseous Phase System	
T. Sak and S. Pietrzyk	164
Electrical Conductivity of Low-Melting AlF₃-NaF and KF-AlF₃ Solutions	
P. Palimąka and S. Pietrzyk	169
An Analytical Model for the High Temperature Low Sag Conductor Knee Point Determination	
A. Mamala, T. Knych, B. Smyrak, P. Kwaśniewski, G. Kiesiewicz, M. Jabłoński and W. Ścieżor	173

Chapter 2: Metalworking

Continuous Rotary Extrusion (CRE) of Flat Sections from 6063 Alloy	
M. Mitka, M. Gawlik, M. Bigaj and W. Szymanski	183
Processing Maps of the Ti-6Al-4V Alloy in a Forging Process Design	
A. Łukaszek-Solek and J. Krawczyk	190
The Hammer Forging of Ti-6Al-4V Alloy	
A. Łukaszek-Solek and S. Bednarek	198
Analysis of Properties of Selected Aluminium Alloys, Obtained by Twin Roll Casting Method and Subjected to Cold Rolling Process	
W. Ścieżor, A. Mamala and P. Kwaśniewski	202
Numerical Simulation of Extrusion of Hollow Profiles from Mg-Li Alloy	
W. Libura, A. Rękas, M. Milczanowski and K. Milczanowska	210
Numerical Simulations of Drawing and Redrawing Process of Forming Thin Cylindrical Element from Aluminium Series 3XXX	
A. Rękas, T. Latos, R. Budzyn, M. Kociolek and T. Styra	218
The Analysis of Influence of Sheet Properties on the Ironing Process of Thin-Walled Cylindrical Shell Products from Aluminum Alloys	
A. Rękas, T. Latos, R. Budzyn, M. Fijałkowski and Ł. Brodawka	232
The Analysis of Mechanical Properties of 3XXX Series Aluminum Sheets Used for Beverage Can Production	
A. Rękas, T. Latos, R. Budzyn, A. Furman and M. Siedlik	246
The Analysis of Weldability of Profiles Extruded from Powder Mixtures Based on Aluminium	
A. Rękas, J. Zasadziński, A. Kuta and T. Latos	257
Implementation of FMEA into Mass Production Process to Identify and Eliminate Causes of Defects	
A. Rękas, M. Kurek, T. Latos and K. Milczanowska	266
Influence of Severe Plastic Deformation Induced by HE and ECAP on the Thermo-Physical Properties of Metals	
J. Skiba, A. Dominiak, T.S. Wiśniewski, W. Pachla, M. Kulczyk and S. Przybysz	278
Processing of Copper by Equal Channel Angular Pressing (ECAP) – Microstructure Investigations	
B. Leszczyńska-Madej, M.W. Richert, A. Hotłoś and J. Skiba	286
Effect of Continuous RCS Deformation on Microstructure and Properties of Copper and Copper Alloys Strips	
W. Głuchowski, J. Domagała-Dubiel, J. Stobrawa, Z. Rdzawski and J. Sobota	294