

Table of Contents

Preface, Committees, Sponsors

Chapter 1: Apatites and Calcium Phosphate

Value Added Bioceramics: A Review of the Developments and Progress in India T.S. Sampath Kumar	3
Transformation of Apatite Cement to B-Type Carbonate Apatite Using Different Atmosphere A. Cahyanto, K. Tsuru and K. Ishikawa	9
Nanocrystalline Apatites: A Versatile Functionalizable Platform for Biomedical Applications for Bone Engineering... and beyond C. Drouet, C. Rey, C. Combes, S. Cazalbou, S. Sarda and D. Grossin	14
Osteoconductivity and Bioresorption of an Interconnecting Porous Carbonate Apatite with Enhanced Mechanical Strength N.X.T. Tram, M. Maruta, K. Tsuru, S. Matsuya and K. Ishikawa	23
Regulation of DCPD Formation on β-TCP Granular Surface by Exposing Different Concentration of Acidic Calcium Phosphate Solution K.A. Shariff, K. Tsuru and K. Ishikawa	27
Analysis on the Setting of Brushite Bone Cement after Storage in the Humid Environment T.J. Chung and K.S. Oh	32
Conversion of Marine Structures to Calcium Phosphate Materials: Mechanisms of Conversion Using Two Different Phosphate Solutions I.J. Macha, D. Grossin and B. Ben-Nissan	36
Fabrication of Bone-Like Apatite-Phosphatidylcholine Composite Thin Film by Biomimetic Method H. Mizutani, T. Yabutsuka, S. Takai and T. Yao	40
Novel Bioceramic Production via Mechanochemical Conversion from Plate Limpet (<i>Tectura scutum</i>) - Shells A.T. Inan, O. Gunduz, Y.M. Sahin, N. Eken, S. Salman, J. Chou, B. Ben-Nissan, H. Gökçe and F.N. Oktar	45
Production of Apatite from Snail Shells for Biomedical Engineering Applications N. Eken, O. Gunduz, S. Celik, B. Ayata, Y.M. Sahin, J. Chou, B. Ben-Nissan, S. Salman, H. Gökçe and F.N. Oktar	51
Preparation of Porous α-TCP Block by Fusion of DCPD Coated α-TCP Spheres T.I. Arifita, M.L. Munar, K. Tsuru and K. Ishikawa	57
Can European Sea Bass (<i>Dicentrarchus labrax</i>) Scale Be a Good Candidate for Nano-Bioceramics Production? Y.M. Sahin, O. Gunduz, A. Ficai, N. Eken, A. Tuna, A.T. Inan and F.N. Oktar	60

Chapter 2: Bioceramics in Dental Surgery and Orthodontics

Adhesion Properties of an Apatite Film Deposited on Dentine Using Er:YAG Laser Ablation Method E. Yamamoto, N. Kato, K. Yoshikawa, K. Yasuo, K. Yamamoto and S. Hontsu	69
Hardness Evaluation of Dental Composite with Ceramic Fillers N. Djustiana, Z. Hasratiningah, E. Karlina, R. Febrida, V. Takarini, A. Cahyanto, A. Hardiansyah and B. Sunendar	74
Effects of Surface Properties of Montmorillonite for their Cytocompatibility K. Nakanishi, S. Abe, S. Yamagata, Y. Yoshida and J. Iida	80
Synthesize and Characterization Zr-Al-Si Post through Eggshell Membrane Strengthening with PMMA Matrix N.E. Putra, Y. Fendra, D. Nurdin and B.S. Purwasasmita	85
Polymethylmethacrylate Composite Bone Cement Adding with Tetracalcium Phosphate R.J. Chung, K.L. Ou and H.W. Liang	89

Basic Properties of PMMA Reinforced Using Ceramics Particles of ZrO₂-Al₂O₃-SiO₂ Coated with Two Types of Coupling Agents	
Z. Hasratiningih, A. Cahyanto, V. Takarini, E. Karlina, N. Djustiana, R. Febrida, K. Usri, Y. Faza, A. Hardiansyah and B.S. Purwasasmita	93
Overlaid Ultrathin Amorphous Calcium Phosphate Sheet Improves Dentinal Permeability Inhibition Rate	
N. Kato, Y. Ido, E. Yamamoto, K. Yasuo, K. Yoshikawa and S. Hontsu	99
Application of Fluorine Containing Bioactive Glass Nanoparticles in Dentin Hypersensitivity Treatment	
C.E. Camargos Lins, S.M. de Carvalho, A.A.R. de Oliveira and M. de Magalhães Pereira	103
Inappropriate Toothbrushes Selection Alter Composite Dental Material Restoration Surface Roughness: A Preliminary Study	
E. Oktaviana, R. Ardhani and H.D.K. Yulianto	108
Effect of Infiltration with Ferric Oxide Containing Glass on the Color and Mechanical Properties of Zirconia	
S.W. Park, G.J. Oh, K.J. Jang, M.K. Ji, J.H. Kim, J.W. Kim, J.S. Ban, H.P. Lim, K.D. Yun, M.J. Kim and C. Park	113

Chapter 3: Bioceramics in Practice of Scaffolds, Tissue Engineering and Implantation

Magnetite/Hydroxyapatite Composite Particles-Assisted Pore Alignment of Tilapia Fish Scale Collagen-Based Scaffold	
V. Irawan, T. Sugiyama and T. Ikoma	121
The Effect of Freeze-Thaw Treatment to the Properties of Gelatin-Carbonated Hydroxypatite Membrane for Nerve Regeneration Scaffold	
A. Patriati, R. Ardhani, H.D. Pranowo, E.G.R. Putra and I.D. Ana	129
Development of Bioactive PEEK by the Function of Apatite Nuclei	
K. Fukushima, T. Yabutsuka, S. Takai and T. Yao	145
Fabrication of Bioactive Stainless Steel by the Function of Apatite Nuclei	
T. Yabutsuka, R. Karashima, S. Takai and T. Yao	151
Increased Pre-Osteoblast Bioactivity on Ca-Modified Titanium	
Sunarso, R. Toita, K. Tsuru and K. Ishikawa	157
Mesoporous Silica Coating on Rf-Sputtered Apatite/Titanium Substrate	
Y. Yokogawa, M. Kitano and K. Hiroyasu	161
Primary Stability of Uncemented Total Hip Stems with Different Ceramic and Titanium Surface Coatings	
R. Dammer, A. Fritsche, H.D. Link, C. Zietz and R. Bader	165
Thin Degradable Coatings for Optimization of Osteointegration Associated with Simultaneous Infection Prophylaxis	
A. Bernstein, N. Suedkamp, H.O. Mayr, R. Gadow, I. Arhire, A. Killinger and P. Krieg	171
The Balance between Bone Formation and Material Resorption in Unidirectional Porous β-Tricalcium Phosphate Implanted in a Rabbit Tibia	
T. Makihara, M. Sakane, H. Noguchi and M. Yamazaki	177
Effects of Na Alginate in the Porosity of Scaffold Biphasic Calcium Phosphate/Alginate Composites	
K. Dahlan, N.A. Nuzulia, S.T. Wahyudi and S. Utami	183
Highly Porous β-TCP Block with Triple Pore Structure in Rat Subcutaneous Tissue and Sheep Iliac Critical Bone Defect	
M. Murata, T. Akazawa, M.A. Kabir, Y. Minamida, M. Shakya, H. Nagayasu, K. Yamada, M. Ito, M. Sakamoto, T. Matsumoto and T. Nakajima	187
Quantitative Estimation of Connectivity among Pores in the Hydroxyapatite Scaffold Prepared by Slip Casting with Porogen	
M.C. Lee, T.J. Chung and K.S. Oh	192
Mechanical Behavior of PCL Nanofibers	
M.K. Keler, S. Daglilar, O. Gunduz, M. Yuksek, Y.M. Sahin, N. Ekren, F.N. Oktar and S. Salman	196

Chapter 4: Cytocompatibility and Cytotoxicity of Bioceramics

Human Mesenchymal Stem Cells Behavior on Synthetic Coral Scaffold E.S. Mahanani, I. Bachtiar and I.D. Ana	205
In Vivo Evaluation of Strontium-Containing Nanostructured Carbonated Hydroxyapatite G.M. Kammer, S.C. Sartoretto, R. Resende, M. Uzeda, J.R. Nascimento, A.T. Alves, J. Calasans-Maia, A.M. Rossi, J.M. Granjeiro and M.D. Calasans-Maia	212
In Vivo Evaluation of Zinc-Containing Nanostructured Carbonated Hydroxyapatite S. Ribeiro, S.C. Sartoretto, R. Resende, M. Uzeda, A.T. Alves, S.A. Santos, G. Pesce, A.M. Rossi, J.M. Granjeiro, F. Miguel and M.D. Calasans-Maia	223
Studies on Connexin 43, a Gap-Junction Protein, in P19 Embryonal Carcinoma Cells after Culture on an Apatite Fiber Scaffold N. Kanzawa, H. Takano, K. Yasuda, M. Takahara and M. Aizawa	230
Cytocompatibility of Ceramic Nanoparticles to Various Types of Cells S. Abe, N. Iwadera, M. Mutoh, T. Katsurayama, S. Morimoto, K. Nakanishi, T. Akasaka, S. Inoue, Y. Yawaka, J. Iida and Y. Yoshida	234
Hollow Shells Development and Characterization for Cells Carrying Purpose T. Miramond, P. Borget, F. Moreau, B. Fellah and G. Daculsi	238

Chapter 5: Drug Delivery Systems

Bioceramic Drug Delivery System for Cancer Treatment and Regenerative Medicine A. El-Ghannam	245
Preparation of Carbonated Apatite Membrane as Metronidazole Delivery System for Periodontal Application R. Ardhani, Setyaningsih, O.A. Hafiyyah and I.D. Ana	250
Enzyme Immobilization by Using Apatite Microcapsules with Magnetic Properties T. Yabutsuka, S. Kumazawa, D. Hisashuku, H. Mizutani, K. Fukushima, S. Takai and T. Yao	259
Interface Function and Cefazolin-Adsorption-Release Characteristics of Hydroxyapatite Granules Modified by Supersonic Treatment Techniques T. Akazawa, M. Murata, Y. Minamida, M.A. Kabir, M. Ito, M. Sakamoto and T. Nakajima	265
Hydroxyapatite/PLA Biocomposite Thin Films for Slow Drug Delivery of Antibiotics for the Treatment of Bone and Implant-Related Infections I.J. Macha, B. Ben-Nissan, J. Santos, S. Cazalbou and B. Milthorpe	271