

Table of Contents

Preface and Scientific Committee

Chapter 1: Materials Properties and Application

Microstructural Refinement in a Commercial Aluminum Alloy Processed by ECAP Using a Die Channel Angle of 110 Degrees N. Șerban, D. Răducanu, N. Ghiban and V.D. Cojocaru	3
Mechanical Behavior for some Cobalt Alloys A. Ghiban, B. Ghiban, C.M. Borțun, N. Serban and M. Buzatu	9
Focus on Carbide-Tipped Circular Saws when Cutting Stainless Steel and Special Alloys M. Rosso, I. Peter and F.S. Gobber	13
The Sintering Mixed Powders Behavior of Triuranium Octoxide in Uranium Dioxide A. Barbu and M.O. Cojocaru	22
The SmCo₅ Intermetallic Compound Sintering G. Arghir	29
Thermal Analysis of Heat Sinks for a Power Thyristor Module C. Fărcaș, A. Fodor and D. Pitică	38
Thermal Conductivity of Aluminum Particle Filled High Density Polyethylene Composites – Particle Size Effect T. Evgin and I.H. Tavman	44
Improvement of the Magnetic Properties of Silicon Iron Alloys through Laser Irradiation and Thermal Treatments V. Paltanea, V. Păltănea, H. Gavrilă, M. Butu and D. Popovici	50
Die Failures in Copper Hot Extrusion M. Schwartz, D. Gheorghe, R. Ciocoiu and I. Ciucă	56
Microstructural Investigation of Aluminum Alloys Type "2024" for the Aviation Industry F.V. Anghelina, V. Bratu, E.V. Stoian and I.N. Popescu	62
Studies on Fe-Cr-Ni-Si-B Bulk Metallic Glass for Automotive Applications M. Lucaci, D. Patroi, V. Tsakiris, M.V. Lungu, E. Manta and A. Iorga	68
Composite Materials Based on Silicone Rubber Used to Mitigation Electromagnetic Pollution E.V. Stoian, V. Bratu, F.V. Anghelina and I.N. Popescu	76
Advanced Materials with Photocatalytic Properties and Magnetic Core for Environmental Applications A. Predescu, E. Matei, A. Predescu, C. Predescu, C. Covaliu and R. Trusca	81
Al/Al₂O₃+Gr Hybrid Composite Compacting Behavior M.A. Matara, I. Csáki, M. Lucaci, M. Lungu, G. Popescu and G. Iacob	86
Preparation and Characterization of Conductive Polymer Nanocomposites Based on Ethylene-Vinylacetate Copolymer (EVA) Reinforced with Expanded and Unexpanded Graphite I.H. Tavman	92
World Crisis of Rare Earth – Inoculants Enhancer Solution for Ductile Iron Production I. Riposan, V. Uta, C. Firican, S. Stan, M. Chisamera, R. Naro and D. Williams	100
Thermodynamics of Iron Metallothermy M. Cojocaru, M. Branzei and T.A. Coman	112

Chapter 2: Materials Processing Technologies

Template Based Synthesis of Ni Nanowires by Electrochemical Deposition G. Tepes, R. Vidu, C.M. Cotru, M.D. Vrânceanu, A. Matei, F. Miculescu and D. Bojin	121
Design of the Main Working Tools for Non-Ferrous Alloys Processing Using Multi-Pass ECAP Technique N. Șerban, D. Răducanu, V.D. Cojocaru and A. Ghiban	129

The Obtaining of the Intermetallic Compounds of Ni-Al System by Self-Propagating High Temperature Synthesis and Thermal Explosion	
M. Cojocaru and F. Tudose	135
Microstructural Design of an AlMgSi Alloy via ECAP Processing: An Advanced SPD Manufacturing Technique for NC/UFG Materials	
N. Serban, D. Răducanu, V.D. Cojocaru and N. Ghiban	143
Structural Features of Ti-25Ta-25Nb Alloy Thermo-Mechanically Processed	
R.M. Angelescu, A.D. Călin Vulcan, M.L. Angelescu, A. Căprarescu and D. Raducanu	149
Influence of Inclusional State of Manganese Low Alloy Steel on the Quality of Forgings	
C. Predescu, S. Ciuca, A. Berbecaru, M. Sohaciu, G. Coman, E. Matei and A. Predescu	155
Research on Laser Micro Welding of an Aluminum Alloy Pressure Sensor	
R. Ciobanu, O. Donțu, D. Besnea, V. Constantin and D. Cioboata	160
Influence of the Vibrations on AlSi10Mg Casting Alloy Structure	
M.H. Tiorean, L.S. Baltes and A. Banea	166
Thermophysical Properties in Assembling Process at Macro and Micro Level	
M. Branzei and I. Plotog	172

Chapter 3: Surface Engineering, Corrosion and Coatings

The Effect of Ce Added to Carburizing Paste on Phase Composition of Carburized Surface Layers	
M. Cojocaru, D. Dragomir, L. Druga, V. Kuncser and P. Badica	183
Multilayer Ceramic Materials Testing under the Terms of High Heating-Cooling Gradients	
S. Dimitriu, V. Manoliu, G. Ionescu and A. Stefan	190
Hardfacing Corrosion and Wear Resistant Alloys	
M. Vasilescu and M. Dobrescu	196
Influence of Rare Earth Metals on Carburizing Kinetics of 21NiCrMo2 Steel	
D. Dragomir, M. Cojocaru, L. Druga, Z. Kolozsváry and A. Berbecaru	206
Thermal Shock Influence on some Abrasive Wear Resistant Nickel and Cobalt Complex Alloy's Microstructure and Properties	
R. Dumitrescu, I. Gherghescu and S. Ciuca	214
Reinforcing Bar Corrosion for Buildings Construction	
M. Dobrescu and M. Vasilescu	219
Development of a Metal Coated Conformal Periodic Geometry for Electromagnetic Application	
I. Peter, L. Matekovits and M. Rosso	224
Ru-Based Bond Coats Used for High Temperature Applications	
A. Soare, I. Csáki, C. Oprea, S. Soare, C. Predescu and M. Sohaciu	229
Recent Advances of the Basic Concepts in Geothermal Turbines of Low and High Enthalpy	
A. Buzăianu, I. Csáki, P. Moțoiu, G. Popescu, I. Thorbjornsson, K.R. Ragnarsdottir, S. Guðlaugsson and D. Goubmunson	233
Development, Microstructure and Corrosion Resistance of Al-Mg-(Si) Binary and Ternary System Samples in 5.3% NaCl Solution for Applications with Environmental Impact	
I.N. Popescu, M.C. Enescu, V. Bratu, R.I. Zamfir and E.V. Stoian	239

Chapter 4: Biomaterials and Medical Application

Biomaterials View on the Complications Associated with Hip Resurfacing Arthroplasty	
M. Niculescu, D. Laptioiu, F. Miculescu and V.I. Antoniac	247
Choosing the Biomaterials for Hernia Mesh Fixation in Correlation with Surgical Procedure	
G. Pariza, C.I. Mavrodin, M.E. Gangone and I. Antoniac	253
In Vitro Corrosion Behaviour of Metallic Dental Materials	
M.D. Vrânceanu, M. Tarcolea, A.I. Gherghilescu, F. Miculescu and M.C. Cotrut	258
In Vitro Assessment of a New Proposed Biomaterial and Dental Implant Abutments Understatic Load	
M. Weschler, A. Antoniac, D. Cojocaru and V.I. Antoniac	266

Laser Welding Optimization Procedure Applied to Cobalt Alloys for Removable Partial Dentures	
A. Ghiban, M. Buzatu, C.M. Bortun, B. Ghiban and N. Serban	272
Relationship between Biomaterials Structure Used in Hernia Mesh Fixation and Chronic Infection	
C.I. Mavrodin, I. Antoniac and G. Pariza	278
Metal Allergy and other Adverse Reactions in Patients with Total Hip Replacement	
M. Niculescu, D. Laptoiu, F. Miculescu and V.I. Antoniac	283