



Summary of the 29th Annual Conference

Dear Colleagues and Friends,

we are extremely grateful for your presence at the 29th Annual Conference 'Biomaterials in Medicine and Veterinary Medicine.'

This year, for the first time, the Annual Conference of the Polish Society for Biomaterials 'Biomaterials in Medicine and Veterinary Medicine' was held in a hybrid manner - both onsite in Rytro, Poland and online via MS Teams. The majority of the conference participants joined us remotely with only a limited number participating in Rytro but somehow we all felt part of the conference. Technology brought us all closer, no matter how far we really were!

The numbers were strong, too! Despite the uncertainty of the COVID-times, we had 58 registered delegates, 61 accepted abstracts, 3 outstanding plenary lectures, 14 oral presentations, and 44 poster presentations – onsite and online mixed together. This year Plenary Speakers were: **Prof. Olafur E. Sigurjonsson, Prof. Roman Major,** and **Prof. Havard Jostein Haugen.** Following our tradition, we organized also Best Poster & Rapid Fire Competition for young scientists. Congrats to all of the participants and particularly to Ewa Dzierzkowska who won the main prize!

In these challenging times, we were all conference delegates, no matter if sitting in front of the computer or in Rytro conference hall.

Thank you!

Best regards,

Organizing Committee



POLISH SOCIETY FOR BIOMATERIALS

AGH University of Science and Technology
Faculty of Materials Science and Ceramics
Department of Biomaterials and Composites
Al. A. Mickiewicza 30
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General Information

The **Conferences on Biomaterials in Medicine and Veterinary Medicine** are held every year and address both fundamentals and clinical applications of carbon, metals, polymers, ceramics and composite biomaterials. Their aim is to present the latest results of scientific research as well as to exchange ideas, knowledge and experience of scientists, researchers and clinicians in the field of biomaterials.

The topics to be covered during the Conference include, but are not limited to:

- Smart biomaterials
- Surface modification and functionalization
- Advanced manufacturing
- Antimicrobial surfaces and materials
- Biointerfaces
- Bioimaging and biosensing
- Tissue engineering / Regenerative medicine
- Drug and gene delivery
- Cell encapsulation and delivery
- Stem cells
- Cancer therapy
- Bone and cartilage
- Neural regeneration
- Cardiovascular applications
- Biomechanics and micromechanics
- Clinical trials
- Translation and commercialization



ABSTRACTS

All participants intend to contribute oral and/or poster presentations were requested to prepare one-page abstract in English, which was published in conference materials (non-reviewed special edition of the "Engineering of Biomaterials,, Journal). Each author might submit maximum two abstracts (one for oral and one for poster or two for poster presentations).

Abstract submission was only possible during registration via our online system. Only abstracts from individuals who have paid the registration fee were published.

We have accepted total number of 61 abstracts.

FULL PAPERS

We invited all participants to send full papers for publication in a regular issue of the "Engineering of Biomaterials" Journal (peer-reviewed, included in Index Copernicus Journals Master List, with the Polish Ministry of Science and Higher Education scoring – 20 points).



ORAL AND POSTER PRESENTATIONS

We had 3 plenary lectures (45 mins long), 14 oral presentations (15 mins each) and 44 poster presentations including rapid fire presentations within the Best Poster Competition.



Prof. Olafur E. Sigurjonsson

Plenary Lecture: **Current Status and Future Prospects of Genome-Scale Metabolic Modeling to Optimize the Use of Mesenchymal Stem Cells in Regenerative Medicine and Biomaterials Research**

*School of Engineering
Reykjavik University*



Professor Ólafur E. Sigurjónsson holds a PhD in stem cell biology and immunology from the University of Oslo. He is a Professor at the school of engineering, Reykjavik University, program director in Biomedical engineering at the same University and a clinical Professor at the department of medicine, school of health sciences, University of Iceland. Professor Sigurjonsson is the director of research and development at the Blood bank, Landspítali University Hospital, Iceland and the laboratory director for the clinical hematopoietic stem cell program at the same institute. He is the founder and CSO of Platome biotechnologies and is the former president of the Scandinavian Society for Biomaterials. Professor Sigurjonsson research group focuses research

in tissue engineering of bone and adipose tissue, GMP culture of mesenchymal stem cells, platelet lysate development, systems biology and storage of blood components.

Prof. Havard Jostein Haugen

Plenary Lecture: **Novel Nanocomputed Tomography (nanoCT) Techniques Applied to Dental Research**

*Department of Biomaterials
Institute of Clinical Dentistry
University of Oslo*



Håvard J. Haugen is currently professor and leader of the Biomaterials group at The Institute of Clinical Dentistry, Faculty of Dentistry, University of Oslo. He received a Master in chemical engineering at the Imperial College of Science, Technology and Medicine in London, UK in 2001 and a doctoral engineering in biomaterials from the Technische Universität München in 2004. Previously Haugen has been working at the Central Institute for Medical Engineering in Munich (2001-2004), at Helmholtz Institute for Biomedical Engineering in Aachen (1999) and the Tissue Engineering Centre at Imperial College, London (2000-2001). Haugen has been granted more than 10 million Euros in various research grants the past five years from both the European Research Council and the Research Council of Norway.

Haugen has about eighty publications, and has been awarded the British Petroleum Prize in 2000, University of Oslo Innovation Prize in 2008 and the German innovation award for 2009 (Innovationspreis 2009 der Deutschen BioRegionen). From 2012-2016 Haugen was the President of the Scandinavian Society for Biomaterials (www.scsb.eu). The research group of Prof. Haugen bridges the gap between basic materials research and clinical treatment. UiO hub is highly interdisciplinary with extensive experience in dental biomaterials development, modification of biomaterials, soft tissue and hard tissue regeneration and integration of biomaterials into skin and related hard tissues, using methods from biomaterials, odontology, and biochemistry. His group currently has and operates advanced micro- and nanoscale X-ray imaging systems. Their nanoscale X-ray imaging system is one of only a few in Norway, covers a wide range of object sizes and spatial resolutions, and opens unique possibilities for 3D imaging. Haugen is also involved with commercialisation of medical devices and is currently working part time at Corticalis AS (www.corticalis.com).



Prof. Roman Major

Plenary Lecture: **Material Engineering in Regenerative Cardiac Surgery: "Yesterday and Today" & The Role of Material Engineering in the Reconstruction of Defects in Oncological Diseases**

*Institute of Metallurgy and Materials Science
Polish Academy of Sciences
Cracow*



Roman Major, Ph.D., professor of the Polish Academy of Sciences (PAN) is the head of the laboratory of "Surface and Biomaterial Engineering" and the laboratory of "Laser and Acoustic Scanning Microscopy" at the Institute of Metallurgy and Materials Science of the Polish Academy of Sciences in Cracow. The subject matter of his research work concerns the influence of modifications with advanced methods of surface engineering on the properties of materials mainly dedicated to elements of cardiovascular regeneration systems. In particular, it covers the issues of manufacturing and characterization of coatings applied with advanced physical methods using, among others, the laser ablation method. In his research work, he presents issues from the borderline of material engineering (biomaterial

engineering), molecular biology and regenerative medicine. In this aspect, he uses, among others, tools available in molecular biology to design and test materials. Based on the analysis of the anatomical structure of natural organs, he attempts to reconstruct their structure using various types of biomaterials. Dr. Roman Major, Prof. PAN is the author and co-author of 300 publications, including 63 in journals from the JCR list. The bibliometric data are as follows: Hirsch index - 13, number of citations 456 (including 200 without self-quotations). He participated in 11 research projects, including 9 as a work manager. He actively cooperates with many scientific centers both in Poland (Foundation for Cardiac Surgery Development in Zabrze, Collegium Medicum of Jagiellonian University, Silesian Centre for Heart Diseases, Regional Centre for Blood Donation and Blood Management in Cracow) and abroad (Austria: Joanneum Research Forschungs-GmbH, Leoben, France: Institut National Polytechnique de Grenoble, Spain: Universidad Politécnica de Madrid). He is the winner of many awards and distinctions (including the scientific award of Faculty IV of Technical Sciences for a series of publications on biomedical engineering issues in the context of biomaterials for blood contact.