

# Table of Contents

## I. APATITES AND CALCIUM PHOSPHATES

|                                                                                                                                                                                                                                                |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Formation of Apatite Pattern by Electrophoretic Deposition of Apatite Nuclei</b><br>S. Yamaguchi, T. Yabutsuka, M. Hibino and T. Yao                                                                                                        | 3  |
| <b>Mechano-Chemical Synthesis of Biphasic Calcium Phosphates with the Various Ratio of HA and <math>\beta</math>-TCP</b><br>T.R. Tadjiev, S.S. Chun and S.Y. Kim                                                                               | 7  |
| <b>In Situ Micro-XRD Structure Analysis of Bioapatite in Human Ribs</b><br>S.S. Wei, Y.P. Tian, H. Li and L.H. Guo                                                                                                                             | 11 |
| <b>Preparation of <math>\beta</math>-Calcium Metaphosphate (<math>\beta</math>-CMP) Whiskers</b><br>L. Liao, L. Chen, A.Z. Chen, X.M. Pu, Y.Q. Kang and G.F. Yin                                                                               | 15 |
| <b>Comparison of Carbonate Hydroxyapatite with and without Sodium Co-Substitution</b><br>J.A. Stephen, C. Pace, J.M.S. Skakle and I.R. Gibson                                                                                                  | 19 |
| <b>Biocompatibility of Calcium Phosphate Ceramics Synthesized from Eggshell</b><br>N.S. Oh, Y.H. Na, S.W. Ji, S.W. Song, S.H. Oh, S.J. Lee and M.H. Lee                                                                                        | 23 |
| <b>Comparison of Biomineralization on Calcium Phosphate Implants in Rabbit and Dog Models</b><br>R.L. Xin, Y. Leng, J.Y. Chen and X.D. Yang                                                                                                    | 27 |
| <b>Dissolution of Hydroxyapatite Reinforced Grain Boundary by Glassy Phases</b><br>S.H. Youn, Z.X. Yang, K.H. Hwang, J.K. Lee and H. Kim                                                                                                       | 31 |
| <b>Chemical Dissolution and Bone Formation in Identical Porous <math>\beta</math>-TCP and HA</b><br>Q.Y. Shen, J. Sun, Z.W. Huang, D.H. Zhang, H. Lu, G.Z. Gu, Y.F. Qian and J.X. Lu                                                           | 35 |
| <b>Studies on Non-Quenched Calcium Phosphate Cement: Influences of Quenching and Milling on Setting Characteristic</b><br>X.J. Wang, Y.B. Li, J.A. Jansen, S.H. Li and J.G.C. Wolke                                                            | 39 |
| <b>Improvement of Microstructure of Bovine Hydroxyapatite (BHA) by Doping with Calcium Fluoride</b><br>L.S. Ozyegin, F.N. Oktar, S. Agathopoulos, S. Salman, Y. Bozkurt and N. Eruslu                                                          | 43 |
| <b>Improvement of Microstructure of Bovine Hydroxyapatite with Yttria</b><br>L.S. Ozyegin, S. Salman, F.N. Oktar, S. Agathopoulos, O. Meydanoglu, S. Akesi and I. Yukler                                                                       | 47 |
| <b>Slip Casting Derived <math>\alpha</math>-TCP/HA Biphasic Ceramics</b><br>K. Cheng                                                                                                                                                           | 51 |
| <b>A Simplified Preparation Method of Silicon-Substituted Calcium Phosphates According to Green Chemistry Principles</b><br>S.V. Dorozhkin, E.I. Dorozhkina, F.N. Oktar and S. Salman                                                          | 55 |
| <b>Precipitation of Carbonated Calcium Phosphate Powders from a Highly Supersaturated SBF Solution</b><br>I. Hofmann, L. Müller, P. Greil and F.A. Müller                                                                                      | 59 |
| <b>A Comparative Study of the Biodegradability of Calcium-Alkali-Orthophosphate Ceramics in Vitro and in Vivo</b><br>R. Gildenhaar, G. Berger, E. Lehmann, M. Stiller, C. Koch, P. Ducheyne, A. Rack, H. Seligmann, S. Jonscher and C. Knabe   | 63 |
| <b>Preparation of Merwinite with Apatite-Forming Ability by Sol-Gel Process</b><br>J. Ou, G.F. Yin, D.L. Zhou, X.C. Chen, Y.D. Yao, W.Z. Yang, B.L. Wu, M. Xue, J. Cui, W.F. Zhu and Y.Q. Kang                                                 | 67 |
| <b>The Effects of the Various Surface Treatments of Titanium on Cellular Activity of Osteoblast-Like Cells</b><br>H. Lee, J.W. Park, B.J. Choi, S.I. Yeo and J.Y. Suh                                                                          | 71 |
| <b>The Effects of Anodic Oxide Films Produced by <math>\beta</math>-Glycerophosphate and Calcium Acetate Anodizing on Attachment and Spreading of Osteoblast-Like Cell</b><br>Y.T. Jung, J.W. Park, S.I. Yeo, B.J. Choi, K.H. Kim and J.Y. Suh | 75 |
| <b>Control of Calcium Phosphate Precipitation in Hydrogel</b><br>M. Kamitakahara, S. Ogata, M. Tanihara and C. Ohtsuki                                                                                                                         | 79 |

|                                                                                                                                                                                                                   |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Preparation of Silicate Substituted Calcium Deficient Hydroxyapatite by Coprecipitation</b><br>H.B. Shi, H. Zhong, Y. Liu, F.Z. Zhang, M.C. Liang and M. Chen                                                  | 83  |
| <b>Synthesis of Novel High Silicate-Substituted Hydroxyapatite by Co-Substitution Mechanisms</b><br>J.A. Stephen, J.M.S. Skakle and I.R. Gibson                                                                   | 87  |
| <b>Bimodal Porous Bi-Phasic Calcium Phosphate Ceramics and Its Dissolution in SBF Solution</b><br>Y. Zhang, Y. Yokogawa and T. Kameyama                                                                           | 91  |
| <b>Promotion of Bioactive and Corrosion Resistance by Electrolytic Piezoelectric Ceramic</b><br>C.M. Lin and S.K. Yen                                                                                             | 95  |
| <b>Preparation of a Bioactive Xenograft</b><br>H.S. Kim, Y.K. Lee, B.S. Lim, C.P. Chung and S.H. Rhee                                                                                                             | 99  |
| <b>Hydroxyapatite Morphology Control by Using Hydrothermal Treatment</b><br>G. Kawachi, E.H. Ishida and K. Ioku                                                                                                   | 103 |
| <b>Effect of Ca/P Molar Ratio and Heat Treatment on Thermal Decomposition and Reconstitution of Hydroxyapatite</b><br>Q.X. Zhu, M. Lv and J.Q. Wu                                                                 | 107 |
| <b>Apatite-Forming Ability of Polymer Substrates Irradiated by Oxygen Cluster Ion Beams</b><br>K. Masakazu, S. Itoh, K. Miyamoto, R. Araki and G.H. Takaoka                                                       | 111 |
| <b>Hydroxyapatite Precursor Phases Identification by X-Ray Diffraction Using Synchrotron Radiation</b><br>S.R.A. Santos, A.M. Rossi and M.H. Prado da Silva                                                       | 115 |
| <b>Molecular and Crystal Structure Characterization of Calcium-Deficient Apatite</b><br>H.H. Zhou, H. Li and L.H. Guo                                                                                             | 119 |
| <b>Studies on Cadmium Uptake by Hydroxyapatite</b><br>N.C.C. da Rocha, E. Mavropoulos, M.H. Prado da Silva, R.C.d. Campos and A.M. Rossi                                                                          | 123 |
| <b>Lessening Hydroxyapatite Ceramics Particles Adverse Effects by Serum Modification: A Preliminary In Vitro Study and Mechanism Analysis</b><br>T. Yuan, X.N. Chen, J. Shan and X.D. Zhang                       | 127 |
| <b>Cell Proliferation on Titania Layer with In Vitro Apatite Forming Ability</b><br>S. Yabe, K. Tsuru, S. Hayakawa, A. Osaka, Y. Yoshida, K. Suzuki and T. Kuboki                                                 | 131 |
| <b>In Vivo Evaluation of Hydrothermally Converted Hydroxyapatite as a Bone Graft Substitute</b><br>S.R. Bae, J.W. Park, C.H. Ahn and J.Y. Suh                                                                     | 135 |
| <b>Electrohydrodynamic Processing Routes for Bioceramics</b><br>H.B. Zhang, M.J. Edirisinghe and J. Huang                                                                                                         | 139 |
| <b>Influence of Solvent Polarity on Synthesis of Beta - Tricalcium Phosphate</b><br>X.L. Deng, Y.M. Luo, M.M. Xu and X.Y. Hu                                                                                      | 143 |
| <b>Influence of Hydrothermal Reaction Temperature and pH on Phase Stability of Hydroxyapatite</b><br>S.H. Park, I.Y. Ryu, D.J. Kim, J.S. Han and M.H. Lee                                                         | 147 |
| <b>The Effect of Different Ratios of Zeolite Content in the Phosphate-Bonded Investment on Surface Roughness and Dimensional Change of the Casting</b><br>N. Ari, L.S. Ozyegin, E. Kazasoglu and S. Calikkocaoglu | 151 |

## II. GLASS AND GLASS-CERAMICS

|                                                                                                                                                                             |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Preparation of Apatite-Containing Calcium Phosphate Glass-Ceramics</b><br>T. Kasuga, E. Ueno and A. Obata                                                                | 157 |
| <b>Investigation of the Mixed Alkali Effect in a Range of Phosphate Glasses</b><br>E.A. Abou Neel, I. Ahmed and J.C. Knowles                                                | 161 |
| <b>Effect of Particle Size on New Bone Formation In Vivo Using Calcium Phosphate Glass</b><br>H.J. Moon, R.Z. LeGeros, K.N. Kim, K.M. Kim, S.H. Choi, C.K. Kim and Y.K. Lee | 165 |
| <b>Preparation and Properties of Porous Apatite-Wollastonite Bioactive Glass-Ceramic</b><br>M. Xue, J. Ou, D.L. Zhou, D. Feng, W.Z. Yang, G. Li, D.P. Liu and Y.S. Wang     | 169 |
| <b>Factors Controlling Antibacterial Properties of Bioactive Glasses</b><br>D. Zhang, E. Munukka, L. Hupa, H.O. Ylänen, M.K. Viljanen and M. Hupa                           | 173 |
| <b>Effects of Polyethylene Glycol on Morphology of Bioactive CaO-SiO<sub>2</sub> Gel</b><br>I.Y. Kim, C. Ohtsuki, M. Kamitakahara and S.B. Cho                              | 177 |

|                                                                                                                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Fabrication and Characterization of Bioactive Glass Reinforced CaSiO<sub>3</sub> Ceramics</b><br>K.L. Lin, S.Y. Ni, J. Chang, W.Y. Zhai and W.M. Gu                                                                  | 181 |
| <b>In-Vitro Bioactivity Characterization of Sodium-Potassium Mica and Fluorapatite Containing Glass Ceramics</b><br>G. Göller, C. Cekli, I. Akin and E. Demirkesen                                                      | 185 |
| <b>Sintering Effect on Mechanical Properties of Composites Made of Bovine Hydroxyapatite (BHA) and Commercial Inert Glass (CIG)</b><br>S. Salman, F.N. Oktar, O. Gunduz, S. Agathopoulos, M.L. Öveçoğlu and E.S. Kayali | 189 |
| <b>The Influence of Bioactive Glass Particles on Osteolysis</b><br>D.H. Kim, K.S. Lee, J.H. Kim, J.S. Chang and Y.T. Kim                                                                                                | 193 |

### III. NANOMATERIALS (I) NANOPARTICLES

|                                                                                                                                                                                                                     |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Rapid Wet Synthesis of Nano-Sized <math>\beta</math>-TCP by Using Dialysis</b><br>Y.H. Liu, S.M. Zhang, L. Liu, W. Zhou, W. Hu, J. Li and Z.Y. Qiu                                                               | 199 |
| <b>Effect of Inorganic Ions on Gelation, Particle Morphology, and Texture of Solo-Gel-Derived Silica Nanospheres</b><br>Z.R. Gou, W.J. Weng, C. Zou, P.Y. Du and G.R. Han                                           | 203 |
| <b>Preparation and Characterization of Calcium Metaphosphate Nanofibers via Electrospinning</b><br>T.R. Tadjiev, S.S. Chun, H.M. Kim, I.K. Kang and S.Y. Kim                                                        | 207 |
| <b>Dialysis Efficiency in Rapid Synthesis of Nano-Hydroxyapatite</b><br>W. Zhou, S.M. Zhang, W. Hu, Z.Y. Qiu and Y.H. Liu                                                                                           | 211 |
| <b>Ultrafine Grinding of Radix Salvia Miltiorrhiza Particles and the Physicochemical Properties by High Speed Centrifugal Shearing</b><br>Y.L. Su, Z.Y. Fu, W.M. Wang, H. Wang, Y.C. Wang, J.Y. Zhang and P.Y. Ma   | 215 |
| <b>Dialysis Preparation of Zinc-Substituted Nano-Hydroxyapatite and Its Characterization</b><br>S.M. Zhang, W. Hu, W. Zhou, J. Li, Y.H. Liu and Z.Y. Qiu                                                            | 219 |
| <b>Surface Modification of Nanosized Biphasic <math>\alpha</math>-TCP/HA Powders</b><br>L.L. Pan, Y.B. Li, C. Zou, W.J. Weng, K. Cheng, C.L. Song, P.Y. Du, G.L. Zhao, G. Shen, J.X. Wang and G.R. Han              | 223 |
| <b>Surface Dissolution of Hydroxyapatite Prepared by Microwave Sintering</b><br>D.S. Seo, H. Kim, K.H. Hwang and J.K. Lee                                                                                           | 227 |
| <b>Synthesis and Dispersion of Magnetic Nano-Particles by a Surfactant-Mediated Approach</b><br>P. Hou, J. Sun, S.B. Zhou and J. Weng                                                                               | 231 |
| <b>Preparation and Characterization of Nano Hydroxyapatite</b><br>B. Li, X.L. Wang, B. Guo, Y.M. Xiao, H.S. Fan and X.D. Zhang                                                                                      | 235 |
| <b>Synthesis of Albumin/DCP Nano-Composite Particles</b><br>H. Ohsawa, A. Ito, Y. Sogo, A. Yamazaki and T. Ohno                                                                                                     | 239 |
| <b>Microspheres Based on Hydroxyapatite Nanoparticles Aggregates for Bone Regeneration</b><br>A.Y. Pataquiva Mateus, M.P. Ferraz and F.J. Monteiro                                                                  | 243 |
| <b>Hydrothermal Synthesis of Nano-Crystalline Hydroxyapatite</b><br>J.L. Niu                                                                                                                                        | 247 |
| <b>Caries Inhibitory Activity of the Nano-HA In Vitro</b><br>X.C. Meng, K.L. Lv, J.X. Zhang and D.L. Qu                                                                                                             | 251 |
| <b>Structural Properties of Hydroxyapatite With Particle Size Less Than 10 Nanometers</b><br>A.M. Rossi, M.H. Prado da Silva, A.J. Ramirez, D. Biggemann, M.M. Caraballo, Y.P. Mascarenhas, J.G. Eon and G.T. Moure | 255 |
| <b>Sintering Behaviour of Nanosized HAP Powder</b><br>D. Veljković, B. Jokic, I. Jankovic-Castvan, I. Smičiklas, R. Petrović and D. Janačković                                                                      | 259 |
| <b>Preparation of Nano-Sized Strontium Containing Tricalcium Phosphate Particles</b><br>S.D. Miao, W.J. Weng, K. Cheng, P.Y. Du, G. Shen and G.R. Han                                                               | 263 |
| <b>Remineralization Effect of the Nano-HA Toothpaste on Artificial Caries</b><br>K.L. Lv, J.X. Zhang, X.C. Meng and X.Y. Li                                                                                         | 267 |
| <b>Effect of Precipitation Method on Stoichiometry and Morphology of Hydroxyapatite Nanoparticles</b><br>H.B. Shi, H. Zhong, Y. Liu, J.Y. Gu and C.S. Yang                                                          | 271 |
| <b>Remineralization Potential of Sports Drink Containing Nano-Sized Hydroxyapatite</b><br>H.J. Lee, J.H. Min, C.H. Choi, H.G. Kwon and B.I. Kim                                                                     | 275 |

|                                                                                                                                                  |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Influence of Different Hydroxyapatite Particles on the Behavior of Highly Malignant Melanoma Cells</b>                                        |     |
| B. Guo, B. Li, X.L. Wang, M.X. Zhang, N.H. Yan and X.D. Zhang                                                                                    | 279 |
| <b>Research about Tooth Whitening and Bacteria Sticking Capability with Using Dentifrice Including Nano-Hydroxyapatite, Sodium Metaphosphate</b> |     |
| Y.D. Park, J.H. Kim and K.S. Hwang                                                                                                               | 283 |
| <b>Effect of Nanometer Hydroxyapatite Particles on Rat Macrophage at mRNA Level</b>                                                              |     |
| T.T. Ding and J. Sun                                                                                                                             | 287 |
| <b>Effect of New Dentifrice Containing Nano-Sized Carbonated Apatite on Enamel Remineralization</b>                                              |     |
| S.H. Jeong, S.J. Hong, C.H. Choi and B.I. Kim                                                                                                    | 291 |
| <b>Synthesis and Characterization of Yttrium/Hydroxyapatite Nanoparticles</b>                                                                    |     |
| Y. Liu, R.J. Zhou, A.C. Mo, Z.Q. Chen and H.K. Wu                                                                                                | 295 |
| <b>Antibacterial Activity of Silver-Hydroxyapatite/Titania Nanoparticles on Oral Bacteria</b>                                                    |     |
| J. Liao, A.C. Mo, H.K. Wu, J.C. Zhang, Y.B. Li and G.Y. Lv                                                                                       | 299 |
| <b>Synthesis of Nanosized Carbonated Hydroxyapatite under Microwave Irradiation</b>                                                              |     |
| X. Ran, J.Y. Chen, J.G. Ran, L. Guo and X.D. Zhang                                                                                               | 303 |
| <b>Ce(IV) Doped TiO<sub>2</sub> Nanoparticles and the Effect on Proliferation of BEL7402 Human Hepatoma Cells</b>                                |     |
| L. Wang, J. Mao, X.L. Zhang, M.J. Tu, B. Kan and Y.Q. Wei                                                                                        | 307 |

### III. NANOMATERIALS (II) NANOCOMPOSITES

|                                                                                                                                              |     |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Osteogenic Activity of MG63 Cells on Hydroxyapatite/Collagen Nanocomposite Membrane</b>                                                   |     |
| M. Kikuchi                                                                                                                                   | 313 |
| <b>Osteogenic Activity of MG63 Cells on Hydroxyapatite/Collagen Nanocomposite under Pressure/perfusion Culture</b>                           |     |
| T. Yoshida, M. Kikuchi, Y. Koyama and K. Takakuda                                                                                            | 317 |
| <b>Fabrication of Porous n-HA/PA66 Composite for Bone Repair</b>                                                                             |     |
| H. Li, Y.B. Li, Y.G. Yan, J.D. Li, A.P. Yang and H.Z. Xiang                                                                                  | 321 |
| <b>Characterization and Antibacterial Effect of a Novel Nanocomposite Membrane</b>                                                           |     |
| S. Bai, A.C. Mo, S.Q. Xian, Y. Zuo, Y.B. Li and W. Xu                                                                                        | 325 |
| <b>Development of Poly(Vinyl Alcohol)-Collagen-Hydroxyapatite Nanohybrids for Tissue Grafting</b>                                            |     |
| X.M. Wang, X.D. Li, G.Q. Zheng, X.L. Wang, X.D. Zhang and Z.W. Gu                                                                            | 329 |
| <b>The Construction and Characterization of Nano-FHA Bioceramic Coating on Titanium Surface</b>                                              |     |
| X.X. Cai, P. Gong, Y. Man, Z.Q. Chen and G. He                                                                                               | 333 |
| <b>Fracture Mechanics and Toughening Mechanisms Analysis of Ce-TZP/Al<sub>2</sub>O<sub>3</sub> Nanocomposite for Biomedical Applications</b> |     |
| G. Pezzotti, K. Yamada, S. Shiroyama and M. Nawa                                                                                             | 337 |
| <b>A Novel Approach to Prepare Nano-Hydroxyapatite / Silk Fibroin Composite to Increase Nucleation Sites</b>                                 |     |
| J. Wang, M.Q. Li, X.C. Meng and G.W. Wen                                                                                                     | 341 |
| <b>Fabricating Hydroxyapatite-Silk Fibroin Nanocomposite by Bone Bionics</b>                                                                 |     |
| B. Cui, L.F. Liang, X.Y. Lu and J. Weng                                                                                                      | 345 |
| <b>Effect of Dehydration Methods on Mechanical Strength of Nanohydroxyapatite/Collagen Composites</b>                                        |     |
| X.Y. Lin, X.D. Li and X.D. Zhang                                                                                                             | 349 |
| <b>Effect of Sandblasting and Heat Treatment on Biaxial Flexure Strength of the Zirconia/Alumina Nanocomposite</b>                           |     |
| S. Ban, H. Sato, Y. Suehiro, H. Nakanishi and M. Nawa                                                                                        | 353 |
| <b>Magnetic Chitosan/Hydroxyapatite Nanocomposite via In Situ Hybridization Strategy</b>                                                     |     |
| B.Q. Li, D.C. Jia, Y. Zhou, Q.L. Hu and W. Cai                                                                                               | 357 |
| <b>Calcium Phosphate Nano-Composite with Bone Morphogenetic Protein</b>                                                                      |     |
| M. Park, H. Kim, J.W. Lee, K.Y. Lee, H.M. Kim, S.H. Moon and H.M. Lee                                                                        | 361 |
| <b>Nano-Hydroxyapatite/Polymer Composite Scaffold for Bone Tissue Engineering</b>                                                            |     |
| H.N. Wang, Y.B. Li, Y. Zuo, L. Cheng, Y.Y. Wang and H. Li                                                                                    | 365 |

|                                                                                                                                                                                                                                                            |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Preparation and Cytocompatibility of Novel Nano-HA/PLA Composite</b><br>W.Q. Xiao, Y.M. Xiao, X.T. Wen, H.S. Fan and X.D. Zhang                                                                                                                         | 369 |
| <b>Confocal Raman Spectroscopic Analysis of Phase Transformation and Residual Stresses in Ce-TZP/Al<sub>2</sub>O<sub>3</sub> Nanocomposite for Biomedical Applications</b><br>K. Yamada, M. Nawa and G. Pezzotti                                           | 373 |
| <b>Electrospun Poly(L-lactic acid)/Nano-Hydroxyapatite Hybrid Nanofibers and Their Potential in Dental Tissue Engineering</b><br>M.M. Xu, F. Mei, D. Li, X.P. Yang, G. Sui, X.L. Deng and X.Y. Hu                                                          | 377 |
| <b>Proteomics Study of the Osteoblast Cells Proliferated on Nanostructured Hydroxyapatite Coatings</b><br>H. Li, K.A. Khor, W.N. Chen, T.L. Tan, H. Pan and P. Cheang                                                                                      | 381 |
| <b>Improvement of the Adhesion and Proliferation of Human Osteoblastic-Like Cells with Biomimetic Nanoapatite Coatings</b><br>Z.J. Pan, B.G. Guan, D.S. Yang, J. Feng and W.Q. Yan                                                                         | 385 |
| <b>Biomimetic Organic-Inorganic Nanocomposite Coatings for Titanium Implants: I. Preparation, Physicochemical and Mechanical Characterization</b><br>M. Dutour Sikirić, C. Gergely, F. Cuisinier and H. Füredi-Milhofer                                    | 389 |
| <b>Electrospun PLLA/MWNTs/HA Hybrid Nanofiber Scaffolds and Their Potential in Dental Tissue Engineering</b><br>X.L. Deng, M.M. Xu, D. Li, G. Sui, X.Y. Hu and X.P. Yang                                                                                   | 393 |
| <b>Early Bone Repair and Regeneration of Nano-Sized <math>\beta</math>-Tricalcium Phosphates/Collagen Composite in Rabbits</b><br>B.G. Guan, D.S. Yang, Z.L. Shi, W.J. Weng and W.Q. Yan                                                                   | 397 |
| <b>Biomimetic Organic-Inorganic Nanocomposite Coatings for Titanium Implants. II. Biological "In Vitro" and "In Vivo" Characterization</b><br>M. Dutour Sikirić, R. Elkaim, S. Lamolle, H.J. Ronold, S.P. Lyngstadass, H. Füredi-Milhofer and F. Cuisinier | 401 |
| <b>Hydrothermal Preparation of Hydroxyapatite/Chitosan Nanocomposites via In Situ Precipitation</b><br>X.Y. Lu, Z. Liu and J. Weng                                                                                                                         | 405 |

#### IV. CERAMIC COMPOSITES

|                                                                                                                                                                                                               |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Highly Bioactive Porous Composite Scaffolds of Bovine Hydroxyapatite (BHA-Ti, BHA-TiO<sub>2</sub>, BHA-Li<sub>2</sub>O)</b><br>F.N. Oktar, S. Ağathopoulos, G. Göller, H. Gökçe, E.S. Kayali and S. Salman | 411 |
| <b>Investigation of a Collagen-Chitosan-Hydroxyapatite System for Novel Bone Substitutes</b><br>X.L. Wang, X.D. Li, X.M. Wang, J. Lu, H.C. Zhao, X.D. Zhang and Z.W. Gu                                       | 415 |
| <b>Physical and Adhesive Properties of Cyanoacrylate-Based <math>\beta</math>-TCP Composites</b><br>G.S. Lee, S.B. Lee, D.Y. Lee, K.J. Park, S.O. Kim, K.N. Kim and B.J. Choi                                 | 419 |
| <b>Preparation and Characterization of the Microspheres Comprised of Atelocollagen and BCP</b><br>Q.R. Wei, J. Lu, H.C. Zhao, B. Jiang, B. Zhang, Z.W. Gu, X.D. Zhang and J.Y. Chen                           | 423 |
| <b>Synthesis of Hydroxyapatite in Polymeric Solutions for Organic-Inorganic Nanocomposites</b><br>G.Q. Zheng, X.D. Li, X.M. Wang, S.H. Yu, Z.W. Gu and X.D. Zhang                                             | 427 |
| <b>Three Composites of Bioactive Glass and PLA-Copolymers: Mass Loss and Water Absorption in Vitro</b><br>T. Niemelä and M. Kellomäki                                                                         | 431 |
| <b>Study of The Mechanical Property of Magnetite/ Hydroxyapatite/ Chitosan Nano-Composite</b><br>J. Wu, Q.L. Hu, F.P. Chen, B.Q. Li and J.C. Shen                                                             | 435 |
| <b>Bioactivity and Mechanical Property of Starch-Based Organic-Inorganic Hybrids</b><br>T. Miyazaki, S. Yasunaga, E. Ishida, M. Ashizuka and C. Ohtsuki                                                       | 439 |
| <b>Spongiosa-like Specimen and Foils of a Biomaterial Composed of Fluorapatite and Calcium Zirconium Phosphate</b><br>U. Ploska and G. Berger                                                                 | 443 |
| <b>Evaluation of Osteoblast Responses to Silver-Hydroxyapatite/Titania Nanoparticles In Vitro</b><br>J.C. Zhang, J. Liao, A.C. Mo, H.K. Wu, Y.B. Li, G.Y. Lv and X.Y. Li                                      | 447 |
| <b>Preparation and Characterization of CaSiO<sub>3</sub>-Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> Composite Bioceramics</b><br>S.Y. Ni, J. Chang, K.L. Lin and W.Y. Zhai                                    | 451 |

|                                                                                                                                   |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Antibacterial Activity of Silver-Hydroxyapatite/Titania Nanocomposite Coating on Titanium against Oral Bacteria</b>            |     |
| A.C. Mo, W. Xu, S.Q. Xian, Y.B. Li and S. Bai                                                                                     | 455 |
| <b>Selective Bone Formation on Hydroxyapatite-Granule-Implanted Titanium</b>                                                      |     |
| A. Watazu, Y.Z. Li, S. Tsutsumi, K. Matsumura and N. Saito                                                                        | 459 |
| <b>Preparation and Characterization of n-HA/PA66/CS Biocomposite</b>                                                              |     |
| H.Z. Xiang, Y.B. Li, Y.H. Mu, X.J. Wang, H.N. Wang and H. Li                                                                      | 463 |
| <b>Development of Bioactive Polyethylene-Apatite Nuclei Composite</b>                                                             |     |
| T. Yabutsuka, S. Yamaguchi, M. Hibino and T. Yao                                                                                  | 467 |
| <b>Synthesis and Characterization of n-HA/PVA/Gel Composite</b>                                                                   |     |
| M.B. Wang, Y.B. Li, F.L. Xu, G. Zhou and L. Cheng                                                                                 | 471 |
| <b>Bioactive Hydroxyapatite/ Polyvinyl Alcohol Composite for Repair and Regeneration of Articular Cartilage</b>                   |     |
| Y.D. Zheng, Y.J. Wang, X.F. Chen, H.D. Lu and Q. Liu                                                                              | 475 |
| <b>DCPD/Collagen Scaffold and Apatite Formation In Vitro</b>                                                                      |     |
| Y. Honda, S. Kamakura, K. Sasaki, T. Anada, T. Masuda and O. Suzuki                                                               | 479 |
| <b>A Study of Bone-Like Apatite Formation on <math>\beta</math>-TCP/PLLA Scaffold in Static and Dynamic Simulated Body Fluid</b>  |     |
| Y.Q. Kang, G.F. Yin, K.F. Wang, L. Luo, L. Liao and Y.D. Yao                                                                      | 483 |
| <b>Preparation of Calcium Carbonate / Poly(Lactic Acid) Composite Membranes Containing Mercapto Groups</b>                        |     |
| S. Tokuda, A. Obata and T. Kasuga                                                                                                 | 487 |
| <b>Preparation and Characterization of Porous <math>\beta</math>-TCP/PLLA Composites with High <math>\beta</math>-TCP Content</b> |     |
| H.B. Liu, Y.B. Gao, S.D. Miao, W.J. Weng, K. Cheng, P.Y. Du, G. Shen and G.R. Han                                                 | 491 |
| <b>Influence of Collagen Status on Microstructures of Porous Collagen/TCP Composites</b>                                          |     |
| C. Zou, W.J. Weng, X.L. Deng, K. Cheng, P.Y. Du, G. Shen and G.R. Han                                                             | 495 |
| <b>Preparation and Characteristics of Strontium Containing Bioactive <math>\text{CaSiO}_3</math> Ceramics</b>                     |     |
| C.T. Wu and H. Zreiqat                                                                                                            | 499 |
| <b>Three-Dimensional Characterization of the Microstructure of Bioglass/Polyethylene Composite by X-Ray Microtomography</b>       |     |
| X.W. Fu, J. Huang, E.S. Thian, S. Best and W. Bonfield                                                                            | 503 |
| <b>Study on Interface Reaction and Its Control of Titanium Fiber-Hydroxyapatite Composites</b>                                    |     |
| J. Li, Y.L. Wang, Y. Huang, F. He and Y.Z. Wan                                                                                    | 507 |
| <b>A Novel Way of Dispersing Fine Ceramic Particles in PLGA Matrix</b>                                                            |     |
| Z. Yang, E.S. Thian, S. Best and R. Cameron                                                                                       | 511 |
| <b>Comparison Research between Porous HA/PLA Composite and Bone-Derived Material in Repairing Periodontal Defects</b>             |     |
| Z. Tan, Q. Zhao, Y. Wang, Q. Yuan and P. Gong                                                                                     | 515 |
| <b>Silicon-Doped Bonelike Apatite / Poly(lactic acid) Composite</b>                                                               |     |
| A. Obata, H. Maeda and T. Kasuga                                                                                                  | 519 |

## **V.BIOACTIVE COATINGS AND BIOMIMETIC APATITES (I)**

### **BIOACTIVE COATINGS ON TITANIUM & ALLOYS**

|                                                                                                                                                     |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Characterization of Crystalline Hydroxyapatite Thin Coatings for Biomedical Applications</b>                                                     |     |
| Z. Hong, A. Mello, L. Luan, M. Farina, L.R. Andrade, C.L. Ferreira, S. Paik, B. Deng, J.G. Eon, J. Terra, A.M. Rossi, D.E. Ellis and J.B. Ketterson | 525 |
| <b>Fabrication of Porous Titania and Porous Calcium Phosphate Coatings on Titanium Surface</b>                                                      |     |
| B. Feng, J. Weng, Y. Liang, S.X. Qu, J. Wang and X. Lu                                                                                              | 529 |
| <b>Surface Modification of Vacuum Plasma Sprayed Titanium Coating via Two Different Treatments</b>                                                  |     |
| Y.K. Chen, X.B. Zheng, H. Ji, C.X. Ding and S.W. Lee                                                                                                | 533 |
| <b>The Behavior of SiC Films Fabricated by Hybrid Laser-Magnetron Deposition after Immersion</b>                                                    |     |
| N.M. Badea, M. Jelinek, T. Tite, M. Prodana, A. Campean and I. Demetrescu                                                                           | 537 |
| <b>Grafting Collagen on the Plasma Sprayed Titania Coating Treated by Sodium Hydroxide</b>                                                          |     |
| B. Li, X.Y. Liu and C.X. Ding                                                                                                                       | 541 |

|                                                                                                                                                                                                        |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>The Behaviour of Electrochemical Deposition of Phosphate Coating on CoCr Bio Alloys</b><br>D. Ionita, I. Man and I. Demetrescu                                                                      | 545 |
| <b>Calcium Phosphate Coatings on Titanium Alloy via an Electrodeposition Method</b><br>M.A. Lopez-Heredia, P. Weiss and P. Layrolle                                                                    | 549 |
| <b>Early Peri-Implant Osteogenesis with Functionally Graded Nanophase Hydroxyapatite/Bioglass Coating on Ti Alloys</b><br>Y.B. Tan, X.H. Wang, Q.H. Wu and W.Q. Yan                                    | 553 |
| <b>Bloodcompatibility Improvement of Titanium Oxide Film Modified by Hydrogen Plasma Reduction</b><br>Y. Xu, N. Huang and H. Sun                                                                       | 557 |
| <b>In Vitro Dissolution of Amorphous Calcium Phosphate (ACP) Increased the Wear Particle Generation of Plasma-Sprayed HA Coatings</b><br>W.D. Tong and P.J. Li                                         | 561 |
| <b>Preparation of Titania Films on Implant Titanium by Electron Cyclotron Resonance Plasma Oxidation</b><br>H. Masumoto, T. Goto, Y. Honda, O. Suzuki and K. Sasaki                                    | 565 |
| <b>Fabrication of Bioactive HA/Ti Composite Coating by Laser Cladding</b><br>S. Yang and H.C. Man                                                                                                      | 569 |
| <b>The Study of Surface Energy, Electrical Properties and Platelet Adhesion Behavior of a-C/a-CN Films Synthesized by PIH-D</b><br>F. Wen, N. Huang, H. Sun, A.S. Zhao, J. Wang, Y.J. Li and Z.W. Wang | 573 |
| <b>The Behavior of Ceramic Coating on Titanium Using Chemical and Electrochemical Deposition</b><br>D. Ionita, D. Bojin and I. Demetrescu                                                              | 577 |
| <b>The Influence of Bovine Serum Albumin on the Biomimetic Calcium Phosphate Coating of Bioactivated Titanium</b><br>Y. Wu, B.C. Yang, J. Lu, Z.W. Gu and X.D. Zhang                                   | 581 |
| <b>Biomimetic Synthesis of a Strontium-Substituted Apatite Coating Grown on Ti<sub>6</sub>Al<sub>4</sub>V Substrate</b><br>A.L. Oliveira, R.L. Reis and P.J. Li                                        | 585 |
| <b>Hydroxyapatite and Bioactive Glass Composite Coating on Ti<sub>6</sub>Al<sub>4</sub>V</b><br>R.L. Du, S.X. Zeng, Y.H. Wu and X.H. Xie                                                               | 589 |
| <b>Biocompatibility of Precipitation-Enhancing Anodic Oxidation on Titanium as Implant Material</b><br>K.T. Oh, K.N. Kim, D.H. Han, M.K. Chung and S.H. Hwang                                          | 593 |
| <b>The Effects of Ion Beam-Assisted Deposition of Hydroxyapatite on the Osseointegration of Endosseous Implant Surface</b><br>M.K. Kim, J.Y. Choi, U.W. Jung, I.S. Lee, T. Inoue and S.H. Choi         | 597 |
| <b>Morphologies of Hydroxyapatite Crystal Deposited on Titanium Surface with Electrochemical Technique</b><br>W. Ye and X.X. Wang                                                                      | 601 |
| <b>The Surface Valence Band Structure and Hemocompatibility of Rutile Titanium Oxide Films</b><br>L.X. Xu, Y.X. Leng, Q. Zhang, P. Yang and N. Huang                                                   | 605 |
| <b>Different Morphology of Hydroxyapatite Coatings on Titanium by Electrophoretic Deposition</b><br>X.W. Meng, T.Y. Kwon and K.H. Kim                                                                  | 609 |
| <b>Biomimetic Coating on Titanium Metal and Its Excellent Cell Proliferation</b><br>X.D. Yang, L.Z. Teng, J. Lu, Q.R. Wei, H. Wang, J.Y. Chen and B.C. Yang                                            | 613 |
| <b>Calcium Phosphate Coating on Titanium</b><br>H.L. Yang, S. Somegawa, Y.J. Yang and Z.C. Luo                                                                                                         | 617 |
| <b>pDNA and Calcium Phosphate Co-Precipitation on Titanium Alloy Plate</b><br>L. Yang, C.A. van Blitterswijk and F. Barrere                                                                            | 621 |
| <b>Research on the In Situ Fabrication of Bioceramic Composite Coatings by Laser Cladding</b><br>Y.C. Wang, J.G. Li and Y. Zhou                                                                        | 625 |
| <b>Mineralization Behavior of Bioactive Ceramic Coatings Formed by Micro-Arc Oxidation on Titanium</b><br>K.H. Nan and G.X. Pei                                                                        | 629 |

|                                                                                                                                                                                                                              |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>In Vitro Apatite-Forming Ability of Titania Films Depends on Their Substrates</b><br>T. Shozui, K. Tsuru, S. Hayakawa and A. Osaka                                                                                        | 633 |
| <b>Preparation of Bioactive Tantalum Metal via Anodic Oxidation Treatment</b><br>B.C. Yang, L. Gan, Z.S. Li, Y. Huang, Y. Qu and X.D. Zhang                                                                                  | 637 |
| <b>Crystallization of a Bone-like Apatite from a Milk-Containing Revised Simulated Body Fluid (SBF)</b><br>S.V. Dorozhkin, E.I. Dorozhkina, S. Salman and F.N. Oktar                                                         | 641 |
| <b>Ultra-Thin Film of Chitosan and Sulfated Chitosan Coating on Titanium Oxide by Layer-by-Layer Self-Assembly Method</b><br>Q.L. Li, N. Huang, G.J. Wan, L.S. Zhao and X.Y. Tang                                            | 645 |
| <b>Characterization of Hydroxyapatite Sputtered Films Doped with Titanium</b><br>A.R. Ribeiro, A.P. Piedade, C.C. Ribeiro, M.T. Vieira and M.A. Barbosa                                                                      | 649 |
| <b>Exploring Antibacterial and Antiadhesive Activities of Titanium Surface Modified with Hydroxyapatite Sol-Gel Containing Silver</b><br>W.C. Chen, C.Y. Bao, Y.L. Jeyachandran, G.M. Ou, H.S. Fan, Y.M. Liao and X.D. Zhang | 653 |

## **V. BIOACTIVE COATINGS AND BIOMIMETIC APATITES (II) BIOACTIVE COATINGS ON POLYMERS**

|                                                                                                                                                                                                                 |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Formation of a Laminin–Apatite Composite Layer with Low Surface Roughness on a Polymer Surface</b><br>A. Oyane, Y. Ishikawa, Y. Sogo, A. Yamazaki, K.S. Furukawa, T. Ushida and A. Ito                       | 659 |
| <b>Controlled Crystallization of Tooth-Like Hydroxyapatite under Gelatin Monolayer</b><br>K. Tian, D.H. Guan, P. Wu, C.P. Huang, L. Niu, S.Q. Xian, Y. Chen, P. Wang, Y.L. Qu, Y.M. Ye, T.T. Wang and Z.Q. Chen | 663 |
| <b>The Effect of Titania Deposited by Hydrolysis at Low Temperature on Apatite Formation Ability in DMEM</b><br>F. Xiao, R.G. Song and A. Osaka                                                                 | 667 |
| <b>Bone-Like Apatite Formation on Modified PCL Surfaces under Different Conditions</b><br>Y.J. Wang, C.R. Yang, H.D. Zheng, X.F. Chen, C.Y. Ning, L. Ren and C.L. Deng                                          | 671 |
| <b>Apatite-Forming Ability of Pectin Gels in Simulated Body Environment</b><br>T. Ichibouji, T. Miyazaki, E. Ishida, M. Ashizuka, A. Sugino, C. Ohtsuki and K. Kuramoto                                         | 675 |
| <b>Bonelike Apatite Formation on Synthetic Organic Polymers and Fiber Coated with Titania</b><br>J.F. Liu, S. Hayakawa, K. Tsuru, J.Z. Jiang and A. Osaka                                                       | 679 |
| <b>Apatite-Forming Ability of Polyglutamic Acid Gel in Simulated Body Fluid: Effect of Cross-Linking Agent</b><br>A. Sugino, T. Miyazaki and C. Ohtsuki                                                         | 683 |
| <b>Preparation of Hydroxyapatite / Titania Double Layer Coating on Poly-L-lactide due to Hydrolysis of Titanium Tetrachloride</b><br>J.F. Liu, S. Hayakawa, K. Tsuru, J.Z. Jiang and A. Osaka                   | 687 |
| <b>FGF-2/Calcium Phosphate Composite Layer to Resist Bacterial Infection</b><br>Y. Sogo, A. Ito, H. Mutsuzaki, A. Oyane, M. Onoguchi, N. Ichinose, M. Sakane and N. Ochiai                                      | 691 |
| <b>Biom mineralization of Electrospun Nano-HA/PHB GTR Membrane</b><br>D.H. Guan, C.P. Huang, J. Liu, K. Tian, L. Niu, Y.H. Lin, Y.L. Qu, P. Wang, Y.M. Ye and Z.Q. Chen                                         | 695 |
| <b>Apatite Forming Ability of a Non-Woven Silica Fabric Containing Calcium</b><br>S.H. Rhee, I.Y. Chung, Y.K. Lee, B.S. Lim and Y.J. Seol                                                                       | 699 |
| <b>Growth of Calcium Phosphate on Poled Piezoelectric Poly-L-lactic Acid Membrane by a Biomimetic Method</b><br>C.P. Huang, D.H. Guan, K. Tian, X.M. Chen, L. Niu, P. Wang, Y.L. Qu, Y.M. Ye and Z.Q. Chen      | 703 |
| <b>Biological Efficacy of Modified Structure of Polymer Surfaces for Bone Substitute</b><br>Z.J. Pan, X. Huang, D.S. Yang, H. Unuma and W.Q. Yan                                                                | 707 |

## **V. BIOACTIVE COATINGS AND BIOMIMETIC APATITES (III) BIOMIMETIC APATITES**

|                                                                                                      |     |
|------------------------------------------------------------------------------------------------------|-----|
| <b>Surface Charge of Hydroxyapatite and Bone Mineral</b><br>C.A. Bertran, S. Bertazzo and L.P. Faria | 713 |
|------------------------------------------------------------------------------------------------------|-----|

|                                                                                                                                    |     |
|------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>In Situ Monitoring the Growth of HAP Crystal on the Surface of Ti/TiO<sub>2</sub> in SBF with a Quartz Crystal Microbalance</b> |     |
| Z.H. Zhu, H. Tong, T. Jiang, X.Y. Shen, P. Wan and J.M. Hu                                                                         | 717 |
| <b>Biomimetic Synthesis of the Nanocomposite of Phosphorylated Chitosan and Hydroxyapatite and its Bioactivity In Vitro</b>        |     |
| Q.L. Li, N. Huang, Z.Q. Chen and X.Y. Tang                                                                                         | 721 |
| <b>Carbonate Substitution and Preferred Growth Orientation of Biomimetic Apatites</b>                                              |     |
| F.A. Müller, L. Müller, D. Caillard and E. Conforto                                                                                | 725 |
| <b>In Vitro Studies of Inflammation and Contact Activation of Titanium Oxide Film</b>                                              |     |
| A.S. Zhao, P. Yang, Y.X. Leng, J.Y. Chen, J. Wang, G.J. Wan and N. Huang                                                           | 729 |
| <b>Comparisons of the Apatite Presentation and Demineralization in Enamel and Cementum by Atomic Force Microscopy</b>              |     |
| Q. Zeng, Y.H. Zhang, Z.H. Xing and X.J. Zhao                                                                                       | 733 |
| <b>Calcium Titanate Film-Coating on Titanium with Hydrothermal Treatments</b>                                                      |     |
| M. Kon, R. Sultana, E. Fujihara, K. Asaoka and T. Ichikawa                                                                         | 737 |
| <b>Collagenous Molecule Immobilization on Hydroxyapatite Surface</b>                                                               |     |
| B. Jiang, Z.H. Wu, J.Y. Zeng, J. Lu, Q.R. Wei, X.D. Zhang and Z.W. Gu                                                              | 741 |
| <b>Chemical Treatment for Inducing Bioactivity of TiO<sub>2</sub> Coating</b>                                                      |     |
| X.B. Zhao, X.Y. Liu, B. Li and C.X. Ding                                                                                           | 745 |
| <b>Biocompatibility of Cerium Oxide Films Synthesized by Dual Plasma Deposition</b>                                                |     |
| F.J. Jing, L. Wang, Y.W. Liu, J.Y. Cheng, Y.X. Leng, R.K.Y. Fu, X.B. Zhao, P.K. Chu and N. Huang                                   | 749 |
| <b>Hydroxyapatite Formation on Alumina Surface Modified by Aluminosilane</b>                                                       |     |
| C.A. Bertran, S. Bertazzo, L.L. Almeida and A.V. Souza Jr.                                                                         | 753 |
| <b>The Effect of Initial pH on Morphology of Biomimetic Apatite Coating</b>                                                        |     |
| H.B. Qu and M. Wei                                                                                                                 | 757 |
| <b>Preparation and Biocompatibility of Tantalum Oxide Films Containing the Hydroxyl Group</b>                                      |     |
| T. Tao, G.C. Li, Y. Yao, X.F. Wang, P. Yang, J.Y. Cheng, Y.X. Leng and N. Huang                                                    | 761 |
| <b>XPS studies of Hydroxyapatite Powders by Grafting Octadecyltrichlorosilane</b>                                                  |     |
| C.L. Yang, W.J. Weng, P.Y. Du, G. Shen and G.R. Han                                                                                | 765 |
| <b>Preparation of Bone-Like Microstructured <math>\beta</math>-TCP/Collagen Layer on Fluoridated Hydroxyapatite Coating</b>        |     |
| J.B. Zhou, W.J. Weng, K. Cheng, C.L. Song, P.Y. Du, G. Shen and G.R. Han                                                           | 769 |
| <b>The Formation of an Apatite Coating on Y-TZP Zirconia Ceramics</b>                                                              |     |
| S. Beranič Klopčič, I. Pribošič and T. Kosmač                                                                                      | 773 |
| <b>Evaluation of Sodium Titanate Coating on Titanium by Sol-Gel Method In Vitro</b>                                                |     |
| F.F. Wang, Y.M. Liao, M. Wang, P. Gong, X.Y. Li, H. Tang, Y. Man, Q. Yuan, N. Wei, Z. Tan and Y. Ban                               | 777 |
| <b>Immobilization of Collagen on Hydroxyapatite and Its Interaction with Cells</b>                                                 |     |
| K.H. Jung, I.K. Kang, S.M. Kim, M.W. Ahn and S.Y. Kim                                                                              | 781 |
| <b>Research on the Layered Microstructure of Shankbone</b>                                                                         |     |
| B. Chen, X.Y. Wu and X.H. Peng                                                                                                     | 785 |

## VI. BIOACTIVE CEMENTS

|                                                                                                                                              |     |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Novel Antibacterial Calcium Phosphate Cement</b>                                                                                          |     |
| J.H. Kim, D.Y. Lee and S.B. Lee                                                                                                              | 791 |
| <b>Strontium-Substituted Calcium Phosphate Cements Prepared with Strontium-Containing Solutions</b>                                          |     |
| E. Fujihara, M. Kon and K. Asaoka                                                                                                            | 795 |
| <b>An In Vivo Comparative Analysis of the Intra-Operative Properties of Injectable Calcium Phosphate/Calcium Sulphate Based Bone Cements</b> |     |
| P.J. Catalano, G.M. Insley and B. Hess                                                                                                       | 799 |
| <b>Preparation of Calcium Phosphate Paste Composites with Demineralized Bone Matrix</b>                                                      |     |
| K.Y. Lee, Y.W. Lee, M. Park, H.M. Kim, J.H. Lee, K.T. Kim, J.S. Han and K.S. Oh                                                              | 803 |
| <b>Preliminary Study on the Biocompatibility of Calcium Phosphate Bone Cement Containing N,O-Carboxymethyl Chitosan</b>                      |     |
| Q. Huang, F. Cao and D.X. Li                                                                                                                 | 807 |

|                                                                                                                                                                                                                               |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Bone Ingrowth at the Expense of a Novel Macroporous Calcium Phosphate Cement</b><br>G. Daculsi, I. Khairoun, R.Z. LeGeros, F. Moreau, P. Pilet, X. Bourges, P. Weiss and O. Gauthier                                       | 811 |
| <b>Biom mineralization of Glass Fibre Reinforced Porous Acrylic Bone Cement</b><br>M. Puska, A. Forsback, A. Yli-Urpo, J. Seppälä and P.K. Vallittu                                                                           | 815 |
| <b>Clinical Results of Total Knee Arthroplasty by Using Improved Cement Technique by Interposing Hydroxyapatite Granules</b><br>S.C. Kim, H. Oonishi, H. Oonishi Jr. and H. Ohashi                                            | 819 |
| <b>Effects of the Composition of the Bioactive Composite Calcium Phosphate Cement on Its Behavior in the Solution</b><br>C.S. Liu, C.W. Chen and P. Ducheyne                                                                  | 823 |
| <b>Bone-Bonding Strength of a New Composite Bone Cement</b><br>K. Goto, K. Kawanabe, S. Fujibayashi, R. Kowalski and T. Nakamura                                                                                              | 827 |
| <b>Antibacterial Effect of Silver-Zeolites in Glass-Ionomer Cements</b><br>J.H. Lee, S.B. Lee, K.N. Kim, K.M. Kim and Y.K. Lee                                                                                                | 831 |
| <b>Calcium Phosphate Biomaterials Composite Device: In-Vitro and In-Vivo Investigation</b><br>A. Tofighi and M. Sutaria                                                                                                       | 835 |
| <b>Chitosan-Crystallized Apatite Composites for Bone Cements: Mechanical Strength and Setting Behavior</b><br>S.T. Rattanachan, C. Lorpayoon and P. Bunpayun                                                                  | 839 |
| <b>Development of a New Injectable Calcium Phosphate Cement That Contains Modified Starch</b><br>L. Chen, H. Xiang, X.X. Li, J.D. Ye, X.P. Wang, L. Li and X.M. Zhang                                                         | 843 |
| <b>Rheological Properties of an Injectable Bioactive Calcium Phosphate Material</b><br>J. Bosco, A. Fatimi, S. Quillard, J.M. Bouler and P. Weiss                                                                             | 847 |
| <b>The Effect of Lif-Maleic Acid Added Calcium Aluminate Bone Cement and Ca-PMMA Composite Bone Cement on Bone Regeneration in Rat Calvarial Defects</b><br>U.W. Jung, J.A. Shin, K.J. Chae, Y.K. Lee, C.K. Kim and S.H. Choi | 851 |

## **VII. PROTEIN ABSORPTIONS & CELLINTERACTIONS**

|                                                                                                                                                                                |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Control of Protein Initial Burst from Zinc-Hydroxyapatite / Poly(L-Lactide) System</b><br>T. Tonegawa, T. Ikoma, G.P. Chen and M. Tanaka                                    | 857 |
| <b>Contribution of Surface Charge to Bovine Serum Albumin Adsorption on Hydroxyapatite Ceramic Particles</b><br>X.D. Zhu, H.S. Fan, X.N. Chen, D.X. Li and X.D. Zhang          | 861 |
| <b>Covalent Immobilization of Heparin on Anatase TiO<sub>2</sub> Films via Chemical Adsorbent Phosphoric Acid Interface</b><br>Y.J. Weng, R. Hou, D. Xie, J. Wang and N. Huang | 865 |
| <b>Comparing Adsorptive Property of Natural and Synthesized Hydroxyapatite to Albumin, Fibrinogen and IgG</b><br>X.Y. Lü, H. Yan, B.Z. Zheng and A.P. Wu                       | 869 |
| <b>The Synthesis and Initial Studying Anticoagulant Property of O-Doped DLC Films by DC-MFCVAD</b><br>F. Wen, N. Huang, H. Sun, F.J. Jing and A.S. Zhao                        | 873 |
| <b>Surface Wettability Enhances Osteoblast Adhesion on Silicon-Substituted Hydroxyapatite Thin Films</b><br>E.S. Thian, J. Huang, S. Best, Z.H. Barber and W. Bonfield         | 877 |
| <b>Effect of Mn on Protein Adsorption on Mn-TCP/FHA Coatings</b><br>K. Cheng                                                                                                   | 881 |
| <b>Effect of Pamidronate on Protein Adsorption and Osteoblast Adhesion to Hydroxyapatite Bioceramics Scaffold</b><br>E. Luo, J. Cui, Y. Gao, Y.F. Lin, S.S. Zhu and J. Hu      | 885 |
| <b>Behaviors of Platelets Adherent on Si-N(H) Surface Prepared from Ammonia Plasma-Implanted Silicon</b><br>G.J. Wan, N. Huang, A.S. Zhao, P. Yang and P.K. Chu                | 889 |
| <b>Study of Protein Adsorption and Conformational Change on DLC and Ti Surfaces Using FTIR and Coomassie Brilliant Blue Protein Assay</b><br>H. Yan, X.Y. Lü and N. Huang      | 893 |
| <b>A Study of Osteocalcin Production In Vitro on Various Hydroxyapatite Based Biomaterials</b><br>J.L. Xu, K.A. Khor and W.N. Chen                                             | 897 |

|                                                                                                                                                                                                                                                               |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Studies on Characteristics and Adsorption of BSA on Hydrogel Biomaterials</b><br>G.X. Tan, Y.D. Cui and Y.J. Wang                                                                                                                                          | 901 |
| <b>VII. POROUS MATERIALS</b>                                                                                                                                                                                                                                  |     |
| <b>Fabrication and Mechanical Properties of Dense/Porous <math>\beta</math>-Tricalcium Phosphate Bioceramics</b><br>F.M. Zhang, J. Chang, J.X. Lu and K.L. Lin                                                                                                | 907 |
| <b>Segementation of X-Ray Microtomography Data of Porous Scaffold</b><br>S. Zou, S. Best and W. Bonfield                                                                                                                                                      | 911 |
| <b>Two Dimensional Histogram of X-Ray Microtomogrphahy and Its Application in Quantification of Ex Vivo Implants</b><br>S. Zou, R.A. Brooks, S. Best, T. Buckland, X.W. Fu, N. Rushton and W. Bonfield                                                        | 915 |
| <b>Fabrication and Characterization of Bioactive Composite Scaffolds Based on <math>\beta</math>-TCP-BG-PLA for Bone Tissue Engineering</b><br>N.R. Zhao, Y.J. Wang, X.F. Chen and C.Y. Ning                                                                  | 919 |
| <b>Preparation and Characterization of Hydroxyapatite/Bacterial Cellulose Nanocomposite Scaffolds for Bone Tissue Engineering</b><br>H.J. Jiang, Y.L. Wang, S.R. Jia, Y. Huang, F. He and Y.Z. Wan                                                            | 923 |
| <b>Biocompatibility Improvement of Pure Hydroxyapatite (HA) with Different Porosity</b><br>J.C. Hornez, F. Chai, N. Blanchemain, A. Lefèvre, M. Descamps and H.F. Hildebrand                                                                                  | 927 |
| <b>Degradation of Surface Modified <math>\beta</math>-TCP/PLLA Porous Scaffold In Vitro</b><br>Y. Zhang, G.F. Yin, Y.H. Wang, W.Z. Yang and Y.Q. Kang                                                                                                         | 931 |
| <b>In Vitro Evaluation of Porous Biphasic Scaffolds</b><br>S.R.A. Santos, A.M. Rossi, L.R. Andrade and M.H. Prado da Silva                                                                                                                                    | 935 |
| <b>Investigation on the Biomimetic Scaffold for Bone Tissue Engineering Based on Bioglass-Collagen-Hyaluronic Acid-Phosphatidylserine</b><br>X.F. Chen, Y.J. Wang, N.R. Zhao and C.R. Yang                                                                    | 939 |
| <b>Biomimetic Bone Graft with Higher Bioactivity</b><br>R. Martinetti, L. Dolcini, L. Merello, S. Scaglione, R. Quarto and D. Pressato                                                                                                                        | 943 |
| <b>Study on Hydroxylapatite Fibroin Porous Composite</b><br>S.Z. Lu, M.Z. Li and L. Bai                                                                                                                                                                       | 947 |
| <b>Osteoconductivity of Porous Titanium Having Young's Modulus Similar to Bone and Surface Modification by OCP</b><br>Y. Suzuki, N. Nomura, S. Hanada, S. Kamakura, T. Anada, T. Fuji, Y. Honda, T. Masuda, K. Sasaki, S. Kokubun and O. Suzuki               | 951 |
| <b>Apatite Formation on Porous HA/TCP in Animals' Serums In Vitro</b><br>C.L. Deng, Y.J. Wang, Y. Wu, X.L. Wang, X.F. Chen, H.D. Zheng, J.Y. Chen and X.D. Zhang                                                                                              | 955 |
| <b>The New Art of Bone Graft Substitute Design</b><br>E.D. Klinkenberg, H.G. Neumann, U. Bulnheim and J. Rychly                                                                                                                                               | 959 |
| <b>Comparison among Four Kinds of Bone Tissue Engineering Scaffold</b><br>L. Liu, R.L. Chen, Y.F. Lin, C. Li, W.D. Tian and S.W. Li                                                                                                                           | 963 |
| <b>Novel Micro-CT Based 3-Dimentional Structural Analyses of Porous Biomaterials</b><br>B. Otsuki, M. Takemoto, S. Fujibayashi, M. Neo, T. Kokubo and T. Nakamura                                                                                             | 967 |
| <b>Study on Tissue Engineering Scaffolds of Silk Fibroin-Chitosan/ Nano-Hydroxyapatite Composite</b><br>G.W. Wen, J. Wang, M.Q. Li and X.C. Meng                                                                                                              | 971 |
| <b>Porous and Bioactive Alumina Ceramics for Bone Grafts and Tissue Engineering Scaffolds</b><br>B. Su, X. He, S. Dhara and J.P. Mansell                                                                                                                      | 975 |
| <b>Synthesis of <math>\text{CaO-P}_2\text{O}_5\text{-SiO}_2</math> Monolithic with Double Pore Structure by Peg /Starch</b><br>H.B. Yang, Q. Chen, L. Song, H.P. Li, J.Y. Lu and W.Z. Zhang                                                                   | 979 |
| <b>Microstructure and Properties of A Calcium Phosphate Cement Tissue Engineering Scaffold Modified with Collagen and Chitosan</b><br>X.P. Wang, J.D. Ye, L. Chen and Y.J. Wang                                                                               | 983 |
| <b>Bone Ingrowth Into Porous Bioactive Titanium Implant for Load-Bearing Use: Experimental Study Using a Novel Canine Anterior Interbody Fusion Model</b><br>M. Takemoto, S. Fujibayashi, M. Neo, K. So, N. Akiyama, T. Matsushita, T. Kokubo and T. Nakamura | 987 |

|                                                                                                                                           |      |
|-------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Biomimetic Apatite/Polycaprolactone (PCL) Nanofibres for Bone Tissue Engineering Scaffolds</b>                                         |      |
| M. Ngiam, T.R. Hayes, S. Dhara and B. Su                                                                                                  | 991  |
| <b>Structure and Antibacterial Properties of Ag-Doped TiO<sub>2</sub> Porous Materials</b>                                                |      |
| H.R. Liu, Y. Lin, R.F. Ye, L. Song and Q. Chen                                                                                            | 995  |
| <b>Comparison of Porous Ti<sub>6</sub>Al<sub>4</sub>V Made by Sponge Replication and Directly 3D Fiber Deposition and Cancellous Bone</b> |      |
| J.P. Li, J.R. Wijn, C.A. van Blitterswijk and K. de Groot                                                                                 | 999  |
| <b>Structural and Tissue Reaction Properties of Novel Hydroxyapatite Ceramics with Unidirectional Pores</b>                               |      |
| Y. Suetsugu, Y. Hotta, M. Iwasashi, M. Sakane, M. Kikuchi, T. Ikoma, T. Higaki, N. Ochiai and M. Tanaka                                   | 1003 |

## IX. DELIVERY CARRIERS FOR DRUGS

|                                                                                                                                    |      |
|------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Hydroxyapatite/Chondroitin Sulfate Microparticles as Time-Controlled Release Carrier of Proteins</b>                            |      |
| H. Watanabe, T. Ikoma, G.P. Chen and M. Tanaka                                                                                     | 1009 |
| <b>Adsorption and Effectiveness of Different Antibiotics on Pure Hydroxyapatite (HA) with Controlled Porosity</b>                  |      |
| F. Chai, J.C. Hornez, N. Blanchemain, C. Neut, M. Descamps and H.F. Hildebrand                                                     | 1013 |
| <b>Setting Behaviors and Ciprofloxacin Hydrochloride Sustained Release of CSH-TCP Binary Cement</b>                                |      |
| D. Zhang, Q. Cheng and H. Li                                                                                                       | 1017 |
| <b>Novel Gene-Transferring System Using a Laminin-DNA-Apatite Composite Layer</b>                                                  |      |
| A. Oyane, H. Tsurushima and A. Ito                                                                                                 | 1021 |
| <b>Emulsified Sol-Gel Microspheres for Controlled Drug Delivery</b>                                                                |      |
| S. Radin, T.L. Chen and P. Ducheyne                                                                                                | 1025 |
| <b>Fabrication of Hydroxyapatite Microcapsules by Biomimetic Method</b>                                                            |      |
| Y. Tabe, M. Hibino and T. Yao                                                                                                      | 1029 |
| <b>Study on Synthesis of Calcium Phosphate Biomaterials Containing SMB</b>                                                         |      |
| M.H. Li, S.X. Qu, R. Shen, N. Yao, P.D. Ren and J. Weng                                                                            | 1033 |
| <b>Protein Loaded Apatite Hydrogel and Protein Release from Its Cake</b>                                                           |      |
| Y. Yokogawa, M. Tagaki, Y. Siotsu and M. Watanabe                                                                                  | 1037 |
| <b>Preparation of Targeting Vehicles for The Delivery of N-Bisphosphonates</b>                                                     |      |
| L.M. Rodríguez-Lorenzo, M. Fernandez, J. Parra, B. Vázquez, A. López-Bravo, J. San Román, K.A. Gross and G.I. Anderson             | 1041 |
| <b>Preparation of Hydroxyapatite/Poly(ε-caprolactone) Hybrid Microspheres for Drug Release System</b>                              |      |
| S.H. Zhang, Y.J. Wang, K. Wei and X.D. Wang                                                                                        | 1045 |
| <b>Development of a Bioactive Inorganic/Organic Composite for Bone Formation Active Drug Carrier</b>                               |      |
| S.H. Ye and M. Kikuchi                                                                                                             | 1049 |
| <b>Preparation of Hydroxyapatite-Alginate Gels as a Carrier for Controlled Release of Paclitaxel</b>                               |      |
| T. Yoshioka, T. Ikoma, A. Monkawa, S. Yunoki, T. Abe, M. Sakane and M. Tanaka                                                      | 1053 |
| <b>Tailoring of Multilayer Core-Shell Structure for the Controllable Release of Biologically Active Silicon and Strontium Ions</b> |      |
| Z.R. Gou, W.J. Weng, J.B. Zhou, P.Y. Du and G.R. Han                                                                               | 1057 |

## X. OSTEOINDUCTIVE MATERIALS

|                                                                                                                                |      |
|--------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Comparison of Osteoinduction by Autologous Bone and Biphasic Calcium Phosphate Ceramic in Goats</b>                         |      |
| B.H. Fellah, O. Gauthier, P. Weiss, D. Chappard and P. Layrolle                                                                | 1063 |
| <b>Quantitative Analysis of Core Binding Factor 1 (Cbfa1) and Osteocalcin in C2C12 Cells Induced by Ca/P Ceramics In Vitro</b> |      |
| Y.F. Tan, G. Wang, H.S. Fan, X.L. Wang, J. Lu and X.D. Zhang                                                                   | 1067 |
| <b>Attenuation of Osteoclastic Activity Induced by Zinc-Containing Tricalcium Phosphate</b>                                    |      |
| Y. Yamada, A. Ito, H. Kojima, M. Sakane, S. Miyakawa, T. Uemura and R.Z. LeGeros                                               | 1071 |

|                                                                                                                                                       |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Titanium-Reinforced Polytetrafluoroethylene Membrane Combined with Inorganic Polyphosphate Induces Exophytic Bone Formation in Rabbit Calvaria</b> |      |
| J.S. Kim, S.Y. Na, Y.H. Kown, J.B. Park, J.H. Chung, M.I. Cho and Y. Herr                                                                             | 1075 |
| <b>Development of EGFP-Expressing Cell Line for Biocompatibility Evaluation of Osteoinductive CaP Ceramics</b>                                        |      |
| G. Wang, Y.F. Tan, X.D. Zhang and Y.Z. Zhang                                                                                                          | 1079 |
| <b>Effect Of HA/TCP Biphasic Ceramic on Osteoinduction</b>                                                                                            |      |
| B. Lu, X.F. Lu, S.F. Li and Z.Q. Liu                                                                                                                  | 1083 |
| <b>Gene Expression Profile of Osteoblast-Like Cells on Calcium Phosphate Biomaterials</b>                                                             |      |
| T. Takemura, H.S. Fan, T. Ikoma, M. Tanaka and N. Hanagata                                                                                            | 1087 |
| <b>In Vivo Bone Tissue Formation Induced by Calcium Phosphate Paste Composite with Demineralized Bone Matrix</b>                                      |      |
| H. Kim, M. Park, S.Y. Lee, K.Y. Lee, H.M. Kim and S.H. Moon                                                                                           | 1091 |
| <b>OPG and Rankl Expression in Osteoblasts Grown on Different HA Ceramics</b>                                                                         |      |
| C.Y. Wang, Y.R. Duan, X.L. Wang, B. Markovic, J. Barbara, C.R. Howlett, H. Zreiqat and X.D. Zhang                                                     | 1095 |

## **XI. TISSUE ENGINEERING**

|                                                                                                                                                       |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>A Novel Collagen Sponge for Cartilage Tissue Engineering</b>                                                                                       |      |
| G.P. Chen, D. Akahane, N. Kawazoe, Y. Shirasaki, M. Tanaka, K. Yamamoto and T. Tateishi                                                               | 1101 |
| <b>Effect of a Single Period of Mechanical Strain on Gene Expression Patterns of Ets1 and Cbfa1 in Murine Calvarial Sutural Osteoblast-Like Cells</b> |      |
| Q.F. Zhang, S.J. Zou, M.C. Qi, Y.X. Chen and Z.H. Zhao                                                                                                | 1105 |
| <b>Ectopic Osteogenesis of Bone Marrow Stromal Cells Loading in Hydroxyapatite/ <math>\beta</math>-Tricalcium Phosphate</b>                           |      |
| Y.F. Lin, L. Wu, L. Liu, J. Qiao, W. Jing and W.D. Tian                                                                                               | 1109 |
| <b>The Optimized Design of a Double-Layer Flow Chamber</b>                                                                                            |      |
| Y. Zeng, Y. Lai, H. Huang and X.H. Liu                                                                                                                | 1113 |
| <b>Calcium Phosphate Hybridized with Human Semitendinosus and Gracilis Tendon Grafts</b>                                                              |      |
| S. Kobayashi, M. Sakane, H. Mutsuzaki, H. Nakajima, M. Tanaka, Y. Miyana and N. Ochiai                                                                | 1117 |
| <b>Repairing Periodontal Bone Defect with In Vivo Tissue Engineering Bone</b>                                                                         |      |
| B. Zhang, X.J. Zhang, C.Y. Bao, Q. Wang, J.F. Yao, H.S. Fan, C.D. Xiong and X.D. Zhang                                                                | 1121 |
| <b>Proliferation Effect of Mandibular Condylar Chondrocytes Given The Static Tension-Stress and/or TGF-<math>\beta</math>1 In Vitro</b>               |      |
| Z.Q. Wang, Z.H. Zhao, J.L. Song, Y.B. Fan and S.J. Luo                                                                                                | 1125 |
| <b>Mesenchymal Stem Cell Proliferation and Morphological Analysis on Interconnected Macroporous Structures</b>                                        |      |
| S. Teixeira, H.M. Fernandes, J. de Boer, M.P. Ferraz and F.J. Monteiro                                                                                | 1129 |
| <b>A New Four-Point Bending System to Supply Cultured Adhesive Cells In Vitro with Cyclic Uniaxial Strain</b>                                         |      |
| J. Li, Z.H. Zhao, G.P. Chen, H. Tang, Z.H. Li, J. Zeng, S.J. Luo, Y. Zheng and Z. Zhou                                                                | 1133 |
| <b>Can Basic Fibroblast Growth Factor Pre-Treatment Enhance Mesenchymal Stem Cell Therapy in Undecorticated Posterior Spinal Fusion?</b>              |      |
| C.W. Chan, K.H.K. Wong, K.M. Lee, L. Qin, H.Y. Yeung, H.B. Fan, Y.Y. Hu and J.C.Y. Cheng                                                              | 1137 |
| <b>Distribution of Seeded Mesenchymal Stem Cells on Hydroxyapatite Porous Ceramics</b>                                                                |      |
| M. Tadokoro, N. Kotobuki, A. Oshima and H. Ohgushi                                                                                                    | 1141 |
| <b>Study on the Chondrogenesis In Vivo of Bone Marrow Stromal Cells Compounded with Alginate Gel</b>                                                  |      |
| L. Liu, R.L. Chen, C. Li, W.D. Tian and S.W. Li                                                                                                       | 1145 |
| <b>Mesenchymal Stem Cell Derived Osteogenic Cells Is Superior to Bone Marrow Aspirate Impregnated Biomaterial Complex in Posterior Spinal Fusion</b>  |      |
| C.W. Chan, K.M. Lee, L. Qin, K.H.K. Wong, H.Y. Yeung, H.B. Fan, Y.Y. Hu and J.C.Y. Cheng                                                              | 1149 |
| <b>In vitro Investigation of Mesenchymal Stem Cells with Nanophase PLGA/HA Composite</b>                                                              |      |
| J. Feng, Q. Zheng, Z.L. Shi, H.L. Jiang and W.Q. Yan                                                                                                  | 1153 |
| <b>In Vivo Osteogenic Potential of Mesenchymal Stromal Cells Derived from Patient's Bone Marrow on Hydroxyapatite Ceramics</b>                        |      |
| A. Matsushima, N. Kotobuki, H. Machida, T. Morishita, Y. Takakura and H. Ohgushi                                                                      | 1157 |
| <b>Cell Repopulation in Calcium Phosphate Hybridized Tendon Graft</b>                                                                                 |      |
| H. Mutsuzaki, M. Sakane, Y. Katayoshi, S. Hattori, H. Nakajima, M. Tanaka and N. Ochiai                                                               | 1161 |

|                                                                                                                                                                                                          |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Reconstructing Box-Like Bone Defect of Mandible with In Vivo Tissue Engineering Bone</b><br>J.F. Yao, Y.Z. Zhang, C.Y. Bao, L.Y. Sun, X.M. Hao, H.S. Fan and X.D. Zhang                               | 1165 |
| <b>Mechanical Properties of Living Adherent Cells: Interaction of Cell and Shear Flow</b><br>X.H. Liu, C. Yu, M.J. Zou and H.M. Yin                                                                      | 1169 |
| <b>Comparison on the Osteogenesis Potential between Poly(lactide-Co-Glycolide) and Alginate as Bone Tissue Engineering Scaffold In Vivo</b><br>C. Li, R.L. Chen, L. Liu, Y.F. Lin, W.D. Tian and S.W. Li | 1173 |
| <b>Preparation of Porous Organically-Modified Silicate Hybrids for Cell Culture Matrix</b><br>K. Tsuru, S. Hayakawa, Y. Shirosaki, T. Okayama, K. Kataoka, N.H. Huh and A. Osaka                         | 1177 |
| <b>Effects of Mechanical Strain on Osteoblastic Precursor Cells in a Three-Dimensional Scaffold</b><br>Z.H. Zhao, J. Wang, Y.B. Fan, S.J. Luo and L.Y. Jiang                                             | 1181 |
| <b>Repair of Articular Cartilage Defect with Cell-Loaded Nano-HA/PLGA Composites</b><br>H. Lu, S.M. Zhang, L. Cheng, P.P. Chen, W. Zhou, J. Liu and J.X. Zhou                                            | 1185 |
| <b>Effect of Surface Electrostatic Property on Chondrogenic Differentiation of Human Mesenchymal Stem Cells</b><br>L. Guo, Y.J. Fan, N. Kawazoe, G.P. Chen, M. Tanaka, T. Tateishi and X.D. Zhang        | 1189 |
| <b>Biomechanical Study on Repairing Bone Defect with Composite of Bovine Bone Morphogenetic Protein and Hydroxyapatite</b><br>H. Wang, M.S. Chen, L. Liu, W. Tang and W.D. Tian                          | 1193 |
| <b>Effect of Woven Fabric Biodegradable Polyglycolic Acid on Joint Resurfacing with Fresh Chondrocytes in a Rabbit Model</b><br>Z.L. Shi, W.Q. Yan, J. Feng, B.G. Guan, Y.B. Liu and S.G. Yan            | 1197 |

## **XII. WEAR**

|                                                                                                                                                                                          |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Kinetics of the Phase Transformation of Non-HIPed Zirconia Femoral Heads</b><br>J. Ikeda, G. Pezzotti, M. Iwamoto and M. Ueno                                                         | 1203 |
| <b>Characteristic Properties of a New Dispersion Ceramic</b><br>S. Begand, T. Oberbach and W. Glien                                                                                      | 1207 |
| <b>Biotribological Properties of UHMWPE Reinforce by Nano-ZrO<sub>2</sub> Particle</b><br>D.S. Xiong and N. Yuan                                                                         | 1211 |
| <b>Bio-Tribological Properties of Bulk Metallic Glasses Sliding Against Si<sub>3</sub>N<sub>4</sub></b><br>J. Kong, D.S. Xiong, J.L. Li and Q.X. Yuan                                    | 1215 |
| <b>An Abnormal Liner Fracture about 4 Consecutive Cases</b><br>L. Sedel, A. Raould, F. Zadegan, D. Hannouche and R. Nizard                                                               | 1219 |
| <b>Influence of Abrasive Machining and Annealing on Hydrothermal Stability of Zirconia-Alumina Composites as a Hip Joint Head</b><br>H.B. Lim, K.S. Oh, Y.J. Kwon, Y.K. Kim and D.Y. Lee | 1223 |
| <b>Corrosion Behaviour of ATZ and ZTA Ceramic</b><br>S. Begand, T. Oberbach and W. Glien                                                                                                 | 1227 |
| <b>In-Vitro Wear of Different Ceramic Couplings</b><br>T. Oberbach, S. Begand and W. Glien                                                                                               | 1231 |
| <b>Luxation Test of Different Ceramic on Ceramic Couplings</b><br>T. Oberbach, S. Begand, W. Glien and C. Kaddick                                                                        | 1235 |
| <b>Tribological Properties of Nano-Al<sub>2</sub>O<sub>3</sub>/PEEK Composites</b><br>D.S. Xiong, J.M. Lin and L.L. Liu                                                                  | 1239 |
| <b>Medial Placement of a Cementless Acetabular Component in a Modern Alumina-on-Alumina THA</b><br>J.J. Yoo, H.J. Kim, Y.M. Kim, K.S. Yoon, K.H. Koo, K.W. Nam and Y.L. Kim              | 1243 |
| <b>Sequelae of the Hip Joint Infection Treated with a Modern Alumina-on-Alumina THA</b><br>J.J. Yoo, H.J. Kim, Y.M. Kim, K.S. Yoon, K.H. Koo, K.W. Nam, Y.L. Kim and H.J. Lee            | 1247 |
| <b>Wear Behavior of Enamel/Dentine and Veneering Ceramics</b><br>Q.P. Gao, Y.L. Chao, X.C. Jian, F. Guo, Y.K. Meng, H. Wang, J. Cui, W.Q. Zhang and Y.F. Tian                            | 1251 |
| <b>The Influence of Antagonist Radii on Friction and Wear of Dental Ceramics</b><br>H.Y. Yu, S.S. Gao, Z.B. Cai and M.H. Zhu                                                             | 1255 |
| <b>Osteolysis Associated with Polythene Liners in Hydroxyapatite Hip Arthroplasty</b><br>J.M. Buchanan                                                                                   | 1259 |

|                                                                                                            |      |
|------------------------------------------------------------------------------------------------------------|------|
| <b>Effect of Grinding, Sandblasting and Heat Treatment on the Phase Transformation of Zirconia Surface</b> |      |
| H. Sato, S. Ban, M. Nawa, Y. Suehiro and H. Nakanishi                                                      | 1263 |
| <b>Mechanical and Phase Stability of Zirconia Toughened Alumina</b>                                        |      |
| T. Nakanishi, M. Sasaki, J. Ikeda, F. Miyaji and M. Kondo                                                  | 1267 |

### **XIII. OTHER MATERIALS**

|                                                                                                                                        |      |
|----------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Research of Herringbone Structure of Fragum Unedo Shell</b>                                                                         |      |
| B. Chen, X.H. Peng and X.Y. Wu                                                                                                         | 1273 |
| <b>Synthesis of Poly(<math>\epsilon</math>-Caprolactone)-Organosiloxane Hybrid Containing Amine Group</b>                              |      |
| S.H. Rhee, S.J. Lee, Y.M. Kang, Y.K. Lee, B.S. Lim and S.J. Lee                                                                        | 1277 |
| <b>Effect of Fibrin Sealant on Early Bone Healing with Tooth Ash and Plaster of Paris in Ovariectomized Rats</b>                       |      |
| S.G. Kim, S.H. Kim, S.C. Lim and C.S. Bae                                                                                              | 1281 |
| <b>The Corrosion Behavior of Titanium in Hydrogen Peroxide Solution with Various Additives</b>                                         |      |
| L. Xie, X.X. Wang and J. Li                                                                                                            | 1285 |
| <b>Crystallinity and Thermal Decomposition of Dialdehyde Celluloses from Bacterial Cellulose</b>                                       |      |
| Y.H. Feng, J.C. Li, Q. Lin, X.B. Wang, Z.X. Wu, S.J. Pang and Z.L. Sun                                                                 | 1289 |
| <b>Fabrication of Porous <math>\text{Ti}_6\text{Al}_4\text{V}</math> with Designed Structure by Rapid Prototyping Technology</b>       |      |
| J.P. Li, C. Wilson, J.R. Wijn, C.A. van Blitterswijk and K. de Groot                                                                   | 1293 |
| <b>Friction Characteristics of Poly(vinyl Alcohol) Hydrogel as an Articular Cartilage Biomaterial</b>                                  |      |
| Y.S. Pan, D.S. Xiong and X.L. Chen                                                                                                     | 1297 |
| <b>Research on Residual Stress and Surface Morphology of Bio-Functionally Gradient <math>\text{HA-ZrO}_2\text{-Ti}</math> Coatings</b> |      |
| C.Y. Ning, Y.J. Wang, X.F. Chen, J.D. Ye, G. Wu, N.R. Zhao, K. Wei, L. Ren and H.G. Liu                                                | 1301 |
| <b>Preparation of Poly(L-lactic Acid) Hybrid Membrane with Silicon-Ion-Releasing Ability</b>                                           |      |
| H. Maeda, E.H. Ishida and T. Kasuga                                                                                                    | 1305 |

### **XIV. ORTHOPAEDIC APPLICATIONS**

|                                                                                                                                                 |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Effect of High Local Concentrations of Antibiotics on Early Bone Formation with Tooth Ash and Plaster of Paris in the Ovariectomized Rat</b> |      |
| S.G. Kim, O.J. Park, S.C. Lim and C.S. Bae                                                                                                      | 1311 |
| <b>Stability of Regenerated Bone by Octacalcium Phosphate (OCP) Combined with Collagen</b>                                                      |      |
| S. Kamakura, K. Sasaki, Y. Honda, T. Anada, T. Kawai, K. Matsui, S. Echigo and O. Suzuki                                                        | 1315 |
| <b>Orthopedic Effects of Repelling Rare Earth Magnets on Craniofacial Sutures of Rhesus Monkeys</b>                                             |      |
| N. Zhao, H. Shi, Y. Xu and Y.X. Chen                                                                                                            | 1319 |
| <b>In Vitro and In Vivo Bactericidal Effect of Sol-Gel/Antibiotic Thin Films on Fixation Devices</b>                                            |      |
| S. Radin, V. Antoci, N. Hickok, C.S. Adams, J. Parvizi, I.M. Shapiro and P. Ducheyne                                                            | 1323 |
| <b>Guided Tissue Regeneration of the Mixture of Human Tooth-Ash and Plaster of Paris in Dogs</b>                                                |      |
| H.R. Ku, H.S. Jang, S.G. Kim, M.J. Jeong, J.C. Park, H.J. Kim, Y.S. Kwon, C.K. Kim and B.O. Kim                                                 | 1327 |
| <b>Bone Formation Effect of <math>\text{HA}/\beta\text{-TCP}</math> Composite Powders in Rabbit Calvarial Bone Defects: Histologic Study</b>    |      |
| H.S. Jang, K.H. Lee, M.J. Jeong, J.C. Park, H.J. Kim, Y.S. Kwon, C.K. Kim and B.O. Kim                                                          | 1331 |
| <b>In Vitro Growth of Aragonite Crystal on Nacre Surface</b>                                                                                    |      |
| C. Luo, L. Xie and X.X. Wang                                                                                                                    | 1335 |
| <b>Development of Biocompatible Glues for Minimum Invasive Therapy</b>                                                                          |      |
| T. Taguchi, H. Saito, M. Iwasashi, M. Sakane, S. Kakinoki, N. Ochiai and T. Tateishi                                                            | 1339 |
| <b>Novel Local Treatment with Paclitaxel-Loaded Hydroxyapatite-Alginate Gels for Spinal Bone Metastases</b>                                     |      |
| T. Abe, M. Sakane, T. Ikoma, T. Tonegawa, T. Yoshioka, M. Tanaka and N. Ochiai                                                                  | 1343 |
| <b>Combined Effects of Nano-Hydroxyapatite and NaF on Remineralization of Early Caries Lesion</b>                                               |      |
| M.Y. Kim, H.K. Kwon, C.H. Choi and B.I. Kim                                                                                                     | 1347 |

## **XV. DENTAL MATERIALS & APPLICATIONS**

|                                                                                                                                                                                                                                     |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Fracture Strength of Ceramic Bracket Tie Wings Subjected to Force Direction</b><br>K.N. Kim, S.B. Lee, H.J. Kim, J.S. Choi, K.M. Kim and C.J. Hwang                                                                              | 1353 |
| <b>The Evaluation of Cytotoxicity and Histological Response of Periradicular Tissues of a New Injectable Root Canal Sealer</b><br>L.Z. Teng, H.S. Fan and X.D. Zhang                                                                | 1357 |
| <b>Effect of Cyanoacrylate-Based <math>\beta</math>-TCP Adhesive on Pullout Strength of Orthodontic Mini-Screw</b><br>S.B. Lee, J.Y. Cha, D.Y. Lee, K.J. Park, K.N. Kim and K.M. Kim                                                | 1361 |
| <b>The Effect of Ceramic Surface Treatments on the Shear Bond Strength of Dental Composite Resin to All-Ceramic Coping Materials</b><br>W.H. Kim, H.J. Lee, K.W. Lee, K.M. Kim, K.N. Kim and J.S. Shim                              | 1365 |
| <b>Composition Optimization of Zirconia Toughened Alumina for Dental Ceramics</b><br>J. Ma, K. Zhao, C. Liu, D. Zhang, X.D. Zhang, Y.L. Chao and X.D. Li                                                                            | 1369 |
| <b>Comparative Analysis on the Precision Fit of Dental Prosthesis between the Various Fabricated Copings of Nickel-Chromium Alloy, Titanium and Zirconia Ceramic</b><br>S.W. Lee, J.W. Kim, S.H. Hwang, D.H. Han and H.S. Moon      | 1373 |
| <b>Mechanical Properties and Marginal Fitness of Glass Infiltrated Alumina Core Fabricated from Aqueous-Based Alumina Tape</b><br>N.S. Oh, S.I. Jeong, S.H. Kim, K.W. Lee, M.H. Lee, I.K. Kim and D.J. Kim                          | 1377 |
| <b>Effect of Apatite Nanoparticles on Remineralization of the Demineralized Human Dentin</b><br>Z. Tan, H.K. Wu, A.C. Mo, Z.Q. Chen and Y.B. Li                                                                                     | 1381 |
| <b>Histomorphometric Analysis of Sinus Augmentation Using the ICB and MBCP</b><br>H.S. Jang, J.U. Park, S.J. Yu, M.J. Jeong, Y.S. Kwon and B.O. Kim                                                                                 | 1385 |
| <b>The Clinical Effects of Anorganic Bovine-Derived Hydroxyapatite Matrix(ABM)/Cell Binding Peptide (P-15) in Human Periodontal Defects</b><br>G.J. Chae, M.S. Won, U.W. Jung, Y.K. Lee, C.K. Kim and S.H. Choi                     | 1389 |
| <b>Biocompatibility of Nano-TiO<sub>2</sub>/HA Bioceramic Coating for Nerve Regeneration around Dental Implants</b><br>Q. Yuan, G. He, Z. Tan, P. Gong, X.Y. Li, Z.Q. Chen, Y. Ban, H. Tang, F.F. Wang, Y. Man, N. Wei and Z.L. Zhu | 1393 |
| <b>Abrasivity of Desensitizing Dentifrice Containing Sodium Metasilicate</b><br>S.O. Jang, S.Y. Lee, H.S. Kim, W.G. Chung, K.N. Kim, K.M. Kim and B.I. Kim                                                                          | 1397 |
| <b>A New Method for Evaluating Thermal Compatibility of Multi-Layer Dental Ceramic Composites</b><br>J. Cui, J. Ou, Y.L. Chao, Q.P. Gao, G.F. Yin, H. Wang, J.F. Shen and Y.X. Chen                                                 | 1401 |
| <b>Effect of Bleaching on Dental Hard Tissues: A Raman and IR Spectroscopic Study</b><br>X.J. Wang, A. Klocke, B. Mihailova, R. Stosch, B. Güttler and U. Bismayer                                                                  | 1405 |
| <b>The Marginal Fit of CAD-CAM Zirconia Cores with Different Proximal Margin Configurations</b><br>O.E. Puntsag, E.K. Bae, J.H. Lee and K.W. Lee                                                                                    | 1409 |
| <b>Histologic and Radiographic Evaluation of Progressive Loading on Implants Placed into Extraction Sockets</b><br>Y. Ban, P. Gong, S.A. Wang, N. Geng, X.G. Liu, Q. Yuan, J. Zhao and Y. Man                                       | 1413 |
| <b>Guiding Bone Regeneration with a Novel Biodegradable Polymeric Membrane and Bioceramic Bone Grafts around Dental Implants</b><br>L. Li, C.Y. Bao, G.M. Ou, W.C. Chen, X.J. Zhang, D.Y. Yang, Q. Wang, L.Y. Sun and C.D. Xiong    | 1417 |
| <b>Base-Coated Zirconia Brackets for Orthodontics</b><br>M.H. Lee, K.S. Oh, Y.K. Kim, H.B. Lim, D.Y. Lee and N.S. Oh                                                                                                                | 1421 |
| <b>Hardness, Behavior and Metal Surface Evaluation of Recasting Non-Precious Dental Alloys</b><br>L.S. Ozyegin, R. Tuncer and E. Avci                                                                                               | 1425 |
| <b>Occlusion Effect of Dentinal Tubules of the Dentifrice Containing Sodium Metasilicate</b><br>S.Y. Lee, S.O. Jang, H.S. Kim, J.H. Choi, H.K. Kwon and B.I. Kim                                                                    | 1429 |