

Table of Contents

Preface, Committees and Bioceramics Symposia

I. Advanced Calcium Phosphate Ceramics

Ab Initio Simulations on the Carbonated Apatite Structure

F.Z. Ren, Y. Leng and X. Lu 1

Orientation of Hydroxyapatite Rods Formed by Hydrothermal Treatment of Calcium Carbonate

I.Y. Kim, K. Kikuta and C. Ohtsuki 7

Observation of Transformation Behavior of Octacalcium Phosphate to Hydroxyapatite

N. Ito, M. Kamitakahara and K. Ioku 11

Fabrication of β TCP Foam Using α TCP Foam as a Precursor by Heat Treatment

T. Nikaido, K. Tsuru, G. Kawachi, M.L. Munar, S. Matsuya, S. Nakamura and K. Ishikawa 15

Smart Calcium Phosphate Bioceramic Scaffold for Bone Tissue Engineering

G. Daculsi, T. Miramond, P. Borget and S. Baroth 19

Formation of Oriented Hydroxyapatite Crystals in a Hydrogel

T. Yokoi, I.Y. Kim, K. Masakazu and C. Ohtsuki 24

Influence of Niobium Oxide on the Mechanical Properties of Hydroxyapatite

N. Demirkol, F.N. Oktar and E.S. Kayali 29

Apatite-Based Microcarriers for Bone Tissue Engineering

J. Feng, M. Chong, J. Chan, Z.Y. Zhang, S.H. Teoh and E.S. Thian 34

Basic Properties of Starfish Derived Calcium Carbonate and its Phase Transformation to Carbonate Apatite

D. Honda, A. Takeuchi and I. Kunio 40

Behavior of Human Blood Adsorption to Biomimetic Functionally Graded Hydroxyapatite

J. Tazaki, S. Yodogawa, M. Murata, K. Ito, T. Akazawa, J. Hino, M.A. Kabir, H. Nagayasu, M. Arisue, T. Shibata and T. Hanawa 44

Characteristics of Surface Behavior and Osteoinductivity of Biomimetic Ceramic Scaffold

J. Tazaki, M. Murata, T. Akazawa, M. Yamamoto, K. Ito, J. Hino, Y. Minamida, H. Nagayasu, M. Arisue, T. Shibata and Y. Tabata 50

Effect of Anions on Morphology Control of Brushite Particles

R. Hamai, T. Toshima, M. Tafu, T. Masutani and T. Chohji 55

Morphological Control of Hydroxyapatite Particles by Homogeneous Precipitation Method in the Co-Presence of Various Carboxylic Acids

H. Shimizu, Z. Zhuang and M. Aizawa 61

The Size Control of Hydroxyapatite Particles during Spray Pyrolysis

J.S. Cho and S.H. Rhee 66

Heterogeneous Structure of Hydroxyapatite and *In Vitro* Biodegradability

S. Hayakawa, Y. Shiroasaki, A. Ōsaka and C. Jäger 70

Investigation of Multilayered Protein Adsorption on Carbonate Apatite with a QCM Technique

T. Yoshioka, H. Yonekura, T. Ikoma, M. Tagaya and M. Tanaka 74

Fabrication of Spherical Carbonate Apatite Using Calcium Sulfate as a Precursor by W/O Emulsion Method

S. Nomura, K. Tsuru, S. Matsuya, I. Takahashi and I. Kunio 78

Enhanced Effects of New Bone Formation by an Electrically Polarized Hydroxyapatite Microgranule/Platelet-Rich Plasma Composite Gel

S. Ohba, W. Wang, S. Itoh, A. Nagai and K. Yamashita 82

Synthesis and Characterisation of Strontium and Magnesium Co-Substituted Biphasic Calcium Phosphates

F.E. Imrie, V. Aina, G. Lusvardi, G. Malavasi, I.R. Gibson, G. Cerrato and B. Annaz 88

Simplification of the Synthesis Method for Silicon-Substituted Hydroxyapatite: A Raman Spectroscopy Study

F.J. Harden, I.R. Gibson and J.M.S. Skakle 94

Synthesis and Characterization of C_x-Si_y-HA for Bone Tissue Engineering Application	100
A. Boyer, D. Marchat and D. Bernache-Assollant	
Characterization and <i>In Vitro</i> Evaluation of Silicate-Containing Tricalcium Phosphate Prepared through Wet Chemical Process	105
M. Kamitakahara, S. Umemoto and K. Ioku	
Fabrications of Boron-Containing Apatite Ceramics via Ultrasonic Spray-Pyrolysis Route and their Surface Properties	109
M. Nakamura, Z. Zhuang and M. Aizawa	
Synthesis of Mg²⁺ Incorporated Hydroxyapatite by Ion Implantation	114
T.R. Rautray and K.H. Kim	
Synthesis of Zinc-Containing Amorphous Calcium Phosphate	119
T. Uchino and K. Toda	
Computational Studies of Magnesium and Strontium Substitution in Hydroxyapatite	123
F.E. Imrie, M. Corno, P. Ugliengo and I.R. Gibson	

II. Porous Materials

β-TCP Scaffolds with an Interconnected and Aligned Porosity Fabricated via Ice-Templating	129
S. Flauder, U. Gbureck and F.A. Müller	
The Effect of Sintering Temperature on the Microstructural and Mechanical Characteristics of Hydroxyapatite Macroporous Scaffolds Prepared via Freeze-Casting	133
A. Zamanian, S. Farhangdoust, M. Yasaei, M. Khorami and M. Abbasabadi	
3-D Printed Bioactive Bone Replacement Scaffolds of Alkaline Substituted Ortho-Phosphates Containing Meta- and Di-Phosphates	138
F. Dombrowski, P.W.G. Caso, M.W. Laschke, M. Klein, J. Günster and G. Berger	
Fabrication of Three Different Types of Porous Carbonate-Substituted Apatite Ceramics for Artificial Bone	143
T. Tanaka, T. Yoshioka, T. Ikoma, T. Kuwayama, T. Higaki and M. Tanaka	
Evaluating Initial Content of the Slurry and Cooling Rate on the Microstructural and Mechanical Characteristics of Freeze Casted Hydroxyapatite Macroporous Scaffolds	147
S. Farhangdoust, S.M. Rabiee, A. Zamanian, M. Yasaei, M. Khorami and M. Hafezi-Ardakani	
Fabrication of Calcite Foam by Inverse Ceramic Foam Method	153
T.N.X. Thanh, M. Maruta, K. Tsuru, A. Valanezhad, S. Matsuya and I. Kunio	

III. Cements

Characterization of α/β-TCP Based Injectable Calcium Phosphate Cement as a Potential Bone Substitute	157
K. Sarıibrahimoğlu, J.G.C. Wolke, S.C.G. Leeuwenburgh and J.A. Jansen	
Adsorption Behavior of Sodium Inositol Hexaphosphate on the Surface of Hydroxyapatite	161
T. Konishi, M. Mizumoto, M. Honda and M. Aizawa	
Comparative Study on Bioresorbability of Chelate-Setting Cements with Various Calcium-Phosphate Phase Using Rabbit Model	167
T. Konishi, S. Takahashi, M. Mizumoto, M. Honda, K. Kida, Y. Horiguchi, K. Oribe, K. Ishii, H. Morisue, Y. Toyama, M. Matsumoto and M. Aizawa	
<i>In Vitro</i> Biological Evaluation of Anti-Tumor Effect of the Chelate-Setting Hydroxyapatite Cement	173
M. Honda, T. Konishi, M. Mizumoto and M. Aizawa	
Studies on the Anti-Tumor Action of Chelate-Setting Apatite Cements	178
T. Inayama, H. Konishi, M. Aizawa and N. Kanzawa	
<i>In Vitro</i> Evaluation of Chelate-Setting Cements Fabricated from Silicon-Containing Apatite Powder Using Osteoblastic Cells	183
Y. Nakashima, M. Honda, T. Konishi, M. Mizumoto and M. Aizawa	
Evaluation of the Anti-Bacterial Activity of a Novel Chelate-Setting Apatite Cement Containing Lactoferrin	187
H. Ohsugi, Y. Habuto, M. Honda, M. Aizawa and N. Kanzawa	
Basic Properties of Carbonate Apatite Cement Consisting of Vaterite and Dicalcium Phosphate Anhydrous	192
A. Cahyanto, M. Maruta, K. Tsuru, S. Matsuya and I. Kunio	

Preparation of Carbonate Apatite Cement Based on α-TCP	197
S. Matsuya, M. Maruta, K. Tsuru and I. Kunio	
Improvement in Handling Property of αTCP Cement	202
M. Maruta, S. Matsuya, K. Tsuru and I. Kunio	

IV. Coatings

Controlled Self-Coating of Implant Surfaces with Autologous Molecules	207
M. Adam, C. Ganz, W. Xu, B. Frerich and T. Gerber	
Hydroxyapatite and YSZ Reinforced Hydroxyapatite Coatings by Gas Tunnel Type Plasma Spraying	213
A. Kobayashi and B. Subramanian	
Laser-Assisted Biomimetic Process for Calcium Phosphate Coating on a Hydroxyapatite Ceramic	217
A. Oyane, I. Sakamaki, Y. Shimizu, K. Kawaguchi, Y. Sogo, A. Ito and N. Koshizaki	
A Novel Approach to Prepare Hydroxyapatite-Coated Biodegradable Polymer Microspheres Loaded with Magnetic Fe_3O_4 via Nanoparticle-Stabilized Emulsions	223
M. Okada, S. Takeda and T. Furuzono	
Evaluation of Hydroxyapatite Film by Powder Jet Deposition after Artificial Aging	229
R. Akatsuka, K. Matsumura, M. Noji, C. Nishikawa, K. Sato, T. Hagiwara, T. Anada, O. Suzuki, T. Kuriyagawa and K. Sasaki	
Characteristics and Bioactivity of CaP Porous Coating with Bio-Inspired Dopamine	233
Y.T. Liu, K.C. Kung, T.M. Lee and T.S. Lui	
Formation of Hydroxyapatite on Nickel-Free High-Nitrogen Stainless Steel by Chemical Solution Deposition Method in Neutral/Alkaline Solution	237
M. Sasaki, M. Inoue, Y. Katada, S. Hiromoto and T. Taguchi	
Electrolytic Deposition of Calcium Phosphates Films on Nitinol Stents	243
D. Kondo, T. Yoshioka, T. Ikoma, K. Takamatsu, K. Ohta and M. Tanaka	
Effects of Hydrothermal Treatment on Properties of Titanium Nitride Coating for Dental Implants	247
X.L. Shi, K. Tsuru, G. Kawachi and I. Kunio	
Protectivity and Adhesive Strength of Zinclipscombite Coating on 316L Stainless Steel	251
A. Valanezhad, K. Tsuru, M. Maruta, S. Matsuya and I. Kunio	
Bio-Fabrication of Nacre on Conventional Implant Materials	255
M. Kwan and R.Z. Wang	

V. In Vivo Study and Clinical Application

Clinical Studies of Anterior Cervical Fusion with PEEK Cages: Comparing Iliac Graft and a Macroporous Biphasic Calcium Phosphate	261
G. Daculsi and H. Pascal-Moussellard	
Bioactive Glass Cloth that Promotes New Bone Formation	266
T. Minatoya, T. Furusawa, M. Sato, Y. Matsushima and H. Unuma	
Autologous Bone vs. Allograft Bone in Ridge Augmentation	270
C. Ratiu, S. Cavalu and V. Miclaus	
A Novel Unidirectional Porous Hydroxyapatite Cylinder Implanted in the Dorsal Muscles of Dogs Promotes Fibrous Tissue Vascularization and Invasion	275
H. Noguchi, A. Watanabe, T. Funayama, T. Tsukanishi, Y. Wadano and M. Sakane	
Comparison of Polyethylene Wear between Highly Crosslinked and Annealed UHMWPE and Conventional UHMWPE against Ceramic Heads in Total Hip Arthroplasty	279
T. Sato, Y. Nakashima, M. Akiyama, T. Yamamoto, T. Mawatari, T. Itokawa, M. Ohishi, G. Motomura, M. Hirata and Y. Iwamoto	
Bone Grafting Putty – Animal Experiments and Clinical Applications	285
T. Gerber, C. Ganz, W. Xu, F. Maier, B. Frerich and S. Lenz	
In Vivo Comparative Study of Two Injectable/Moldable Calcium Phosphate Bioceramics	291
T. Miramond, E. Aguado, E. Goyenvalle, P. Borget, S. Baroth and G. Daculsi	
Cortical Bone Tissue Response of Injectable Octacalcium Phosphate-Hyaluronic Acid Complexes	296
K. Suzuki, T. Anada, Y. Honda, K.N. Kishimoto, N. Miyatake, M. Hosaka, H. Imaizumi, E. Itoi and O. Suzuki	

Bone Regenerative Properties of Injectable Calcium Phosphate/PLGA Cement in an Alveolar Bone Defect	
R.P.F. Lanao, J.W.M. Hoekstra, J.G.C. Wolke, S.C.G. Leeuwenburgh, A.S. Plachokova, O.C. Boerman, J.J.J.P. van den Beucken and J.A. Jansen	300
Osteoconductivity of New Sodium Calcium Phosphate Pastes	
M. Tanaka, M. Takemoto, S. Fujibayashi and S. Matsuda	304
Histological Analysis of Bone Bonding and Ingrowth into Connected Porous Hydroxyapatite Spacers in Spinal Surgery	
T. Funayama, H. Noguchi, T. Tsukanishi and M. Sakane	309
Radiological and Histological Evaluation of Regenos® which Implanted in Human Radial Fracture: A Clinical Case Report	
M. Iwasashi, T. Muramatsu and M. Sakane	313
The Clinical Application of the LEBRA-PXR in Imaging Diagnosis	
K. Sekiya, T. Kaneda, S. Mori, M. Suemitsu, Y. Hayakawa and T. Sakae	317
Assessment of the Elastic Properties of Human Femoral Bone with Artificial Hip Joint by Ultrasound Transmission	
R. Suetoshi, D. Cretin, S. Ogawa and T. Nakano	321
Preclinical and Clinical Cases of New Absorbable Composite Interference Screws in Osteoarticular Surgery	
A.P. Uzel, S. Elodie, S. Henri, G. Jouan, P. Borget and G. Daculsi	325
Lectinhistochemistry Evaluation of Rabbits Tibia Implanted with Macroporous Biphasic Ceramic Implants	
K.B. Violin, C. Ribeiro, T.S. Goia, J.C. Bressiani and A.H.d.A. Bressiani	331
Comparison between the Lateral and Medial Femur in Low-Mineral-Diet-Fed Ovariectomized Rats Using Raman Spectral Analysis	
T. Sakae, H. Nakada, M. Teranishi, T. Kato, S. Suzuki, A. Yanagawa, N. Yasuda, S. Ochiai, N. Kitagawa, Y. Kawai and R.Z. LeGeros	337
Changes in Bone Quality of the Femoral Diaphysis Induced by High-Level Fluorine Ingestion in Ovariectomized Rats	
H. Nakada, T. Sakae, M. Teranishi, T. Kato, T. Watanabe, T. Takahashi, Y. Kawai and R.Z. LeGeros	341
Osteoinductive Coating on PEEK Surfaces by Using Nanocrystalline Biomaterial and <i>In Vivo</i> Test	
H. Keuer, C. Ganz, W. Xu, A. Schubert, B. Frerich and T. Gerber	345

VI. Cell Studies and Cell-Material Interactions

Physico-Chemical Characterization and <i>In Vitro</i> Biological Evaluation of Pure SiHA for Bone Tissue Engineering Application	
D. Marchat, G. Bouët, A. Lueckgen, M. Zymelka, L. Malaval, S. Szenknect, N. Dacheux, D. Bernache-Assollant and J. Chevalier	351
Surface Electric Fields of Apatite Electret Promote Osteoblastic Responses	
M. Nakamura, A. Nagai and K. Yamashita	357
Nerve Regeneration by Using of Chitosan-Silicate Hybrid Porous Membranes	
Y. Shiroasaki, S. Hayakawa, A. Osaka, J.D. Santos and A.C. Maurício	361
MC3T3-E1 Cell Response to Hydroxyapatite and Alpha-Type Alumina Adsorbed with Bovine Serum Albumin	
J. Hayashi, K. Masakazu, T. Miyazaki, T.A. Kudo, H. Kanetaka and M. Hashimoto	365
Analysis of Gene Expression and Morphology of P19 Cells Cultured in an Apatite-Fiber Scaffold	
H. Ishii, Y. Mukai, M. Aizawa and N. Kanzawa	370
Influence of Micro-/Nano-Particles on Osteoblast-Like Cells: A Static and Time Lapse Observation	
N. Iwadera, S. Abe, T. Akasaka, Y. Yawaka and F. Watari	374
Murine Macrophage RAW264.7 Cells Response for the Carbon Nanotubes Immobilized on Substrate	
T. Akasaka, S. Abe and F. Watari	379
Study of the C60 Fullerene on Differentiation of Mouse Embryonic Stem Cells	
K. Imai, F. Watari, K. Nakamura and A. Tanoue	385

In Vitro Evaluation of Silicon-Containing Apatite Fiber Scaffolds for Bone Tissue Engineering

Y. Kinoshita, S.M. Best and M. Aizawa

391

Reconstruction of Tissue-Engineered Bone Using an Apatite-Fiber Scaffold, Rat Bone Marrow Cells and Radial-Flow Bioreactor: Optimization of Flow Rate in Circulating Medium

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

397

Three-Dimensional Culture of Vascular Endothelial Cells Using Vascular Endothelial Growth Factor-Loaded Apatite-Fiber Scaffolds with Enhanced Mechanical Property

K. Kayashima, R. Oyama, M. Emoto, H. Maehashi, T. Matsuura and M. Aizawa

402

Expression of Integrin Alpha-3 and Beta-4 Subunits on the Process of Peri-Implant Epithelium Formation

I. Atsuta, Y. Ayukawa, T. Yamaza, A. Furuhashi, R. Kondo and K. Koyano

407

VII. Composites

Properties of Gelatin/Carbonate Apatite Composite Compared to Bovine Bone

P. Khanna and R.Z. LeGeros

413

Comparison of PLGA Reinforcement Method for Carbonate Apatite Foam

G.M. Munar, M.L. Munar, K. Tsuru and I. Kunio

417

Processing and Characterization of a Composite of Hyaluronic Acid (HA) and Microspheres Biphasic Calcium Phosphate (BCP) for Dermal Repair

E.S. Silva, D.G. de Freitas and S.N. da Silva

421

Fabrication of Composites from Apatite and Chemically Synthesized Collagen

T. Miyazaki and A. Kuramoto

426

Surface Design and Water Vapor-Adsorption Characteristics of Biomimetic Composite Materials Derived from Salmon Resource

T. Akazawa, M. Murata, M. Ito, T. Nomura, T. Shigyo, K. Sakai, Y. Minamida, M.A. Kabir, T. Yamagishi, S. Iida, K. Nakamura and S. Miyazaki

430

Effects of Heat Treatment on Apatite Formation of CaO-SiO₂-PEEK Composites

S.B. Cho, E.M. An, S. Lee, H.D. Jang, I.Y. Kim, C. Ohtsuki and Y.J. Kim

436

Composite Bioceramics/Polymer Electrospun Scaffolds for Regenerative Medicine

T. Miramond, P. Borget, C. Colombeix, S. Baroth and G. Daculsi

441

Development and Characterization of Poly(ϵ -caprolactone) Reinforced Porous Hydroxyapatite for Bone Tissue Engineering

Y. Phanny and M. Todo

447

Effect of Organic Polymer Addition on the Microstructure of Magnetite-Polymer Hybrid

Y. Kuwahara, T. Miyazaki and K. Masakazu

453

VIII. Drug Delivery Carriers

Therapeutic Effect of Lipophilic and/or Hydrophilic Zinc Related Compound Injections on Alveolar Bone Mass in Zinc-Deficient Osteoporosis Rats

M. Otsuka, Y. Tokudome, K. Otsuka and A. Ito

457

The Controlled Release of Simvastatin from Biomimetic Macrospheres

J. Chou, T. Ito, M. Otsuka, B. Ben-Nissan and B. Milthorpe

461

Coprecipitation of DNA and Calcium Phosphate Using an Infusion Fluid Mixture

A. Oyane, H. Araki, Y. Sogo, A. Ito and H. Tsurushima

465

Novel Apatite-Pathogen-Associated Molecular Patterns Adjuvants for Cancer Immune Therapy

X.P. Wang, X. Li, A. Ito and Y. Sogo

471

Adsorption of Alendronate onto Biomimetic Apatite Nanocrystals to Develop Drug Carrier Coating for Bone Implants

R. Bosco, M. Iafisco, J. van den Beucken, S.C.G. Leeuwenburgh and J.A. Jansen

475

FGF-2-Zinc-Apatite Composite Layers on External Fixation Rod for Promoting Cell Activity

X.P. Wang, A. Ito, X. Li, Y. Sogo and A. Oyane

480

Preparation of Calcium Phosphate – Peptide Composites with Highly pH-Sensitive Drug Release

C. Tamura, M. Sakurai and K. Kato

486

Calcium Phosphate Coated Hydroxyapatite/Collagen Nanocomposite Membrane for Surface-Mediated Gene Transfer

S. Bodhak, M. Kikuchi, A. Oyane, Y. Sogo, H. Tsurushima and A. Ito 490

Effect of Structure and Composition on Ibuprofen Drug Delivery by Calcium Phosphate Nanocarriers

K. Madhumathi and T.S. Sampath Kumar 495

IX. Dental Materials

Surface Properties of Dental Zirconia after Clinical Grinding and Polishing

S. Ban, T. Sakakibara, K. Yoshihara, M. Takeuchi, T. Kawai, H. Murakami and H. Kono 501

Factors Affecting on the Bond Strength of Dental Zirconia to Veneering Porcelains

J. Tsuruki, H. Kono, Y. Okuda, M. Noda, H. Arikawa, T. Kanie and S. Ban 507

Rare Earth Oxide Containing Filler for Dental Composite Resin

M. Uo, Y. Nakajima, Y. Asakawa, T. Wada, T. Hongo, K. Soga and Y. Kogo 512

Phosphorylated Pullulan Bioadhesive for Regeneration and Reconstruction of Bone and Tooth

Y. Yoshida, T. Okihara, M. Nakamura and T. Matsumoto 516

Adhesive Strength between Flexible Hydroxyapatite Sheet and Tooth Enamel

E. Yamamoto, N. Kato, H. Nishikawa, M. Kusunoki, T. Hayami, K. Yoshikawa and S. Hontsu 522

Effects of Ammonium Hexafluorosilicate Concentration on Crystallinity of Hydroxyapatite Powder and Enamel

T. Suge and T. Matsuo 526

Formation of Calcium Phosphate/Titanium Oxide/Titanium/ Plastic Composite Implant

A. Watazu, T. Sakai, K. Teraoka, T. Sonoda, K. Morinaga and H. Kido 531

Reaction of Dental Zirconia with Phosphate-Bonded Investments for Heat Pressing Technique

K. Yoshihara, S. Ban, T. Kawai and Y. Tanaka 537

Visible Light-Induced Crosslinkable Gelatin for Direct Pulp Capping

M. Nakamura, Y. Yoshida and Y. Ito 543

X. Metals

Bioactive Ti Metal with Ca-Enriched Surface Layer Able to Release Zn Ion

S. Yamaguchi, T. Matsushita, T. Nakamura and T. Kokubo 547

Fabrication of Bioactive Apatite Nuclei-Precipitated Titanium Alloys by Using Sandblasting

H. Mizuno, T. Yabutsuka and T. Yao 553

Influence of Titanium Surface Topography on Peri-Implant Soft Tissue Integration

A. Furuhashi, Y. Ayukawa, I. Atsuta, Y.D. Rakhmatia, N. Yasunami and K. Koyano 559

Enhancement of Calcium Phosphate Formation on Zirconium by Combination of Simple Electrochemical Treatments

Y. Tsutsumi, H. Doi, N. Nomura, K.H. Kim and T. Hanawa 565

Effect of Autoclave and Hot Water Treatment on Surface Structure and Apatite-Forming Ability of NaOH- and Heat-Treated Titanium Metals in Simulated Body Fluid

K. Masakazu, N. Matsui, T. Miyazaki and H. Kanetaka 570

Titanium and Ti-13Nb-13Zr Alloy Porous Implants Obtained by Space-Holder Technique with Addition of Albumin

T.S. Goia, K.B. Violin, J.C. Bressiani and A.H.d.A. Bressiani 574

Hydrothermal Modification of Products Fabricated by Electron Beam Melting

H. Fukuda, M. Ueda, M. Ikeda and T. Nakano 580

Corrosion Resistance of Ti-29Nb-13Ta-4.6Zr Alloy in a Fluoride-Containing Solution

S. Takemoto, M. Nakai, M. Hattori, M. Yoshinari, E. Kawada, M. Niinomi and Y. Oda 584

XI. Zirconia and Alumina Ceramics

The Long-Time Low-Temperature Degradation (“LTD”) Kinetics in 3Y-TZP Bioceramics

K.G. Nickel, M. Keuper and C. Berthold 589

Titania versus Ceria Alumina/Zirconia Composites: Structural Aspects and Biological Tolerance

S. Cavalu, V. Simon, C. Ratiu, V. Rus, I. Akin and G. Göller 595

Effect of Polarization Treatment Time on Inhibition of Low Temperature Degradation in Y-Doped ZrO₂
Y. Tsuchiya, N. Horiuchi, M. Nakamura, K. Nozaki, A. Nagai, K. Hashimoto and K. Yamashita 601

XII. Nano Materials

Laser Vaporization of Magnetic Fe_xO_y and Fe_xO_y-SiO₂ Nanoparticles for Biomedical Applications

C. Stötzl, H.D. Kurland, J. Grabow and F.A. Müller 605

Nano-Bioceramic Production via Mechano-Chemical Conversion (Ultrasonication)

F.N. Oktar, S. Agathopoulos, L.S. Ozyegin, I.G. Turner, O. Gunduz, N. Demirkol, S. Brück, B. Ben-Nissan, R. Samur, E.S. Kayali and C. Aktas 609

Adsorption Behavior of Albumin and other Proteins on Carbon Nanotubes Studied by Chromatography

M. Morikawa, Y. Kuboki, T. Akasaka, S. Abe, H. Takita and F. Watari 615

The Effects of the Coating of Anodized Titanium with Multi-Walled Carbon Nanotubes on Bone Formation

S. Inoue, M. Uo, M. Sakairi, E. Hirata, M.H. Lee, T.S. Bae, T. Akasaka, F. Watari and A. Yokoyama 621

Biocompatibility and Biodistribution of Several Nano-Sized Ceramics Particles

S. Abe, Y. Hamba, N. Iwadera, T. Akasaka, S. Yamagata, Y. Yawaka, J. Iida, M. Uo, T. Yonezawa and F. Watari 625

Cytotoxicity and Cancer Detection Ability of the Luminescent Nanoporous Silica Spheres Immobilized with Folic Acid Derivative

M. Tagaya, N. Hanagata, T. Ikoma, T. Kobayashi, K. Shiba, T. Yoshioka and J. Tnaka 630

XIII. Sol-Gel Synthesis and other Materials

Sol-Gel Preparation of HA-Coated Silica Macrospheres from Water Glass and their Protein Adsorption

J. Li, Y. Shiroasaki, S. Hayakawa, A. Stamboulis and A. Osaka 637

Inhibitory Effects of Doped Aluminum and Silicon on HA-Forming Ability of Titania in Simulated Body Fluid

E.S. Shin, I.Y. Kim, S.B. Cho and C. Ohtsuki 641

Time-Dependent Protein Adsorptive Behavior on/in Mesoporous Silica Materials

Y. Yokogawa, Y. Yamato, S. Ito, A. Nakamura and I. Kishida 646

The VSC Adsorption on Hydrotalcite through Topochemical Reactions

Y. Yokogawa, Y. Yagi, H. Sano, A. Nakamura and I. Kishida 650

A New Role for Marine Skeletal Proteins in Regenerative Orthopaedics

D.W. Green, M. Padula, J. Santos, J. Chou, B. Milthorpe and B. Ben-Nissan 654