

Table of Contents

Preface, Organizers and Committees

Chapter 1: Biomaterials

Micro-Analytical Comparison on Elemental Composition of Nonstoichiometric Bovine Bone Derived Hydroxyapatite	
F. Miculescu, L.T. Ciocan, M. Miculescu, A. Mocanu, A. Maidaniuc, A. Purcaru and O. Preda	3
The Effect of Silver Nanoparticles on the Collagen Secondary Structure	
M. Drobota, I. Grierosu, I. Radu and D.S. Vasilescu	8
A Study on Metal-Ceramic Interface on Metal Base Dental Alloys	
M. Miculescu, M. Bane, F. Miculescu, L.T. Ciocan, O. Preda and V.I. Antoniac	14
Alginate Used to Develop Bio-Inspired Composite Microparticles for Bone Regeneration	
S. Cecoltan, D.G. Petre, E.G. Stan, E. Vasile, H.E. Cioflan, M. Istodorescu, I. Cristescu, R. Marinescu, D. Laptoiu and I.C. Stancu	20
Cellulose Derivatives Based Membranes for Biomedical Applications	
S.I. Voicu, A. Muhulet, I. Antoniac and M.S. Corobea	27
Corrosion Behavior of Ti and Ti Based Alloys Used as Implants-Supported Mandibular Overdentures	
D. Meghea, M. Miculescu, M.C. Cotrut, M. Bane, A.I. Gherghilescu and M.D. Vrânceanu	31
Gelatin-PVP Hydrogels with Potential Skin Grafts Applications	
A. Serafim, D.G. Petre, L. Moraru, H.E. Cioflan, E. Vasile, B. Mastalier-Manolescu, M. Petrutescu and I.C. Stancu	38
Corrosion Behavior of TiSiN Coatings Deposited on Ni-Cr Alloy in Artificial Saliva with and without Fluoride	
M. Dinu, M. Braic, M. Tarcolea, A. Vladescu, V.I. Antoniac and C.M. Cotru	47
Hybrid Hydrogels Intended as Scaffolds for Soft Tissue Repair	
A. Serafim, D.G. Petre, A. Lungu, H.E. Cioflan and I.C. Stancu	54
Hydroxyapatite Coating Influenced by Ti6Al4V Substrate Roughness	
F. Constantinescu, R. Ciocoiu, O. Trante and I. Ciucă	62
Mesenchymal Stem Cell Response to Surface Altered Porous Ti	
A.M. Salantiu, F. Popa, P. Pascuta, O. Soritau, N. Dirzu and C. Popa	67
New Flexible Cyanoacrylate Tissue Adhesive Adhflex®: Adhesion and Performance in Inguinal Hernia Repair	
A.M. Villarreal-Gómez, M. Martínez-Paíno and J.M. Martín-Martínez	73
XRD and Microstructural Analyses on Biodegradable Mg Alloys	
C.I. Crimu, B. Istrate, C. Munteanu, V.I. Antoniac, M.N. Matei and K. Earar	79
The Hybridization of Multi-Walled Carbon Nanotubes with Various Drugs	
A. Duma Voiculet, M. Prodana and I. Demetrescu	85
Structural Analysis of the Laser Welding Co-Cr-Mo-(Ti) Alloys for Removable Partial Dentures	
A. Ghiban, B. Ghiban, C.M. Bortun and M. Buzatu	91
Three-Dimensional Nanostructures with Biocidal Activity Created on a Siloxane-Containing Copolyimide Film	
I. Stoica, A.I. Barzic, M. Aflori, C. Hulubei, V. Harabagiu and D.S. Vasilescu	98
Effect of Calcium Content on the Microstructure and Degradation of Mg-Ca Binary Alloys Potentially Used as Orthopedic Biomaterials	
A.I. Blajan, F. Miculescu, I. Ciucă, M.C. Cotru, A. Semenescu and V.I. Antoniac	104

Chapter 2: Biomedical Engineering

Cooling Conditions Influence on Cortical Bovine Bones Derived Hydroxyapatite	
F. Miculescu, L.T. Ciocan, M. Miculescu, V.I. Antoniac, A. Purcaru, O. Preda and A. Maidaniuc	111

Preliminary Results of FeMnSi+Si(PLD) Alloy Degradation M. Raoi, G. Dascălu, T. Stanciu, S.O. Gurlui, S. Stanciu, B. Istrate, N. Cimpoeșu and R. Cimpoeșu	117
A Three-Dimensional Finite Element Analysis of Restored Deciduous Canine F. Baci, C. Bratosin and A. Rusu-Casandra	123
Analysis of Centromedullary Nailing with Implant Failure I. Cristescu, V.I. Antoniac, D. Vilciov and F. Safta	130
Comparative Study to Determine the State of Tension Using FEM in a Premolar Restored with a Composite Inlay versus a Ceramic Inlay D. Vlasceanu, A. Stamate, H.A. Petrescu, G. Jiga and M. Tarcolea	135
Dental Plating Efficiency of Metal Base Dental Alloys by Thermal Diffusivity Study M. Miculescu, M. Bane, F. Miculescu, O. Preda and I. Plotog	141
Determination of Mastication Forces in Case of Total Dental Prosthesis L. Rusu, C. Vigar and D.I. Stoia	145
Effects of Low Level Laser Therapy on Bone Regeneration of Intrabony Defects G. Bereescu, M. Monea, B. Porca, A. Cocan and A.M. Monea	151
Finite Element Analyses Comparison Between Normal Teeth and Prosthetic Teeth H.A. Petrescu, D. Vlasceanu, A. Stamate, R. Bololoi and S.C. Hanganu	155
Total Elbow Implant - Computer Assisted Design and Simulation R. Bololoi, M. Burdusel, P. Badica and D. Batalu	161
Investigation of the Mechanical Behavior of Mandibular Overdentures Using Finite Element Method D. Vlasceanu, M. Marin, H.A. Petrescu, E. Preoteasa and H.M. Gheorghiu	165
Simulation of Bone Mechanical Adaptation in a 3D Model of the Proximal Femur Using the Stanford Strain Energy Density Approach E. Nu and M. Tarcolea	171
Numerical Analysis for Determining the Displacements of a Lung Tumor H.A. Petrescu, D. Vlasceanu, S.D. Pastrama and L.G. Gruionu	177
Simulation of Bone Mechanical Adaptation Using Different Mathematical Models: A Comparative Numerical Study E. Nu and H.M. Gheorghiu	183

Chapter 3: Biomaterials and Technologies in Clinical Practice

Sonication in Orthopedics for the Diagnosis of Implant-Associated Infections C. Carstoiu, R. Ene, Z. Panti, P. Ene, R. Mihailescu, V. Arama and M. Carstoiu	191
Advanced Polymeric Biomaterials - An Integrated Solution for Plastic, Reconstructive and Aesthetic Surgery C.R. Jecan, C.I. Filip, L. Răducu and D. Hernic	197
A Medical Insight on the of Biomaterials for Cranioplasty Surgery D. Mohan, V. Munteanu, H. Moisa and A.V. Ciurea	205
Alternative Technologies for Obtaining the Metal-Ceramic Dental Prostheses Imposed by some Clinical Situations – A Case Series M. Opri, H.O. Manolea, R. Rîcă and S. Cotorcea	210
Bleeding Disorders – A Frequent Complication Related to the Use of Intrauterine Device with Low Dose Hormonal Mechanism of Action M. Cîrstoiu, C. Cirstoiu, V.I. Antoniac and O. Munteanu	216
A Medical Perspective Regarding the Use of Biomaterials for the Treatment of Hydrocephalus in Children D. Mohan, D.A. Nica, H. Moisa and A.V. Ciurea	222
Correlation between the Used Polymeric Biomaterials, Implant Design and Clinical Performance of the Mammary Implants A. Carantino	228
Esthetic Build-Up Achievement of Dental Ceramics in Posterior Restorations R. Rîcă, A.M. Rîcă, H.O. Manolea, M. Opri and C. Stroie	233
New Surgical Option in Correction of Scoliotic Seformity – LSZ System I. Popa, M. Oprea, M. Mardare, A.A. Laka and D.V. Poenaru	238

Modern Approaches in Choosing Materials for Implant Supported Prosthesis H.O. Manolea, A. Fronie, S.M. Popescu, M. Opri and E. Ciucă	243
Stimuli Responsive Matrices for Medical Applications R.P. Dumitriu, D. Pamfil, M.T. Nistor and C. Vasile	249
The Analysis of Main Causes of Different Osteosynthesis Implants Failure in a Series of Clinical Cases C. Cirstoiu, R. Ene, M. Nica, P. Ene and M. Cîrstoiu	255
The Assessment of Enamel Demineralisation by Fluorescent Light in Fixed Orthodontics A. Galuscan, D. Jumanca, A.C. Podariu, A. Dumitrache, R.A. Popovici, L.C. Rusu, T. tefănescu and A. Tudor	262
The Role of Hyaluronic Acid in the Correction of Soft Tissue Deficiencies: Review and Clinical Considerations A. Carantino	270
The Use of Bone-Like Materials in Skull Base Traumatology A. Ilea, A. Butnaru, S. Sfrângeu, M.C. Dudescu, R.S. Câmpian, V.E. Tombita and S. Albu	274
BMAC-HARVEST: Innovational Method in Osteoarticular Pathology Using Autogenous Stem Cells S. Árpád, K. Ildikó, B. Csaba, N. Ors, S. Reka and B. Voicu	280
Erosion Effects on Morphology and Chemical Composition of Direct Dental Restoratives A. Bor, M. Szekely, O. Ponta and V.I. Antoniac	286
Bisphosphonates vs. Atypical Femur Fractures - Influence on Bone Resorption R. Adam, C. Orban, N. Gheorghiu, H. Orban and V.I. Antoniac	296

Chapter 4: Auxiliary Techniques and Tools in Biomedical Practice

Intelligent Collaborative Platform for Development of Personalized Surgical Orthopedic Guides D. Popescu, D. Laptoiu and A. Hadăr	303
Failure Analysis of a Metallic Component Used in Hospital Cooling Equipment G. Coman, S. Ciuca, M. Sohaciu, E. Matei, A. Predescu, A. Berbecaru and C. Predescu	310
Increased Resistance to Mechanical Shock of Metallic Materials by Metal-Ceramic Surface Coatings C. Biniuc, B. Istrate, C. Munteanu and L. Dorin	316
Instrumental Assistance to the Restorative Dentistry Treatments W.O. Kawamoto, S.C.M. Rodrigues and L.T. Kawamoto	322
Metallurgical Characterization of the Failed Motor Shaft Component from an Electric Surgical Motor used in Orthopedic Surgery A. Berbecaru, S. Ciuca, A. Predescu, G. Coman, M. Sohaciu, M.G. Anton and C. Predescu	327
Structural Modification of α-Ti Based Alloy after Submission to Open Flame Thermal Shock B. Istrate, C.I. Crimu, C. Munteanu, C. Biniuc, L.G. Pintilei, S.I. Strugaru, P. Avram and K. Earar	333
Virtual Environment to Aid the Assessment of Basic Math Concepts in Children with ADHD E.S. Ianaguivara, A. Candiago, L.T. Kawamoto, S.C.M. Rodrigues, T.A. Scardovelli and A.P. da Silva	339
Virtual Reality in Orthopedic Surgeons Training D. Popescu, R. Iacob and D. Laptoiu	344
Laser Sinterization Aspects of PA2200 Biocompatible Powder - Spinal Cage Application D.I. Stoia, C. Vigarau and L. Rusu	352
Short Review on Rare Earth and Metalloid Oxide Additions to MgB_2 as a Candidate Superconducting Material for Medical Applications D. Batalu, G. Aldica, M. Burdusel and P. Badica	357
Finite Element Analysis of the Linear 11 MM Screw A0623-11 Expansor R.A. Popovici, A. Podariu, A. Arjocan, M. Mojse, M. Onet and T. tefănescu	363