

Table of Contents

Preface and Committees

Chapter 1: Nanomaterials, Metallic Biomaterials & Coatings

Nano-Iron Oxides Used for Environmental Applications	
A. Predescu, E. Matei, A.M. Predescu, A. Berbecaru and L. Vladutiu	3
Stainless Steels with Biocompatible Properties for Medical Devices	
V. Geantă, I. Voiculescu, R. Stefanoiu and E.R. Rusu	9
Obtaining and Characterization of Biocompatible Co-Cr as Cast Alloys	
V. Geantă, I. Voiculescu, R. Stefanoiu and I. Chirita	16
Corrosion Behavior of Ti6Al4V Coated with SiO_x by PECVD Technology	
V. Togan, G. Ionita and V.I. Antoniac	22
Structural Analysis of Steels by Cavitation Erosion	
M.E. Manzana, B. Ghiban, I. Bordeasă, N. Ghiban, M. Marin and F. Miculescu	28
Calorimetric Analysis of a Mg-Zn-Zr Alloy Processed by Equal Channel Angular Pressing via Route A	
F.D. Dumitru, B. Ghiban, J.M. Cabrera, O.F. Higuera-Cobos, G. Gurau and N. Ghiban	32
Surface Characterization of Some CoCrMo Dental Alloys	
C. Bortun, B. Ghiban and N. Ghiban	36
Correlation between Materials, Design and Clinical Issues in the Case of Associated Use of Different Stainless Steels as Implant Materials	
R. Ionescu, M. Mardare, A. Dorobantu, S. Vermesan, E. Marinescu, R. Saban, V.I. Antoniac, D.N. Ciocan and M. Ceausu	41

Chapter 2: Bioceramics & Biocomposites

Control of Crystallinity of Hydroxyapatite Sheet	
M. Kusunoki, T. Matsuda, N. Fujita, Y. Sakoishi, R. Iguchi, S. Hontsu, H. Nishikawa and T. Hayami	47
<i>In Vitro</i> Response and Adhesive Strength of Titanium and Hydroxyapatite Bilayer-Films on Polyetheretherketone Substrate	
T. Hayami and M. Kusunoki	51
Innovative Composite HA Scaffold Rapid Prototyping for Bone Reconstruction: An <i>In Vitro</i> Pilot Study	
I.G. Lesci, L. Ciocca, B. Dozza, E. Lucarelli, S. Squarzone, D. Donati and N. Roveri	56

Chapter 3: Biopolymers, Biocompatibility & Drug Delivery

New Polyurethane Sealants Containing Rosin for Non-Invasive Disc Regeneration Surgery	
P. Carbonell-Blasco, I. Antoniac and J.M. Martin-Martinez	67
UV Light as a Tool for Surface Modification of Polymeric Biomaterials	
A. Sionkowska	80
The Functionalization of Remaining Solvent in Polymeric Membrane Pores for Biomedical Applications	
S.I. Voicu, V.I. Antoniac, L. Naftanaila and G. Nechifor	87
<i>In Situ</i> Generation of Polyaniline inside Zeolite Pores for Retention of Ions and for Controlled Drug Delivery	
A.C. Nechifor, A. Ivan, S.I. Voicu, V. Danciulescu and R. Trusca	91
Biopolymer Blends as Potential Biomaterials and Cosmetic Materials	
A. Sionkowska, K. Lewandowska, A. Planecka, P. Szarszewska, K. Krasinska, B. Kaczmarek and J. Kozłowska	95

Alternative Approaches Using Animal Model for Implant Biomaterials: Advantages and Disadvantages	
S. Cavalu, V. Simon, C. Ratiu, I.G. Oswald, V. Silviu and O. Ponta	101
Specific Biomaterials Used within the Department of Anatomy	
B. Petru, D. Constantin, B. Ionut and I. Dan	107

Chapter 4: Bioengineering

Computing Simulation of the Influence of Plate Design, Material, and Screw Positioning on Biomechanical Behavior of Ulna Bone Plates	
M. Toth-Tascau, F. Bălănean, M. Krepelka, L. Rusu and C. Toader-Pasti	115
An Electrical Field Numerical Simulation of Implantable Pacing Electrodes	
C. Savastru and A.M. Morega	119
Comparison of Plantar Arch Index Calculated from Ink and Electronic Footprints	
M. Toth-Tascau, C. Vigar, O. Pasca, D.I. Stoia and F. Bălănean	125
Energy Dispersive Techniques Using X-Ray Fluorescence with Primary X-Rays for Human Hard Tissues Analysis	
F. Miculescu, I. Pencea, M. Miculescu, I. Antoniac, L.T. Ciocan and A. Ernuteanu	129

Chapter 5: Biomaterials Application in Surgery

Investigation of a Mechanical Valve Impairment after Eight Years of Implantation	
C.A. Buzila, I. Antoniac, F. Miculescu, M. Dumitrescu and I. Droc	137
Development of Modified Viscoelastic Solution with Magnetic Nanoparticles – Potential Method for Targeted Treatment of Chondral Injuries	
R. Marinescu, D. Laptoiu, I. Antoniac and C. Petcu	145
Clinical, Biomechanical and Biomaterials Approach in the Case of Fracture Repair Using Different Systems Type Plate-Screw	
R. Ionescu, I. Cristescu, M. Dinu, R. Saban, V.I. Antoniac and D. Vilcioiu	150
New Devices for Optimization of Renoureteral Lithiasis Treatment Using ESWL	
I.G. Oswald, S. Cavalu, A. Bumbu, C. Brisc, V. Silviu, E. Todoru and P. Ovidiu	155

Chapter 6: Dental Materials

The Influence of Classical and Modern Manufacturing Technologies on the Properties of Metal Dental Bridges	
M.C. Cotrut, S. Ciuca, F. Miculescu, V.I. Antoniac, M. Tarcolea and M.D. Vrânceanu	163
Numerical Analyses of Stresses and Strains in Bone – Implant Assembly	
R.M. Comăneanu, H.M. Barbu, D. Vlăsceanu and M. Tarcolea	169
Cobalt Based Alloys for Dental Applications	
B. Ghiban, C.M. Bortun, A. Ghiban and N. Ghiban	175