

## Scientific Program

### December 2 (Mon)

16:00 Registration Open

18:00 – 20:00 Welcome Reception (Sea Lounge)

### December 3 (Tue)

8:30 Registration Open

9:10 Opening Ceremony

Plenary Lecture 1

9:20 – 10:00

Chair: Jin Nakamura

#### **PL-1: Polyelectrolyte Shield as a Growth Factor Delivery System for Tissue Engineering Application**

Justin J. Chung<sup>1, 2</sup>

*<sup>1</sup>Department of Transdisciplinary Medicine, Seoul National University Hospital, Republic of Korea, <sup>2</sup>Department of Medicine, Seoul National University College of Medicine, Republic of Korea*

Oral Session 1

10:00 – 10:45

Chair: Takeshi Yabutsuka

#### **O-1: Antiviral Activity of Zn containing Ceramic Materials**

Kaiki Amose, Hiroshi Kawakami, Yoshiyuki Yokogawa

*Osaka Metropolitan University, Japan*

#### **O-2: Effects of Silicate Compounds with Different Structures on Osteogenesis**

Kazumasa Ikedo<sup>1</sup>, Masayasu Igarashi<sup>2</sup>, Sungho Lee<sup>2</sup>, Akiko Obata<sup>1</sup>

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

### **O-3: Preparation of B<sub>2</sub>O<sub>3</sub>-CaO-ZnO Sol-Gel Glasses and Fibers**

Kohei Hosoki, Akiko Obata

*Nagoya Institute of Technology, Japan*

10:45 – 11:00 Coffee Break

Oral Session 2

11:00 – 12:00

Chair: Ryo Hamai

### **O-4: Structure and Solubility of CaO-P<sub>2</sub>O<sub>5</sub>-Ta<sub>2</sub>O<sub>5</sub> Glasses Prepared by Liquid Phase Method**

Hayato Asano<sup>1,2</sup>, Minori Takahashi<sup>3</sup>, Akiko Obata<sup>3</sup>, Makoto Sakurai<sup>2</sup>, Fukue Nagata<sup>1</sup>, Sungho Lee<sup>1</sup>

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

<sup>2</sup>*Department of Applied Chemistry, College of Engineering, Chubu University, Japan,*

<sup>3</sup>*Nagoya Institute of Technology, Japan*

### **O-5: The Solid Solution State of Zn<sup>2+</sup> ions in β-TCP and the Effect of the Injectable Material on Bone Regeneration**

Chika Isawa, Osamu Yamamoto

*Yamagata University, Japan*

### **O-6: *In vivo* Evaluation of Anti-bacterial Paste-like Artificial Bone Using a Pig Tibia Defect Model**

Yuki Kamaya<sup>1</sup>, Kitaru Suzuki<sup>1,2</sup>, Shiori Kato<sup>1</sup>, Kazuaki Nakano<sup>3</sup>, Masaki Nagaya<sup>3</sup>, Hiroshi Nagashima<sup>3,4</sup>, Mamoru Aizawa<sup>1,2</sup>

<sup>1</sup>*Applied Chemistry Program, Graduate School of Science and Technology, Meiji University, Japan,* <sup>2</sup>*Meiji University International Institute for Materials with Life Functions, Japan,* <sup>3</sup>*Meiji University International Institute for Bio-Resource Research, Japan,* <sup>4</sup>*Department of Life Sciences, School of Agriculture, Meiji University, Japan*

**O-7: The Effect of Fluorescent Light Irradiation on the Antibacterial Activity of Copper-Oxide Surface Layer**

*Yurika Taniguchi<sup>1</sup>, Hiroshi Kawakami<sup>1</sup>, Sadao Komemushi<sup>1</sup>, Ken Hirota<sup>2</sup>, Takashi Ozawa<sup>3</sup>, Kazunori Miyamoto<sup>3</sup>, Hiroaki Nakayama<sup>3</sup>, Masahiko Wada<sup>3</sup>, Hideaki Hatano<sup>3</sup>*

*<sup>1</sup>Osaka Metropolitan University, Japan, <sup>2</sup>Doshisha University, Japan, <sup>3</sup>Japan Copper Development Association, Japan*

12:00 – 13:15 Lunch

Oral Session 3

13:15 – 14:15

Chair: Tomohiko Yoshioka

**O-8: XPS Analysis of New Titanium-silver Alloys Immersed in Fluoride Solution**

*Naoto Sakurai<sup>1,2</sup>, Tomofumi Sawada<sup>1</sup>, Yukinori Kuwajima<sup>2</sup>, Yasunori Egawa<sup>3</sup>, Keita Itoh<sup>3</sup>, Shintaro Niiyama<sup>3</sup>, Kazuya Asakawa<sup>1</sup>, Akihiko Hatanaka<sup>1</sup>, Kaori Sasaki<sup>1</sup>, Kazuro Satoh<sup>2</sup>, Shinji Takemoto<sup>1</sup>*

*<sup>1</sup>Department of Biomedical Engineering, Iwate Medical University, Japan, <sup>2</sup>Division of Orthodontic, Department of Developmental Oral Health Science, School of Dentistry, Iwate Medical University, Japan, <sup>3</sup>Ishifuku Metal Industry Co., Ltd., Japan*

**O-9: Apatite Formation Ability of Bioactive Ceria-stabilized Zirconia/Alumina Composite in Various Kinds of Simulated Body Environment**

*Yudai Watabiki, Shigeomi Takai, Takeshi Yabutsuka*

*Kyoto University, Japan*

**O-10: Development of Zinc Cobalt Ferrite Nanoparticles by Sol-gel Technique for Cancer Hyperthermia Treatment**

*Zaid Mukhtar, Jin Nakamura, Toshiki Miyazaki*

*Kyushu Institute of Technology, Japan*

**O-11: Fundamental Verification of Enhanced Ferroptosis in Cancer Cells by Magnetic Hyperthermia Using Fe<sub>2-3</sub>N Particles**

Soichiro Usuki<sup>1</sup>, Saki Okada<sup>2</sup>, Masaya Shimabukuro<sup>3</sup>, Taishi Yokoi<sup>3</sup>, Tomoyuki Ogawa<sup>4</sup>, Masakazu Kawashita<sup>3</sup>

<sup>1</sup>*Graduate School of Medical and Dental Sciences, Institute of Science Tokyo, Japan,*

<sup>2</sup>*Faculty of Medicine, Imperial College London, UK,* <sup>3</sup>*Laboratory for Biomaterials and Bioengineering, Institute of Integrated Research, Institute of Science Tokyo, Japan,*

<sup>4</sup>*Graduate School of Engineering, Tohoku University, Japan*

14:15 – 14:30 Coffee Break

14:30 – 15:30 Poster Session (No.21 Meeting Room)

Oral Session 4

15:30 – 16:30

Chair: Akiko Obata

**O-12: Preparation of CaO-P<sub>2</sub>O<sub>5</sub>-Na<sub>2</sub>O-Ta<sub>2</sub>O<sub>5</sub> Glasses for Biomedical Applications**

Sungho Lee<sup>1</sup>, Hayato Asano<sup>1,2</sup>, Makoto Sakurai<sup>2</sup>, Fukue Nagata<sup>1</sup>

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

<sup>2</sup>*Chubu University, Japan*

**O-13: Histological Examination of Calcium Phosphate with Silica Composite as Alveolar Socket Cement after Tooth Extraction**

Ira Artilia<sup>1</sup>, Ratni Wulan Ndary<sup>2</sup>, Saskia Lenggogeni Nasroen<sup>3</sup>, Ahmed El-Ghannam<sup>4</sup>

<sup>1</sup>*Department of Dental Materials Engineering, Faculty of Dentistry, Universitas Jenderal Achmad Yani, Cimahi, Indonesia,* <sup>2</sup>*Faculty of Dentistry, Universitas Jenderal Achmad Yani, Cimahi, Indonesia,* <sup>3</sup>*Department of Oral Surgery, Faculty of Dentistry, Universitas Jenderal Achmad Yani, Cimahi, Indonesia,* <sup>4</sup>*Mechanical Engineering and Engineering Science, University of North Carolina at Charlotte, Charlotte, NC, USA*

**O-14: The Composite Scaffolds for the Cartilage Regeneration in the Whole-thickness Wound of Porcine Cartilage**

Ming-Fa Hsieh<sup>1</sup>, Yi-Ho Hsieh<sup>2</sup>

<sup>1</sup>*Chung Yuan Christian University, Taiwan (R.O.C.),* <sup>2</sup>*Min-Sheng General Hospital, Taiwan (R.O.C.)*

**O-15: Development of Cuttlebone-based Carbonate Apatite Scaffolds: A Novel Strategy for Bone Tissue Engineering**

A.N. Taleb Alashkar, K. Hayashi, K. Ishikawa

*Graduate School of Dental Science, Department of Biomaterials, Kyushu University, Japan*

16:30 – 16:45 Coffee Break

Plenary Lecture 2

16:45 – 17:25

Chair: Mamoru Aizawa

**PL-2: Development and Clinical Application of Precise Bone Processing Apparatus and Optimization of Bioabsorbable Bone Screw Geometry**

Yuji Uchio, Shinji Imade, Masato Sato, and Takuya Manako

*Department of Orthopaedic Surgery, Shimane University, Japan*

18:30 – 20:30 Banquet (JR Kyushu Station Hotel Kokura)

## **December 4 (Wed)**

8:30 Registration Open

Special Symposium on Environmentally-friendly Material Design

9:15 – 11:20

Chair: Yuki Shirosaki and Sungho Lee

9:15 – 9:20 Introduction (Toshiki Miyazaki)

### **PL-3: Harnessing Bamboo Biomass: Utilising Agricultural Waste as a Vital Source of Crop-based Phytonutrients**

Vivien Yi Mian Jong

*Centre of Applied Science Studies, Universiti Teknologi MARA, Malaysia*

### **KN-1: Upgrade Resource Usage of Dicalcium Phosphate Dihydrate from Food Industry**

Masamoto Tafu<sup>1</sup>, Takeshi Toshima<sup>1</sup>, Natsuki Okajima<sup>2</sup>, Yuya Hata<sup>3</sup>, Yoshiaki Hagino<sup>3</sup>, Kenji Nagano<sup>3</sup>, Hiroshi Tsukamoto<sup>2</sup>, Yasuo Morioka<sup>2</sup>

*<sup>1</sup>National Institute of Technology (KOSEN), Toyama College, Japan, <sup>2</sup>Nitta Gelatin Inc., Japan, <sup>3</sup>Fudo Tetora Corporation, Japan*

### **KN-2: Verification of Thermoplastic Materials Based on Cellulose**

Yoshito Andou<sup>1,2</sup>, Jacqueline Lease<sup>1</sup>

*<sup>1</sup>Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Japan, <sup>2</sup>Collaborative Research Centre for Green Materials on Environmental Technology, Kyushu Institute of Technology, Japan*

11:20 – 12:30 Lunch

Plenary Lecture 4

12:30 – 13:10

Chair: Toshiki Miyazaki

**PL-4: NanoFusion: Polymer-based Composites for Next-gen Bone Tissue Engineering**

Che Azurhanim Che Abdullah<sup>1</sup>, Aminatun<sup>2</sup>

*<sup>1</sup>Department of Physics, Faculty of Science and Institute of Nanoscience and Nanotechnology, Universiti Putra Malaysia, UPM Serdang, 43400, Selangor, Malaysia,*

*<sup>2</sup>Department of Physics, Universitas Airlangga, Surabaya 60115, Indonesia*

Oral Session 5

13:10 – 13:40

Chair: Taishi Yokoi

**O-16: Usefulness of Silica-loaded Carbonate Apatite as a Bone Regeneration Material**

Yuki Sugiura<sup>1</sup>, Fumiko Ono<sup>2</sup>, Masakatsu Nohara<sup>2</sup>, Etsuko Yamada<sup>1</sup>, Masanori Horie<sup>1</sup>

*<sup>1</sup>Health and Medical Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan, <sup>2</sup>Faculty of Veterinary Medicine, Okayama University of Science, Japan*

**O-17: Fabrication and Characterization of Sodium Alginate/Calcium Chloride/ $\beta$ -TCP composite as a candidate of Guided Bone Regeneration Material**

Eddy<sup>1</sup>, Muhammad Rian Gymnastiar<sup>2</sup>, Juan Cassius Halim<sup>2</sup>, Tansza Putri<sup>1</sup>

*<sup>1</sup>Department of Dental Materials, Faculty of Dentistry, Universitas Trisakti, Indonesia,*

*<sup>2</sup>Undergraduate School of Dentistry, Faculty of Dentistry, Universitas Trisakti, Indonesia*

13:40 – 13:55 Coffee Break

Oral Session 6

13:55 – 14:40

Chair: Taira Sato

**O-18: Ca<sup>2+</sup> Release from Monetite-incorporated Gelatin Sponge for Effective Hemostatis**

Azizah Intan Pangesty<sup>1</sup>, Sunarso<sup>2</sup>

<sup>1</sup>*Universitas Indonesia, Indonesia*, <sup>2</sup>*Universitas Indonesia, Indonesia*

**O-19: Fabrication of Composite Scaffold Containing Chitosan/Gelatin/ $\beta$ -tricalcium Phosphate as a Candidate for Synthetic Bone Substitute**

Tansza Setiana Putri, Eddy

*Department of Dental Materials, Faculty of Dentistry, Universitas Trisakti, Indonesia*

**O-20: Development of Octacalcium Phosphate-based Fluorescence Materials**

Taishi Yokoi, Masakazu Kawashita

*Institute of Science Tokyo, Japan*

Oral Session 7

14:40 – 15:10

Chair: Artilia Ira

**O-21: Fabrication of Monetite for Bone Graft Applications Using the Dissolution-Precipitation Method**

Sunarso

*Department of Dental Materials, Faculty of Dentistry, Universitas Indonesia, Indonesia*

**O-22: The Effect of Serum Component Adsorption on the Surface Properties and Initial Microbial Adhesion of Various Materials**

Masaki Umetsu, Kyogo Hoshi, Masanobu Kamitakahara

*Tohoku University, Japan*

15:10 – 15:25 Coffee Break

Oral Session 8

15:25 – 16:10

Chair: Kanji Tsuru



**O-23: Protein Adsorption and Osteoblastic Differentiation on Octacalcium Phosphate via Different Hydrolysis Processes**

Ryo Hamai, Masahiro Okada, Kaori Tsuchiya, Osamu Suzuki

*Division of Craniofacial Function Engineering (Biomaterials Science and Engineering),  
Tohoku University Graduate School of Dentistry, Japan*

**O-24: Adsorption Behavior of Mucin on Hexagonal Prism-shaped Hydroxyapatite Depending on Ionic Species**

Kazumasa Suzuki, Shogo Sumi, Yuko Matsukawa, Chikara Ohtsuki

*Nagoya University, Japan*

**O-25: Characterizations and Biological Activities of Dispersible Titanium Dioxide Hybrid Hydroxyapatite Nanoparticles**

Tsutomu Furuzono<sup>1</sup>, Hiroki Maruyama<sup>1</sup>, Mitsunobu Iwasaki<sup>2</sup>, Yoshinao Azuma<sup>1</sup>

<sup>1</sup>*Graduate School of Biology-oriented Science and Technology, Kindai University,*

<sup>2</sup>*Graduate School of Science and Engineering, Kindai University*

Oral Session 9

16:10 – 16:40

Chair: Kazumasa Suzuki

**O-26: Biocompatible Ceramic Multi-layer Film on the Mg-Zn-Zr Alloy Formed by Aqueous Solution Method Under Normal Temperature and Pressure**

Takeshi Yabutsuka, Shuntaro Kida, Shigeomi Takai

*Kyoto University, Japan*

**O-27: Immobilization of Enzyme in Silica Gel Using AC Electrolysis**

Tomohiko Yoshioka<sup>1</sup>, Koji Taniguchi<sup>2</sup>, Takuya Kataoka<sup>1</sup>, Satoshi Hayakawa<sup>1</sup>

<sup>1</sup>*Faculty of Interdisciplinary Science and Engineering in Health Systems, Okayama University, Japan,* <sup>2</sup>*Graduate School of Interdisciplinary Science and Engineering in Health Systems, Okayama University, Japan*

16:40 – 16:50 Closing Ceremony

## Poster List

### **P-1: Cellular Responses of Osteoclasts to Chelate-setting Bone Repair Cements with Various Calcium-phosphate Phases**

Minami Kosuge<sup>1</sup>, Yuki Kamaya<sup>1</sup>, Kitaru Suzuki<sup>1,2</sup>, Mamoru Aizawa<sup>1,2</sup>

<sup>1</sup>*Applied Chemistry Program, Graduate School of Science and Technology, Meiji University, Japan,* <sup>2</sup>*Meiji University International Institute for Materials with Life Functions, Japan*

### **P-2: Three-dimensional Interconnected Porous Carbonate Apatite Bone Graft Fabricated with Polymer-bound CaCO<sub>3</sub> Cylindrical and Spherical Granules**

Saki Takeda<sup>1,2</sup>, Akira Tsuchiya<sup>3</sup>, Masahumi Moriyama<sup>2</sup>, Kunio Ishikawa<sup>1</sup>

<sup>1</sup>*Department of Biomaterials, Faculty of Dental Science, Kyushu University, Japan,* <sup>2</sup>*Section of Oral and Maxillofacial Surgery, Division of Maxillofacial Diagnostic and Surgical Sciences, Faculty of Dental Science, Kyushu University, Japan,* <sup>3</sup>*Institute of Environmental Science and Technology, The University of Kitakyushu, Japan*

### **P-3: Regeneration of Vascular and Bone Tissue Using Porous Hydroxyapatite Ceramics and Its Biological Evaluation**

Haruka Shibahara<sup>1</sup>, Kitaru Suzuki<sup>1</sup>, Shunta Kawabata<sup>1</sup>, Michiyo Honda<sup>1,2</sup>, Mamoru Aizawa<sup>1,2</sup>

<sup>1</sup>*Graduate School of Science and Technology, Meiji University, Japan,* <sup>2</sup>*Meiji University International Institute of Material with Life Functions, Japan*

### **P-4: Comparison of Setting Time of Apatite Cement with and without Peperomia Pellucida (L). Kunth Extract as Bone Substitute Material**

Widya Irsyad<sup>1</sup>, Allya Salwa<sup>2</sup>, Artilia Ira<sup>3</sup>

<sup>1</sup>*Department of Orthodontics, Program Study of Dentistry, Universitas Jenderal Achmad Yani, Indonesia,* <sup>2</sup>*Faculty of Dentistry, Universitas Jenderal Achmad Yani, Cimahi, Indonesia,* <sup>3</sup>*Department of Dental Materials Engineering, Faculty of Dentistry, Universitas Jenderal Achmad Yani, Cimahi, Indonesia*

**P-5: Three-dimensional Culture of Neuroblastoma Cells Using Apatite-fiber Scaffold And Its Biological Evaluation**

Xinglin Zhong<sup>1</sup>, Haruka Shibahara<sup>1</sup>, Zixuan Lu<sup>1</sup>, Kitaru Suzuki<sup>1</sup>, Nagisa Nakata Arimistu<sup>2</sup>, Yoshishige Miyabe<sup>2</sup>, Mamoru Aizawa<sup>1</sup>

<sup>1</sup>Meiji University, Japan, <sup>2</sup>St. Marianna University, Japan

**P-6: Preparation of Chitosan–siloxane Porous Hybrids Prepared Using Different Silane Resources for Nerve Conduits**

Ryutaro Munemasa<sup>1</sup>, Yuki Shirosaki<sup>2</sup>

<sup>1</sup>Department of Applied Chemistry, School of Engineering, Kyushu Institute of Technology, Japan, <sup>2</sup>Department of Materials Science, Faculty of Engineering, Kyusyu Institute of Technology, Japan

**P-7: Development of Immunoceramics Working on the Immune System and Their Anti-tumor Effects**

Yuki Oshima<sup>1</sup>, Yundi Zheng<sup>1</sup>, Masato Nose<sup>1</sup>, Ryuichi Fukuda<sup>1</sup>, Shigenori Nagai<sup>2, 3</sup>, Mamoru Aizawa<sup>1, 3</sup>

<sup>1</sup>Applied Chemistry Program, Graduate School of Science and Technology, Meiji University, Japan, <sup>2</sup>Department of Oral Biology, Institute of Science Tokyo, Japan, <sup>3</sup>Meiji University International Institute for Materials with Life Functions, Meiji University, Japan

**P-8: Radiograph Characterization of Apatite Cement-Silica Composite in the Alveolar Bone Socket After Tooth Extraction**

Mutiara Sukma Suntana<sup>1</sup>, Ratna Trisusanti<sup>1</sup>, Ira Artilia<sup>2</sup>, Saskia Lenggogeni Nasroen<sup>3</sup>, Ratni Wulan Ndary<sup>4</sup>

<sup>1</sup>Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Universitas Jenderal Achmad Yani, Indonesia, <sup>2</sup>Department of Dental Materials Engineering, Faculty of Dentistry, Universitas Jenderal Achmad Yani, Indonesia, <sup>3</sup>Department of Oral & Maxillofacial Surgery, Faculty of Dentistry, Universitas Jenderal Achmad Yani, Indonesia, <sup>4</sup>Faculty of Dentistry, Universitas Jenderal Achmad Yani, Indonesia

**P-9: Preparation and Performance Evaluation of Monetite-type Bone Paste Containing Gelatinized Starch**

Ryuga Ueno<sup>1</sup>, Santa Kanda<sup>2</sup>, Takahiro Kawai<sup>1</sup>

<sup>1</sup>*Graduate School of Science and Engineering, Yamagata University, Japan,* <sup>2</sup>*Faculty of Engineering, Yamagata University, Japan*

**P-10: Cytotoxicity Evaluation of Poly(lactic acid)/hydroxyapatite Particles Developed for Drug Delivery Carriers**

Natsuki Ikeda<sup>1,2</sup>, Sungho Lee<sup>1</sup>, Tatsuya Miyajima<sup>1</sup>, Katsuya Kato<sup>1</sup>, Makoto Sakurai<sup>2</sup>, Fukue Nagata<sup>1</sup>

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

**P-11: Influence of Varying Calcium Citrate Levels and Different Gelatin Sources on Hydroxyapatite Formation in Octacalcium Phosphate/Calcium Citrate/Gelatin Composites in Simulated Body Fluid**

Yuejun Wang<sup>1</sup>, Taishi Yokoi<sup>2</sup>, Masaya Shimabukuro<sup>2</sup>, Masakazu Kawashita<sup>2</sup>

<sup>1</sup>*Graduate School of Medical and Dental Science, Institute of Science Tokyo, Japan,* <sup>2</sup>*Laboratory for Biomaterials and Bioengineering, Institute of Science Tokyo, Japan*

**P-12: Solvothermal Synthesis of Propyl-Modified Calcium Silicate with Reduced Carbonate By-Product Formation**

Ryo Tsunekawa, Toshiki Miyazaki, Jin Nakamura

*Kyushu Institute of Technology, Japan*

**P-13: Development of sustained drug-releasable dental restorative glassionomer cement using nano-structured silica particles**

Sirus Safae<sup>1</sup>, Mahdis Nesabi<sup>1</sup>, Eri Seitoku<sup>1</sup>, Shigeaki Abe<sup>1</sup>, Yuko Era<sup>2</sup> Atsushi Hyono<sup>3</sup>, Mariko Nakamura<sup>4</sup>, Ikuya Watanabe<sup>1</sup>, Hiroshi Murata<sup>1</sup>

<sup>1</sup>*Nagasaki University, Japan,* <sup>2</sup>*Saitama Prefectural University, Japan,* <sup>3</sup>*National Institute of Technology, Asahikawa College, Japan,* <sup>4</sup>*Kyushu University of Medical Science, Japan*

**P-14: Thermal Alchemy: Enhancing Malaysian Dolomites for Bioceramic Innovation**

Mazni Abu Zarin<sup>1</sup>, Che Azurahanim Che Abdullah<sup>1,2,3</sup>

<sup>1</sup>*Institute of Bioscience, Universiti Putra Malaysia, Malaysia,* <sup>2</sup>*Nanomaterial Synthesis and Characterization Laboratory, Institute of Nanoscience and Nanotechnology, Universiti Putra Malaysia, Malaysia,* <sup>3</sup>*Department of Physics, Faculty of Science, Universiti Putra Malaysia, Malaysia*

**P-15: Molecular Design of High Density Gas-storage Devices: A DFT Approach**

Hiroshi Kawabata, Tetsuji Iyama, Hiroto Tachikawa

*Hokkaido University, Japan*

**P-16: Release Behavior of Phosphate Species from Organically Modified Zirconium Phosphate**

Ryohei Kozaki<sup>1</sup>, Jin Nakamura<sup>2</sup>, Yuko Matsukawa<sup>1</sup>, Kazumasa Suzuki<sup>1</sup>, Chikara Ohtsuki<sup>1</sup>

<sup>1</sup>*Graduate School of Engineering, Nagoya University, Japan,* <sup>2</sup>*Graduate School of Life Science and Systems Engineering, Japan*

**P-17: Zirconium Phosphate Deposition on Zirconium Metal by Phosphoric Acid Treatment**

Fuka Momota, Jin Nakamura, Toshiki Miyazaki

*Kyushu Institute of Technology, Japan*

**P-18: Towards Understanding the Antibacterial Mechanism of Iodine-loaded Titanium**

Mahmoud Gallab<sup>1</sup>, Yoshiyuki Kawamoto<sup>1</sup>, Seine A. Shintani<sup>1</sup>, Morihiro Ito<sup>1</sup>, Bungo Otsuki<sup>2</sup>, Takaaki Ueno<sup>3</sup>, Hisashi Kitagaki<sup>4</sup>, Tomiharu Matsushita<sup>1</sup>, Seiji Yamaguchi<sup>1</sup>

<sup>1</sup>*Department of Biomedical Sciences, Chubu University, Japan,* <sup>2</sup>*Department of Orthopaedic Surgery, Kyoto University, Japan,* <sup>3</sup>*Department of Dentistry and Oral Surgery, Osaka Medical and Pharmaceutical University, Japan,* <sup>4</sup>*Osaka Yakin Kogyo Co., Ltd., Japan*

**P-19: Characterization of Surface Layers of Sulfate-containing Hydrogen Peroxide-Treated Titanium and Its Alloy**

Komei Kawaguchi<sup>1</sup>, Takahiro Kawai<sup>2</sup>

*<sup>1</sup>Faculty of Engineering, Yamagata University, Japan, <sup>2</sup>Graduate school of Science and Engineering, Yamagata University, Japan*

**P-20: Enhanced bone repair and osseointegration of titanium implants by harnessing macrophage phenotype**

Riki Toita<sup>1,2</sup>, Yuki Shimizu<sup>1</sup>, Akira Tsuchiya<sup>3</sup>, Jeong-Hun Kang<sup>4</sup>

*<sup>1</sup>Biomedical Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan, <sup>2</sup>AIST-Osaka University Advanced Photonics and Biosensing Open Innovation Laboratory, Japan, <sup>3</sup>Institute of Environmental Science and Technology, The University of Kitakyushu, Japan, <sup>4</sup>National Cerebral and Cardiovascular Center Research Institute, Japan*

**P-21: Apatite Formation Ability and Visible-light-responsive Photocatalytic Activity of Surface-treated Tantalum**

Sota Iwasada, Jin Nakamura, Toshiki Miyazaki

*Kyushu Institute of Technology, Japan*