

## Oral Session | Friday, 26<sup>th</sup> October

15:00 – 15:15 Opening Remarks (Room: Auditorium)

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Plenary Lecture 1

15:15 – 16:00

Room: Auditorium

Chair: Masakazu Kawashita

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### **PL-01: Understanding Cellular Response to Bioactive Scaffolds: Effects of Calcium Phosphate Composition and Topography**

**Serena M. Best**, Maria Isabella Gariboldi

*University of Cambridge, United Kingdom*

16:00 – 16:15 Break

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Oral Session 1: Composites

16:15 – 17:45

Room: Auditorium

Chairs: Masanori Kikuchi, TBA

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### **KN-01: Synthesis of Bioactive Tellurite-Lanthanide Reinforced Hydroxyapatite Composites for Biomedical and Luminescence Applications**

**Sooraj H. Nandyala**<sup>1</sup>, Pedro Gomes<sup>2,3</sup>, Graham Hungerford<sup>4</sup>, Liliana Grenho<sup>2,3</sup>,

Maria H. Fernandes<sup>2,3</sup>, Artemis Stamboulis<sup>1</sup>

<sup>1</sup> *School of Metallurgy and Materials, University of Birmingham, United Kingdom*, <sup>2</sup> *Laboratory for Bone Metabolism and Regeneration, Faculty of Dental Medicine, University of Porto, Portugal*,

<sup>3</sup> *REQUIMTE/LAQV, University of Porto, Portugal*, <sup>4</sup> *HORIBA Jobin Yvon IBH Ltd, United Kingdom*

### **O-01: Preparation of Composite Hydrogels Consisting of Elastin-like Polypeptides and Hydroxyapatite Nanoparticles**

**Kanki Uchida**<sup>1</sup>, Ayae Sugawara-Narutaki<sup>1</sup>, Jin Nakamura<sup>1</sup>, Chikara Ohtsuki<sup>1</sup>, Tatsuya Miyajima<sup>2</sup>, Fukue Nagata<sup>2</sup>

<sup>1</sup> *Nagoya University, Japan*, <sup>2</sup> *National Institute of Advanced Industrial Science and Technology, Japan*

### **O-02: Investigation of Phosphate Glasses and PLLA/PLCL-PEG Blends for the Development of Novel Bioresorbable Composite Cardiac Stents**

**Reece N. Oosterbeek**<sup>1</sup>, Xiang C. Zhang<sup>2</sup>, Serena M. Best<sup>1</sup>, Ruth E. Cameron<sup>1</sup>

<sup>1</sup> *University of Cambridge, United Kingdom*, <sup>2</sup> *Lucideon Ltd., United Kingdom*

### **O-03: Control of Cellular Arrangement by Siloxane-Poly(lactic acid)-Vaterite Composite Fibermats**

**Sungho Lee**<sup>1</sup>, Yuriko Kiyokane<sup>1</sup>, Toshihiro Kasuga<sup>2</sup>, Takayoshi Nakano<sup>1</sup>

<sup>1</sup> *Osaka University, Japan*, <sup>2</sup> *Nagoya Institute of Technology, Japan*

### **O-04: Microstructure of Chitosan-Siloxane Hybrid Mono-Fiber**

**Takuma Okada**, Toshiki Miyazaki, Yuki Shirotsaki

*Kyushu Institute of Technology, Japan*

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Oral Session 2: Cements

16:15 – 17:45

Room: Symposion

Chairs: Ika Dewi Ana, Tomohiro Uchino

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**KN-02: Manipulating Injection Behavior of Brushite Bone Cement via Control over the Plastic Limits of Starting Powder**

**Kyung-Sik Oh**, Hyun-Ho Jo

*Andong National University, South Korea*

**O-05: Biomimetic Bone Cement as Antibacterial Drug Delivery System: From Microparticles Preparation to a Composite with Optimized Properties**

**Christèle Combes**<sup>1</sup>, Sylvaine Jacquart<sup>1</sup>, Sophie Girod-Fullana<sup>2</sup>, Fabien Brouillet<sup>2</sup>, Christine Roques<sup>3</sup>, Reine Bareille<sup>4</sup>, Françoise Bosc<sup>1</sup>, Christian Rey<sup>1</sup>

<sup>1</sup> *CIRIMAT, Université de Toulouse, CNRS, ENSIACET, France*, <sup>2</sup> *CIRIMAT, Université de Toulouse, CNRS, Faculté des Sciences Pharmaceutiques, France*, <sup>3</sup> *LGC, Université de Toulouse, Faculté des Sciences Pharmaceutiques, France*, <sup>4</sup> *Biotis - Inserm U1026, Université Bordeaux Segalen, France*

**O-06: Enhancing Calcium Phosphate Cements Properties by Forming Organic/Inorganic Hybrid Materials**

**Jean-Michel Bouler**<sup>1</sup>, Charlotte Mellier<sup>2</sup>, Florian Boukhechba<sup>2</sup>, François-Xavier Lefevre<sup>1</sup>, Olivier Gauthier<sup>1</sup>, Bruno Bujoli<sup>1</sup>

<sup>1</sup> *University of Nantes, France*, <sup>2</sup> *GRAFTYS, France*

**O-07: Inhibitory Effects of Zoledronic Acid-Loaded Bioresorbable Cement on Osteosarcoma**

**Michiyo Honda**, Norihiro Suzuki, Kohei Nagata, Mamoru Aizawa

*Meiji University, Japan*

**O-08: Neutral Containing Chitosan and Polyol for Calcium Phosphate Cement**

**Yoshiyuki Yokogawa**, Kentaro Fujii, Ryota Izumiki, Seiya Shibata, Tasuku Takayasu

*Osaka City University, Japan*

17:45 – 18:00 Break

18:00 – 19:30 Welcome Reception (Toyoda Auditorium)

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Plenary Lecture 2

9:00 – 9:45

Room: Auditorium

Chair: Kunio Ishikawa

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**PL-02: Bioceramics for Bone Regeneration and Beyond**

**Jiang Chang**

*Shanghai Institute of Ceramics, China*

9:45 – 10:00 Break

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Oral Session 3: Processing Routes

10:00 – 11:45

Room: Auditorium

Chairperson: Kyung-Sik Oh, Christèle Combes

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**KN-03: Sol-Gel Derived Inks for 3D Biofabrication**

**Gowsihan Poologasundarampillai<sup>1</sup>, Gil Machado<sup>2</sup>, Jin He<sup>3</sup>, Julian R. Jones<sup>4</sup>**

*<sup>1</sup> University of Birmingham, United Kingdom, <sup>2</sup> University of Birmingham, United Kingdom, <sup>3</sup> Hebrew University of Jerusalem, Israel, <sup>4</sup> Imperial College, United Kingdom*

**O-09: Preparation of PLA/45S5 Bioglass Composite Scaffolds Via Nonsolvent Thermally-Induced Phase Separation Method for Applications in Bone Tissue Engineering**

**Ena Athenea Aguilar-Reyes, Nora Janeth Lúa-Gómez, Carlos Alberto León-Patiño**

*Universidad Michoacana de San Nicolás de Hidalgo, Mexico*

**O-10: Implantable Composite Devices with Marbling Dispersion of Fibrous Poly-L-Lactide and Hydroxyapatite/Poly-L-lactide to Enhance Bioactivity and Bioresorbability**

**Kazuaki Morizane<sup>1</sup>, Yasuo Shikinami<sup>2</sup>, Shunsuke Fujibayashi<sup>1</sup>, Koji Goto<sup>1</sup>, Bungo Otsuki<sup>1</sup>, Toshiyuki Kawai<sup>1</sup>, Shuichi Matsuda<sup>1</sup>**

*<sup>1</sup> Kyoto University, Japan, <sup>2</sup> Shikinami Yasuo Institute, Japan*

**O-11: Evaluating Pore Forming Mechanisms of the Freeze Foaming Process for Manufacturing Bone Mimicking Scaffolds**

**Matthias Ahlhelm<sup>1</sup>, David Werner<sup>1</sup>, Johanna Maier<sup>2</sup>, Thomas Behnisch<sup>2</sup>, Tassilo Moritz<sup>1</sup>, Alexander Michaelis<sup>1</sup>, Maik Gude<sup>2</sup>**

*<sup>1</sup> Fraunhofer IKTS, Germany, <sup>2</sup> Technische Universität Dresden, Institute of Lightweight Engineering and Polymer Technology, Germany*

**O-12: Pure and Sr-Doped  $\beta$ -TCP Synthesis**

**Bastien Le Gars Santoni<sup>1</sup>, Christoph Stähli<sup>1</sup>, Nicola Döbelin<sup>1</sup>, Paul Bowen<sup>2</sup>, Marc Bohner<sup>1</sup>**

*<sup>1</sup> RMS Foundation, Switzerland, <sup>2</sup> EPFL, Switzerland*

**O-13: Electrochemically Assisted Sol-Gel Deposition of Bioactive Films**

**Tomohiko Yoshioka, Naoki Miyamoto, Satoshi Hayakawa**

*Okayama University, Japan*

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Oral Session 4: Cells/Materials Interactions

10:00 – 11:45

Room: Symposion

Chairs: Jean-Michel Bouler, Michiyo Honda

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**KN-04: Understanding of Cell-Bioceramic Interactions in Terms of Materials Science**

**Miho Nakamura**<sup>1, 2</sup>, Teuvo Hentunen<sup>2</sup>, Jukka Salonen<sup>2</sup>, Kimihiro Yamashita<sup>1</sup>

<sup>1</sup> Tokyo Medical and Dental University, Japan, <sup>2</sup> University of Turku, Finland

**O-14: Osteoblast-Like Cell Responses to Silicate Ions with Different Ion Structures**

**Akiko Obata**<sup>1</sup>, Yamato Goto<sup>1</sup>, Gavin Jell<sup>2</sup>, Toshihiro Kasuga<sup>1</sup>

<sup>1</sup> Nagoya Institute of Technology, Japan, <sup>2</sup> University College London, United Kingdom

**O-15: Understanding Silicon Nitride's Biological Properties: From Inert to Bioactive Ceramic**

**Elia Marin**<sup>1, 2</sup>, Alfredo Rondinella<sup>1</sup>, Francesco Boschetto<sup>1</sup>, Matteo Zanocco<sup>1</sup>, Bryan J. McEntire<sup>3</sup>, Sonny B. Bal<sup>3</sup>, Giuseppe Pezzotti<sup>1, 4, 5, 6</sup>

<sup>1</sup> Ceramic Physics Laboratory, Kyoto Institute of Technology, Japan, <sup>2</sup> Department of Dental Medicine, Graduate School of Medical Science, Japan, <sup>3</sup> Amedica Corporation, United States, <sup>4</sup> Department of Orthopedic Surgery, Tokyo Medical University, Japan, <sup>5</sup> Center for Advanced Medical Engineering and Informatics, Osaka University, Japan, <sup>6</sup> Department of Molecular Cell Physiology, Graduate School of Medical Science, Japan

**O-16: Effects of Silicate or Phosphate Ions on Osteoblast-Like Cell Mineralization and Collagen Synthesis**

**Riku Furuya**<sup>1</sup>, Azadeh Rezaei<sup>2</sup>, Gavin Jell<sup>2</sup>, Akiko Obata<sup>1</sup>, Toshihiro Kasuga<sup>1</sup>

<sup>1</sup> Nagoya Institute of Technology, Japan, <sup>2</sup> University College London, United Kingdom

**O-17: Responses of Immune Cells to Hydroxyapatite Ceramics Loaded with Immunostimulators**

**Sanae Kagami**<sup>1</sup>, Rihoko Kizukuri<sup>1</sup>, Shigenori Nagai<sup>2</sup>, Mamoru Aizawa<sup>1</sup>

<sup>1</sup> Meiji University, Japan, <sup>2</sup> Graduate School of Medical and Dental Sciences, Japan

**O-18: Biomimetic Apatite Coating as Bioactive Molecule Carrier and Their Influence on Cell Behavior**

**In-Seop Lee**<sup>1</sup>, Cen Chen<sup>2</sup>, Ya Hao<sup>2</sup>, Xue Bai<sup>2</sup>, Shichao Ruan<sup>2</sup>

<sup>1</sup> Yonsei University, South Korea, <sup>2</sup> Zhejiang Sci-Tech University, China

11:45 – 12:45 Lunch & Poster Viewing

12:45 – 14:15 Poster Session (1) Odd Numbers

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Oral Session 5: Biomimetics

14:15 – 15:45

Room: Auditorium

Chairs: Gowsihan Poologasundarampillai, Takuya Matsumoto

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**KN-05: Bio-inspired Nano-ceramics Instructing Cells for Tissue Regeneration**

**Anna Tampieri**, Simone Sprio, Monica Sandri, Alessio Adamiano, Monica Montesi, Silvia Panseri  
*National Research Council, Italy*

**O-19: Bioactivity Assessment of PVDF-Precursors of Apatite Composite Thin Films**

**Hasnat Zamin**, Takeshi Yabutsuka, Shigeomi Takai

*Kyoto University, Japan*

**O-20: Artificial Cross-Lamellar Structures Similar to Calcareous Shells**

Mihiro Takasaki<sup>1</sup>, Tohru S. Suzuki<sup>2</sup>, Yuya Oaki<sup>1</sup>, Hiroaki Imai<sup>1</sup>

<sup>1</sup> Keio University, Japan, <sup>2</sup> National Institute for Materials Science, Japan

**O-21: Comparative Study of Apatite Formation on Copolymer Modified with Different Anionic Functional Groups in Simulated Body Environment**

Ryo Hamai<sup>1,2</sup>, Osamu Suzuki<sup>1</sup>, Yuki Shirosaki<sup>3</sup>, Yukari Shiwaku<sup>1</sup>, Toshiki Miyazaki<sup>2</sup>

<sup>1</sup> Tohoku University, Japan, <sup>2</sup> Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Japan, <sup>3</sup> Faculty of Engineering, Kyushu Institute of Technology, Japan

**O-22: Impartation of Apatite-Forming Ability to Hydrophobicized Cellulose Nanofiber by Combination with Apatite Nuclei**

Takuya Yoshioka, Takeshi Yabutsuka, Sigeomi Takai, Takeshi Yao

Kyoto University, Japan

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Oral Session 6: Drug Delivery

14:15 – 15:45

Room: Symposion

Chairs: Miho Nakamura, In-Seop Lee

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**KN-06: CpG DNA Complexed with Apatite Nanoparticles as a Potent Vaccine Adjuvant via Microneedle Technology**

Min-Hua Chen<sup>1</sup>, Takashi Minowa<sup>2</sup>, Xianglan Li<sup>2</sup>, Nobutaka Hanagata<sup>2</sup>

<sup>1</sup> Chung Yuan University, Taiwan, <sup>2</sup> National Institute for Materials Science, Japan

**O-23: Gallium Stimulates in vivo Calcium Phosphate-Mediated Bone Reconstruction**

Ivana Strazic<sup>2</sup>, Sébastien Schaub<sup>2</sup>, Pascal Janvier<sup>1</sup>, Jean-Michel Bouler<sup>1</sup>, Jean-Claude Scimeca<sup>2</sup>,

Elise Verron<sup>1</sup>

<sup>1</sup> CEISAM CNRS UMR 6230, France, <sup>2</sup> University of Nice, France

**O-24: Multifunctional-Dual Drug Delivery PLA Coating for Bone Implants**

Ipek Karacan<sup>1</sup>, Joshua Chou<sup>1</sup>, Besim Ben-Nissan<sup>1</sup>, Sophie Cazalbou<sup>2</sup>, Bruce Milthorpe<sup>1</sup>

<sup>1</sup> University of Technology Sydney, Australia, <sup>2</sup> University of Toulouse, France

**O-25: Calcium Phosphates Nanoparticles for the Delivery of Cardiovascular Therapeutic Agents through Inhalation**

Michele Iafisco<sup>1</sup>, Lorenzo Degli Esposti<sup>1</sup>, Francesca Carella<sup>1</sup>, Alessio Adamiano<sup>1</sup>, Anna Tampieri<sup>1</sup>, Michele Miragoli<sup>2,3,4</sup>, Marco Vacchiano<sup>3,4</sup>, Maria Sobrados Barandalla<sup>3,4</sup>, Daniele Catalucci<sup>3,4</sup>

<sup>1</sup> National Research Council (CNR), Italy, <sup>2</sup> University of Parma, Italy, <sup>3</sup> National Research Council (CNR), Italy, <sup>4</sup> Humanitas Research Hospital, Italy

**O-26: Ceramic Core and Polymer Shell Nanoparticles as Bone Substitute Material for Sequential Delivery of Therapeutic agents**

Ram Prasad Sekar<sup>1,2</sup>, Sampath Kumar T.S.<sup>2</sup>, Jayakrishnan A.<sup>1</sup>

<sup>1</sup> Biomaterials Laboratory, Department of Biotechnology, Indian Institute of Technology Madras, India,

<sup>2</sup> Medical Materials Laboratory, Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras, India

15:45 – 16:00 Break

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Oral Session 5-2: Surface Engineering and Coatings

16:00 – 17:00

Room: Auditorium

Chairs: Masami Hashimoto, Elia Marin

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**O-27: Antibacterial Sol-Gel Coating for Bone Scaffolds Based on the Dark Catalytic Effect of Titanium Dioxide**

David Wiedmer, Chen Cui, Fernanda C. Petersen, **Hanna Tiainen**

*University of Oslo, Norway*

**O-28: Hydroxyapatite Coatings on Mg-Zn-Mn Magnesium Alloys for Potential Orthopaedic Applications using Electrophoretic Deposition**

**Iulian Antoniac**, Aurora Antoniac, Camelia Tecu

*University Politehnica of Bucharest, Romania*

**O-29: XPS Study on Preparation of Bioactive Apatite Nuclei Precipitated Fiber Reinforced PEEK**

**Takeshi Yabutsuka**, Tomoko Hiruta, Shigeomi Takai, Takeshi Yao

*Kyoto University, Japan*

**O-30: Chemical Growth and Apatite-Forming Ability of Rod-Like Rutile Titania Layers with Tailored Facets on Titanium Substrate**

**Xingzhu Liu**, Tomohiko Yoshioka, Satoshi Hayakawa

*Okayama University, Japan*

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Oral Session 6-2: Calcium Phosphate Bioceramics

16:00 – 17:00

Room: Symposion

Chairs: Sooraj H. Nandyala, Akiko Obata

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**O-31: Effect of OCP on the Crosstalk between Osteoclasts and Osteoblasts**

Yukari Shiwaku, Linghao Xiao, **Osamu Suzuki**

*Tohoku University Graduate School of Dentistry, Japan*

**O-32: Conversion of Fish Bone into Calcium Phosphate Based Materials for Biomedical Applications**

**Alessio Adamiano**<sup>1</sup>, Clara Piccirillo<sup>2</sup>, David Tobaldi<sup>3</sup>, Marco Montalti<sup>4</sup>, Jeannette Manzi<sup>4</sup>,

Paula M. L. Castro<sup>5</sup>, Silvia Panseri<sup>1</sup>, Monica Montesi<sup>1</sup>, Simone Sprio<sup>1</sup>, Michele Iafisco<sup>1</sup>,

Anna Tampieri<sup>1</sup>

<sup>1</sup> Italian National Research Council - ISTE, Italy, <sup>2</sup> Italian National Research Council - NANOTEC, Italy, <sup>3</sup> University of Aveiro, Portugal, <sup>4</sup> University of Bologna, Italy, <sup>5</sup> Universidade Católica Portuguesa, Portugal

**O-33: Compressive Strength Evaluation and Phase Analysis of Pulp Capping Materials based on Carbonate Apatite-SCPC using Different Concentration of SCPC and Calcium Hydroxide**

**Arief Cahyanto**<sup>1</sup>, Muga Restunaesha<sup>1</sup>, Myrna Zakaria<sup>2</sup>, Andri Rezano<sup>1</sup>, Ahmed El-Ghannam<sup>3</sup>

<sup>1</sup> Universitas Padjadjaran, Indonesia, <sup>2</sup> Universitas Jenderal Achmad Yani, Indonesia, <sup>3</sup> The University of North Carolina at Charlotte, United States

**O-34: Comparison of alpha-TCP Scaffolds Fabricated by Binder Jetting Method and Commercially Available TCP Substitutes in Vivo**

**Shintaro Oyama**<sup>1,2</sup>, Masaki Watanabe<sup>3</sup>, Yuki Tsujimura<sup>1</sup>, Kenji Yamazawa<sup>1</sup>, Hideo Yokota<sup>1</sup>

<sup>1</sup> RIKEN Center for Advanced Photonics, Japan, <sup>2</sup> Nagoya University Hospital Department of Hand Surgery, Japan, <sup>3</sup> Ricoh Company Ltd., Japan

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Plenary Lecture 3

9:00 – 9:45

Room: Auditorium

Chairperson: Hitoshi Hirata

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**PL-03: Electrical Polarization of Apatite Ceramics and Living Bones to Facilitate New Bone Formation - From the Principle to the Practical -**

**Soichiro Itoh**<sup>1, 2</sup>, Kazuhiro Kohata<sup>2</sup>, Masato Obara<sup>3</sup>, Naohiro Horiuchi<sup>2</sup>, Hiroyoshi Fujiwara<sup>3</sup>, Kimihiro Yamashita<sup>2</sup>

<sup>1</sup> Sakurakai Hospital, Japan, <sup>2</sup> Tokyo Medical and Dental University, Japan, <sup>3</sup> Kyoto Prefectural University of Medicine, Japan

9:45 – 10:00 Break

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Oral Session 7: Calcium Phosphate Bioceramics

10:00 – 11:45

Room: Auditorium

Chairs: Rui L. Reis, Ayako Oyane

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**KN-07: Low Temperature Calcium Phosphate Processing: a New Path to Face Biomedical Challenges**

**Christophe Drouet**<sup>1</sup>, David Grossin<sup>1</sup>, Ghislaine Bertrand<sup>1</sup>, Eric Champion<sup>2</sup>, Camille Ortali<sup>2, 1</sup>, Marina Luginina<sup>3, 1</sup>, Ambra Paterlini<sup>1</sup>, Geoffroy Chevallier<sup>4</sup>, Isabelle Julien<sup>2</sup>, Roberto Orru<sup>3</sup>, Giacomo Cao<sup>3</sup>, Sergi Dosta<sup>5</sup>, Irene Garcia<sup>5</sup>, Fabien Brouillet<sup>1</sup>, Christian Rey<sup>1</sup>

<sup>1</sup> CIRIMAT - CNRS / University of Toulouse, France, <sup>2</sup> IRCER / Université de Limoges, France, <sup>3</sup> Università degli Studi di Cagliari, Italy, <sup>4</sup> PNF<sup>2</sup>, France, <sup>5</sup> Thermal Spray Center (CPT), Universitat de Barcelona, Spain

**O-35: Novel EPD Coating of HAp/Col Realizes Strong Adhesion to Substrate Metal**

**Kaori Iwanami-Kadowaki**<sup>1, 2</sup>, Tetsuo Uchikoshi<sup>2</sup>, Masayoshi Uezono<sup>1</sup>, Masanori Kikuchi<sup>2</sup>, Keiji Moriyama<sup>1</sup>

<sup>1</sup> Tokyo Medical and Dental University, Japan, <sup>2</sup> National Institute for Material Science, Japan

**O-36: Preparation of Calcium Phosphate Glasses Containing Nb<sub>2</sub>O<sub>5</sub> and TiO<sub>2</sub>**

**Patricia Sato**, Akiko Obata, Hiroataka Maeda, Toshihiro Kasuga

Nagoya Institute of Technology, Japan

**O-37: The Race between Tissue Integration and Bacteria Colonisation on Silver, Silicon Co-Substituted Apatite**

**Poon Nian Lim**<sup>1</sup>, Shi Yun Tong<sup>1</sup>, Zixuan Zhao<sup>1</sup>, Bow Ho<sup>2</sup>, Wilson Wang<sup>1</sup>, Eng San Thian<sup>1</sup>

<sup>1</sup> National University of Singapore, Singapore, <sup>2</sup> Singapore Precision Medical Centre Pte. Ltd., Singapore

**O-38: Innovative Solutions in order to Produce Multi Bioceramic Implants by 3D Printing**

**Maxence Bourjol**, Richard Gaignon

3DCERAM Sinto, France

**O-39: Microstructural Investigation of Calcium Phosphate to Fluoroapatite in the Different Precursor Solution under Hydrothermal Process**

Reedwan B. Auniq, Wisarat Ngoenthong, **Upsorn Boonyang**

Functional Materials and Nanotechnology Center of Excellence, School of Science, Walailak University, Thailand

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Oral Session 8: Nanomaterials

10:00 – 11:45

Room: Symposion

Chairs: Min-Hua Chen, Tomohiko Yoshioka

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**KN-08: Cell Nanofragment Inspired from Bone Mineralization in Secondary Ossification Center**

**Takuya Matsumoto**, Emilio Satoshi Hara

*Okayama University, Japan*

**O-40: Enzyme Immobilization on Silica Nanoparticle Vesicles**

**Daiki Takata**, Ayae Sugawara-Narutaki, Jin Nakamura, Chikara Ohtsuki

*Nagoya University, Japan*

**O-41: Interaction of Calcium Phosphate with Gold Nanocrystals Coated with Polyethylene Glycol**

**Maki Nakamura**<sup>1</sup>, Kiyoko Kuroiwa<sup>1</sup>, Ayako Oyane<sup>1</sup>, Hisanori Kosuge<sup>2</sup>

<sup>1</sup> *National Institute of Advanced Industrial Science and Technology (AIST), Japan*, <sup>2</sup> *University of Tsukuba, Japan*

**O-42: Elucidating the Osteoinductive Effect of Extracellular Phosphate on Stem Cells by Using  $\beta$ -Tricalcium Phosphate Nanoparticles Model**

**Xiaopei Wu**<sup>1</sup>, Honglian Dai<sup>1,2</sup>, Shipu Li<sup>1,2</sup>

<sup>1</sup> *Wuhan University of Technology, China*, <sup>2</sup> *Biomedical Materials and Engineering Research Center of Hubei Province, China*

**O-43: Synthesis of Spherical Phosphate-containing Mesoporous Silicas for Improving Their Reaction Behaviors in Simulated Body Fluid**

Shang Yucheng, **Shota Yamada**, Motohiro Tagaya

*Nagaoka University of Technology, Japan*

**O-44: Quantitative Detection of Hydroxyapatite Nanoparticles in Vitro and in Vivo**

**Yingchao Han**, Qingguo Xing, Honglian Dai, Xinyu Wang

*Wuhan University of Technology, China*

11:45 – 12:45 Lunch & Poster Viewing

12:45 – 14:15 Poster Session (2) Even Numbers

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Oral Session 9: Scaffolds/Tissue Engineering

14:15 – 16:00

Room: Auditorium

Chairs: Christophe Drouet, Osamu Suzuki

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**KN-09: Quantitative Assessment of MRC-5 Cellular Membrane Integrity Upon Exposure to Hydroxyapatite Sintered at Various Temperatures**

**Hamed Benghuzzi**, Michelle Tucci

*University of Mississippi Medical Center, United States*

**O-45: High Chemical Reactivity of HA/ $\beta$ -TCP Smart Calcium Phosphate Bioceramic for Tissue Engineering**

**Cyril d'Arros**<sup>1,2</sup>, Thierry Rouillon<sup>2</sup>, Pascal Borget<sup>1</sup>, Guy Daculsi<sup>1,2</sup>

<sup>1</sup> *Biomatlante, France*, <sup>2</sup> *INSERM, UMR 1229, RMeS, France*



**O-46: Biomedical Potential of Organic/Inorganic Hybrid Microgel for Bone Tissue Engineering**

Honghyun Park<sup>1</sup>, Kyubin Byun<sup>1,2</sup>, Jueun Kim<sup>1,2</sup>, Hui-suk Yun<sup>1,2</sup>

<sup>1</sup> Korea Institute of Materials Science (KIMS), South Korea, <sup>2</sup> Korea University of Science and Technology (UST), South Korea

**O-47: Enzymatically Crosslinked SF/SF- $\beta$ -TCP Scaffolds Incorporating Sr- and Zn-ions as Hierarchical Structures for Osteochondral Tissue Engineering Applications**

Viviana P. Ribeiro<sup>1,2</sup>, Sandra Pina<sup>1,2</sup>, João B. Costa<sup>1,2</sup>, Ibrahim Fatih Cengiz<sup>1,2</sup>,

Luís García-Fernández<sup>3,4</sup>, Mar Fernández-Gutierrez<sup>3,4</sup>, Ana L. Oliveira<sup>5</sup>, Julio San-Román<sup>3,4</sup>, Joquim M. Oliveira<sup>1,2,6</sup>, Rui L. Reis<sup>1,2,6</sup>

<sup>1</sup> 3B's Research Group, University of Minho, Portugal, <sup>2</sup> ICVS/3B's - PT Government Associate Laboratory, Portugal, <sup>3</sup> Institute of Polymer Science and Technology, Polymeric Nanomaterials and Biomaterials Department, Spanish Council for Scientific Research (ICTP-CSIC), Spain, <sup>4</sup> Centro de Investigación Biomédica en Red. Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), Spain, <sup>5</sup> CBQF - Center for Biotechnology and Fine Chemistry, Portuguese Catholic University, Portugal, <sup>6</sup> The Discoveries Centre for Regenerative and Precision Medicine, Headquarters at University of Minho, Portugal

**O-48: Preparation and Characterization of HA/Gel/ $\beta$ -TCP Microspheres Composite Porous Scaffold**

Zhao Yangzi, Youfa Wang

Wuhan University of Technology, China

**O-49: Comparison of Bioactive Property of Bone Substitute Materials by 3D Culture and in Vivo Implantation**

Tomoya Sato<sup>1</sup>, Takahisa Anada<sup>1,2</sup>, Yukari Shiwaku<sup>1</sup>, Kaori Tsuchiya<sup>1</sup>, Keiichi Sasaki<sup>1</sup>, Osamu Suzuki<sup>1</sup>

<sup>1</sup> Tohoku University Graduate School of Dentistry, Japan, <sup>2</sup> Institute for Materials Chemistry and Engineering, Japan

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Oral Session 10: Calcium Phosphate Bioceramics

14:15 – 16:00

Room: Symposion

Chairs: Iulian Antoniac, Masanobu Kamitakahara

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**KN-10: Tissue Engineering and Precision Medicine Strategies to Regenerate Mineralized Human Tissues**

Rui L. Reis<sup>1,2,3</sup>

<sup>1</sup> University of Minho, Portugal, <sup>2</sup> ICVS/3B's-PT Government Associate Laboratory, Portugal, <sup>3</sup> The Discoveries Centre for Regenerative and Precision Medicine, Portugal

**O-50: Hydration Structure of Apatite and Its Relation to Bone Mineral Formation**

Masahiro Okada<sup>1</sup>, Emilio Satoshi Hara<sup>1</sup>, Masaru Tanaka<sup>2,3</sup>, Takuya Matsumoto<sup>1</sup>

<sup>1</sup> Okayama University, Japan, <sup>2</sup> Yamagata University, Japan, <sup>3</sup> Kyushu University, Japan

**O-51: Functionalized Bioceramics towards Regeneration of Musculoskeletal Disorders**

Sandra Pina<sup>1,2</sup>, Viviana P. Ribeiro<sup>1,2</sup>, Luís García-Fernández<sup>3,4</sup>, Julio San-Román<sup>3,4</sup>,

Rui L. Reis<sup>1,2,5</sup>, J. Miguel Oliveira<sup>1,2,5</sup>

<sup>1</sup> 3B's Research Group, University of Minho, Portugal, <sup>2</sup> ICVS/3B's - Associate Laboratory, Portugal, <sup>3</sup> Institute of Polymer Science and Technology, CSIC, Spain, <sup>4</sup> Centro de Investigación Biomédica en Red. Bioingeniería, Spain, <sup>5</sup> The Discoveries Centre for Regenerative and Precision Medicine, Portugal

**O-52: Area-Selective Osteoconduction of HAp-Patterned Tough Hydrogel by Acidic Gel Stamping**

**Takayuki Nonoyama**<sup>1, 5</sup>, Ryuji Kiyama<sup>2</sup>, Susumu Wada<sup>3</sup>, Lei Wang<sup>4, 5</sup>, Masumi Tsuda<sup>4, 5</sup>, Nobuto Kitamura<sup>3</sup>, Kazunori Yasuda<sup>3, 5</sup>, Takayuki Kurokawa<sup>2, 5</sup>, Shinya Tanaka<sup>4, 5</sup>, Jian Ping Gong<sup>1, 5</sup>

<sup>1</sup> Faculty of Advanced Life Science, Hokkaido University, Japan, <sup>2</sup> Graduate School of Life Science, Hokkaido University, Japan, <sup>3</sup> Department of Sports Medicine, Graduate School of Medicine, Hokkaido University, Japan, <sup>4</sup> Department of Cancer Pathology, Faculty of Medicine, Hokkaido University, Japan, <sup>5</sup> Global Station for Soft Matter, Global Institution for Collaborative Research and Education, Hokkaido University, Japan

**O-53: Fabrication of Porous  $\beta$ -TCP Block by Heating  $\beta$ -TCP Granules Bridged with DCPD**

**Tansza Putri**<sup>1</sup>, Melvin L. Munar<sup>1</sup>, Koichiro Hayashi<sup>1</sup>, Kanji Tsuru<sup>1, 2</sup>, Kunio Ishikawa<sup>1</sup>

<sup>1</sup> Kyushu University, Japan, <sup>2</sup> Fukuoka Dental College, Japan

**O-54: Fluoride-Incorporated Apatite Coating for Tooth Surface Modification by Laser Irradiation in Supersaturated Solutions**

**Ayako Oyane**<sup>1</sup>, A. Joseph Arputharaj<sup>1</sup>, Maki Nakamura<sup>1</sup>, Kanako Shitomi<sup>2</sup>, Hirofumi Miyaji<sup>2</sup>

<sup>1</sup> National Institute of Advanced Industrial Science and Technology (AIST), Japan, <sup>2</sup> Hokkaido University, Japan

16:00 – 16:15 Break

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Oonishi Award Ceremony/Award Lecture

16:15 – 17:15

Room: Auditorium

Chairs: Guy Daculsi, Takashi Nakamura

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**Cellular Differentiation onto the Surface of Bioceramics**

**Hajime Ohgushi**

*Dept. of Orthopedics, Ookuma Hospital, Japan*

18:30 – 20:30 Banquet/Dinner (ANA Crowne Plaza Hotel Grand Court Nagoya)

## Oral Session | Monday, 29<sup>th</sup> October

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Oral Session 11: In vivo Evaluation

9:00 – 10:00

Room: Auditorium

Chairs: Michelle Tucci, Sandra Pina

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**KN-11: A Histological Assessment of the Mechanism of Early-Stage Healing of a Biphasic Calcium Phosphate in an *In Vivo* Rabbit Model**

Ian R. Dunkley<sup>1</sup>, Scott M. Vickers<sup>1</sup>, Jeffrey Badura<sup>1</sup>, Jeffrey Toth<sup>2</sup>

<sup>1</sup> Medtronic, United States, <sup>2</sup> Medical College of Wisconsin, United States

**O-55: Bone Morphogenetic Protein-2 Incorporated Beta-tricalcium Phosphate Enhanced Bone Regeneration in Critical-sized Bone Defects in Rats**

Lingfei Wei<sup>1,2</sup>, Yuelian Liu<sup>1</sup>

<sup>1</sup> Academic Center for Dentistry Amsterdam, Netherlands, <sup>2</sup> Yantai Stomatological Hospital, China

**O-56: *In vivo* Evaluation of Apatite-fiber Scaffolds with Enhanced Mechanical Property Using a Rat Calvarial Defect Model**

Rie Ohno<sup>1</sup>, Kohei Nagata<sup>1</sup>, Tomohiro Yokota<sup>1</sup>, Jotaro Yuza<sup>1</sup>, Tadaaki Morotomi<sup>2</sup>, Noritaka Isogai<sup>2</sup>, Riichi Kajiwara<sup>1</sup>, Mamoru Aizawa<sup>1</sup>

<sup>1</sup> Meiji University, Japan, <sup>2</sup> Kinki University, Japan

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Oral Session 12: Glass/Glass-Ceramics

9:00 – 10:00

Room: Symposion

Chairs: Hamed Benghuzzi, Mamoru Aizawa

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**KN-12: Bone Tissue Engineering with Si and Co Releasing Bioactive Glasses: Moving The Focus Away From Mineralization**

Yutong Li<sup>1</sup>, Azadeh Rezaei<sup>1</sup>, Riku Furuya<sup>2</sup>, Akiko Obata<sup>2</sup>, Toshihiro Kasuga<sup>2</sup>, Gavin Jell<sup>1</sup>

<sup>1</sup> University College London (UCL), United Kingdom, <sup>2</sup> Nagoya Institute of Technology, Japan

**O-57: Silver-Doped Bioactive Glasses with Cotton-Wool-Structure for Skin Wound Healing**

Takuya Zenji<sup>1</sup>, Elizabeth Norris<sup>2</sup>, Gowsihan Poologasundarampillai<sup>3</sup>, Julian R. Jones<sup>2</sup>, Akiko Obata<sup>1</sup>, Toshihiro Kasuga<sup>1</sup>

<sup>1</sup> Nagoya Institute of Technology, Japan, <sup>2</sup> Imperial College London, United Kingdom, <sup>3</sup> University of Birmingham, United Kingdom

**O-58: Sintering Temperature Effect on Hardness of Self-Synthesized Porcelain Made from Natural Sumatran Sand Without Kaolin**

Sianny Kurnia<sup>1</sup>, Dede Taufik<sup>2</sup>, Veni Takarini<sup>1</sup>, Zulia Hasratiningsih<sup>1</sup>

<sup>1</sup> University of Padjadjaran, Indonesia, <sup>2</sup> Balai Besar Keramik Bandung, Indonesia

10:00 – 10:15 Break

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Oral Session 11-2: Bioinert Ceramics & Porous Material

10:15 – 11:00

Room: Auditorium

Chairs: Ian R. Dunkley, Satoshi Hayakawa

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**O-59: Bioceramics are Not Bioinert: The Role of Oxide and Non-Oxide Bioceramics on the Oxidation of UHMWPE Components in Artificial Joints**

Alfredo Rondinella<sup>1</sup>, Elia Marin<sup>1,2</sup>, Bryan J. McEntire<sup>3</sup>, Ryan Bock<sup>3</sup>, B. Sonny Bal<sup>3</sup>, Wenliang Zhu<sup>1</sup>, Giuseppe Pezzotti<sup>1,4,5,6</sup>

<sup>1</sup> Ceramic Physics Laboratory, Kyoto Institute of Technology, Japan, <sup>2</sup> Department of Dental Medicine, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Japan, <sup>3</sup> Amedica Corporation, United States, <sup>4</sup> Department of Orthopedic Surgery, Tokyo Medical University, Japan, <sup>5</sup> The Center for Advanced Medical Engineering and Informatics, Osaka University, Japan, <sup>6</sup> Department of Immunology, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Japan

**O-60: Transparent, Superflexible Doubly Cross-linked Polyvinylpolymethylsiloxane Aerogels and Xerogels for Superinsulation**

Kazuki Nakanishi<sup>1</sup>, Kazuyoshi Kanamori<sup>1</sup>, Guoqing Zu<sup>1</sup>, Ryota Ueoka<sup>1</sup>, Jun Shen<sup>1</sup>

<sup>1</sup> Kyoto University, Japan, <sup>2</sup> Tongji University, China

**O-61: Material Design and Creation of New FRP Artificial Bone Material Using Biodegradable Resin and Bone Induction Material**

Kazuo Yagi<sup>1,2</sup>, Takuya Kurimoto<sup>2</sup>, Tomoaki Hamada<sup>2</sup>, Seiichi Sugimoto<sup>3</sup>, Tadashi Inaba<sup>2</sup>

<sup>1</sup> Tokyo Metropolitan University, Japan, <sup>2</sup> Mie University, Japan, <sup>3</sup> Tokyo Metropolitan College of Industrial Technology, Japan

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Oral Session 12-2: Surface Engineering

10:15 – 11:00

Room: Symposion

Chairs: Gavin Jell, Toshiki Miyazaki

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**O-62: Cytotoxicity of Antibacterial Metal-Doped Raw Silk Fabric**

Hiroki Chigama, Hiroyasu Kanetaka, Maiko Furuya, Kotone Yokota, Masakazu Kawashita  
Tohoku University, Japan

**O-63: Wettability and Durability of Si-O Coatings on Zirconia Substrate by rf-Magnetron Plasma Sputtering**

Yoshiyuki Yokogawa<sup>1</sup>, Taishi Morishima<sup>1</sup>, Mitsunori Uno<sup>2</sup>, Masakazu Kurachi<sup>2</sup>, Hajime Ishigame<sup>2</sup>, Yutaka Doi<sup>2</sup>, Harumi Kawaki<sup>2</sup>, Masato Hotta<sup>2</sup>

<sup>1</sup> Osaka City University, Japan, <sup>2</sup> Asahi University, Japan

**O-64: Nano Coating with Silicate-substituted Strontium Apatite (SrSiP) Improve Osteogenesis around Artificial Ligament**

Yusuke Inagaki, Takuya Egawa, Manabu Akahane, Akira Furukawa, Tsutomu Kira, Kazuya Inoue, Yasuhito Tanaka

Nara Medical University, Japan

11:00 – 11:15 Break

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Plenary Lecture 4

11:15 – 12:00

Room: Auditorium

Chairperson: Toshihiro Kasuga

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**PL-04: Therapeutic Silica Nanoparticles**

**Julian R. Jones**, Alexandra E. Porter

*Imperial College London, United Kingdom*

12:00 – 12:30    General Assembly  
                         Student Award Ceremony  
                         Closing Remarks

## Poster Session |

Saturday, 27<sup>th</sup> October (Odd Numbers) & Sunday, 28<sup>th</sup> October (Even Numbers)

### **P-01: Surface Influence on Deposition of Hydroxyapatite on Zirconia**

**Andrei Victor Sandu**<sup>1,2</sup>, Sergiu Ciprian Focsaneanu<sup>1,3</sup>, Petrica Vizureanu<sup>1,4</sup>, Dragos Cristian Achitei<sup>1,4</sup>, Mohd Mustafa Al Bakri Abdullah<sup>4</sup>

<sup>1</sup> Gheorghe Asachi Technical University of Iasi, Romania, <sup>2</sup> Romanian Inventors Forum, Romania,

<sup>3</sup> Grigore T. Popa University of Medicine and Pharmacy, Romania, <sup>4</sup> Centre of Excellence Geopolymer and Green Technology (CeGeoGTech), Universiti Malaysia Perlis, Malaysia

### **P-02: Template Effecting on Morphology of Hydroxyapatite and Template-Mediated Mechanism Study**

**Jing Luo**<sup>1</sup>, Yu Wang<sup>2</sup>

<sup>1</sup> Wuhan University of Technology, China, <sup>2</sup> Wuhan University of Technology, China

### **P-03: Evaluation of Spherical Porous Hydroxyapatite/Octacalcium Phosphate Granules Loaded with Ascorbic Acid Phosphate**

**Masanobu Kamitakahara**, Airi Ishii, Hideaki Matsubara, Masakazu Kawashita, Maiko Furuya, Hiroyasu Kanetaka

Tohoku University, Japan

### **P-04: Avidin-Immobilized Peptide-Calcium Phosphate Composites Exhibiting High Binding Activity to Biotin**

**Suzuka Kojima**<sup>1,2</sup>, Fukue Nagata<sup>2</sup>, Masahiko Inagaki<sup>2</sup>, Shinichi Kugimiya<sup>1</sup>, Katsuya Kato<sup>2</sup>

<sup>1</sup> Aichi Institute of Technology (AIT), Japan, <sup>2</sup> National Institute of Advanced Industrial Science and Technology (AIST), Japan

### **P-05: Isotope Microscopic Evaluation of Osteogenesis Penetration into Hydrogel**

**Yuki Suzuki**<sup>1</sup>, Takayuki Nonoyama<sup>2,4</sup>, Lei Wang<sup>3,4</sup>, Masumi Tsuda<sup>3,4</sup>, Ryuji Kiyama<sup>1</sup>, Kazunori Yasuda<sup>4,5</sup>, Jian Ping Gong<sup>2,4</sup>

<sup>1</sup> Graduate School of Life Science, Japan, <sup>2</sup> Faculty of Advanced Life Science, Japan, <sup>3</sup> Department of Cancer Pathology, Graduate School of Medicine, Japan, <sup>4</sup> Global Station for Soft Matter, Global Institution for Collaborative Research and Education, Hokkaido University, Japan, <sup>5</sup> Yagi Orthopedic Hospital, Sapporo, Japan

### **P-06: Adhesion and Scratch Testing of Antibiotic-Loaded HAp/PLA Biocomposite Thin Films on Metallic Implants**

**Ipek Karacan**<sup>1</sup>, Joshua Chou<sup>1</sup>, Besim Ben-Nissan<sup>1</sup>, Innocent Macha<sup>2</sup>, Arion Juritza<sup>3</sup>, Andy Wang<sup>4</sup>, Wolfgang Muller<sup>3</sup>, David Grossin<sup>5</sup>, Michael Swain<sup>4</sup>

<sup>1</sup> University of Technology Sydney, Australia, <sup>2</sup> University of Dar es Salaam, Tanzania, <sup>3</sup> Technical University of Berlin, Germany, <sup>4</sup> University of Sydney, Australia, <sup>5</sup> University of Toulouse, France

### **P-07: Investigation of Hydroxyapatite/Poly(lactic acid) Composite Particles Formation by Emulsion Diameter Measurement**

**Motoharu Hanasaki**<sup>1,2</sup>, Fukue Nagata<sup>1</sup>, Tatsuya Miyajima<sup>1</sup>, Ayase Sugawara-Narutaki<sup>3</sup>, Kenichi Imaeda<sup>2</sup>, Katsuya Kato<sup>1</sup>

<sup>1</sup> National Institute of Advanced Industrial Science and Technology (AIST), Japan, <sup>2</sup> Chubu University, Japan, <sup>3</sup> Nagoya University, Japan

### **P-08: Formation of Calcium Phosphate Particles in the Presence of Hyaluronic Acid and Adsorption Capacity for Protein**

**Aoi Suzuki**<sup>1,2</sup>, Fukue Nagata<sup>1</sup>, Tatsuya Miyajima<sup>1</sup>, Kenichi Imaeda<sup>2</sup>, Katsuya Kato<sup>1</sup>

<sup>1</sup> National Institute of Advanced Industrial Science and Technology, Japan, <sup>2</sup> Chubu University, Japan

**P-09: Fabrication of Hydroxyapatite/Cellulose-fiber Composite with Sheet-like Structure**

**Shota Watanabe**<sup>1,2</sup>, Fukue Nagata<sup>1</sup>, Tatsuya Miyajima<sup>1</sup>, Makoto Sakurai<sup>2</sup>, Aio Suzuki<sup>1,2</sup>, Katsuya Kato<sup>1</sup>

<sup>1</sup> National Institute of Advanced Industrial Science and Technology (AIST), Japan, <sup>2</sup> Chubu University, Japan

**P-10: Fabrication and *in Vitro* Properties of Starfish-Derived Porous  $\beta$ -Tricalcium Phosphate/Gelatin Composite**

**Toshiki Kudo**<sup>1</sup>, Akari Takeuchi<sup>1</sup>, Masanori Kikuchi<sup>2</sup>

<sup>1</sup> Graduate School of Science and Technology, Shinshu University, Japan, <sup>2</sup> Bioceramics Group, National Institute for Materials Science, Japan

**P-11: Multi-doped Biomimetic Apatites as 3-D Porous Scaffolds Obtained by Low-temperature Fabrication Processes**

**Simone Sprio**<sup>1</sup>, Lorenzo Preti<sup>1</sup>, Barbara Lambiase<sup>1</sup>, Monica Montesi<sup>1</sup>, Silvia Panseri<sup>1</sup>, Nicola Pugno<sup>2</sup>, Anna Tampieri<sup>1</sup>

<sup>1</sup> Institute of Science and Technology for Ceramics, National Research Council, Italy, <sup>2</sup> Civil, Environmental and Mechanical Engineering, University of Trento, Italy

**P-12: Morphology Dependence of Dicalcium Phosphate Dihydrate in the Powder Operability**

**Takeshi Toshima**, Yuki Sato, Saori Takamatsu, Masamoto Tafu

National Institute of Technology, Toyama College, Japan

**P-13: Plate-shaped Hydroxyapatite Synthesis Using Sebacic Acid**

**Naohiro Horiuchi**<sup>1</sup>, Hironori Saito<sup>2</sup>, Kazuaki Hashimoto<sup>2</sup>, Kimihiro Yamashita<sup>1</sup>

<sup>1</sup> Tokyo Medical and Dental University, Japan, <sup>2</sup> Chiba Institute of Technology, Japan

**P-14: In vitro Cytotoxicity Test of Poly(lactic acid)/Hydroxyapatite Core-shell Nanoparticles**

**Fukue Nagata**, Tatsuya Miyajima, Katsuya Kato

National Institute of Advanced Industrial Science and Technology (AIST), Japan

**P-15: The Evaluation of Setting Time and FTIR Spectroscopy of Carbonate Apatite Cement as Endodontic Sealer**

**Elfira Megasari**<sup>1</sup>, Hendra Dian Adhita Dharsono<sup>1</sup>, Richata Fadil<sup>1</sup>, Myrna Nurlatifah Zakaria<sup>2</sup>, Arief Cahyanto<sup>1</sup>

<sup>1</sup> Universitas Padjadjaran, Indonesia, <sup>2</sup> Universitas Jenderal Achmad Yani, Indonesia

**P-16: Preparation and Evaluation of Nano-hydroxyapatite/saccharide Complex Spray-dried Particles for Oral Administration**

**Yuya Honda**<sup>1</sup>, Yuji Lin<sup>1</sup>, Hideki Aoki<sup>2</sup>, Takayuki Terukina<sup>1</sup>, Yusuke Hattori<sup>1</sup>, Makoto Otsuka<sup>1</sup>

<sup>1</sup> Musashino University, Japan, <sup>2</sup> Internatinal Apatite Institute Co. Ltd., Japan

**P-17: Low Temperature Fabrication of Self-setting Calcium Phosphate Scaffold using 3D Printing Technology**

**Naren Raja**<sup>1,2</sup>, Honghyun Park<sup>1</sup>, Hui-suk Yun<sup>1,2</sup>

<sup>1</sup> Korea Institute of Material Science, South Korea, <sup>2</sup> Korea University of Science and Technology (UST), South Korea

**P-18: Unique Dicarboxylate Ion Incorporation in Octacalcium Phosphate**

**Taishi Yokoi**

Japan Fine Ceramics Center, Japan

**P-19: Biological Evaluation of Active Ingredient Controlled-Release Calcium Phosphate Cement**

**Tomohiro Uchino**, Shota Un-no, Toshiyuki Susa, Yuto Chubachi

Nihon University, Japan

**P-20: Fabrication of Strontium-Substituted Hydroxyapatite Ceramics Preferred Orientation to c-plane by Reactive Templated Grain Growth Method**

Shuhei Yoshida, Mamoru Aizawa  
*Meiji University, Japan*

**P-21: Adsorption Property of Dye on Needle-shaped Hydroxyapatite Synthesized by Solvothermal Treatment**

Tomoyo Goto<sup>1</sup>, Sung Hun Cho<sup>1</sup>, Chikara Ohtsuki<sup>2</sup>, Tohru Sekino<sup>1</sup>  
<sup>1</sup> *Osaka University, Japan*, <sup>2</sup> *Nagoya University, Japan*

**P-22: The Influence of Microstructure on the Polarization of Hydroxyapatite**

Karlis A. Gross, Darta Ubele, Liene Pluduma  
*Riga Technical University, Latvia*

**P-23: A Novel Validation Concept for Phase Quantification by XRD**

Nicola Doebelin<sup>1,2</sup>, Martin Fisch<sup>2</sup>  
<sup>1</sup> *RMS Foundation, Switzerland*, <sup>2</sup> *Institute of Geological Sciences, University of Bern, Switzerland*

**P-24: Fabrication of Micro-Sized Calcium Deficiency Hydroxyapatite Beads for Bioapplications**

Kyubin Byun<sup>1,2</sup>, Honghyun Park<sup>2</sup>, Hui-suk Yun<sup>1,2</sup>  
<sup>1</sup> *Korea University of Science and Technology(UST), South Korea*, <sup>2</sup> *Korea Institute of Material Science(KIMS), South Korea*

**P-25: Insight into Cellular Uptake Mechanism and Gene Delivery of Hydroxyapatite Nanoparticles in Cardiomyocytes**

Hiroaki Komuro<sup>1,2,3</sup>, Tetsuo Sasano<sup>1</sup>, Kimihiro Yamashita<sup>2</sup>, Akiko Nagai<sup>2</sup>  
<sup>1</sup> *Department of Cardiovascular Physiology, Tokyo Medical and Dental University, Japan*, <sup>2</sup> *Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, Japan*, <sup>3</sup> *Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan*

**P-26: Modification of Continuous Pore Structures in  $\alpha$ -Tricalcium Phosphate Ceramics**

Jonathan Li, Takaharu Katsu, Jin Nakamura, Aya Narutaki, Chikara Ohtsuki  
*Nagoya University, Japan*

**P-27: CO<sub>2</sub> Laser Bonding of Silicate-substituted Strontium Apatite on PEEK and Osteointegration on Its Surface**

Akira Furukawa, Manabu Akahane, Yasuhito Tanaka  
*Nara Medical University, Japan*

**P-28: Bioactivity of Precursor of Apatite on polyetheretherketone (PEEK)**

Kazutaka Masamoto<sup>1</sup>, Shunsuke Fujibayashi<sup>1</sup>, Takeshi Yabutsuka<sup>2</sup>, Bungo Otsuki<sup>1</sup>, Tomoko Hiruta<sup>2</sup>, Yaichiro Okuzu<sup>1</sup>, Toshiyuki Kawai<sup>1</sup>, Koji Goto<sup>1</sup>, Shuichi Matsuda<sup>1</sup>  
<sup>1</sup> *Department of Orthopaedic Surgery, Graduate School of Medicine, Kyoto University, Japan*,  
<sup>2</sup> *Graduate School of Energy Science, Kyoto University, Kyoto, Japan*

**P-29: Hydroxyapatite Deposition on Poly(ether ether ketone) Substrate Surfaces Utilizing Solution Processes**

Mineo Hashizume, Takashi Zemba, Kazutoshi Iijima  
*Tokyo University of Science, Japan*

**P-30: Apatite Formation on Titania Powders with Different Valences**

Toshiki Miyazaki, Jun Akaike  
*Kyushu Institute of Technology, Japan*



**P-31: Particulate Titania Coating on Poly(dimethylsiloxane) Films for Improving Osteoconductive Ability**

**Peñaflor Galindo Tania Guadalupe**<sup>1</sup>, Kota Shiba<sup>2</sup>, Motohiro Tagaya<sup>1</sup>

<sup>1</sup> Nagaoka University of Technology, Japan, <sup>2</sup> National Institute for Materials Science, Japan

**P-32: Enzyme Immobilization Behavior on Hydroxyapatite Microcapsules Under Alkaline Condition**

**Takeshi Yabutsuka**, Masaya Yamamoto, Shigeomi Takai, Takeshi Yao

*Kyoto University, Japan*

**P-33: Titanium Nitride Film on Titanium Film by Magnetron DC Sputtering Method**

**Akira Watazu**, Kay Teraoka, Tsutomu Sonoda

*National Institute of Advanced Industrial Science and Technology (AIST), Japan*

**P-34: Synthesis of Titanium Phosphate Compound on Titanium Substrate in Reflux Environment**

**Hiroaki Kanaoka**, Jin Nakamura, Ayae Sugawara-Narutaki, Chikara Ohtsuki

*Nagoya University, Japan*

**P-35: Visible Light-induced Antimicrobial Activity of Nitrogen-doped TiO<sub>2</sub> on Ti Treated with NaOH, Hot Water, and Ammonia Atmospheric Heat Treatment**

**Misato Iwatsu**<sup>1</sup>, Takayuki Mokudai<sup>2</sup>, Masakazu Kawashita<sup>3</sup>, Tomoaki Watanabe<sup>4</sup>, Toru Ogawa<sup>5</sup>, Hiroyasu Kanetaka<sup>6</sup>, Keiichi Sasaki<sup>7</sup>

<sup>1</sup> Tohoku University, Japan, <sup>2</sup> Tohoku University, Japan, <sup>3</sup> Tohoku University, Japan, <sup>4</sup> Meiji University, Japan, <sup>5</sup> Tohoku University, Japan, <sup>6</sup> Tohoku University, Japan, <sup>7</sup> Tohoku University, Japan

**P-36: Preparation of Layered Zirconium Phosphates Modified with Phenyl Groups and Characteristics on Incorporation of Zinc Ions**

**Ryoya Ito**, Jin Nakamura, Ayae Narutaki, Chikara Ohtsuki

*Nagoya University, Japan*

**P-37: Synthesis of Layered Calcium Silicate Modified with Amino- and Phenyl Groups with Improved Chemical Stability**

**Jin Nakamura**, Ayae Sugawara-Narutaki, Chikara Ohtsuki

*Nagoya University, Japan*

**P-38: Bioactive Co-Cr Alloy Obtained by Incorporation of Apatite Nuclei after Sandblasting Process**

**Aurora Antoniac**<sup>1</sup>, Camelia Tecu<sup>1</sup>, Corneliu Munteanu<sup>2</sup>, Claudia Milea<sup>1</sup>, Mirabela Minciuna<sup>2</sup>, Iulian Antoniac<sup>1</sup>

<sup>1</sup> University Politehnica of Bucharest, Romania, <sup>2</sup> Gheorghe Asachi" Technical University of Iasi, Romania

**P-39: Synthesis of Europium(III) Complex-based Hydroxyapatite Nanocrystals for Biolabeling Applications**

**Takuya Kataoka**<sup>1</sup>, Shigeaki Abe<sup>2</sup>, Motohiro Tagaya<sup>1</sup>

<sup>1</sup> Nagaoka University of Technology, Japan, <sup>2</sup> Hokkaido University, Japan

**P-40: Effect of Different Amino-Functionalized Mesoporous Silica Characteristics on Nucleic Acids Selective Adsorption**

**Katsuya Kato**<sup>1</sup>, Ryoichi Hikosaka<sup>2</sup>, Fukue Nagata<sup>3</sup>, Masahiko Inagaki<sup>4</sup>

<sup>1</sup> National Institute of Advanced Industrial Science and Technology, Japan, <sup>2</sup> National Institute of Advanced Industrial Science and Technology, Japan, <sup>3</sup> National Institute of Advanced Industrial Science and Technology, Japan, <sup>4</sup> National Institute of Advanced Industrial Science and Technology, Japan

**P-41: Morphological Controlled Synthesis of Mesoporous Silica Particles**

**Takamasa Kaneko**<sup>1,2</sup>, Fukue Nagata<sup>2</sup>, Shinichi Kugimiya<sup>1</sup>, Katsuya Kato<sup>2</sup>

<sup>1</sup> Aichi Institute of Technology (AIT), Japan, <sup>2</sup> National Institute of Advanced Industrial Science and Technology (AIST), Japan

**P-42: Magnetic Property and Heat-Generatin Ability of Iron Nitrides**

**Misaki Shibata**, Tomoyuki Ogawa, Hiroyasu Kanetaka, Maiko Furuya, Kotone Yokota, Masakazu Kawashita

Tohoku University, Japan

**P-43: Chitosan-catechol as a Direct Writable Bioink under Cell Culture Medium**

**Daiheon Lee**, Haeshin Lee

KAIST(Korea Advanced Institute of Science and Technology), South Korea

**P-44: Mechanical Properties of Dental Composite Prototype with Addition of Acetone when Preparing Dental Composite Prototype on Filler Volume Variations**

**Elin Karlina**, Nina Djustiana, Renny Febrida, Yanwar Faza, Seniyah -, Camellia Panatarani, I Made Joni

Universitas Padjadjaran Bandung Indonesia, Indonesia

**P-45: VSC Adsorptive Property of Zinc or Iron Oxide in Comparison with that of Layered Double Hydroxide containing Zinc of Iron**

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**P-46: Loading of Fluvastatin onto Gelatin-coated Titanium Implants**

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**P-47: Controlled Drug Release Property of Nano-porous Silica Micro Particles and Their Cytocompatibility**

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**P-48: Dental Porcelain Surface From Sumatera Natural Sand Characterization**

**Veni Takarini**<sup>1</sup>, Sianny Surya Putri Kurnia<sup>1</sup>, Dede Taufik<sup>2</sup>, Arief Cahyanto<sup>1</sup>, Zulia Hasratiningsih<sup>1</sup>

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**P-49: Synthesis and Characterization of Calcium Hydroxide from Indonesian Limestone as Endodontic Intra-canal Medicament**

**Atia Nurul Sidiqa**<sup>1</sup>, Myrna Nurlatifah Zakaria<sup>1</sup>, Ira Artilia<sup>1</sup>, Arief Cahyanto<sup>2</sup>

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**P-50: Surface Characterization of a New TiMoSi Alloy with Medical Applications**

**Petrica Vizureanu**<sup>1</sup>, Andrei Victor Sandu<sup>1,2</sup>, Simona Madalina Baltatu<sup>1</sup>, Victor Geanta<sup>3</sup>, Adriana Savin<sup>4</sup>

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**P-51: Structural Characterization of Mg-0.5Ca-xY Biodegradable Alloys**

**Bogdan Istrate**<sup>1</sup>, Corneliu Munteanu<sup>1</sup>, Stefan Lupescu<sup>1</sup>, Iulian-Vasile Antoniac<sup>2</sup>, Eusebiu Sindilar<sup>3</sup>  
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**P-52: Some Tribological Aspects of Mg-0.5Ca-xY Biodegradable Materials**

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**P-53: Iodine-loaded Bioactive Titanium Metal and Its Alloys by Chemical and Heat Treatment**

**Seiji Yamaguchi**<sup>1</sup>, Morihiro Ito<sup>1</sup>, Seine Shintani<sup>1</sup>, Takashi Nakamura<sup>2</sup>, Hiroaki Takadama<sup>1</sup>  
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**P-54: MC3T3-E1 Cellular Response and Protein Detection on Surface Potential-Controlled TiO<sub>2</sub> Scale in Serum-Containing Medium**

**Masami Hashimoto**<sup>1</sup>, Takafumi Ogawa<sup>1</sup>, Satoshi Kitaoka<sup>1</sup>, Shunsuke Muto<sup>2</sup>, Maiko Furuya<sup>3</sup>, Hiroyasu Kanetaka<sup>3</sup>, Masayuki Abe<sup>4</sup>, Hayato Yamashita<sup>4</sup>  
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**P-55: Effect of Crystalline Calcium Phosphate Coating Prepared in an Aqueous Solution on Corrosion Resistance of Bioabsorbable Magnesium Alloy**

**Shin Watanabe**, Takeshi Yabutsuka, Shigeomi Takai  
Kyoto University, Japan

**P-56: Surface Structure and In Vitro Apatite-Forming Ability of Copper-, Zinc-, or Silver-Doped Titanium**

**Masakazu Kawashita**, Yuta Iwabuchi, Kanae Suzuki, Maiko Furuya, Kotone Yokota, Hiroyasu Kanetaka  
Tohoku University, Japan

**P-57: Bone Metastases Treatment by a Local Delivery of Gallium**

Ivana Strazic<sup>2</sup>, Heidy Schmid<sup>2</sup>, Annie Schmid<sup>2</sup>, Jean-Michel Boulter<sup>1</sup>, Jean-Claude Scimeca<sup>2</sup>, **Elise Verron**<sup>1</sup>  
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**P-58: Graphene Reinforced Titania as a Keratoprosthesis Skirt Material**

Zhong Li<sup>1</sup>, Gwendoline T. W. Goh<sup>2</sup>, Gary H.-F. Yam<sup>2,3</sup>, Brianna C. Thompson<sup>1</sup>, Melina Setiawan<sup>2</sup>, Huanlong Hu<sup>1</sup>, Donald Tan<sup>2,3,4</sup>, Jodhbir S. Mehta<sup>1,2,3,4</sup>, **Khiam Aik Khor**<sup>1</sup>  
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**P-59: Citrate-Based Biomaterials Reducing the Oxidative Damage of Stem Cells via Regulating Cellular Redox Signaling Pathways for Oxidative Stress-Induced Diseases Therapy**

**Honglian Dai**<sup>1,2</sup>, Xiaopei Wu<sup>1</sup>, Yingchao Han<sup>1,2</sup>, Shipu Li<sup>1,2</sup>  
<sup>1</sup> Wuhan University of Technology, China, <sup>2</sup> Biomedical Materials and Engineering Research Center of Hubei Province, China

**P-60: Hydroxyapatite Ceramics with Preferred Orientation to a(b)-plane Promote Differentiation of Mesenchymal Stem Cells into Osteoblasts**

**Yuta Yamada**, Masaki Tamazawa, Mamoru Aizawa  
Meiji University, Japan

**P-61: Significant Wound Healing of Simonkolleite Powder Using a Pig Model**

**Miki Nagashima**<sup>1</sup>, Yoshimi Nakata<sup>2</sup>, Etsuro Udagawa<sup>2</sup>, Osamu Yamamoto<sup>1</sup>

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**P-62: Phase Separation Effect in Gelation of 53S 3DOM Bioactive Glass**

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**P-63: Shear Bond Strength of Zirconia to Titanium Implant Using Glass Bonding**

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**P-64: The Role of Si in Bone Nodule Formation**

**Azadeh Rezaei**<sup>1</sup>, Yutong Li<sup>1</sup>, Riku Furuya<sup>2</sup>, Joel Turner<sup>1</sup>, Akiko Obata<sup>2</sup>, Toshihiro Kasuga<sup>2</sup>, Gavin Jell<sup>1</sup>

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**P-65: Grain Boundary Corrosion in Sr and Ca doped TiO<sub>2</sub> Bone Scaffolds**

**Anne Klemm**<sup>1</sup>, Patricia Almeida Carvalho<sup>2</sup>, Håvard J. Haugen<sup>1</sup>, Hanna Tiainen<sup>1</sup>

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**P-66: Synthesis of Hierarchically Porous MgO Monoliths with a Co-Continuous Structure**

**Xuanming Lu**, Kazuyoshi Kanamori, Kazuki Nakanishi

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**P-67: Iron(III) Oxyhydroxide and Oxide Monoliths with Controlled Multiscale Porosity: Synthesis and their Adsorption Performance**

**Yosuke Hara**, Kazuyoshi Kanamori, Kazuki Nakanishi

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**P-68: NH<sub>3</sub> Adsorption Property of Calcium Phosphate Granules With Morphology Originated From Shell Structure**

**Kota Kaga**, Jin Nakamura, Ayae Sugawara-Narutaki, Chikara Ohtsuki

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**P-69: A Novel Mechanically Blended Biodegradable Composite with Antibacterial Efficiency**

**Shi Yun Tong**<sup>1</sup>, Poon Nian Lim<sup>1</sup>, Zuyong Wang<sup>2</sup>, Eng San Thian<sup>1</sup>

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**P-70: Evaluation of Elution Behavior of Silver Ions from Silver Containing Carbonate Hydroxyapatite Composites**

**Takayuki Murakami**<sup>1</sup>, Iwao Noda<sup>1</sup>, Junji Ikeda<sup>1</sup>, Atsushi Nakahira<sup>2</sup>

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**P-71: Cotton-wool-like Resorbable Bone Void Fillers Containing  $\beta$ -TCP and Calcium Carbonate Particles**

**Naoki Osada**<sup>1,2</sup>, Masashi Makita<sup>2</sup>, Yasutoshi Nishikawa<sup>2</sup>, Toshihiro Kasuga<sup>1</sup>

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**P-72: Optimum Blend of Poly( $\epsilon$ -caprolactone)/Chitosan-based Antibacterial Composite**

**Kaiying Wang**<sup>1</sup>, Poon Nian Lim<sup>1</sup>, Zuyong Wang<sup>2</sup>, Eng San Thian<sup>1</sup>

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**P-73: Fabrication of Bioactive Polycaprolactone by Incorporation of Precursors of Apatite**

**Hasnat Zamin**, Takeshi Yabutsuka, Shigeomi Takai

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**P-74: Fabrication of Novel Hemostatic Film with Oxidized Cellulose and Sugar-Containing Hydroxyapatite**

**Yeonjeong Noh**<sup>1</sup>, Tomohiro Umeda<sup>1</sup>, Yoshiro Musha<sup>2</sup>, Kiyoshi Itatani<sup>1</sup>

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**P-75: Rf-magnetron Sputtered Silica Interlayer on  $\beta$ -TCP Granules for Mesoporous Silica Coating**

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**P-76: Shear-induced Viscosity Increase of Silica Nanoparticle Suspensions in the Presence of Amphiphilic Block Copolymer**

**Seito Katayama**, Ayae Sugawara-Narutaki, Jin Nakamura, Chikara Ohtsuki

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**P-77: Evaluation for the Mechanical Properties of the PBS-HAp-AF Composite**

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**P-78: Properties of Starch-reinforced Calcium Phosphate Bone Paste Incorporated with Strontium Ion**

**Yuka Igarashi**, Yasuhiro Watarai, Chikako Yokoyama, Takahiro Kawai

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**P-79: Composition and Functional Groups Evaluation of Indonesian Portland Cement as Material for Dental Application**

**Indra Primathena**, Denny Nurdin, Rahmi Alma Adang, Arief Cahyanto

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**P-80: The Nanofiller Effect on Adhesion and Shear Bond Strength of Experimental Graphene Dental Orthodontic Cements**

**Codruta Sarosi**<sup>1</sup>, Stela Pruneanu<sup>2</sup>, Mihaela Pastrav<sup>3</sup>, Cristina Prejmerean<sup>1</sup>, Aurora Antoniac<sup>4</sup>, Diana Sucala<sup>5</sup>, Doina Prodan<sup>1</sup>, Marioara Moldovan<sup>1</sup>

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**P-81: What Should We Focus on the Evaluating Durability of Ceramic for Artificial Joint?**

**Junji Ikeda**, Taito Nakamura, Kumi Nakamura, Takayuki Murakami

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**P-82: *In vitro* Evaluations of Cation-substituted Hydroxyapatite Ceramics Fabricated by Ultrasonic Spray-Pyrolysis Process using Osteoblasts**

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**P-83: Kinetic Control of Silicic Acid Polycondensation and Synthesis of Porous Silica by Using Peptides**

**Takahiro Shimizu**, Ayae Sugawara-Narutaki, Jin Nakamura, Chikara Ohtsuki  
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**P-84: Synthesis of Porous Calcium Phosphate Using Bacteria as a Template**

**Kazuki Ojio**, Jin Nakamura, Ayae Sugawara-Narutaki, Chikara Ohtsuki  
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**P-85: Effect of Pore Structure of Apatite-fiber Scaffold on Differentiation of P19.CL6 Cells into Cardiomyocytes**

**Yuzuha Ichikawa**<sup>1</sup>, Kei Yasuda<sup>1</sup>, Masahiro Takahara<sup>1</sup>, Mamoru Aizawa<sup>2</sup>, Nobuyuki Kanzawa<sup>1</sup>  
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**P-86: The Synthesis and Properties of PLGA/PRGD/β-TCP Porous Composites**

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**P-87: Deposition of Nanohydroxyapatite Particles on Electrospun Fibers for Tissue Engineering**

**Julia Rogowska-Tylman**<sup>1, 2</sup>, Bartosz Woźniak<sup>1</sup>, Agnieszka Chodara<sup>1</sup>, Giuseppino Fortunato<sup>3</sup>, Alex Dommann<sup>3</sup>, Witold Łojkowski<sup>1</sup>  
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**P-88: Hafnium-doped Hydroxyapatite Nanoparticles with Ionizing Radiation for Lung Cancer Treatment**

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**P-89: Incorporation of Protein Ovalbumin into Carbonate Apatite**

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**P-90: Formation of Plant-Inspired Polyphenol Complex for Ophthalmic Drugs**

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**P-91: Preparation of Calcium Phosphate Coated Simvastatin-loaded PLGA Microspheres Dispersed Alginate Hydrogel Beads As a Controlled Drug Delivery Carrier**

Makoto Matsubayashi, **Takayuki Terukina**, Yusuke Hattori, Makoto Otsuka  
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**P-92: New Strategy for Introducing Bioactive Species in Modified Porous Biphasic Ceramic Scaffold**

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