

Table of Contents

Preface

Preparation and Mechanical Characterization of Hydroxyapatite Monodispersed Macroporous Structure. Influence of Interconnection and Macropores Diameters O. Richart, M. Descamps, A. Liebetrau and G.P. Li	9
Hydroxyapatite Formed on the Aligned Chitosan Prepared from Crab Tendon I. Yamaguchi, M. Sakane, A. Osaka and M. Tanaka	13
A New Method of Preparation of Calcium Phosphate Bioceramics F. Dabbarh, A. Rodrigues El Zein and C. Chaput	17
Correlation between MgO Doping and Sintering Characteristics in Hydroxyapatite/β-Tricalcium Phosphate Composite H.S. Ryu, H.J. Youn, K.S. Hong, S.J. Kim, D.H. Lee, B. Chang, C.K. Lee and S.S. Chung	21
Bioceramic Scaffold with Controlled Porous Structure for Bone Tissue Engineering S.H. Li, K. de Groot and P. Layrolle	25
Physico-Chemical and Thermal Properties of Chlor-, Fluor- and Hydroxyapatites R. Kijkowska, S.J. Lin and R.Z. LeGeros	31
Synthesis and Characterisation of Hydroxyapatite and Fluorapatite M. Wei and J.H. Evans-Freeman	35
Biomimetic Apatite through a Self-Assembly Process C. Du, F.Z. Cui, K. de Groot and P. Layrolle	39
A Compaction Route for Low Temperature Processing of Porous Calcium Polyphosphate Matrices M. Filiaggi and G. Hall	43
Influence of Plasma Gas Composition on the Adhesiveness of RF Thermal Plasma Sprayed Hydroxyapatite/Titanium Composite Coatings M. Inagaki, Y. Yokogawa and T. Kameyama	47
Preparation and Characterization of Porous Titanium J.P. Li, S.H. Li, K. de Groot and P. Layrolle	51
Atomic Force Microscopy as a Tool to Study In-Situ the In-Vitro Bioactivity of Starch Thermoplastic/Hydroxylapatite Biomaterials I.B. Leonor, A. Ito, K. Onuma, N. Kanzaki and R.L. Reis	55
Hydroxyapatite Coatings by Electrophoretic Deposition on Blasted Titanium Sheets L.A. de Sena, M.S. Sader, A.M. Rossi and G.D. de Almeida Soares	61
Preparation of Porous Apatite Material through Low Temperature Synthesis Y. Yokogawa, F. Nagata, A. Hozumi, K. Teraoka, M. Inagaki, T. Kameyama and C. Rey	65
Apatite Induction on Titania due to Combined Chemical and Thermal Treatments of Titanium S. Hayakawa, K. Shibata, K. Tsuru and A. Osaka	71
³¹P Solution State NMR Investigation of the Hydrolysis of a New Alkoxide Sol-Gel Hydroxyapatite D.D. Green, G.S.K. Kannangara, A. Milev and B. Ben-Nissan	75
Ligand Substitution and Complex Formation in Hydroxyapatite Sol-Gel System A. Milev, G.S.K. Kannangara and B. Ben-Nissan	79
Synthesis and Characterization of Silicon Substituted Hydroxyapatite S.R. Kim, D.H. Riu, Y.J. Lee and Y.H. Kim	85
Structural and Morphological Analysis of Functionally Graded Calcium Phosphate Bioceramic I. Manjubala and T.P. Sastry	89
A Contribution to the Production and Characterization of New Biomedical Coatings: Fluorohydroxyapatite Coatings G. Rizzi, R. Groppetti, L. Salvarani and A. Scrivani	93
Importance of Including Proteins in Experimental Models Aimed at Studying Reactive Surface Apatite Layers on Calcium Phosphates K. Rzeszutek, L.H. Guo and J.E. Davies	97
An Equilibrium Study of Phosphate Precipitation on Bioactive Glass K.H. Karlsson, R. Backman and M. Hupa	103

What Process Drives Bone Formation at Bone-Implant Interfaces? G.W. Hastings	109
Effect of Poly L-Aspartic Acid on the Biomimetic Formation of Calcium Phosphate on Collagen Gel E.K. Girija, Y. Yokogawa and F. Nagata	113
Apatite-Forming Ability and Mechanical Behavior of PTMO-Modified CaO-TiO₂ Hybrids Prepared by Sol-Gel Processing N. Miyata, K. Fuke, Q. Chen, K. Masakazu, T. Kokubo and T. Nakamura	117
Micropattern Formation of Apatite by Combination of Biomimetic Method and Transcription of Resist Pattern N. Ozawa and T. Yao	123
Apatite Forming Ability of Titanium Oxide Thin Film Synthesized from Aqueous Solution N. Ozawa, Y. Ideta, T. Yao and T. Kokubo	127
Apatite Deposition on Polyamide Films Containing Carboxyl Groups in Body Environment T. Miyazaki, Y. Akioka, C. Ohtsuki, M. Tanihara, J. Nakao, Y. Sakaguchi and S. Konagaya	133
Coating of Bonelike Apatite on Polyamide Film via Chemical Modification with Calcium Salt Y. Akioka, T. Miyazaki, C. Ohtsuki, M. Tanihara, J. Nakao, Y. Sakaguchi and S. Konagaya	137
In Vitro Evaluation on Bone-Bonding of Chemically Modified Titanium J.M. Wu, S. Hayakawa, K. Tsuru, A. Osaka and D. Aslanidis	141
Acceleration of Bone-Like Crystal Growth on Polarized Plasma Sprayed HAP in SBF R. Kato, S. Nakamura, K. Katayama and K. Yamashita	145
Biodegradation Study of Potassium Calcium Metaphosphate in the SBF and Tris-Buffer Solution S.S. Chun, S.W. Na, J.H. Lee, J.P. Chung, I.C. Ryu and S.Y. Kim	149
In Vitro Evaluation of Highly Absorptive Ceramics Materials Needs Consideration of Calcium and Magnesium Ions Adsorbed to the Materials S. Sotome, T. Uemura, M. Kikuchi, S. Itoh, M. Tanaka, M. Takahashi, T. Tateishi and K. Shinomiya	153
Proteins Modulate the Properties of Biomimetic Calcium Phosphate Coatings on Titanium Implants Y. Liu, M. Stigter, K. de Groot and P. Layrolle	157
Physical and Mechanical Behavior of Zirconia-Hydroxyapatite Ceramics after Aging in Simulated Body Fluid J.A. Delgado, S. Martínez, L. Morejón-Alonso, M.P. Ginebra, E. Fernández, M.T. Clavaguera-Mora, J. Rodríguez-Viejo, F.J. Gil and J.A. Planell	161
Fluor-Hydroxyapatite Solid Solutions as Alternative Bioceramics K.A. Gross, J.N. Hart and L.M. Rodríguez-Lorenzo	165
Comparative Study of the Synthesis and Processing of Hydroxyapatite M. de Campos and A.H.A. Bressiani	171
Synthesis of Carbonate-Hydroxy Apatite and Selective Adsorption Activity against Specific Pathogenic Substances S. Takashima, Y. Kusudo, S. Takemoto, K. Tsuru, S. Hayakawa and A. Osaka	175
Calcium Deficient Apatite: An In-Vitro Model for Vancomycin Controlled Release L. Obadia, G. Amador, G. Daculsi and J.M. Bouler	179
Fabrication and In-Vitro Biocompatibility of Zinc-Containing α-Tricalcium Phosphate A. Ito, M. Kamo, N. Ichinose, Y. Sogo and T. Sakurai	183
Laser Surface Cladding: A New Promising Technique to Produce Calcium Phosphate Coatings F. Lusquiños, J. Pou, J.L. Arias, M. Larosi, A. de Carlos, B. León, M. Pérez Amor, S. Best, W. Bonfield and F.C.M. Driessens	187
Bioactive Titanium: Effect of Sodium Removal on the Bone-Bonding Ability of Bioactive Titanium Prepared by Alkali and Heat Treatment S. Fujibayashi, S. Nishiguchi, J. Tamura, T. Nakamura, H.M. Kim, M. Uchida and T. Kokubo	191
Comparative Study between In Vivo Bone Ingrowth Behavior in Rabbits and In Vitro Apatite Forming Ability in Simulated Body Fluid Using Granules of P₂O₅-Free Na₂O-CaO-SiO₂ Glass System S. Fujibayashi, S. Nishiguchi, J. Tamura, T. Nakamura, H.M. Kim, M. Uchida and T. Kokubo	193

Mechanism of Accelerated Osteogenesis around Polarized Hydroxyapatite in the Bone T. Kobayashi, S. Nakamura, M. Ueshima and K. Yamashita	195
Osteoconduction of Polarized Hydroxyapatite Plasma-Spray-Coating Titanium H. Sagawa, T. Kobayashi, R. Kato, S. Nakamura and K. Yamashita	199
Enhanced In Vivo Response to Silicate-Substituted Hydroxyapatite I.R. Gibson, K.A. Hing, P.A. Revell, J.D. Santos, S. Best and W. Bonfield	203
Methods to Enhance Biomimetic Activity and Ability to Tissue Bonding of Sol-Gel-Derived Nanoporous Titania T. Peltola, H. Paldan, N. Moritz, S. Areva, J. Korventausta, M. Jokinen, T. Närhi, R.P. Happonen and A. Yli-Urpo	207
Coating of Hydroxyapatite Films on Ceria-Stabilized Tetragonal Zirconia by a Spray-Pyrolysis Technique and Its Evaluation of Biocompatibility by Osteoblastic Cells W. Nishine, M. Aizawa, M. Nawa, K. Itatani, H. Suemasu, A. Nozue and I. Okada	213
Resorption of Porous A-W Glass Ceramic K. Ohsawa, T. Okamoto, M. Neo and T. Nakamura	217
LacZ Gene Transfer to Cultured Bone Marrow Cells with Hydroxyapatite M. Akahane, H. Ohgushi, S. Kuriyama, T. Akahane, K. Kawamura and Y. Takakura	223
Cultured Living Bone Equivalents Enhance Bone Formation when Compared to a Cell Seeding Approach S.C. Mendes, M. Sleijster, A. van den Muysenberg, C.A. van Blitterswijk and J.D. de Bruijn	227
Rapidly Resorbable and Spongiosa-Like Dicalcium Potassium Sodium Phosphate Glass-Ceramics for Three-Dimensional Cultivation of Human Osteoblast-Like Cells G. Berger, Y. Açil, S. Jepsen and A. Spitzer	233
Zn Doped β-Tricalcium Phosphate Addition into Apatite Cement further Enhance the Differentiation of Osteoblasts I. Kunio, Y. Miyamoto, T. Yuasa, A. Itou, K. Suzuki and M. Nagayama	237
Quantitative Analysis of Bone Formed in Marrow/BMP/HA Composites H. Ohgushi, T. Noshi, M. Ikeuchi, T. Yoshikawa, Y. Dohi and T. Tateishi	241
Engineered RGD Peptide Surface Regulates Adhesion, Spreading and Cytoskeletal Organization of Osteoblast-Like Cells P. Ducheyne, A. El-Ghannam, I.M. Shapiro and R.J. Composto	245
Manipulation of Cell Proliferation by Electrically Polarized Hydroxyapatite M. Ohgaki, M. Katsura, S. Nakamura and K. Yamashita	249
Allogenic Transplantation of Cultured Bone/Porous β-TCP Materials Construct T. Uemura, J. Dong, T. Yoshikawa, Y. Hakamatsuka, H. Irie, H. Inoue and T. Tateishi	253
Dynamic Culture of Primary Chondrocytes on Porous β-TCP and HA Scaffolds in Spinner Flasks: Effects of Pore Size and Cell Seeding Density T.A. Mahmoud, J. Riesle, S.H. Li, W.C. Lee, C.A. van Blitterswijk and R. Langer	257
In Vitro Proliferation of Human Fibroblasts on P(-CL/DL-LA)/Bioactive Glass Composites T. Jaakkola, M. Hormia, T. Närhi, J. Rich, J. Seppälä and A. Yli-Urpo	261
Cytotoxicity of Calcium Metaphosphate Coated on cp-Titanium S. Oh, D.J. Lee, J.H. Jeong, Y.K. Kim and S.Y. Kim	265
Study of Osteoblast Differentiation and Proliferation on the Surface of Binary Bioactive Gel-Glasses R.C. Bielby, P. Saravanapavan, J.M. Polak and L.L. Hench	269
Improvement of the Stability and Mechanical Properties of Resorbable Phosphate Glasses by the Addition of TiO_2 M. Navarro, J. Clément, M.P. Ginebra, S. Martínez, G. Avila and J.A. Planell	275
In Situ AFM Observation of Apatite Formation on Bioglass J.I. Hamagami, G. Yamaguchi, K. Kanamura and T. Umegaki	279
Colloidal Dimensions Versus Biodegradation and Calcium Phosphate Formation on Sol-Gel Derived Silica Fibers M. Jokinen, T. Peltola, S. Veittola, J. Simola and A. Yli-Urpo	283
Synthesis of Sol-Gel Derived Bioactive Foams P. Sepulveda, J.R. Jones and L.L. Hench	287
In-Situ AFM Study of the Mechanisms Involved on Calcium-Phosphate Film Formation on Partially Crystallized Bioglass and on Hydroxylapatite Immersed in a Simulated Body Fluid I.B. Leonor, A. Ito, K. Onuma, N. Kanzaki, Z. Zhong, D.C. Greenspan and R.L. Reis	291

Bioactive Organic-Inorganic Composite Prepared by Mechano-Chemical Method S.B. Kim, S.B. Cho, K.J. Cho, Y.J. Kim, H.S. Jeon, T.H. Lee and Y. Hwang	295
The Effect of Temperature on the Processing and Properties of Macroporous Bioactive Glass Foams J.R. Jones, P. Sepulveda and L.L. Hench	299
Concentration Dependence of Bioactive Glass Dissolution In Vitro J.R. Jones, P. Sepulveda and L.L. Hench	303
In Vivo Tests of a Highly Porous Rapidly Resorbable Dicalcium Potassium Sodium Phosphate Glass-Ceramics U. Gross, C. Müller-Mai, C. Voigt, G. Berger and A. Spitzer	307
Early Tissue Reaction around Implanted Biomaterials: Differences between b-TCP and PMMA K. Ohsawa, M. Neo, H. Matsuoka, H. Akiyama, H. Ito and T. Nakamura	311
Preparation of Thin Histological Sections for Bone Attachment and Implant Material Analysis K.A. Gross	315
In Vitro Primary Study of an Injectable and Fast Setting Calcium Phosphate Based Biomaterials H.S. Fan, W.W. Lu, S.X. Qu, J.C.Y. Leong, J.Q. Cheng, K.W. Liu and X.D. Zhang	321
Synthesis of Bioactive PMMA Bone Cement via Modification with Alkoxysilane and Calcium Salt; Effect of Calcium Salt C. Ohtsuki, M. Kyomoto, T. Miyazaki, M. Tanihara, A. Mori and K. Kuramoto	325
Comparison between Commercial Calcium Phosphate Bone Cements M.E. Saadalla, N. Ahad, I.R. Gibson and J.C. Shelton	331
Influence of Air-Entraining Agent on Bone Cement Macroporosity S. Sarda, E. Fernández, M. Nilsson and J.A. Planell	335
Effects of Powder Phase Sterilization on Basic Properties of Apatite Cement M. Takechi, Y. Miyamoto, I. Kunio, Y. Momota, T. Yuasa, S. Tatehara, K. Suzuki and M. Nagayama	339
Influences of Crystal Phases on Bioactivity of Calcium Phosphate Cements L.M. Hirakata, M. Kon, T. Yuasa, Y. Miyamoto and K. Asaoka	343
In Vitro Response of Osteoblast-Like Cells to Hydroxyapatite-Zinc Oxide-Poly(Acrylic Acid) Cements S. Kenny, M. Buggy, T. Pembroke, R. Hill and P.V. Hatton	347
Effects of Tannic Acid in α-Tricalcium Phosphate Cement for the Physical Properties and Tissue Responses M. Yoshikawa, S. Hayami, T. Toda and Y. Mandai	353
Interface Bioactive Bone Cement (IBBC) in Place of HA Coating: Merits and Demerits H. Oonishi, H. Fujita, S. Itoh, T. Kin and K. Oomamiuda	357
Mechanical Evaluation of Fixation of Titanium Implants in Trabecular Bone Using an Injectable Calcium Phosphate Cement E.M. Ooms, J.G.C. Wolke and J.J. Jansen	361
Soft Tissue Response to Newly Developed Calcium Phosphate Cements E.M. Ooms, J.G.C. Wolke, E.A. Egglezos and J.J. Jansen	363
Microstructure Analysis of Novel Resorbable Calcium Phosphate/Sulphate Bone Cements M. Nilsson, E. Fernández, S. Sarda, L. Lidgren and J.A. Planell	365
Bone-Bonding Strength of Two Kinds of Polymethylmethacrylate-Based Bioactive Bone Cement Containing Bioactive Glass Beads or Glass-Ceramic Powder M. Kamimura, J. Tamura, S. Shinzato, K. Kawanabe, M. Neo, T. Kokubo and T. Nakamura	369
In-Vitro Edurance Testing of Bone Graft Materials for Impaction Grafting B. Grimm, A.W. Blom, A.W. Miles and I.G. Turner	375
Mechanical Properties and Characterisation of Sol-Gel Coated Coralline Hydroxyapatite B. Ben-Nissan, A. Milev, D. Green, M. Conway, R. Vago and W. Walsh	379
The In Vivo Response of Phase Pure Hydroxyapatite and Carbonate Substituted Hydroxyapate Granules of Varying Size Ranges N. Patel, I.R. Gibson, K.A. Hing, S. Best, E. Damien, P.A. Revell and W. Bonfield	383
Regeneration of Bone and Bone Marrow by Constructs Grafting of Human Cultured Bone and Porous Ceratite J. Iida, T. Yoshikawa, Y. Ueda, T. Uemura, K. Ichijima and Y. Takakura	387

Osteogenic Activity of FK506-Treated Cultured Bone Tissue T. Yoshikawa, H. Nakajima, T. Uemura, K. Ichijima and Y. Takakura	391
Osteogenic Potential of Osteogenic Cell / Collagen Sponge Construct for Bioartificial Periosteum K. Hattori, T. Yoshikawa, Y. Takakura, H. Aoki and N. Tomita	395
A New Sol-Gel Derived Bone Grafting Material T. Gerber, T. Traykova, K. Henkel and V. Bienengraber	399
Comparison of Osteosyntheses According to Compositions of Porous Calcium Phosphate Graft C.K. Lee, B. Chang, D.H. Lee, K.S. Hong, H.S. Ryu and S.J. Kim	405
Segmental Bone Defect Repair Using Sintered, Porous Ceramics D.C. Fredericks, J.A. Bobst, E.B. Petersen, J.V. Nepola, B. Heckendorf, B. Norberg, Y. Ko and J.J. Cassidy	409
Synthesis and Properties of Ceramic Foams for Hard Tissue Repair P. Sepulveda, A.H.A. Bressiani, J.C. Bressiani, L. Meseguer and B. König Jr	413
In-Vitro Testing of Bonesave, a Ceramic Bone Graft Substitute for Use in Impaction Grafting A.W. Blom, B. Grimm, J. Cunningham, A.W. Miles and I.D. Learmonth	417
Grafton® Demineralized Bone Matrix Combined with Cancellous Allograft as an Autogenous Graft Substitute in the Treatment of Fractures and Nonunions F.C. Redfern	421
Histological Studies on Retrieved HA Granules Filled in Acetabular Massive Bone Defect in Revision Total Hip Arthroplasty H. Oonishi, H. Fujita, S. Itoh, T. Kin and K. Oomamiuda	423
In Vitro Bioactivity and Mechanical Performance of Tricalcium Phosphate/Polyhydroxybutyrate Composites M. Wang, J. Ni and J. Weng	429
Synthesis of a Bioactive Poly(Methyl Methacrylate)/Silica Hybrid S.H. Rhee and J.Y. Choi	433
Apatite-Forming Ability and Mechanical Properties of Glass-Ceramic A-W-Polyethylene Composites J.A. Juhász, K. Masakazu, N. Miyata, T. Kokubo, T. Nakamura, S. Best and W. Bonfield	437
Bi-Composite Sandwich Injection Moulding: A New Method of Producing Stiff and Strongly Bioactive Bone-Analogues A.L. Oliveira, R.A. Sousa, A.M. Cunha and R.L. Reis	441
Heating Effect on Properties of Organic-Inorganic Hybrids Containing Colloidal Silica Particles Y. Aburatani, K. Tsuru, S. Hayakawa and A. Osaka	445
Cross-Linkage of Hydroxyapatite / Collagen Nano-Composite with 3 Different Reagents M. Kikuchi, T. Taguchi, M. Tanaka, H. Matsumoto and K. Takakuda	449
Preparation of a Bioactive Polycaprolactone/Silica Nanocomposite S.H. Rhee and H.M. Kim	453
New Bioactive Composites Consisting of Partially Crystallized Glass Beads and PMMA: Evaluation of Osteoconductivity S. Shinzato, T. Nakamura and T. Kokubo	457
Dentin Mineralization with a Bioactive Composite T. Närhi, T. Tirri, J. Rich and J. Seppälä	461
In Vivo and In Vitro Evaluation of the Biocompatibility of the Hydroxyapatite-PMMA Hybrid Materials Having Mechanical Property Similar to that of Cortical Bone M. Aizawa, M. Ito, K. Itatani, H. Suemasu, A. Nozue, I. Okada, M. Matsumoto, M. Ishikawa, H. Matsumoto and Y. Toyama	465
Mechanical Behaviour of Polyethylene/Hydroxyapatite Bone-Analogue Composites Moulded with an Induced Anisotropy R.A. Sousa, J.F. Mano, R.L. Reis, A.M. Cunha and M.J. Bevis	469
Clinical Application of the Plug Made of Porous AW Glass Ceramic for Revision Total Knee Arthroplasty T. Kitaori, H. Fujita, H. Iida, K. Shimizu, Y. Hiroshima and T. Nakamura	475
Development and Improvement of Ceramic TKP for 19 Years and Clinical Results H. Oonishi, H. Fujita, S. Itoh, S. Kin and H. Amino	479

Design Rationale and Mid-Term Clinical Results of the Bisurface Knee Prosthesis M. Akagi, T. Asano, T. Nakamura, T. Ueo, Y. Matsusue, C. Hamanishi and T. Yamamuro	483
Hydroxy Apatite Ceramic Hip Survey Ceramic on Ceramic Bearings J.M. Buchanan	487
Hydroxyapatite Coated Total Hip Prostheses: A Long-Term, Prospective, Randomized Study of 50 Consecutive Cases C. Faldini, A. Moroni and S. Giannini	491
Hybrid Alumina-Alumina Hip Replacement in Patients under the Age of 55 Years Old P. Bizot, R. Nizard, J. Witvoet and L. Sedel	495
Surface Analysis on Retrieved Ceramic Total Knee Prosthesis H. Oonishi, H. Fujita, S. Itoh, S. Kin, H. Amino and E. Tsuji	499
Lessons and Pitfalls from 27 Years Alumina Ceramic Experience in Vienna / Austria M. Böhler	503
Clinical Wear and Simulator Study of Ceramic-Ceramic THR to 20 Years and Beyond T. Shishido, I.C. Clarke, P.A. Williams, A. Gustafson, H. Shoji, M. Böhler, K. Keggi and A. Imakiire	507
Investigation of a Ceramic Head Retrieved after 20 Years: A Case Study G. Willmann, H.G. Richter and K. Zweymüller	511
Development of Zirconia Plasma Sprayed Coatings for Dental Implants and for Knee Prostheses A. Scrivani, A. Figueras, M. Garriga and G. Rizzi	515
Influence of Material Combinations and Lubricants on Friction and Wear in Ceramic-on-Ceramic Sliding Pairs for Joint Prostheses T. Murakami and S. Doi	521
Effect of Frictional Heating on the Serum Lubricant and Wear of UHMWPE Cups against Cobalt-Chrome or Zirconia Balls Y.S. Liao, Z. Lu, P. Campbell, P. Benya and H. McKellop	525
Analysis of Contact Mechanics and Lubrication in Ceramic-on-Ceramic Hip Joint Replacements M.M. Mak and Z.M. Jin	531
The Friction and Lubrication of Alumina-on-Alumina Total Hip Prostheses - The Effect of Radial Clearance and Wear Testing S.C. Scholes, S.M. Green and A. Unsworth	535
Long-Term Performance of a Transformation Toughened Platelet Reinforced Alumina Matrix Composite H.-. Pfaff, R. Rack and G. Willmann	541
Nanotribological Characterisation of Alumina Femoral Heads Using an Atomic Force Microscope S.C. Scholes, S.M. Green and A. Unsworth	543
Crevice Corrosion of Titanium Alloyed Morse Tapers May Cause Fracture of Alumina Ceramic Heads M. Windler	549
Comparison of the Abrasive Wear Resistance between Amalgams, Hybrid Composite Material and Different Dental Cements F.J. Gil and J.A. Planell	553
High Load Bearing, High Reliable All-Ceramic Bridges F. Filser, P. Kocher, H. Lüthy, P. Schärer and L.J. Gauckler	557
Reliability of Zirconia Hip Joint Heads: Combination of Wear and Aging Tests F. Villiermaux, B. Calès and L. Blaise	561
A New Knee Prosthesis with Bisurface Femoral Component Made of Zirconia-Ceramic T. Nakamura, M. Akagi, T. Yasuda, Y. Nakagawa and M. Shimizu	563
Tribological Characteristics of Diamond-Like Carbon Films Formed on CP Ti and ELI Ti-6Al-4V H.E. Kim, I.S. Lee, C.N. Whang, D.H. Kim and K.R. Lee	567
Mechanical Stress Analysis and Burst Testing of a Zirconia Femoral Component for Total Knee Arthroplasty M. Ueno, M. Apgar and V. Sarin	573
New Approach to a Cementless Ceramic Component for Artificial Knee Joint I. Noda, S. Masuda, H. Kitano, J. Ikeda, Y. Yoshihara, K. Mukai and T. Shimotoso	577

Zirconia Ceramic Femoral Components D. Sida, L. Blaise, V. Sida and P. Vavrik	581
Investigation of the Wear Behaviour of a Ceramic Knee Concept with Floating Meniscal Bearing S. Leyen, J. Schwiesau and R. Schmidt	585
Characterization of Steady-State Wear in All-Alumina THR to 20 MC H. Oonishi, I.C. Clarke, P.A. Williams, T. Shishido and A. Gustafson	587
Ceramic Wear Debris in Total Joint Replacements: Review of Debris Morphology and Biological Response P.A. Williams and I.C. Clarke	591
Nano-Smooth Diamond Surfaces of Duplex Coatings on Titanium Alloy for Low Friction and Low Wear of Biomaterial Counterfaces L. Vandenbulcke, M.I. De Barros, C. Met and G. Farges	595
Ceramized Articulating Surfaces of Metal-Metal Hip Joint Prosthesis H.G. Neumann, A. Baumann, G. Wanke, K.J. Hamelynck and M. Morlock	601
CE-TZP/AL₂O₃ Nanocomposite for Total Joint Prostheses K. Tanaka, J. Tamura, M. Uchida, T. Kokubo, M. Nawa and T. Nakamura	605
Creating Abrasive Conditions in Knee Simulator Tests of Oxidized Zirconium and Cobalt-Chrome Femorals A. Salehi, G. Hunter and K. Widding	609
The Ultrastructural Analysis of Heterotopic Osteogenesis in Porous Biphasic Calcium Phosphate Ceramics S.X. Qu, Y. Leng, X. Guo, J.C.Y. Cheng, W.Q. Chen, Z.J. Yang and X.D. Zhang	613
Apatite-Forming Ability of Ethylene-Vinyl Alcohol Copolymer Modified with Ti-OH Groups T. Kokubo, K. Masakazu, A. Oyane, M. Minoda, T. Miyamoto and T. Nakamura	617
Composition of Apatite Produced in Simulated Body Fluids H.M. Kim, T. Furuya, T. Kokubo, T. Miyazaki and T. Nakamura	621
Characterisation of Mono- and Biphasic Calcium Phosphates Granules S. Ke, I.R. Gibson and K.A. Hing	625
Variation of Clusters in Simulated Body Fluids with Time A. Oyane, K. Onuma, A. Ito, T. Furuya, H.M. Kim, T. Kokubo and T. Nakamura	629
Apatite-Forming Ability and Mechanical Properties of Polydimethylsiloxane (PDMS)-TiO₂ Hybrid Treated with Hot Water M. Kamitakahara, K. Masakazu, N. Miyata, T. Kokubo and T. Nakamura	633
Apatite-Forming Ability of Zirconia Gels with Different Structures M. Uchida, H.M. Kim, T. Kokubo, M. Nawa, K. Tanaka and T. Nakamura	637
Zeta-Potential Variation of Bioactive Titanium Metal during Apatite Formation on Its Surface in Simulated Body Fluid K. Masakazu, T. Himeno, H.M. Kim, T. Kokubo and T. Nakamura	641
Preparation of Magnetite Microspheres for Hyperthermia of Cancer K. Masakazu, M. Tanaka, T. Kokubo, T. Yao, S. Hamada and T. Shinjo	645
Process of Apatite Formation Induced by Anatase on Titanium Metal in Simulated Body Fluid H. Kaneko, M. Uchida, H.M. Kim, T. Kokubo and T. Nakamura	649
Resorbable Calcium Phosphate Composite Coatings P. Becker, P. Zeggel, F. Lüthen, B. Nebe, J. Rychly and H.G. Neumann	653
Tissue Response of Calcium Polyphosphate in Beagle Dog S.M. Yang, S.Y. Kim, S.J. Lee, Y. Ku, S.B. Han, C.P. Chung and I.C. Rhyu	657
Extensive Biocompatibility of Electrically Polarized Partially-Stabilized-Zirconia Ceramics S. Nakamura and K. Yamashita	661
Quantitative Evaluation of Wear Property of Polyethylene-on-Ceramic Sliding Pairs for Joint Prostheses in Multidirectional Sliding Test Y. Sawae, T. Murakami, T. Sawano, I. Noda and T. Shimotoso	665
Ceramic-on-Ceramic Bearing Surfaces: A Complete Solution to 3RD-Body Wear Problem in Total Hip Arthroplasty A. Wang, A. Chopra and G. Schmidig	669

Long-Term Study of High-Strength Hydroxypatite/Poly(L-Lactide) Composite Rods for Internal Fixation of Bone Fractures: Histological Examination

S. Ishii, Y. Matsusue, T. Furukawa, T. Yasunaga, J. Tamura, Y. Shikinami, M. Okuno and T. Nakamura