

Table of Contents

Preface, Committees and Symposia

I. Alumina / Zirconia Ceramics

In Vivo

S. Cavalu, V. Simon, C. Ratiu, I. Oswald, R. Gabor, O. Ponta, I. Akin and G. Göller 1

In Vitro Evaluation of Hydroxyapatite-Containing Glass Coating on Zirconia

D. Yamashita, M. Noda, M. Machigashira, M. Miyamoto, H. Takeuchi, N. Takeuchi, H. Kono, K. Noguchi and S. Ban 7

Electrical Polarization Depresses Low Temperature Degradation and Promotes Bioactivity of Chemically Treated Yttria-Stabilized Zirconia

M. Nakamura, N. Horiuchi, A. Nagai and K. Yamashita 11

II. Apatites

Biomimetic Magnetic Nanoparticles for Hyperthermia Treatment

E.M. Múzquiz-Ramos, D.A. Cortés-Hernández, C.G. Sánchez-Torres, J.C. Escobedo-Bocardo, A. Zugasti and X.S. Ramírez-Gómez 16

Simultaneous Insertion of Mg^{2+} , Sr^{2+} and Mn^{2+} Ions into Hydroxyapatite Structure

M. Pereira Moreira, V. Teixeira da Silva Aragão, G.D. de Almeida Soares and E. Araujo dos Santos 20

Silver-Doped Apatite as a Bioactive and an Antimicrobial Bone Material

E.S. Thian, P.N. Lim, Z. Shi, B.Y. Tay and K.G. Neoh 27

Nanostructures of Hydroxyapatite in Pluronic F 127: Preparation and Structural Characterization

V.D. de Oliveira Fortes, W.A. Diniz, E. Araujo dos Santos, C.X. Resende, L.E. Almeida and Z. Teixeira 31

III. Bioglasses and Glass-Ceramics

Evaluation of Cytocompatibility of Bioglass-Niobium Granules with Human Primary Osteoblasts: A Multiparametric Approach

G.V.O. Fernandes, G. Alves, A.B.R. Linhares, M.H. Prado da Silva and J.M. Granjeiro 37

The Impact of Stirring Rate on the Crystallinity and Bioactivity of 58S Bioactive Glass

O.M. Goudouri, M. Perissi, E. Theodosoglou, L. Papadopoulou, X. Chatzistavrou, E. Kontonasaki, P. Koidis and K.M. Paraskevopoulos 43

The 110⁰ C Thermoluminescence Peak as a Probe in Bioactivity Study of the 58S Sol-Gel Bioactive Glass

G.S. Polymeris, O.M. Goudouri, K.M. Paraskevopoulos and G. Kitis 49

Ion Release Behavior and Apatite-Forming Ability of Sol-Gel Derived 70S30C Bioactive Glass with Magnesium/Zinc Substitution

A.A. Hamedani, F. Moztarzadeh, D. Bizari, M. Ashuri and M. Tahriri 55

Surface Morphology of P₂O₅-CaO-Nb₂O₅-Na₂O Glass-Ceramics after Acid Treatment: SEM and XRD Study

A. Stunda, D. Jakovlevs, L. Poca and L. Berzina-Cimdina 61

Investigation of Strontium Effect on the Bioactive Behavior of Glasses in the System SiO₂-CaO-P₂O₅-Na₂O-SrO

M. Erol, A. Özyüğüran, Ö. Özarpat and S. Küçükbayrak 68

Effect of Silver Concentration on Bioactivity and Antibacterial Properties of SiO₂-CaO-P₂O₅ Sol-Gel Derived Bioactive Glass

N. Nezafati, F. Moztarzadeh, S. Hesarakhi, M. Mozafari, A. Samadikuchaksaraei, L. Hajibaki and M. Gholipour 74

The Impact of Sintering Temperature on the Bioactive Glass-Dental Porcelain Composite Material

M. Manda, O.M. Goudouri, L. Papadopoulou, N. Kantiranis, T. Zorba, K. Chrissafis, K.M. Paraskevopoulos and P. Koidis 80

<i>In Vitro</i>	
V. Simon, R.C. Lucacel, I. Titorencu and V. Jinga	85
Bond Strength of Glass-Fiber Post to Dentine after some Treatment Methods	
O. Oral, O. Kumbuloglu, L.V.J. Lassila, A. User and P. Vallitu	90
Effects of Non-Silanized and Silanized Glass Particles on the Physical Properties on Denture Base Materials	
O. Oral, L.V.J. Lassila, O. Kumbuloglu, A. User and P. Vallitu	96
The Equilibrium between Calcite and Apatite Precipitation onto Bioglass from Three Different Aqueous Media	
G.S. Lazaro, S.C. Santos, L.E. Almeida, L.S. Barreto and E. Araujo dos Santos	102
<i>In Vitro</i> Studies of Antibacterial Activity of Bioglasses Releasing Ag⁺	
L. Ciolek, J. Karaś, A.R. Olszyna, E. Zaczynska, A. Czarny, B. Żywicka and K. Szamałek	108

IV. Biomimetics

Characterization of Bio-Absorbable and Biomimetic Apatite/Collagen Composite Powders Derived from Fish Bone and Skin by the Dissolution-Precipitation Method	
T. Akazawa, M. Murata, M. Ito, S. Iida, T. Shigyo, T. Nomura, H. Inano, T. Yamagishi, K. Itabashi and K. Nakamura	114

V. Bone Substitutes

Evaluation of the Degradation Properties of Carbonate Substituted Hydroxyapatite-Poly(ϵ-caprolactone) Composites	
D. Ege, K. Lee, A. Bismarck, S. Best and R. Cameron	120
Influence of Ca²⁺ and Mg²⁺ Supplementation on <i>In Vitro</i>	
S. Bodhak, M. Kikuchi, A. Oyane, Y. Sogo, H. Tsurushima and A. Ito	126
Unidirectional Porous β-Tricalcium Phosphate Bone Substitute: Examination of Balance between New Bone Formation and Absorption	
M. Sakane, T. Tsukanishi, T. Funayama, M. Kobayashi and N. Ochiai	132
Fabrication of βTCP with Fully-Interconnected Porous Structure	
T. Nikaido, K. Tsuru, F. Daitou, M.L. Munar, S. Matsuya, S. Nakamura and I. Kunio	135
Fabrication of Carbonate Apatite Block from Calcium Sulfate by Hydrothermal Treatment	
S. Nomura, K. Tsuru, A. Valanezhad, S. Matsuya, I. Takahashi and I. Kunio	139
Bone Repair Efficiency by Various Round Granular Bone Substitutes	
J.S. Jhun, H.S. Yun, E.K. Park and H.I. Shin	143
Nanostructured Bone Grafting Substitutes – A Pathway to Osteoinductivity	
T. Gerber, S. Lenz, G. Holzhüter, W. Götz, K. Helms, C. Harms and T. Mittlmeier	147
Characterization and Monitoring of the Evolution of a Calcium Phosphate/Calcium Sulfate Self-Setting Bone Cement	
A. Kasiotas, V. Sandell, E. Lidén, O. Börjesson and M. Nilsson	153
Effect of Simulated Body Fluid on the Behaviour of Artificial Bone Composite Material Extended by Hydroxyapatite and Silicate Powders	
S. Yücel, I. Aydın, D. Özçimen, B.S. Tekerek, Ö. Yıldırım and A. Kabakcı	159
Calcite Bone Substitute Prepared from Calcium Hydroxide Compact Using Heat-Treatment under Carbon Dioxide Atmosphere	
K. Tsuru, A. Otsu, M. Maruta, A. Valanezhad, G. Kawachi, A. Takeuchi, S. Matsuya and I. Kunio	166
The Storing Properties of Electric Energy in Bone	
R. Hirata, M. Nakamura, A. Nagai and K. Yamashita	170
Evaluation of TCP Loaded Clinoptilolite Use as Graft Material on Rabbit Tibia	
A.N. Uyumaz, L.S. Ozyegin, N. Buyukakyuz, B. Yesilbek and F.N. Oktar	175

VI. Calcium Phosphate Ceramics

Synthesis of Silver Incorporated Hydroxyapatite under Magnetic Field	
T.R. Rautray and K.H. Kim	181
Control of Antibiotic Delivery from TCP along with HA on Bone Cement in the Interface Bioactive Bone Cement for Prevention of Infection in Joint Replacement	
S. Mizokawa, T. Arita, A. Tachibana, T. Tanabe, H. Oonishi Jr. and H. Oonishi	186

Preparation and Characterization of Calcium Phosphate Crystals by Precursor Thermolysis Method	
X.Y. Wang, Y.C. Han and S.P. Li	191
Gallium-Doped β-Tricalcium Phosphate Ceramics: Characterization and Properties	
C. Mellier, V. Schnitzler, P. Deniard, J.M. Bouler, B. Bujoli and P. Janvier	195
Effect of Al_2O_3, ZrO_2, and TiO_2 Addition on the Mechanical Properties and the Microstructure of Natural Hydroxyapatite Obtained from Calf Femoral Bone	
I. Ozden, M. Ipekoglu, N. Mahmutyazicioglu and S. Altıntaş	199
<i>In Vitro</i> Dynamic Degradation of Strontium-Hydroxyapatite Granules	
H.M. da Silva, I.R. de Lima, P.G.P. Bezerra, G. Peregrino and G.D. de Almeida Soares	205
<i>In Vitro</i> Evaluations of a Mechanically Optimized Calcium Phosphate Cement as a Filler for Bone Repair	
N. Nezafati, F. Moztarzadeh and M. Mozafari	209
Preparation of Submicron-Sized Hydroxyapatite Powders by Spray Pyrolysis	
J.S. Cho and S.H. Rhee	215
Recrystallization of Amorphized α-TCP	
N. Döbelin, L. Galea, U. Eggenberger, J.M.d.F. Ferreira and M. Böhner	219
Raman and Infrared Studies of Substituted β-TCP	
S. Quillard, C. Mellier, R. Gildenhaar, J. Hervelin, P. Deniard, G. Berger and J.M. Bouler	225
The Effect of Microwave Irradiation on Structural and Mechanical Properties of Nano-Structured Bone-Like Carbonated Hydroxyapatite	
M. Khorami, S. Hesarakı, T. Ebadzadeh, S. Farhangdoust and A. Zamanian	231
<i>In Vivo</i> Behaviour of the Synthetic Porous Hydroxyapatite Prepared by Low Temperature Microwave Processing and Comparison with Deproteinized Bovine Bone	
M. Strnadová, Z. Strnad, P. Šponer, J. Jirošova and J. Strnad	236
Standardized Study of Carbonate Apatite as Bone Substitute in Rabbit's Tibia	
I. Cezar, G. Kammer, A. Alves, J. Calasans-Maia, M.A. Gress, A.M. Rossi, J.M. Granjeiro and M. Calasans-Maia	242
<i>In Vivo</i> and <i>In Vitro</i> Biocompatibility Study of Nanostructured Carbonate-Apatite	
E. Barros, J. Alvarenga, G. Alves, B. Canabarro, G.V.O. Fernandes, A.M. Rossi, J.M. Granjeiro and M. Calasans-Maia	247
Osseointegration Evaluation of Hydroxyapatite and Zinc Containing Hydroxyapatite Granules in Rabbits	
L. Nascimento, M. Medeiros, J. Calasans-Maia, A. Alves, A.M. Rossi, G. Alves, J.M. Granjeiro and M. Calasans-Maia	252
Effect of Carbonate-Apatite on Bone Repair in Non-Critical Size Defect of Rat Calvaria	
H. Valiense, G.V.O. Fernandes, B. Moura, J. Calasans-Maia, A. Alves, A.M. Rossi, J.M. Granjeiro and M. Calasans-Maia	258
Study of Bone Repair in Rat Dental Socket after Implantation of Porous Granules of Beta-Tricalcium Phosphate (β-TCP) and Magnesium-Substituted Beta-Tricalcium Phosphate (β-TCMP)	
D.H. Yassuda-Mattos, N.M. de Freitas Costa, D.d.S. Tavares, G.V.O. Fernandes, A. Alves, J.M. Granjeiro and G.D. de Almeida Soares	263
Study of the Release Potential of the Antibiotic Gentamicin from Microspheres of BCP	
R.M. Osthues, S.N. da Silva, C.A.C. Zavaglia and S.L. Fialho	269
The Effect of Pore Forming Agent Particle Size on the Porosity, Microstructure and <i>In Vitro</i> Studies of Hydroxyapatite Ceramics	
V. Zalite, J. Locs, D. Vempere and L. Berzina-Cimdina	277
A New Natural Biomaterial: Sheep Dentine Derived Hydroxyapatite	
N. Akyurt, M. Yetmez, U. Karacaylı, O. Gunduz, S. Agathopoulos, H. Gökçe, M.L. Öveçoğlu and F.N. Oktar	281
Production of Natural Bioceramic from Land Snails	
D. Kel, H. Gökçe, D. Bilgiç, D. Ağaoğulları, I. Duman, M.L. Öveçoğlu, E.S. Kayalı, I.A. Kiyici, S. Agathopoulos and F.N. Oktar	287
Carbonated Apatite, Type-A or Type-B?	
F.Z. Ren and Y. Leng	293

VII. Cell Materials Interactions

Cytocompatibility and Structural Arrangement of the Collagen Fibers: An <i>In Vitro</i> and <i>In Vivo</i> Evaluation of 5% Zinc Containing Hydroxyapatite Granules G.V.O. Fernandes, J.A. Cortês, B.R. Melo, A.M. Rossi, J.M. Granjeiro, M.D. Calasans-Maia and G. Alves	298
Biological Behavior of Chitosan-Fibroin-Hydroxyapatite Scaffolds with STRO+1A, MC3T3-E1 and SaOS2 Cells P.A.L. Lima, D.d.S. Tavares, G.D. de Almeida Soares, K. Anselme and L.E. Almeida	304
Multinucleated Giant Cells for Biomaterials - Ceramics and Dentin Collagen - M. Murata, T. Akazawa, J. Hino, J. Tazaki, K. Ito, M. Fujii, T. Shibata and M. Arisue	310
Biochemical Studies of the Potential Anti-Tumor Activity of Novel Chelate-Setting Apatite Cements H. Konishi, M. Honda, M. Aizawa and N. Kanzawa	315
Hydroxyapatite Ceramics Including Bone Minerals Promote Differentiation of Osteoblasts Derived from Rat Bone Marrow Cells M. Aizawa, T. Miki, Y. Yasutomi, M. Honda and H. Yoshimura	320
Methodological Implications on Quantitative Studies of Cytocompatibility in Direct Contact with Bioceramic Surfaces J.A. Cortês, E. Mavropoulos, M. Hausen, A. Rossi, J.M. Granjeiro and G. Alves	325
Biocompatibility of Carbonated Hydroxyapatite Nanoparticles with Different Crystallinities E. Mavropoulos, M. Hausen, A.M. Costa, S.R. Albuquerque, G. Alves, J.M. Granjeiro and A.M. Rossi	331
Surface and Cell Affinity Properties of Chitosan-Gelatin-Hydroxyapatite Composite Films C. Isikli and N. Hasirci	337
Fabrication of Janus Microfiber in Microfluidic System H.H. Jeong, S.H. Lee and C.S. Lee	343

VIII. Cements

Calcium Phosphate Bone Cement (CPBC): Development, Commercialization and Future Challenges A. Tofighi	349
Investigations on Degradable and Figuline Calcium Alkaline Phosphate Cements with Multimodal Particle Size Distribution F. Dombrowski, R. Hoffmann, U. Ploska, H. Marx and G. Berger	355
Antibiotic Delivery Effects from HA on Bone Cement in the Interface Bioactive Bone Cement for Prevention of Infection in Joint Replacement H. Oonishi Jr., T. Arita, A. Tachibana, T. Tanabe, S. Mizokawa and H. Oonishi	361
29 to 24 Year-Clinical Results of Total Hip Arthroplasty Cemented with HA by Interface Bioactive Bone Cement (IBBC) H. Oonishi, H. Oonishi Jr., S. Mizokawa, H. Ohashi, M. Ueno and M. Iwamoto	366
Fabrication of Chelate-Setting Cement Using Silicon-Substituted Hydroxyapatite and its Property Y. Nakashima, M. Honda, T. Konishi, M. Mizumoto and M. Aizawa	370
<i>In Vitro</i> J. Karaś, A.R. Olszyna, E. Zaczyńska, A. Czarny and K. Szamalek	375
Investigation of HA Cement Preparation and Properties by Using Central Composite Design A.E. Çetin, D. Şimşek, M. Çiftçioğlu, Y. Akdeniz, F. Özmişçi and A.A. Yetkiner	381
Solubility and Ingrowth Behaviour of Degradable and Figuline Calcium Alkaline Phosphate Cements F. Dombrowski, H. Marx, U. Ploska, D. Nicolaidis, M. Stiller, C. Knabe and G. Berger	387
Improving the Bioactivity and Biocompatibility of Acrylic Cements by Collagen Coating S. Cavalu, V. Simon, I. Akin and G. Göller	391
The Influence of Three Additives on the Setting Reaction Kinetics and Mechanical Strength Evolution of [Alpha]-Tricalcium Phosphate Cements H.A.I. Cardoso, M. Motisuke and C.A.C. Zavaglia	397
PH Evolution and Cytotoxicity of [Alpha]-Tricalcium Phosphate Cement with Three Different Additives H.A.I. Cardoso, M. Motisuke, A.C.D. Rodas, O.Z. Higa and C.A.C. Zavaglia	403

Mechanical Properties of Calcium Phosphate Cements (CPC) for Bone Substitution: Influence of Fabrication and Microstructure J.T. Zhang, F. Tancrét and J.M. Bouler	409
Effect of Liquid/Powder Ratio on the Setting, Handling and Mechanical Properties of Collagen–Apatitic Cements N.J. Dunne, R. O’Hara, F. Buchanan and J. Orr	415
IX. Clinical Applications	
Use of HA–PLLA Composite Screws to Fix Acetabular Bone Graft in Cemented THA: Absorption Pattern of Screws in Six Patients K. Goto, H. Akiyama, K. Kawanabe, K. So and T. Nakamura	422
Simultaneous Implantation of Dental Implants and Autogenous Human Dentin J. Tazaki, M. Murata, Y. Nakanishi, M. Ochi, Y. Hirose, T. Akazawa, S. Yodogawa, J. Hino, K. Ito, H. Kitajo, M. Arisue and T. Shibata	426
X. Coatings	
Tribological Characterization of Porous TiO₂ Coatings Produced by Electrodeposition E. Santos, S.S. Camargo, G.A. Soares and N.K. Kuromoto	430
Effect of Electrolyte Chemistry on the Structural, Morphological and Corrosion Characteristics of Titania Films Developed on Ti-6Al-4V Implant Material by Plasma Electrolytic Oxidation K. Venkateswarlu, S. Suresh, R. Nagumothu, A.C. Bose and S. Subramanian	436
Effect of XPEED® on Ti Implants with Deep Threads S.Y. Lee, D.J. Yang, S. Yeo, H.W. An, S.J. Kim, W.M. Choi and K.B. Park	442
Comparative Evaluation of the Bioactive Behavior of HA and ZrO₂ Reinforced Coatings G. Theodorou, O.M. Goudouri, L. Papadopoulou, N. Kantiranis, S. Yugeswaran, A. Kobayashi and K.M. Paraskevopoulos	447
Influence of Strontium on <i>In Vitro</i> Bioactivity of Heat-Treated Porous Ca-P Ceramics on Titanium for Biomedical Applications K.C. Kung, T.M. Lee and T.S. Lui	453
Fast Deposition of Nanocrystalline Hydroxyapatite into Additive Manufactured Titanium Porous Structures B. Bracci, S. Panzavolta, A. Bigi, S. Prosperi and F. Bucciotti	458
Thermal Processing of Calcium Phosphate Coatings on Zirconia Ceramics M. Štefanič, K. Krnel and T. Kosmač	462
How to Enhance Osseointegration – Roughness, Hydrophilicity or Bioactive Coating M. Adam, C. Ganz, W.G. Xu, H.R. Sarajian, B. Frerich and T. Gerber	467
Studies of Hydroxyapatite Thin Coating Produced by Dual RF Magnetron Sputtering for Biomedical Applications E.O. Lopez, F.F. Borghi, A. Mello, J. Gomes and A.M. Rossi	473
Parascholzite Coatings on Niobium Substrates F.N. Moura, L.H.L. Louro, L.A. Gobbo and M.H. Prado da Silva	477
Comparison between the SBF Response of Hydroxyapatite Coatings Deposited Using both a Plasma-Spray and a Novel Co-Incident Micro-Blasting Technique J.N. Barry and D.P. Dowling	483
Nano Metallic-Oxides as Antimicrobials for Implant Coatings K. Memarzadeh, M. Vargash, J. Huang, J. Fan and R.P. Allaker	489
A Novel HAp Coating Method on Titanium A. Valanezhad, K. Tsuru, M. Maruta, S. Matsuya and I. Kunio	495
Bioactive Coating on Porous Materials with an Interconnected Pore System to Improve Osseointegration H. Keuer, C. Ganz, W.G. Xu, B. Frerich and T. Gerber	499
Spectroscopic Studies of Adsorbed Myoglobin on Hydroxyapatite Surface A.M. Costa, E. Mavropoulos, A. Mello, E.A. dos Santos, R.R. de Oliveira, M.H. Prado da Silva and A. Rossi	504
Organic-Inorganic Hybrids for Bioinert Coating on Implantable Electronic Devices I.Y. Kim, K. Nomura, K. Kikuta, J. Ohta, T. Tokuda and C. Ohtsuki	508

Effect of Surface Charge on the Apatite Mineralization Process V.S. Carvalho, E. Araújo dos Santos and C.X. Resende	513
Effect of the SBF Concentration on the Apatite-Forming Ability of ASTM F75 Alloy Induced by Wollastonite J.C. Ortiz-Cuellar, D.A. Cortés-Hernández, J.C. Escobedo-Bocardo, C.R. Muñoz Valdez, J.S. Luna Alvarez and N. Rodríguez-Rosales	519
Nanomechanical Properties of Bioactive Ti Surfaces Obtained by NaOH-Based Anodic Oxidation and Alkali Treatment E.M. Szesz, G.B. de Souza, E. Santos and N.K. Kuromoto	524
Investigations on <i>Vitro</i> Behaviour of Ceramic Coatings Deposited by High Velocity Suspension Flame Spraying A. Bernstein, N. Suedkamp, H.O. Mayr, R. Gadow, A. Killinger and N. Stiegler	530
Characterization of Plasma Sprayed Yttria Stabilized Zirconia (8 wt %) Hydroxyapatite Coatings O. Anzabi, M.M. Aydin, L.S. Ozyegin, F.N. Oktar, K.A. Gross, G. Göller, E.S. Kayali and E.Z. Erkmen	535
Pore Morphology in MAO Produced Oxide Film Modified by Magnesium Integration G. Ungan, F. Ak Azem and A. Cakir	539

XI. Composites

Fabrication of Bioactive Apatite Nuclei-Precipitated Composites T. Yabutsuka and T. Yao	545
Comparison of Microstructures of Bovine Hydroxyapatite and Sol-Gel Derived Porous Alumina-Hydroxyapatite Biocomposite Powders A. Yelten, S. Yilmaz and F.N. Oktar	551
Fabrication of Organic/Inorganic Hybrids by Infiltration of Commercially-Available PLGA into Porous Hydroxyapatite Ceramics and its Material Properties N. Osada, Y. Shigemitsu, M. Makita, K. Oribe and M. Aizawa	556
Silicate and Calcium Ions Releasing Biomaterials for Bone Reconstruction J. Nakamura, A. Obata, J.R. Jones and T. Kasuga	561
Production and Characterization of Bioglass®-Titania Reinforced Hydroxylapatite Composite B.N. Cetiner and E.Z. Erkmen	566
Preparation and Characterization of Polylactide-co-glycolide/Carbonate Apatite (PLGA/CHA) Composite Scaffolds H.E. Stone, H. Lu and R.Z. LeGeros	572
Gradient Organic Inorganic Nanocomposites for Tissue Repair at the Cartilage/Bone Interface M.G. Aviv, B. Amit, A. Yayon, N. Garti and H. Füredi-Milhofer	577
Mechanical Properties and <i>In Vitro</i> Bioactivity of β-Tri Calcium Phosphate, Merwinite Nanocomposites M. Abbasi-Shahni, S. Hesarakı, A.A. Behnam-Ghader and M. Hafezi-Ardakani	582
Comparison of Mechanical Properties of Sheep Hydroxyapatite (SHA) and Commercial Synthetic Hydroxyapatite (CSHA)-MgO Composites N. Demirkol, O. Meydanoglu, H. Gökçe, F.N. Oktar and E.S. Kayali	588

XII. Dental Materials

Occlusal Surface Reconstruction with Chairside Ceramic Onlay Using CEREC Biogeneric Design Mode: Case Report G. Akgungor, Y. Olcer, D. Şen and B. Tunçelli	594
Anterior Single Laminate Veneer Restoration Using CEREC Biogeneric Reference Design Mode: Case Report G. Akgungor, N. Kilincaslan and D. Şen	599
Effect of <i>In Vitro</i> Ageing on a Cold Isostatic-Pressed Zirconia Ceramic for All Ceramic Restorations A. Vatali, E. Siarampi, E. Kontonasaki, N. Kantiranis, T. Zorba, N. Vouroutzis, K.M. Paraskevopoulos and P. Koidis	604
Grafting Materials for Major Sinus Lift C. Ratiu, S. Cavalu, V. Miclaus, C. Ober, I. Ratiu and O. Ponta	609

Regeneration of Tooth Enamel by Flexible Hydroxyapatite Sheet S. Hontsu, N. Kato, E. Yamamoto, H. Nishikawa, M. Kusunoki, T. Hayami and K. Yoshikawa	615
Clinical Success of IPS Empress II Inlays/Onlays F. Yanikoğlu, G. Özyöney, N. Özyöney, D. Tağtekin, H. Öveçoğlu and M. Günday	620
Calcium Fluoride/Hydroxyfluorapatite Nanocrystals as Novel Biphasic Solid Solution for Tooth Tissue Engineering and Regenerative Dentistry M. Azami, S. Jalilifiroozinezhad and M. Mozafari	626
Resin Bond Strength to Alumina Coated Ce-TZP/Al₂O₃ Dental Ceramic T. Kosmač, A. Kocjan, M. Golobic [~] and P. Jevnikar	632
Ag-Doped Sol-Gel Derived Novel Composite Materials for Dental Applications X. Chatzistavrou, K.M. Paraskevopoulos, V. Salih, A.R. Boccaccini and T. Kasuga	637
Effect of Different Surface Applications and Adhesive Systems on Bond Strength of Porcelain Repair Material B. Tarcin, G. Sinmazisik, F. Ozer and T. Gülmez	643
Mechanical Properties of CAD/CAM Manufactured and Prefabricated Endodontic Posts G. Sinmazisik, B. Tarcin and T. Gülmez	649
Influence of Nano-Hydroxyapatite Addition to Calcium Hydroxide Cement on its Properties A. Zamanian, M. Yasaei, F. Moztarzadeh, S. Hesarakı and M. Hafezi	655
The Effect of Five Polishing Materials on the Surface Roughness of Acrylic and Composite Denture Resins L.S. Ozyegin, B. Yesilbek, O. Bayrak and F.N. Oktar	661

XIII. Drug Delivery Carriers

Regulating Protein Adsorption onto Hydroxyapatite: Amino Acid Treatment W.H. Lee, C.Y. Loo, K.L. Van, A.V. Zavgorodniy and R. Rohanzadeh	666
Preparation of Calcium-Phosphate Microspheres by Salt-Assisted Ultrasonic Spray-Pyrolysis Technique and their Drug Release Behavior Using Anti-Angiogenic Agent, TNP-470 M. Matsueda, M. Emoto and M. Aizawa	672
Preparation of Silver-Containing Hydroxyapatite Powder by Ultrasonic Spray-Pyrolysis Technique and its Antibacterial Property Y. Kawanobe, M. Honda, T. Konishi, M. Mizumoto, Y. Habuto, N. Kanzawa, Z. Zhuang and M. Aizawa	678
Dissolution Medium Responsive Simvastatin Release from Biodegradable Apatite Cements Drug Delivery System - The Therapeutically Effect and their Histology in Osteoporosis Rats - M. Otsuka, H. Hamada, K. Otsuka and H. Ohshima	684

XIV. Injectable Materials

Preparation of Injectable Hydroxyapatite/Collagen Nanocomposite Artificial Bone A. Kochi, M. Kikuchi, Y. Shirosaki, S. Hayakawa and A. Osaka	689
Investigation of the Phase Separation Occurring during the Injection of β-Tricalcium Phosphate – Water – Glass Beads Pastes S. Tadier, L. Galea, S. Gruenenfelder and M. Bohner	693
The Effect of Si(IV) Species Derived from Chitosan-Silicate Hydrogels on Osteoblast Behavior Y. Shirosaki, S. Hayakawa and A. Osaka	698
Study of the Cytotoxicity of a Composite of Carboxymethylcellulose (CMC) and a BioCeramic (Biphasic Calcium Phosphate-BCP) Injection for Use in Articular Cartilage Repair D.G. De Freitas, R.M. Osthues and S.N. da Silva	703
Self Hardening Macroporous Biphasic Calcium Phosphate Bone Void Filler for Bone Reconstruction; Animal Study and Human Data G. Daculsi, M. Durand, O. Hauger, S. Elodie, P. Borget, R.Z. LeGeros and J.C. Le Huec	709
Injectable Microparticles of Bioceramic for Bone Reconstruction Animal and Human Applications. HYDROSTM Concept G. Daculsi, S. Briand, E. Goyenvallé, E. Aguado and S. Baroth	714

XV. Nanomaterials

Poly(lactic-co-glycolic)/Nanostructured Merwinite Porous Composites for Bone Tissue Engineering. I. Preparation and Morphology

M. Hafezi-Ardakani, F. Kavian, F. Moztarzadeh, M.B. Eslaminejad, A. Zamanian and F. Bagheri 718

Synthesis and Characterization of Nano Crystalline Hydroxyapatite Spheroids Using Anionic Template for Bio Applications

P.M. SL Shanthi, M. Ashok, R.V. Mangalaraja and T. Balasubramanian 723

TEM Observation of Biomolecules on/in Mesoporous SBA-15

Y. Yokogawa, A. Saito, N. Ogawa, A. Nakamura and I. Kishida 728

Comparison of Bone Substitutes in a Tibia Defect Model in Wistar-Rats

C. Ganz, W. Xu, G. Holzhüter, W. Götz, B. Vollmar and T. Gerber 732

X-Ray Peak Broadening and *In Vitro* Dissolution Studies of Thermally Stabilized Nanocrystalline Carbonated Hydroxyapatite

K. Pavankumar, K. Venkateswarlu, R. Nagumothu and V. Muthupandi 739

Controlled Synthesis, Characterization and Magnetic Properties of Magnetite (Fe₃O₄) Nanoparticles without Surfactant under N₂ Gas at Room Temperature

M. Raz, F. Moztarzadeh, A.A. Hamedani, M. Ashuri and M. Tahriri 746

Internal Diffusion of Biocompatible Polymer-Coated Inorganic Nanoparticles in Mice

S. Abe, A. Sakaki, T. Narushima, Y. Uchida, T. Akasaka, M. Uo, T. Yonezawa and F. Watari 752

PVP Addition during Hydroxyapatite Synthesis: Effect on Albumin Adsorption

T.J. Fernandes, E. Mavropoulos, J.B. Campos, L.A. Gobbo and M.H. Prado da Silva 757

Simulations of Hydroxyapatite Nanocrystals for HRTEM Images Calculations

C.A. Ospina, J. Terra, A.J. Ramirez, D.E. Ellis and A.M. Rossi 763

FTIR Analysis and Cytotoxicity Test of Titanium Dioxide Nanoparticles

L.R. Rodrigues, C.G.B.T. Dias, H.J. Ceragioli, A.C.D. Rodas, F.J.M. Monteiro and C.A.C. Zavaglia 768

Nano-Bioceramics Production from Razor Shell

S. Agathopoulos, L.S. Ozyegin, Z. Ahmad, O. Gunduz, E.S. Kayali, O. Meydanoglu and F.N. Oktar 775

Sea Snail: An Alternative Source for Nano-Bioceramic Production

L.S. Ozyegin, F. Sima, C. Ristoscu, I.A. Kiyici, I.N. Mihailescu, O. Meydanoglu, S. Agathopoulos and F.N. Oktar 781

XVI. Osteoconduction-Osteoinduction

Enhanced Osteoconductivity of Positively Charged Titanium Metal

T. Kawai, M. Takemoto, S. Fujibayashi, M. Neo, D.K. Pattanayak, K. Doi, T. Matsushita, T. Kokubo and T. Nakamura 787

XVII. Other Materials

Preparation of Porous Wollastonite Microspheres

H. Maeda, T. Okuyama, E.H. Ishida and T. Kasuga 791

Improvement of Bone Ingrowth on PEEK Surface Implant

G. Daculsi, E. Goyenvalle and E. Aguado 795

Embolic Materials of BaFe₁₂O₁₉/Polyurethane Microspheres

H.L. Dai, P. Zhang, X.Y. Wang and S.P. Li 800

XVIII. Porous Materials

BMPs as Adsorptive Proteins for Ceramic Scaffolds

K. Ito, M. Murata, J. Hino, J. Tazaki, T. Akazawa and M. Arisue 808

Structural Optimization of Macroporous Magnesium Phosphate Scaffolds and their Cytocompatibility

A. Ewald, B. Lochner, U. Gbureck, J. Groll and R. Krüger 813

Hydroxyapatite Scaffolds Produced by Hydrothermal Deposition of Monetite on Polyurethane Sponges Substrates

F.D. Mishima, L.H.L. Louro, F.N. Moura, L.A. Gobbo and M.H. Prado da Silva 820

XIX. Scaffolds

Hydroxyapatite/Biopolymers Composite Scaffolds for Bone Tissue Engineering

A.C.B.M. Fook, T.B. Fideles, R.C. Barbosa, G.T.F.S. Furtado, G.Y.H. Sampaio and M.V.L. Fook 826

Fully-Interconnected Pore Forming Calcium Phosphate Cement

I. Kunio, K. Tsuru, T.K. Pham, M. Maruta and S. Matsuya 832

Cell Migration Ability Test for Bioactive Ceramics toward International Standardization of Ceramics for Regenerative Medicine

M. Kikuchi 836

Preparation of Fibrous Scaffolds Containing Calcium and Silicon Species

A. Obata, H. Ozasa, J.R. Jones and T. Kasuga 840

Stability of the Magnesium Carbonate Apatite/Anionic Collagen Scaffolds: Effect of the Cross-Link Concentration

M.S. Sader, G. Alves, R.Z. LeGeros and G.D. de Almeida Soares 844

Calcium Alkaline Phosphate Scaffolds for Bone Regeneration 3D-Fabricated by Additive Manufacturing

R. Gildenhaar, C. Knabe, C. Gomes, U. Linow, A. Houshmand and G. Berger 849

Mechanical Performance and *In Vitro* Studies of Hydroxyapatite/Wollastonite Scaffold for Bone Tissue Engineering

S.K. Padmanabhan, M. Carrozzo, F. Gervaso, F. Scalera, A. Sannino and A. Licciulli 855

Static and Dynamic Degradation of Sintered Calcium Phosphate Ceramics

C. Newe, E. Cunningham, F. Buchanan, G. Walker, P. Prendergast, A. Lennon and N.J. Dunne 861

SEM Observation of Composite Ceramic Scaffolds' Surface during Incubation in Culture Medium with or without Human PDL Fibroblasts

A. Theocharidou, K. Tsoptsias, E. Kontonasi, L. Papadopoulou, C. Panayiotou, K.M. Paraskevopoulos and P. Koidis 866

Electrospun Scaffolds Composed of Poly(L-lactic acid) and Hydroxyapatite

G.N.P. Rodriguez, L.R. Rodrigues, C.G.B.T. Dias, M.A. d'Ávila and C.A.C. Zavaglia 872

XX. Tissue Engineering

Effect of Flow Rate of Medium in Radial-Flow Bioreactor on the Differentiation of Osteoblasts in Tissue-Engineered Bone Reconstructed Using an Apatite-Fiber Scaffold and Rat Bone Marrow Cells

M. Miura, J. Fukasawa, Y. Yasutomi, H. Maehashi, T. Matsuura and M. Aizawa 878

Magnesium Based Sol-Gel Derived Bioactive Glass Ceramics for Dental Tissue Regeneration

O.M. Goudouri, E. Theodosoglou, A. Theocharidou, E. Kontonasi, L. Papadopoulou, X. Chatzistavrou, P. Koidis and K.M. Paraskevopoulos 884

Development and Mechanical Characterization of a Collagen/Hydroxyapatite Bilayered Scaffold for Osteochondral Defect Replacement

F. Gervaso, F. Scalera, S.K. Padmanabhan, A. Licciulli, D. Deponti, A. Di Giancamillo, C. Domeneghini, G.M. Peretti and A. Sannino 890

Ti₄O₇ Used as Electrode in Biomedicine and for Electrochemical Study of Scavenging Mechanism

M. Canillas, A. Rajnicek, C. Rosero, E. Chinarro and B. Moreno 896

Biological Evaluation of a Novel Tissue Engineering Scaffold of Layered Double Hydroxides (LDHs)

F. Fayyazbakhsh, M. Solati-Hashjin, M.A. Shokrgozar, S. Bonakdar, Y. Ganji, N. Mirjodavi, S.A. Ghavimi and P. Khashayar 902

Novel Bioactive Poly(ε-caprolactone)-Gelatin-Hydroxyapatite Nanocomposite Scaffolds for Bone Regeneration

A. Hamlehkhani, M. Mozafari, N. Nezafati, M. Azami and A. Samadikuchaksaraei 909

XXI. Titanium and Alloys

Anti-Bacterial Microporous Ceramic Coating for Ti6Al4V Alloys

A. Aral, M. Gunyuz, M. Baydogan, N.G. Karaguler, E. Olcay and H. Çimenoglu 916

Apatite-Forming Ability Governing Bone-Bonding of Ti-15Zr-4Nb-4Ta Alloy Subjected to Calcium Solution Treatment	
S. Yamaguchi, H. Takadama, T. Matsushita, A. Fukuda, T. Nakamura and T. Kokubo	920
Adhesion Behaviors of Serum Proteins on Oxide Layer of Commercially Pure Titanium	
S.H. Um and S.H. Rhee	926
The Processing and Fatigue Characterization of TiNi and Ti-6Al-4V Porous Materials	
E.E. Aşık, G.I. Nakaş and Ş. Bor	930
Acceleration of Apatite Nucleation on Parallel Aligned Ti-Substrates with Optimum Gaps by UV-Light Pre-Irradiation	
S. Hayakawa, K. Uetsuki, A. Kochi, Y. Shirosaki and A. Osaka	936