



## **COSTMP1301: New generation biomimetic and customized implants for bone engineering**

*Biomaterials (design, processing, characterization, modelling) and applications to regenerative medicine*

**Agenda Workshop COST Action MP1301  
13-14 October, Sofia, Bulgaria**

**Venue: Bulgarian Academy of Science, Main Hall, "15th November" №1 str., Sofia1040**

### **Day 1, October 13<sup>th</sup> 2015**

**08.15 – 09.15: *Registration***

**09.15 – 09.30: *Welcome to participants: Dr. F. Cambier (Action chair) and assoc. prof. S. Gateva (Director of IE-BAS)***

**Chair: Dr. Francis Cambier, Belgium Ceramic Research Centre**

**9:30 – 10:30 Session I: Light –induced Micro-Nano Surface processing and Modification of biomaterials**

**9:30-9:50 Albena Daskalova:** "Functionalization of biopolymer thin films modified by femtosecond pulses for cell guidance improvement", Institute of Electronics-BAS, Bulgaria.

**9:50-10:10 Anthi Ranella:** "Controlling neuronal cell responses via LASER-fabricated, 3D micro/nanostructured and patterned substrates", Institute of Electronic Structure & Laser-FORTH, Greece.

**10:10-10:30 Paraskevi Kavatzikidou:** "The effect of micropatterned structures fabricated via ultrashort pulsed laser irradiation on Neuronal Stem Cells", Institute of Electronic Structure & Laser-FORTH, Greece.

**10:30-10:50 *Coffee break***

**Chair: Carmen Baudin, Instituto de Cerámica y Vidrio, CSIC**

**10:50-12:30 Session II: New trends in design and development of scaffolds for bone tissue engineering. Presentations from Research and Industry (Invited speakers).**

**10:50-11:10 Ahlhelm Matthias:** "Introducing the BONEFOAM network and innovative shaping approaches to next-generation bio scaffolds", Fraunhofer- IKTS, Germany.

**11:10-11:30 Martin Schwentenwein:** "New opportunities for scaffold design by additive manufacturing", Lithoz GmbH, Austria.

**11:30-11:50 Julio San Roman:** "New technologies for the preparation of polymer and composites scaffolds for Tissue Engineering", ICTP, CSIC, Spain.

**11:50-12:10 Nabanita Saha:** "Calcium carbonate filled hydrogel as scaffold for bone tissue engineering", Tomas Bata University in Zlin, Czech Republic.

**12:10-12:30 Yannis Missirlis:** "Development of bioreactors for osteochondral tissue engineering: two prototypes for cylindrical porous scaffolds", University of Patras, Greece.

**12:30-14:00 *Light lunch at the Bulgarian Academy of Sciences and guided tour around the most interesting historic parts of the centre.***

**14:00-14:20 Stefan Scheiner:** "Mathematical modelling employed for biomaterials design", Vienna University of Technology, Austria.

**14:20-14:40 Marie Lasgorceix:** "Additive manufacturing of macro-micro-porous bioceramics for bone tissue engineering", Belgium Ceramic Research Centre, Belgium.

**14:40-15:00 Dominique Hautcoeur:** " $\beta$ -TCP porous scaffold: part 1. Casting method and structure characterization", Belgium Ceramic Research Centre, Belgium

**15:00-15:20 M. Shaan Chamary:** " $\beta$ -TCP porous scaffold: part 2. Relation between structure and cell invasion", LMCPA – Université de Valenciennes, France.

**15:20-16:00 *Coffee break***

**Chair: prof. Fernando Jorge Monteiro, INEB- Instituto de Engenharia Biomédica**

**16:00-17:40 Session II: New trends in design and development of scaffolds for bone tissue engineering.**

**16:00-16:20 Eric Champion:** "Additive manufacturing of bioceramic scaffolds: state of the art", University of Limoges, France.

**16:20-16:40 Nikolaos Michailidis:** "New injection printing process for PCL-Ag nanocomposite scaffolds", Aristotle University of Thessaloniki, Greece.

**16:40-17:00 Anthony Thuault:** "Microwave sintering and microstructural development of hydroxyapatite biomaterials", University of Valenciennes and Hainaut-Cambrésis UVHC, France.

**17:00-17:20 Saša Novak:** "Composite scaffolds with bioactive glass for tissue regeneration", Slovenia.

**17:20-17:40 Erika Adomavičiute:** "Electrospun materials for bone tissue engineering", Kaunas University of Technology, Lithuania.

**20:00 *Workshop dinner***

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**Day 2, October 14<sup>th</sup> 2015**

**Chair: Dr. Norbert Schneider, CeramTec GmbH**

**09.00-10:20 Session III New trends in design and development of scaffolds for bone tissue engineering (Presentations from Clinicians).**

**9:00-9:20 Joël Brie:** "Overview of the biomaterial usually used in alloplastic cranioplasty", University Hospital Center (Hôpital Dupuytren), France.

**9:20-9:40 Virpi Muhonen:** "Cartilage-bone -unit repair with tissue engineering approach", University of Helsinki, Finland.

**9:40-10:20 Session IV: Functionalization of biomaterials**

**09:40-10:00 Benjamín Fernández-Gutiérrez:** "Influence of the origin of human Mesenchymal Stem Cells on different scaffolds in relation to proliferation and differentiation. The Horizon 2020 perspective", University Hospital: Hospital Universitario Clinico San Carlos.

**10:00-10:20 Carmen Baudín:** "Mechanical characterization of bioactive ceramics", Instituto de Cerámica y Vidrio, CSIC, Spain.

**Chair: Dr. Eric Adolfsson, Swerea IVF AB**

**10:40-12:20 Session IV: Functionalization of biomaterials**

**10:20-10:40 *Coffee break***

**10:40-11:00 Lia Rimondini:** "Upper paramagnetic iron oxide nanoparticles (SPIONs) as functionalizing platforms for delivering and tissue regeneration", Università del Piemonte Orientale, Italy.

**11:00-11:20 Christèle Combes:** "Functionalization of biomimetic apatite-based bioceramics and cements", ENSIACET, CIRIMAT, INPT-UPS-CNRS, France.

**11:20-11:40 Joanna Karbowniczek:** "Surface modifications of titanium alloys by ceramic coatings deposition", AGH University of Science and Technology in Krakow, Poland.

**11:40-12:00 Jānis Ločs:** "Functionalization of biomaterials using ultrasonic technologies", Riga Technical University, Latvia.

**12:00-12:20 Sari Vanhatupa:** "Bioactive glass ions as inducers of the osteogenic differentiation of mesenchymal stem cells", Institute of Biosciences and Medical Technology, University of Tampere, Finland.

**12:20-13:50 *Light lunch at the Bulgarian Academy of Sciences***

**Chair: Dr. Stephane Hocquet, Belgium Ceramic Research Centre**

**13:50 – 17:00 Session V: STSM presentations and NEWGEN WG's meeting**

**13:50-14:50- STSM presentations**

**13:50-14:10 Barbara Ostrowska:** "Modification of polymeric, ceramic and composite samples surfaces by using CaP to improve bioactivity", Warsaw University of Technology, Poland.

**14:10-14:30 Lucia Forte:** "Functionalization of hydroxyapatite nanocrystals modified with polyethylenimine, as drug delivery system for Risedronate", University of Bologna, Italy.

**14:30-14:50 Milivoj Plodinec:** "Mechanical characterization of nanostructured composite materials for application as a bone implant", Rudjer Boskovic Institute, Croatia.

**14:50-15:10 *Coffee break***

**15:10-16:50 WG session joint discussion**

State of the art, future needs and plans

**16:50-17:00 Conclusive remarks**