

Table of Contents

Preface, Committees, Organizing Partners and Sponsors

Chapter 1: Advanced Materials and Technologies in Industrial Production

Microstructure and Wear Resistance of FeNiCrMnCu High Entropy Alloy G. Buluc, I. Florea, R. Chelariu, O. Rusu and I. Carcea	3
Study on Ni-Cr-Mo Dental Alloy Subjected to Electrocorrosion in Artificial Saliva M. Baciú, E.R. Baciú, R. Cimpoeşu and I. Gradinaru	7
Obtaining and Characterization of Ni-Ti Alloys Processed through Powder Metallurgy F. Potecaşu, O. Potecaşu, F.M. Braz Fernandes, P. Alexandru and A. Alexa	13
Obtaining of the Ni-P Coatings on Steel Strips T. Radu	20
Characterization of Ni-P and Ni-P-Al₂O₃ Heat Treated Layers L. Balint and G.G. Istrate	26
Design of Microalloyed Steel for Wind Turbine Towers and Influence of Chemical Composition on Microstructure and Mechanical Properties L. Gurau, C. Gurau and G. Gurau	32
Effect of Secondary Vacuum Treatment on Performance Characteristics of A516 Grade 65 Carbon Steel A. Ciocan and B. Tudor	38
Optimization of Chemical Composition for Pressure Vessel Steel Grade P460NL2 - Industrial Trial Research C. Durduc-Roibu and E. Drugescu	45
Mechanical Behaviour of Welded Joints Achieved by Multi-Wire Submerged Arc Welding E. Scutelnicu, C.C. Rusu, B. Georgescu, O. Mircea and M. Bormambet	52
Modular Multi-Process Welding System Used for HSLA Materials Joining C.C. Rusu, L.R. Mistodie and E. Scutelnicu	58
Wettability in Aluminium-Graphite Particles Composites (Review) H. Faleh, M. Noori, F. Ştefănescu, G. Neagu and E.M. Stefan	64
Properties of Aluminium-SiC_p Composites (Review) M. Noori, H. Faleh, C. Mihai, G. Neagu, F. Ştefănescu and E.M. Stefan	72
Obtaining Composite Materials with Technological Role by Incorporating Granular Particles in Metal Matrix V. Baliu, M. Vlad and G. Movileanu	79
The Influence of the Deformation Degree on the Mechanical Properties and Microstructures of the Blanks Obtained by Tube and Wire Drawing O. Potecaşu, F. Potecaşu, M. Marin, F.B. Marin and F. Chicoş	85
Influence of the Iron Oxide Phases in Steam Oxidation on the Mechanical Properties and Abrasive Wear of Sintered Iron Materials F. Potecaşu, M. Marin, O. Potecaşu and F.B. Marin	91
Influence of the Pore Characteristics on Mechanical Properties and Abrasive Wear of Sintered Iron-Based Alloys Subjected to a Thermochemical Treatment M. Marin, F. Potecaşu, O. Potecaşu and F.B. Marin	97
Image Analysis Software for Porosity Measurements in Some Powder Metallurgy Alloys M. Marin, F. Potecaşu, O. Potecaşu and F.B. Marin	103
Influence of Different Galvanic Sludge Types on the Extraction Efficiency of Chromium Ions M.I. Mărcu, M. Vlad and A.M. Mîţiu	108
Properties of Alkali Activated Ground Granulated Blast Furnace Slag Based Geopolymers I. Severin and M. Vlad	114
Chemical and Mineralogical Composition Influence of Steelworks Dust on Agglomerate Quality V.V.C. Toniţă, M. Vlad, I. Severin and A. Berbecaru	120

Behavior Analysis of a Ship Structure Made out of Composite Materials A. Presura, I. Chirica and E.F. Beznea	127
Fatigue Life Estimation of a Layered Composite Plate I. Iacob, I. Chirica and E.F. Beznea	133
Influence of the Honeycomb Geometry on the Sandwich Composite Plate Behavior F. Rotaru, I. Chirica and E.F. Beznea	139
Buckling and Ultimate Strength Assessment of Ship Hull Layered Composite Panels B.I. Lupu, E.F. Beznea and I. Chirica	145
Thermo-Insulating Panels Based on Composite Structures from Vegetal Fibres and Polymeric Matrix S. Ionescu and P. Nechita	154
Experimental Study on the Stability Level Assessment of Mini-Implants for Orthodontic Anchorages A. Nicolau, E. Vasilescu, V.G. Vasilescu and M. Neacsu	160
The Selection and Characterization of the Absorptive Coatings Used to Laser Surface Treatments of Tool Steel Parts P. Alexandru and S. Boiciuc	167
Experimental and Statistical Analysis of the Nitrided Layer Behavior during a Wear Process C.P. Papadatu and M. Bordei	174
Mathematical Modeling and Optimization of Fluidized Layer Carbonitriding Process for 1C 25 Steel M. Neacsu and S. Dobrovici	180
Virtual Interactive Prototyping Based on Function-Behavior-Structure (FBS) Approach O. Potecașu, A. Bucur and F.B. Marin	188
Automatic Grain Size Determination in Microstructures Using Computer Vision Algorithm Based on Support Vector Machine (SVM) F.B. Marin, F. Potecașu, M. Marin and P. Alexandru	194
Computer Vision Algorithm for Collision Detection in Case of Industrial Environment F.B. Marin, I. Petrea and M. Deacu	200

Chapter 2: Nanotechnologies and Functional Materials

Analytical Technique for Estimating the Termophysical Properties of Hybrid Nanofluids M.G. Moldoveanu, T.M. Simionescu, A.A. Minea and A. Dima	207
Microstructural Evolution in Ultrafine Grained FeMnSiCr Shape Memory Alloy Modules G. Gurau, C. Gurau, M. Banu and L.G. Bujoreanu	214
Surface Microhardness and Friction Coefficient of Epoxy Coating Modified with Metal Oxide Nanoparticles C. Spanu, V. Panaite, F. Potecașu, P. Alexandru and V. Muat	221
The Influence of Electrodes Deposition on the Interface and Dielectric Characteristics of Polymer Gate for Thin Films Transistors E.E. Herbei, M.P.M. Jank, S. Oertel, L. Frangu and V. Muat	227
Fe-Doped ZnO Nanoparticles: Structural, Morphological, Antimicrobial and Photocatalytic Characterization V. Muat, M. Ibănescu, D. Tutunaru and F. Potecașu	233
Effect of Severe Plastic Deformation on the Structure and Magnetic Behaviour of an Fe-Mn-Si Shape Memory Alloy G. Gurau, C. Gurau, F. Tolea, M. Valeanu, V. Sampath and L.G. Bujoreanu	240
Damping Properties of Magnetorheological Elastomers E. Chirila, I. Chirica and E.F. Beznea	247