

# Symposium 5: Next Generation Bioceramics and Biocomposites

Wednesday, January 25, 2012  
**Porous Bioceramics - Joint  
Session with Symposium 9  
on Porous Ceramics**

10:00 AM-12:10 PM

Room: Coquina Salon C

Session Chair(s): Eldon Case, Aldo Boccaccini

**10:00 AM**

**(ICACC-S5-001-2012) Requirements for  
Bioactive Bone Implants from a Medical  
Device Company's Perspective (Invited)**

Jeff Rouleau\*, Markus Reiterer, Medtronic,  
USA

**10:30 AM**

**(ICACC-S5-002-2012) Fabrication of Carbonate  
Apatite - PLGA Hybrid Foam Bone Substitute**

Girlie Micu Munar\*, Melvin L Munar, Kanji  
Tsuru, Kyushu University, Japan; Shigeki  
Matsuya, Fukuoka Dental College, Japan; Kunio  
Ishikawa, Kyushu University, Japan

**10:50 AM**

**(ICACC-S5-003-2012) Sustained Release of a  
Monoclonal Antibody from Porous Silica**

Jennifer S Andrew\*, University of Florida, USA

**11:10 AM**

**(ICACC-S5-004-2012) Porosity-property  
relationships for bioceramics - is the volume  
fraction porosity an adequate descriptor in  
some cases? (Invited)**

Eldon Darrel Case\*, Michigan State University,

USA

**11:30 AM**

**(ICACC-S5-005-2012) Novel Cu-doped  
bioactive glass (45S5) derived scaffolds for  
bone tissue engineering**

Alexander Hoppe, Daniel Hiller, Subha Narayan  
Rath, U. Knesser, Aldo R. Boccaccini\*,  
University of Erlangen-Nuremberg, Germany

**11:50 AM**

**(ICACC-S5-006-2012) Microstructures and  
physical properties of biomorphic SiSiC  
ceramics manufactured via LSI-technique**

Steffen Weber\*, Raouf Jemmali, Dietmar Koch,  
Heinz Voggenreiter, German Aerospace  
Center, Institute of Structures and Design,  
Germany

## **Advanced Processing of Bioceramics I**

1:30 PM-3:10 PM

Room: Coquina Salon C

Session Chair(s): Min Wang, Jerome Chevalier

**1:30 PM**

**(ICACC-S5-007-2012) Interfaces in  
Biocomposites (Invited)**

Christian Bonhomme\*, UPMC, France

**1:50 PM**

**(ICACC-S5-008-2012) Electrospinning and  
Electrospun Fibrous Structures for Medical  
Applications (Invited)**

Min Wang\*, The University of Hong Kong,  
Hong Kong

**2:10 PM**

**(ICACC-S5-009-2012) Organic-Inorganic  
Scaffolds for Bone Substitute Applications  
(Invited)**

Jerome Chevalier\*, Peroglio Marianna,  
Nathalie Ginsac, Laurent Gremillard, Sylvain

Meille, Jean Marc Chenal, Laurent Chazeau,  
Catherine Gauthier, INSA-LYON, France

**2:30 PM**

**(ICACC-S5-010-2012) Direct foaming of a  
sponge-like bioactive glass/gelatin  
comoposite scaffold for bone tissue  
engineering**

Danish Nadeem\*, University of Bristol, United  
Kingdom; Xuebin Yang, University of Leeds,  
United Kingdom; Bo Su, University of Bristol,  
United Kingdom

**2:50 PM**

Break

## **Advanced Processing of Bioceramics II**

3:10 PM-5:00 PM

Room: Coquina Salon C

Session Chair(s): Masahiro Yoshimura, Leif  
Hermansson

**3:10 PM**

**(ICACC-S5-011-2012) Possible Degradation-  
Tolerable Zirconia Ceramics for Biomedical  
Applications (Invited)**

Masahiro Yoshimura\*, Chii-Shyang Hwang,  
National Cheng Kung University, Taiwan

**3:40 PM**

**(ICACC-S5-012-2012) ZBLAN glass ceramics for  
X-ray Imaging (Invited)**

Jacqueline Johnson\*, University of Tennessee  
Space Institute, USA; Christian Passlick, Martin-  
Luther-University of Halle-Wittenberg,  
Germany; Stefan Schweizer, Fraunhofer Center  
for Silicon Photovoltaics, Germany

**4:00 PM**

**(ICACC-S5-013-2012) Laser deposition of  
bioactive glasses on titanium alloys (Invited)**

Sameer R Paital, Ye Xiang, Jincheng Du,

Narendra Dahotre\*, University of North Texas,  
USA

**4:20 PM**

**(ICACC-S5-014-2012) Aspects of Antibacterial  
Nanostructurally Integrating Ca-aluminate  
Based Biomaterials (Invited)**

Leif Hermansson\*, Doxa AB, Sweden

**4:40 PM**

**(ICACC-S5-015-2012) Hydroxyapatite, TCP and  
Bioglass Coatings for Biomedical Applications  
made by High Velocity Suspension Flame  
Spraying (HVSFS)**

Rainer Gadow\*, Andreas Killinger, Nico  
Stiegler, University of Stuttgart, Germany

## **Symposium 5: Poster Session**

5:00 PM-7:30 PM

Room: Exhibition Hall, Ocean Center

**(ICACC-S5-P069-2012) In Vitro Evaluation of  
Silicate and Borate Bioactive Glass Scaffolds  
Prepared by Robocasting of Organic-Based  
Suspensions**

Aylin M Deliormanli\*, Mohamed N Rahaman,  
Missouri University of Science and Technology,  
USA

**(ICACC-S5-P070-2012) Evaluation of Borate  
Bioactive Glass Scaffolds with Different Pore  
Sizes in a Rat Subcutaneous Implantation  
Model**

Aylin M Deliormanli\*, Mohamed N Rahaman,  
Missouri University of Science and Technology,  
USA

**(ICACC-S5-P071-2012) The effect of  
silicocarnotite on the behavior of rat bone  
marrow stromal cells**

Congqin Ning\*, Wei Duan, Shanghai Institute

of Ceramics, Chinese Academy of Sciences,  
China

Thursday, January 26, 2012  
**Bioinspired, Biomimetic,  
and Biologically-derived  
Ceramics I**

8:00 AM-10:00 AM

Room: Coquina Salon C

Session Chair(s): Xiaodong Li, A. Cuneyt Tas

**8:00 AM**

**(ICACC-S5-016-2012) Granules of brushite and octacalcium phosphate from marble (Invited)**

A. Cuneyt Tas\*, University of Oklahoma, USA

**8:20 AM**

**(ICACC-S5-017-2012) Unveiling the Strengthening and Toughening Mechanisms of Nacre - Lessons from Nature (Invited)**

Xiaodong Li\*, University of South Carolina, USA

**8:40 AM**

**(ICACC-S5-018-2012) Antibiotics-incorporated Apatite and Apatite/Collagen Coatings on NiTi Shape Memory Alloy Formed by Electrochemical Deposition (Invited)**

Wing-Cheung Lee, Min Wang\*, The University of Hong Kong, Hong Kong

**9:00 AM**

**(ICACC-S5-019-2012) Bio-inspired synthesis of bone-like matrix**

Yan Wang\*, Nadine Nassif, Thierry Azais, Guillaume Laurent, Marie-Madeleine Giraud-Guille, Florence Babonneau, Laboratory of la chimie de la matiere condensee de Paris, France

**9:20 AM**

**(ICACC-S5-020-2012) UV-irradiation modifies**

**chemistry of anatase layer pertinent to in vitro apatite nucleation (Invited)**

Keita Uetsuki, Shinsuke Nakai, Yuki Shiroasaki, Satoshi Hayakawa, Akiyoshi Osaka\*, Okayama University, Japan

**9:40 AM**

Break

**Bioinspired, Biomimetic,  
and Biologically-derived  
Ceramics II**

10:00 AM-11:40 AM

Room: Coquina Salon C

Session Chair(s): Federico Rosei, Akiyoshi Osaka

**10:00 AM**

**(ICACC-S5-021-2012) Nanoscale Properties of Implantable Biomaterials (Invited)**

Federico Rosei\*, INRS, Canada

**10:20 AM**

**(ICACC-S5-022-2012) Bioactive Glass Scaffolds for Bone Tissue Engineering (Invited)**

Mohamed N. Rahaman\*, Missouri University of Science and Technology, USA

**10:40 AM**

**(ICACC-S5-023-2012) Residual stress and phase transformation in zirconia restoration ceramics (Invited)**

Masoud Allahkarami, Jay C Hanan\*, Oklahoma State University, USA

**11:00 AM**

**(ICACC-S5-024-2012) Carbonate Apatite Formation During The Setting Reaction of Apatite Cement**

Arief Cahyanto\*, Ira Artilia, Kanji Tsuru, Kunio Ishikawa, Faculty of Dental Science, Kyushu University, Japan

**11:20 AM**

**(ICACC-S5-025-2012) Preparation and Characterization of Mg-based Silicate Bioceramics from a Pre ceramic Polymer Filled with Nano-particles (Invited)**

Enrico Bernardo\*, Pedro M Dias, Paolo Colombo, University of Padova, Italy; Laura Treccani, Ulrike Hess, Kuroschi Rezwan, University of Bremen, Germany

## **Advanced Processing of Bioceramics III**

1:30 PM-3:30 PM

Room: Coquina Salon C

Session Chair(s): Aldo Boccaccini, George Quinn

**1:30 PM**

**(ICACC-S5-026-2012) Metal Matrix-Bioactive Glass Composite Coatings via Flame Spray (Invited)**

John A. Nychka\*, Greg M Nelson, Univ of Alberta, Canada; Andre G McDonald, University of Alberta, Canada

**2:00 PM**

**(ICACC-S5-027-2012) Composite materials with biomimetic apatite matrix for bone substitution (Invited)**

David Grossin, Fabien Brouillet\*, Christian Rey, CIRIMAT Carnot Institut (Toulouse University), France

**2:30 PM**

**(ICACC-S5-028-2012) Fracture Origins in a High Strength Dental Porcelain**

George Quinn\*, Kathleen Hoffman, Janet Quinn, American Dental Association foundation, USA

**2:50 PM**

**(ICACC-S5-029-2012) Cellular response to**

**ionic dissolution products from bioactive glasses and glass-ceramics (Invited)**

Aldo R. Boccaccini\*, Alexander Hoppe, University of Erlangen-Nuremberg, Germany

**3:10 PM**

Break

## **Advanced Processing of Bioceramics IV**

3:30 PM-5:50 PM

Room: Coquina Salon C

Session Chair(s): Florence Babonneau, Steven Jung

**3:30 PM**

**(ICACC-S5-030-2012) Fabrication of custom specific dental crown through green stage machining of ceramics**

Saralashrita Mohanty, Santanu Dhara\*, IIT Kharagpur, India

**3:50 PM**

**(ICACC-S5-031-2012) Heterogeneous structure of hydroxyapatite and in vitro degradability (Invited)**

Satoshi Hayakawa\*, Takehiro Ohiwa, Yuki Shirotsuki, Akiyoshi Osaka, Okayama University, Japan; Jaeger Christian, BAM, Germany

**4:10 PM**

**(ICACC-S5-032-2012) Structural Investigation of substituted Hydroxyapatites : Strengths of Solid State NMR (Invited)**

Florence Babonneau\*, Thierry Azaïs, LCMCP / UPMC-Paris6 & CNRS, France; Cristina Coelho, IMPC / UPMC-Paris6 & CNRS, France; Christian Bonhomme, LCMCP / UPMC-Paris6 & CNRS, France

**4:30 PM**

**(ICACC-S5-033-2012) Potential Toxicity of Bioactive Borate Glasses In-vitro and In-vivo**

**(Invited)**

Steven Jung\*, Mo-Sci Corporation, USA; Roger Brown, Missouri University of Science and Technology, USA; Lynda Bonewald, University of Missouri - Kansas City, USA; Delbert Day, Missouri University of Science and Technology, USA

**4:50 PM**

**(ICACC-S5-034-2012) Investigation of the local environment of cations in apatites and bone**

Danielle Laurencin\*, Université Montpellier 2, France; Mark E Smith, University of Warwick, United Kingdom; Franck Fayon, UPR3079 CNRS, France; Nora de Leeuw, University College London, United Kingdom; Christel Gervais, Christian Bonhomme, Université Pierre et Marie Curie, France

**5:10 PM**

**(ICACC-S5-035-2012) Preparation of Magnesium-containing TiO<sub>2</sub> Ceramic Layer on Titanium by Hydrothermal Treatment and its in vitro Bioactivity**

Xingling Shi\*, Masaharu Nakagawa, Alireza Valanezhad, Kanji Tsuru, Kunio Ishikawa, Faculty of Dental Science, Kyushu University, Japan

Friday, January 27, 2012

**Medical and Dental  
Applications of Bioceramics  
I**

8:00 AM-9:50 AM

Room: Coquina Salon C

Session Chair(s): Jay Hanan, Humberto Yoshimura

**8:00 AM**

**(ICACC-S5-036-2012) Evaluating Flaws in Ceramic Dental Crowns Using Microfocus X-**

**ray Computed Tomography (Invited)**

Yanli Zhang, Jay C Hanan\*, Oklahoma State University, USA

**8:30 AM**

**(ICACC-S5-037-2012) Slow crack growth velocities (v-K curves) of dental bioceramics**

Humberto Naoyuki Yoshimura\*, Federal University of ABC, Brazil; Carla C Gonzaga, Positivo University, Brazil; Walter G Miranda, Paulo F Cesar, University of São Paulo, Brazil

**8:50 AM**

**(ICACC-S5-038-2012) Validating FEM of Ceramic Dental Restorations**

Paulo Coelho\*, New York University, USA; Jay C Hanan, Oklahoma State University, USA; Hrishikesh Bale, University of California, Berkeley, USA; Yanli Zhang, Oklahoma State University, USA; Nelson Silva, New York University, USA; Van Thompson, New York University College of Dentistry, USA

**9:10 AM**

**(ICACC-S5-039-2012) Fracture Surface Analysis of Multilayer Ceramic - Polymer Composites**

Paul A Robinson\*, Clifford A Wilson, John J Mecholsky, University of Florida, USA

**9:30 AM**

Break

**Medical and Dental  
Applications of Bioceramics  
II**

9:50 AM-11:30 AM

Room: Coquina Salon C

Session Chair(s): Laura Wortmann, Janet Krevolin

**9:50 AM**

**(ICACC-S5-040-2012) Fabrication of**

**Monophasic HAp Discs from Tricalcium Phosphate by Hydrothermal Treatment in Ammonia Solution**

Nurazreena Ahmad\*, Masaharu Nakagawa, Melvin L Munar, Kyushu University, Japan; Shigeki Matsuya, Fukuoka Dental College, Japan; Kunio Ishikawa, Kyushu University, Japan

**10:10 AM**

**(ICACC-S5-041-2012) Role of ultrasonic irradiation and drying on the physical properties of nanohydroxyapatite**

E. K. Girija\*, G. Suresh Kumar, Periyar University, India; A. Thamizhavel, Tata Institute of Fundamental Research, India; Y. Yokogawa, Osaka City University, Japan; S.Narayana Kalkura, Anna University, India

**10:30 AM**

**(ICACC-S5-042-2012) Resorption rate and strength degradation of a novel bioactive scaffold**

Janet Krevolin\*, James Liu, Vincent Valant, Bio2 Technologies, USA

**10:50 AM**

**(ICACC-S5-043-2012) Nano grain sized silica-zirconia glass ceramics for dental applications**

Wei Xia, Cecilia Persson, Erik Unosson, Martin Andersson, Johanna Engstrand, Hakan Engqvist\*, Uppsala University, Engineering Sciences, Applied Materials Science, Sweden

**11:10 AM**

**(ICACC-S5-044-2012) Surface properties of nano-structured TiO<sub>2</sub> for dental implants design**

Sabin Issa\*, IICMPE-MCMC, CNRS UMR 7182, 2-8, rue Henri Dunant, 94320 THIAIS, France; Pierre Cenedese, Christophe Azavedo, Pierre Dubot, Universite Paris 7, France