Symposium 13: Ceramics for Medicine, Biotechnology and Biomimetics

Main Organizers
- Chikara Ohtsuki, Nagoya University, Japan
- Roger Narayan, University of North Carolina, USA
- Sung-Baek Cho, KIGAM, Korea

Co-Organizers
- Mamoru Aizawa, Meji University, Japan
- Besim Ben-Nissan, University of Technology, Sydney, Australia
- Serena M. Best, University of Cambridge, UK
- Yasuhiko Hirayama, HOYA, Japan
- Koji Ioku, Tohoku University, Japan
- Kunio Ishikawa, Kyushu University, Japan
- Fumiaki Miyaji, JMM, Japan
- Akiyoshi Osaka, Okayama University, Japan
- Sang-Hoon Rhee, Seoul National University, Korea
- Takashi Shigematsu, Olympus Terumo Biomaterials Corp., Japan
- Min Wang, The University of Hong Kong, Hong Kong

Oral Session

Monday, November 15

Room: 1202

15:00 - 16:00: Synthesis of Novel Bioceramics

Chairs: Toshiki Miyazaki (Kyushu Institute of Technology, Japan) and Tsutomu Furuzono (Kinki University, Japan)

15:00 - 15:15
S13-001 **In vitro Apatite-forming Ability of Hydrogels Derived from Sodium Carboxymethylcellulose**
M.-Y. Koh[1], Y. Morita[2], T. Miyazaki[2], C. Ohtsuki[1]; [1]Nagoya University, Japan, [2]Kyusyu Institute of Technology, Japan

15:15 - 15:30
S13-002 **Iron Nanoparticles-Encapsulating Silica Glass Microspheres for Arterial Embolization Hyperthermia**
Z. Li, M. Kawashita; Tohoku University, Japan

15:30 - 15:45
S13-003 **Fabrication of Silicon Nitride Ceramics for Dental Core Material Application**
R. Wananuruksawong[1], S. Jinawath[1], P. Padipatvuthikul[2], T. Wasanapiarnpong[1]; [1]Chulalongkorn University, Thailand, [2]Srinakharinwirot University, Thailand

15:45 - 16:00
S13-004 **Fabrication of Functionally Graded ZTA Ceramics Using a Novel Combination of Freeze Casting with Electrophoretic Deposition and Vacuum Casting**
A. Preiss[1], B. Su[1], S. Collins[2], P. Ellison[2]; [1]University of Bristol, UK, [2]Corin Ltd, UK

16:00 - 16:15 **Break**

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16:15 - 17:15: Organic Modification of Bioceramics

Chairs: Yuya Oaki (Keio University, Japan) and
Roger. J. Narayan (University of North Carolina and North Carolina State University, USA)

16:15 - 16:30
S13-005 **Two Photon Polymerization of Organically-Modified Ceramic Materials for Medical Applications**
R. J. Narayan[1], S. D. Gittard[1], A. Doraiswamy[1], A. Ovsianikov[2], B. N. Chichkov[2]; [1]University of North Carolina and North Carolina State University, USA, [2]Laser Zentrum Hannover, Germany

16:30 - 16:45
S13-006 **Effetcs of Monocarboxylic Acid Addition on Crystallization of Calcium Phosphate in a Hydrogel Matrix**
T. Yokoi[1], M. Kawashita[2], C. Ohtsuki[1]; [1]Nagoya University, Japan, [2]Tohoku University, Japan

16:45 - 17:00
S13-007 **Design of Bioactive Organic-inorganic Hybrid Materials with Self-setting Ability**
T. Miyazaki, S. Machida, Y. Morita, E. Ishida; Kyushu Institute of Technology, Japan

17:00 - 17:15
S13-008 **Preparation of Silicate and Calcium Ion-Releasable Bead-Shaped Siloxane-Containing Vaterite / Poly (L-Lactic Acid) Hybrids**
J. Nakamura, S. Lin, G. Poologasundarampillai, A. Obata, T. Kasuga; Nagoya Institute of Technology, Japan

17:15 - 17:30: Novel Design of Bioceramics

Chairs: Yuya Oaki (Keio University, Japan) and
Roger. J. Narayan (University of North Carolina and North Carolina State University, USA)

17:15 - 17:30
S13-009 **Synthesis of Microporous Materials and their VSC Adsorption Properties**
Y. Yokogawa, H. Morikawa, M. Sakanishi, H. Utaka, A. Nakamura, I. Kishida; Osaka City University, Japan

17:30 - 18:00: Novel Design of Bioceramics

Chairs: Mamoru Aizawa (Meiji University, Japan)

17:30 - 18:00
S13-010 **Bioceramics for Skeletal Repair (Invited)**
S. Best; University of Cambridge, UK

Tuesday, November 16

Room: 1202

9:00 - 10:00: Bioactive Materials

Chairs: Ayako Oyane (National Institute of Advanced Industrial Science and Technology, Japan) and
Junzo Tanaka (Tokyo Institute of Technology, Japan)

9:00 - 9:15
S13-011 **Chemical Regeneration of Enamel for Tooth Repair**
Z. Feng, U. Liaop, L. He, R. Xie, Y. Ma, S. Li; Xiamen University, China

9:15 - 9:30
S13-012 **In Vitro Study of Carbonated Hydroxyapatite Blocks Prepared by Double-Step Hydrothermal Method**
S. P. Parthiban, I. Y. Kim, K. Kikuta, C. Ohtsuki; Nagoya University, Japan

9:30 - 9:45

S13-013 **Effects of Kind and pH of Acid Solution on Apatite-forming Ability of Titanium Metal Subjected to Acid and Heat Treatments**

S. Yamaguchi[1], D. K. Pattanayak[1], H. Takadama[1], T. Matsushita[1], T. Nakamura[2], T. Kokubo[1]; [1]Chubu University, Japan, [2]Kyoto University, Japan

9:45 - 10:00

S13-014 **Surface Nitriding Dependence on Apatite Formation of Biomedical Titanium Metal in a Simulated Body Fluid**

M. Hashimoto, K. Kashiwagi, S. Kitaoka; Japan Fine Ceramics Center, Japan

10:00 - 10:30: Bioactive Materials

Chairs: Yoshiyuki Yokogawa (Osaka City University, Japan) and Hong-Tao Sun (National Institute for Materials Science, Japan)

10:00 - 10:15

S13-015 **Apatite Formation in Hanks' Solution on Dicalcium Silicate Films Prepared by Chemical Vapor Depostion**

S. Nath, R. Tu, T. Goto; Tohoku University, Japan

10:15 - 10:30

S13-016 **Electrospun Sol-Gel Organic/Bioactive Silica Hybrid Materials for Bone Regeneration**

G. Poologasundarampillai[1], J. R. Jones[2], T. Kasuga[1]; [1]Nagoya Institute of Technology, Japan, [2]Imperial College London, UK

10:30 - 10:45 **Break**

10:45 - 11:45: Processing of Designed Bioceramics

Chairs: Masakazu Kawashita (Tohoku University, Japan) and Zude Feng (Xiamen University, China)

10:45 - 11:15

S13-017 **Effect of Microstructure of Artificial Bone on Regeneration of Critical Tibia Defect (Invited)**

M. Kikuchi[1], Y. Koyama[2], K. Edamura[3], K. Takakuda[2], S. Tanaka[3]; [1]National Institute for Materials Science, Japan, [2]Tokyo Medical and Dental University, Japan, [3]Nihon University, Japan

11:15 - 11:30

S13-018 **Liquid-phase Laser Processing for Area-specific Apatite Coating on Ethylene-vinyl Alcohol Copolymer**

A. Oyane, I. Sakamaki, K. Kawaguchi, N. Koshizaki; National Institute of Advanced Industrial Science and Technology, Japan

11:30 - 11:45

S13-019 **On the Influence of the HA-SiO_2 Ratio on Properties of Laser Surface Sintered (LSS) Bioceramic Implants**

E. Kivitz[1], J. Zhang[2], J. G. Heinrich[1]; [1]Clausthal University of Technology, Germany, [2]Shanghai Institute of Ceramics, China

14:15 - 15:15: Bioceramics Toward Innovative Functions

Chairs: Masanori Kikuchi (National Institute for Materials Science, Japan) and Christian Bonhomme (UPMC CNRS, France)

14:15 - 14:30

S13-020 **Highly Fluorescent Bismuth Doped Aluminosilicate/Silica Core-Shell Nanoparticles for Multifunctional Near Infrared Bioimaging**

H.-T. Sun[1], Y. Sakka[1], N. Shirahata[1], M. Fujii[2], Z. Bai[2]; [1]National Institute for Materials Science, Japan, [2]Kobe University, Japan

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14:30 - 14:45
S13-021 **Interaction of Specific Proteins and Peptides with Hydroxyapatite in Aqueous Solution**
S. Ono, T. Tsuji, S. Hirakura, T. Kobayashi, Y. Oaki, H. Imai; Keio University, Japan

14:45 - 15:00
S13-022 **Protein Adsorption and Subsequent Fibroblasts Adhesion on Hydroxyapatite Nanocrystals**
M. Tagaya[1], T. Ikoma[1], T. Takemura[2], S. Migita[2], N. Ogawa[1], N. Hanagata[2], T. Yoshioka[1], J. Tanaka[1]; [1]Tokyo Institute of Technology, Japan, [2]National Institute for Materials Science, Japan

15:00 - 15:15
S13-023 ***In Vitro* Dissolution Behavior of Drug from Apatite Cement Made from Amorphous Calcium Phosphate**
T. Uchino[1,2], F. Ishii[2], M. Otsuka[2]; [1]Meiji University, Japan, [2]Musashino University, Japan

15:15 - 16:00: Bioceramics Toward Innovative Functions

Chairs: Atsushi Nakahira (Osaka Prefecture University, Japan) and
Juergen G. Heinrich (Clausthal University of Technology, Germany)

15:15 - 15:30
S13-024 **CS/NaCMC/n-HA Polyelectrolyte Complex Membrane: Electrostatic Assembling Preparation and in Vitro Degradation**
H. Jiang, Y. Zuo, Y. Li; Sichuan University, China

15:30 - 15:45
S13-025 **Biodegradable Properties of the Electrospun Fibers Incorporated into Calcium Phosphate Cement for Bone Regeneration**
Y. Zuo[1,2], F. Yang[2], J. Li[1], A. Sun[1], J. G. C. Wolke[2], J. A. Jansen[2], Y. Li[1]; [1]Sichuan University, China, [2]Radboud University Nijmegen Medical Center, The Netherlands

15:45 - 16:00
S13-026 **Towards a Better Structural Characterization of Substituted Hydroxyapatites**
Y. Wang[1], N. Nassif[1], L. Bonhomme[1], C. Bonhomme[1], F. Babonneau[1], J.-M. Nedelec[2], S. Gomes[2], G. Renaudin[2], E. Jallot[2]; [1]Collège de France, France, [2]Clermont University, France

16:00 - 16:15 **Break**

16:15 - 17:30: Bioceramics Characterization

Chairs: Akiyoshi Osaka (Okayama University, Japan) and S. Rattanachan (Suranaree University of Technology, Thailand)

16:15 - 16:45
S13-027 **NMR Techniques Applied to the Characterization of Ca-C Proximities in Calcium Phosphate Derived Materials (Invited)**
C. Bonhomme[1], D. Laurencin[2], C. Gervais[1], F. Pourpoint[1], F. Babonneau[1]; [1]Université P. et M. Curie, CNRS, France, [2]Institut Charles Gerhardt, France

16:45 - 17:00
S13-028 **Structural Reliability of Gelatin-Containing Calcium Silicate Bone Grafts for Load-Bearing Applications**
C.-K. Wei, S-J. Ding; Chung-Shan Medical University, Taiwan

17:00 - 17:15
S13-029 **Residual Stress in Microplasma Sprayed Hydroxyapatite Coating**
A. Dey, A. K. Mukhopadhyay; Central Glass and Ceramic Reserach Institute, India

17:15 - 17:30
S13-030 **Novel Synthesis of Yttrium Phosphate Microspheres for Radioembolization of Cancer**
M. Kawashita, N. Matsui, Z. Li; Tohoku University, Japan

Wednesday, November 17

Room: 1202

9:00 - 9:45: Functionalized Bioceramics

Chairs: Hidero Unuma (Yamagata University, Japan) and Basu Bikramjit (Indian Institute of Technology Kanpur, India)

9:00 - 9:15

S13-031 **Catalytic Performance of Subtilisin Immobilized without Covalently Attachment on Surface-functionalized Mesoporous Silica Materials**

K. Murai[1,2], T. Nonoyama[3], F. Ando[1], K. Kato[2]; [1]Chubu University, Japan, [2]National Institute of Advanced Industrial Science and Technology, Japan, [3]Nagoya Institute of Technology, Japan

9:15 - 9:30

S13-032 **Relationship Between Particle Morphology and Protein Adsorption of Hydroxyapatite**

Y. Yamauchi[1,2], F. Nagata[2], K. Ohta[1], K. Kato[2]; [1]Mie University, Japan, [2]National Institute of Advanced Industrial Science and Technology, Japan

9:30 - 9:45

S13-033 **Physiochemical Properties and Biocompatibility of Gusuibu-Loaded Calcium Silicate Bone Substitute**

C.-C. Ho, S.-J. Ding; Chung-Shan Medical University, Taiwan

9:45 - 10:30: Functionalized Bioceramics

Chairs: Toshihiro Kasuga (Nagoya Institute of Technology, Japan) and Yubao Li (Sichuan University, China)

9:45 - 10:00

S13-034 **Sol-gel Synthesis of Osteocompatible Chitosan-silicate Hydrogel**

Y. Shirosaki, M. Hirai, S. Hayakawa, A. Osaka; Okayama University, Japan

10:00 - 10:15

S13-035 **The Influence of the Polarized Titania Coating on MG63 Cells**

A. Nagai[1], Y. Yamazaki[1,2], M. Chuhan[1], Y. Tsutsumi[1], T. Hanawa[1], T. Toyama[2], K. Yamashita[1]; [1]Tokyo Medical & Dental University, Japan, [2]Nihon University, Japan

10:15 - 10:30

S13-036 **Electrically Stimulated Enhancement of Cell Proliferation on Ferroelectric-Hydroxyapatite Composites**

A. K. Dubey, S. D. Gupta, B. Basu; Indian Institute of Technology, India

10:30 - 10:45 **Break**

10:45 - 11:15: Biological Properties of Ceramics

Chair: Chikara Ohtsuki (Nagoya University, Japan)

10:45 - 11:15

S13-037 **Biological Properties of Nanoporous Ceramic Membranes (President - Designated)**

R. J. Narayan[1,5], S. P. Adiga[2], M. J. Pellin[3], L. A. Curtiss[3], S. Stafslien[4], B. Chisholm[4], N. A. Monteiro-Riviere[1,5], R. L. Brigmon[6], J. W. Elam[7]; [1]University of North Carolina, USA, [2]Eastman Kodak Company, USA, [3]Argonne National Laboratory, USA, [4]North Dakota State University, USA, [5]North Carolina State University, USA, [6]Savannah River National Laboratory, USA, [7]Argonne National Laboratory, USA

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11:15 - 11:45: Biological Properties of Ceramics

Chairs: Fumio Watari (Hokkaido University, Japan) and Shinn-Jyh Ding (Chung-Shan Medical University, Taiwan)

11:15 - 11:30

S13-038 **Next Generation Antibacterial Hydroxyapatite Coating with Silver**

I. Noda[1], Y. Ando[1,2], H. Miyamoto[2], Y. Yonekura[2], T. Shimazaki[2], M. Miyazaki[2], M. Mawatari[2], T. Hotokebuchi[2]; [1]Japan Medical Materials Corporation, Japan, [2]Saga University, Japan

11:30 - 11:45

S13-039 **Influence of Moderate Intensity Static Magnetic Field Exposure on Bacterial Cell Adhesion and Viability on Biomaterial Surface**

N. Saha, N. V. S. Krishna, B. Basu; IIT Kanpur, India

Thursday, November 18

Room: 1202

9:15 - 10:15: Cell-Material Interactions

Chairs: Kunio Ishikawa (Kyushu University, Japan) and Bo Su (University of Bristol, UK)

9:15 - 9:30

S13-040 **Reconstruction of Tissue-Engineered Bone through Combination of an Apatite-Fiber Scaffold, a Radial-Flow Bioreactor and Rat Bone Marrow Cells**

J. Fukasawa[1], Y. Nakada[1], H. Maehashi[2], T. Matsuura[2], M. Aizawa[1]; [1]Meiji University, Japan, [2]Jikei University Hospital, Japan

9:30 - 9:45

S13-041 **Preparation of Scaffold Materials Releasing Silicon and Calcium Ions for Bone Reconstruction**

A. Obata[1,2], S. Yamada[1], T. Kasuga[1], J. R. Jones[2]; [1]Nagoya Institute of Technology, Japan, [2]Imperial College London, UK

9:45 - 10:00

S13-042 **Polarized Hydroxyapatite in Silk Fibroin Film Increases in vitro Organization of Endothelial Cells into Capillry-like Networks**

M. Nakamura[1], T. Soya[1,2], K. Hashimoto[2], A. Nagai[1], K. Yamashita[1]; [1]Tokyo Medical and Dental University, Japan, [2]Chiba Institute of Technology, Japan

10:00 - 10:15

S13-043 **Dynamic Liver Cell Behavior to Carbon Nanotubes Observed by Time Lapse Microscopy Method**

S. Itoh[1], T. Taira[2], Y. Yawaka[1], F. Watari[1]; [1]Hokkaido University, Japan, [2]Primary Cell Co.,LTD., Japan

10:15 - 10:45 **Break**

10:45 - 11:15: Applications of Bioceramics

Chair: Serena Best (University of Cambridge, UK)

10:45 - 11:15

S13-044 **Macroporous Calcium Phosphate Cement: Setting Reaction and Initial Mechanical Strength (Invited)**

K. Ishikawa[1], T. K. Pham[1], K. Tsuru[1], S. Matsuya[2], M. Maruta[1], M. Nakagawa[1]; [1]Kyushu University, Japan, [2]Fukuoka Dental College, Japan

11:15 - 12:00: Applications of Bioceramics

Chairs: Kimihiro Yamashita (Tokyo Medical and Dental University, Japan) and Yubao Li (Sichuan University, China)

11:15 - 11:30

S13-045 Biological Evaluation of Biodegradable β-tricalcium Phosphate / Poly-(L-lactic acid) Hybrids
Y. Shigemitsu[1], Y. Iwamoto[1], N. Sugiyama[2], Y. Takeoka[2], M. Rikukawa[2], M. Matsumoto[3], H. Morisue[3], Y. Toyama[3], M. Aizawa[1]; [1]Meiji University, Japan, [2]Sophia University, Japan, [3]Keio University, Japan

11:30 - 11:45

S13-046 Preparation and Characterization of PET/Gelatin/HA Composites for the Space-Making Membrane in Guided Bone Regeneration
H. Unuma[1], N. Matsuoka[1], N. Tanaka[1], T. Kawai[1], Y. Matsushima[1], T. Furusawa[2], M. Sato[2]; [1]Yamagata University, Japan, [2]Tohoku University, Japan

11:45 - 12:00

S13-047 Blood Compatibility and Tissue Response of Methylsiloxane Coating
Y. Hoshikawa[1,3], T. Onoki[2,3], M. Akao[3], T. Akatsu[3], Y. Tanabe[4], E. Yasuda[3]; [1]Tohoku University, Japan, [2]Osaka Prefecture University, Japan, [3]Tokyo Institute of Technology, Japan, [4]Nagoya University, Japan

Poster Session

Tuesday, November 16

Room: Event Hall

12:00 - 14:00

S13-P001 Fabrication of Porous Flexible Calcium-Deficient Apatite - Alginate Composite and its Evaluation
S. Tsukuda, T. Umeda, S. Koda, K. Itatani; Sophia University, Tokyo, Japan

S13-P002 Production of Hydroxyapatite from Waste Mussel Shells
M. I. Jones, H. Barakat, D. Patterson; Univeristy of Auckland, New Zealand

S13-P003 Processing of Highly Porous Calcium Phosphates for Use in Bioreactor Constructions
A. Finoli[1,2], N. Ostrowski[1], E. Schmelzer[2], J. Gerlach[2], I. Nettlship[1,2]; [1]University of Pittsburgh, USA, [2]McGowan Institute of Regenerative Medicine, USA

S13-P004 Effects of Organic Additives on the Morphology of Various Calcium Phosphates Prepared via Solution and Emulsion Methods
I. Kimura[1], T. Wei[1], Y. Kikushima[1], R. E. Riman[2], T. Akazawa[3]; [1]Niigata University, Japan, [2]Rutgers, The State University of New Jersey, USA, [3]Hokkaido Industrial Research Institute, Japan

S13-P005 Synthesis and Characterization of Hydroxyapatite with Mg Additive
Y. Nishio[1], M. Sato[2], H. Murata[3], K. Matsunaga[3], A. Nakahira[1,2]; [1]Osaka Prefecture University, Japan, [2]Tohoku University, Japan, [3]Kyoto University, Japan

S13-P006 Effects of Ethanol Addition on Formation of Hydroxyapatite thourgh Hydrothermal Treatment of Dicalcim Phosphate Dihydrate
T. Goto[1], M. Kamitakahara[2], I. Y. Kim[1], C. Ohtsuki[1]; [1]Nagoya University, Japan, [2]Tohoku University, Japan

S13-P007 Influence of MgO Doping in Hot-pressed Tricalcium Phosphate
W. Acchar[1], C. A. A. Cairo[2], A. C. S. da Costa[1]; [1]Federal University of Rio Grande do Norte, Brazil, [2]Centro Tecnico Aeroespacial, Brasil

S13-P008 Calcium Phosphate Bone Pastes with Controlled Setting Behavior
N. Fujisawa[1], I. Suzuki[2], C. Ohtsuki[2], T. Kawai[1], Y. Matsushima[1], H. Unuma[1]; [1]Yamagata University, Japan, [2]Nagoya University, Japan

S13-P009 Injectability Behavior of Chitosan/Calcium Phosphate Cement
S. Rattanachan, N. Suppakarn, C. Lorprayoon; Suranaree University of Technology, Thailand

Symposium 13

S13-P010 Development of a Strontium- containing Calcium Sulfate Bone Cement
H. Bandegani[1], S. Hesaraki[1], M. Alimadadi[1], M. Khorami[1], R. T. Ardakani[2]; [1]Marterials & Energy Research Center, Iran, [2]Sharif University of Technology, Iran

S13-P011 Study of Bioglass Ceramics in the SiO_2 – CaO – P_2O_5 – Fe_2O_3 System
C. Birsan, C. Ghitulica, E. Andronescu, V. Boghiu, M. Birsan; University Politehnica of Bucharest, Romania

S13-P012 Zirconia Reinforced Glass – Ceramic Materials
M. Birsan, C. Ghitulica, E. Andronescu, E. Dinu, C. Ionita; University Politehnica of Bucharest, Romania

S13-P013 Bonding and Properties of Metal/Calcium Phosphate by Modified Hydrothermal Processing
S. Yamamoto[1], A. Nakahira[1,2]; [1]Osaka Prefectural University, Japan, [2]Tohoku University, Japan

S13-P014 Novel Nanophase Ferroelectric Composites for Orthopedic Implant Applications
A. K. Dubey[1], B. Basu[1], K. Balani[1], R. Guo[2], A. S. Bhalla[2]; [1]Indian Institute of Technology, India, [2]University of Texas as San Antonio, USA

S13-P015 Preparation and Characterization of Mesoporous Bioactive Glass –Polycaprolactone Nanofibrous Matrix using electrospinning process
F.-Y. Hsu, H.-M. Lin, Y.-H. Lin; National Taiwan Ocean University, Taiwan

S13-P016 Fabrication of Novel Biofilm Containing Calcium Phosphate Nano-Particles / Cellulose Derivative and its Evaluation.
A. Shimizu[1], T. Umeda[1], A. Isogai[2], T. Saito[2], S. Koda[1], K. Itatani[1]; [1]Sophia University, Japan, [2]The University of Tokyo, Japan

S13-P017 Porous Composite Mineral-Polymer Materials for Bone Tissue Engineering.
A. Y. Fedotov, N. V. Bakunova, V. V. Smirnov, V. S. Komlev, I. V. Fadeeva, S. M. Barinov; RAS, Russia

S13-P018 Fabrication of Hydroxyapatite/Chitosan-Gelatin Nanocomposite Bone Tissue Engineering Scaffold
E. Beman[1], S. Hesaraki, M. Alizadeh[1], M. Kavousi[2]; [1]Material and Energy Istitute Center, Iran, [2]Tarbiat Modarres University, Iran

S13-P019 Hydroxyapatite and Chitosan Composite Coating on Titanium by a Double-layered Capsule Hydrothermal Hot-pressing
T. Onoki[1], T. Kuno[1], Y. Hasegawa[1], A. Nakahira[1,2]; [1]Osaka Prefecture University, Japan, [2]Tohoku University, Japan

S13-P020 Preparation of Apatite Coating on Zirconia Ceramics utilizing Vaterite-Particle-Implanted Poly(L-lactic acid) Layer
Y. Kogo, G. Poologasundarampillai, A. Obata, T. Kasuga; Nagoya Institute of Technology, Japan

S13-P021 Fabrication of Hydroxyapatite/Chitosan Nanocomposite Bone Tissue Engineering Scaffold
E. Beman, S. Hesaraki; Material and Energy Istitute Center, Iran

S13-P022 Preparation of Novel Multifunctionalized Hybride Nanoparticles Using Organosilica Particles Technology
M. Nakamura, K. Hayashi, K. Ishimura; University of Tokushima Graduate School of Medical Sciences, Japan

S13-P023 Synthesis of Protein-incorporated Hydroxyapatite Particles for Biomedical Applications
P. K-hasuwan[1], N. Kuanchertchoo[2], P. Supaphol[1]; [1]Chulalongkorn University, Thailand, [2]Ramkhamhaeng University, Thailand

S13-P024 Ceramic Bracket Fabricated by Aerosol Deposition for Dental Braces
J. W. Lee[1], D. W. Lee[1], H. J. Kim[1], Y. N. Kim[2], J. K. Song[2], S. M. Nam[1]; [1]Kwangwoon University, Korea, [2]Korea Testing Laboratory, Korea

S13-P025 Production of Super Paramagnetic Nano Spheres for Hyperthermic Therapy of Surface (Skin) Cancer Diseases
Z. Kovziridze[1], J. G. Heinrich[2], R. Goerke[2], G. Mamniashvili[3], Z. Chachkhiani[1], N. Mitskevich[1], D. Donadze[1]; [1]Georgian Technical University, Georgia, [2]Clausthal University of Technology, Germany, [3]E. Andronikashvili Institute of Physics, Georgia

S13-P026 **Effect of SiO_2 on Sintering Behavior and Biodegradability of Calcium Sulfate**
H.-W. Wu, S.-T. Kuo, W.-H. Tuan; National Taiwan University, Taiwan

S13-P027 **Effect of Fe Doping on the Properties of HAp**
M. Sato[1], H. Murata[2], K. Matsunaga[2], A. Nakahira[1,3]; [1]Tohoku University, Japan, [2]Kyoto University, Japan, [3]Osaka Prefecture University, Japan

S13-P028 **Effect Of B_2O_3 and LiO_2 Addition on The Sintering Behaviour of Apatite-Nano Sized Mullite Glass-Ceramics System**
R. Sehhat[1], S. M. Beidokhti[1], J. Jvadpour[1], B. E. Yekta[1], A. Yousefi[2], A. Moatti[1]; [1]Iran University of Science and Technology, Iran, [2]Par Tavus Research Institue, Iran

S13-P029 **Bioactivity and Mechanical Properties of White Portland Cement Paste with Calcium Chloride**
P. Torkittikul, A. Chaipanich; Chiang Mai University, Thailand

S13-P030 **Evaluation of Mechanical and Wear Properties Related to Microstructure of Zirconia Toughened Alumina Ceramic for Artificial Joint**
J. Ikeda[1,2], T. Nakanishi[1], F. Miyaji[1], Y. Sawae[2], T. Murakami[2]; [1]Japan Medical Materials Corp., Japan, [2]Kyushu University, Japan

S13-P031 **Some Studies on Comparative Mechanical Behaviour of HAp and HAp-Alumina Bioceramic Composite**
A. Srivastav; IFTM, India

S13-P032 **Effect of Bi_2O_3 on Physicochemical Properties of Dicalcium Silicate Cements**
T.-Y. Chiang, C.-K. Wei, S.-J. Ding; Chung-Shan Medical University, Taiwan

S13-P033 **Application of Flake Shaped Glass for Dental Materials**
M. Uo[1], A. Sasaki[1], F. Watari[1], J. Ino[2]; [1]Hokkaido University, Japan, [2]Nippon Sheet Glass, Japan

S13-P034 **Effects of UV-irradiation on Induction Time for Apatite Nucleation and Growth on Nano-crystalline TiO_2 Layer**
S. Nakai[1], K. Uetsuki[1,2], Y. Shirosaki[1], S. Hayakawa[1], A. Osaka[1]; [1]Okayama University, Japan, [2]Nakashima Medical Co., Ltd., Japan

S13-P035 **Environmentally Friendly Growth and Characterization of Highly Crystalline and Idiomorphic Hydroxyapatite Crystals**
S. Mori[1], S. Suzuki[1], K. Teshima[1], S. H. Lee[1], K. Yubuta[2], T. Shishido[2], S. Oishi[1]; [1]Shinshu University, Japan, [2]Tohoku University, Japan

S13-P036 **Scratch Test of Simulated Body Fluid-derived Hydroxyapatite Film on Biomedical Titanium Substrates**
T. Hayami[1], H. Nishikawa[1], M. Kusunoki[1], K. Matsumura[2], S. Hontsu[1], M. Ohmasa[1], T. Sawai[1]; [1]Kinki University, Japan, [2]Kyoto University, Japan

S13-P037 **Effect of Different Physiological Solutions on Bioactivity of Calcium Silicate Cement**
M.-Y. Shie[1], H.-C. Chang[1], S.-J. Ding[2]; [1]National Cheng-Kung University, Taiwan, [2]Chung-Shan Medical University, Taiwan

S13-P038 **Three-Dimensionally Ordered Macroporous Bioactive Glasses for Drug Delivery**
U. Boonyang[1], A. Stein[2]; [1]Walailak University, Thailand, [2]University of Minnesota, USA

S13-P039 **Morphological Control of Peptide-Apatite Hybrids Obtained from Biomimetic Mineralization**
Y. Uchida[1], T. Matsubara[2], T. Sato[2], M. Hashizume[1]; [1]Tokyo University of Science, Japan, [2]Keio University, Japan

S13-P040 **Effect of Substitution of Soda with Lithia on Surface Reactivity of 45S5 Bioglass**
M. Khorami[1], S. Hesaraki[1], A. Behnam[1], H. Bandegani[1], S. Farhangdoust[2]; [1]Materials and Energy Research Center, Iran, [2]Sharif University of Technology, Iran

S13-P041 **Structure and Degradation Behaviour of Calcium Phosphate Glasses**
A. M. B. Silva, J. M. M. Oliveira, R. N. Correia, M. H. V. Fernandes; University of Aveiro, Portugal

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S13-P042 Structure and *In Vitro* Degradation Behavior of Borate-containing Apatite
S. Hayakawa[1], S. Barheine[2], C. Jaeger[2], Y. Shirosaki[1], A. Osaka[1]; [1]Okayama University, Japan, [2]BAM Federal Institute for Materials Research and Testing, Germany

S13-P043 Enhanced *in Vitro* Degradability of Hydroxyapatite Particles with Orthosilicate Ion-substituted Lattice
Y. Hama, Y. Shirosaki, S. Hayakawa, A. Osaka; Okayama University, Japan

S13-P044 Cefazolin-containing Sponge Pad in Combination with a Fibroblast Growth Factor-2-apatite Composite Layer to Resist Bacterial Infection
A. Oyane[1], H. Mutsuzaki[2,3], Y. Sogo[1], X. Wang[1], S. Kugimiya[4], S. Hitomi[5], K. Ozeki[4], M. Sakane[3], N. Ochiai[3], A. Ito[1]; [1]National Institute of Advanced Industrial Science and Technology, Japan, [2]Ibaraki Prefectural University of Health Sciences Hospital, Japan, [3]University of Tsukuba, Japan, [4]Ibaraki University, Japan, [5]University of Tsukuba, Japan

S13-P045 Porous Hydroxyapatite Bioceramic Scaffolds for Drug Delivery and Bone Regeneration
D. Loca, J. Locs, K. Salma, G. Salms, J. Gulbis, L. Berzina-Cimdina; Riga Technical University, Latvia

S13-P046 Protein Adsorption Properties on Titanium with and without Calcium Titanate-coating
J. Ueta, N. Ohtsu, T. Kanno, K. Tada, J. Horiuchi; Kitami Institute of Technology, Japan

S13-P047 Protein Release Parameters Estimated with a Flow System on Zinc-containing Apatite.
M. Inaba[1], T. Kanno[1], K. Tada[1], J. Horiuchi[1], T. Akazawa[2], K. Itabashi[2]; [1]Kitami Institute of Technology, Japan, [2]Hokkaido Industrial Research Institute, Japan

S13-P048 Intercalation of Pharmaceutically Active Compound into Layered Double Hydroxides
S. Kanamori, N. Akaji, T. Arakawa; Kinki University, Japan

S13-P049 Biocompatibility Evaluation of Hydroxyapatite-coated Titanium Fiber Mesh Scaffold
H. Nishikawa[1], A. Ametani[2], Y. Hashimoto[3], M. Kusunoki[1], T. Hayami[1], S. Hontsu[1]; [1]Kinki University, Japan, [2]Hi-Lex Corporation, Japan, [3]Osaka Dental University, Japan

S13-P050 Feasibility of $CaSO_4$-based Ceramics as Novel Biomaterials
S-T. Kuo[1], H-W. Wu[1], W-H. Tuan[1], Y-Y. Tsai[2]; [1]National Taiwan University, Taiwan, [2]National Taipei University of Technology, Taiwan

S13-P051 Cellular Evaluation on Beta-tricalcium Phosphate Ceramics Doped with Vanadate Ions
K. Ohsashi[1], R. Miyamoto[1], N. Matsumoto[2], H. Shibata[1], K. Yoshida[3], K. Hashimoto[1]; [1]Chiba Institute of Technology, Japan, [2]National Institute of Advanced Industrial Science and Technology, Japan, [3]Tokyo Institute of Technology, Japan

S13-P052 Relationship between Bone Absorption and Protein Adsorption on β-tricalcium Phosphate Doped with Sodium Ions
R. Miyamoto[1], H. Shibata[1], K. Yoshida[2], K. Hashimoto[1]; [1]Chiba Institute of Technology, Japan, [2]Tokyo Institute of Technology, Japan

S13-P053 Cell Test on β-tricalcium Phosphate Doped with Manganese (II) Ions
A. Ozawa[1], R. Miyamoto[1], H. Shibata[1], K. Yoshida[2], K. Hashimoto[1]; [1]Graduate School Chiba Institute of Technology, Japan, [2]Tokyo Institute of Technology, Japan

S13-P054 Effect of Aluminosilicate Nanotubes, Imogolite Scaffold on Osteoblastic Proliferation and Differentiation
K. Ishikawa, S. Abe, F. Watari, Y. Yawaka; Hokkaido University, Japan

S13-P055 Internal Distribution of Micro-/Nano-sized Inorganic Particles and Its Cytocoxisity
S. Abe, N. Iwadera, K. Ishikawa, A. Hyono, S. Itoh, T. Akasaka, M. Uo, Y. Yawaka, Y. Kuboki, T. Yonezawa, F. Watari; Hokkaido University, Japan

S13-P056 In vivo Evaluation of Chelate-setting Calcium-phosphate Cements with Various Bioresorbability Using Rabbit Model

T. Konishi[1], S. Takahashi[1,2], M. Mizumoto[1], S. Sato[1,3], M. Honda[1], K. Kida[2], Y. Horiguchi[3], K. Oribe[3], H. Morisue[4], Y. Toyama[4], M. Matsumoto[1,4], M. Aizawa[1,2]; [1]Kanagawa Academy of Science and Technology, Japan, [2]Meiji University, Japan, [3]SHOWA IKA KOHGYO co., ltd., Japan, [4]Keio University, Japan

S13-P057 Bone Implant of Electrically Polarized Ceramics

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S13-P058 Sono-Catalytic Production of Angiogenesis Factors from Cells Incubated on TiO_2-Coated Nanocomposite

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