33rd Biomaterials in Medicine and Veterinary Medicine Annual Conference

10 – 13 October 2024 Rytro, Poland

The 33rd Annual Conference of the Polish Society for Biomaterials
"Biomaterials in Medicine and Veterinary Medicine"
10-13 October, 2024, Rytro, Poland

Dear Colleagues and Friends,

During the conference, we had three outstanding plenary lecturers: Prof. Miguel Oliveira opened the event with a talk on "Engineering Biomaterials for Biofabrication and 3D In Vitro Models", Prof. Małgorzata Włodarczyk-Biegun continued the theme of 3D printing with her presentation on "3D Printing for the Reconstruction of Functional Tissue Gradients," while Prof. Sachiro Kakinoki discussed “Peptide Immobilization to Create Bioactive and Bioinert Surfaces for Blood-Compatible Medical Devices.” In his keynote presentation, Prof. Pugalanthi Pandian Sankaralingam covered the topic of “Metal Fluorophosphate-Based Nanopowders for Wound Healing”. These presentations were complemented by 27 podium presentations, 62 poster presentations, and 17 rapid-fire presentations. Adam Sobantka (CEO of GCB) also gave a practical talk on funding for product development and commercialization, and Polbionica hosted a fantastic workshop. It was a wealth of first-class biomaterials-related science! Moreover, numerous scientific discussions occurred during both the regular sessions and evening social events.

Traditionally, under the auspices of the Young Scientist Forum of the ESB, we organized the Best Poster Competition and held a Rapid Fire Session. Congratulations to Justyna Więcek-Chmielarz from the Institute of Metallurgy and Materials Science of the Polish Academy of Sciences for winning the prize, and special thanks to the Global Certification Body for sponsoring the award. Also, DevGoMed awarded Anna Kusibab, Karolina Szawiraacz, and Gabriela Misiurek for their commercially promising projects.

We hope you all had a great time at the various celebrations and social events! We really enjoyed the regional dinner at the cozy cottage bar "Nad potokiem" (also known as “Chata u Stacha”), the classy Conference Dinner on Friday (some say it ended at sunrise!), and the trip to the Sądecki Ethnographic Park on Saturday morning, which was followed by a fun karaoke night. It was impressive to see so many of you taking a swim early in the morning and still making it in time for the first lecture – well done!

We would like to take this opportunity to acknowledge all our wonderful sponsors: The Global Certification Body, the two MDPI journals Pharmaceutics and Polymers, DevGoMed, Polbionica, and Shim-Pol A.M. Borzymowski. Thank you for supporting our conference and sharing your expertise with us!

The photo gallery is available here: http://www.biomat.agh.edu.pl/gallery and you can find our group photo in the attachment.

Organizing and enjoying the conference with all of you was a highlight for us. Thank you for making it special!

See you next year (October 9-12, 2025)!
Your Organizing Committee
Elżbieta Pamuła
Barbara Szaraniec
Katarzyna Trała
Patrycja Domalik-Pyzik

POLISH SOCIETY FOR BIOMATERIALS

AGH University of Science and Technology

Faculty of Materials Science and Ceramics

Department of Biomaterials and Composites

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ORGANIZING COMMITTEE

Elżbieta Pamuła - Chair of the Organizing Committee, President of the Polish Society for Biomaterials

Barbara Szaraniec - Secretary

Katarzyna Trała - Secretary of the Engineering of Biomaterials Journal

Patrycja Domalik-Pyzik – YSF representative, Website administrator

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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 115 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 – 40 points).

ORAL AND POSTER PRESENTATIONS

We had 3 plenary lectures, 1 keynote presentation, 26 oral presentations , 84 poster presentations, and 11 rapid fire presentations within the Best Poster Competition.

Prof. Małgorzata Włodarczyk-Biegun

Plenary Lecture: **3D Printing for the Reconstruction of Functional Tissue Gradients**

Polymer Science
Zernike Institute for Advanced Materials
University of Groningen
Groningen, The Netherlands

Biotechnology Centre
The Silesian University of Technology
Gliwice, Poland
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Gosia (Małgorzata) Włodarczyk-Biegun is an Associate Professor at the Silesian University of Technology, in Gliwice, Poland, and an Assistant Professor at The University of Groningen, The Netherlands. She is a leader of Biofabrication and Bio-inspired Materials group joining both labs. Her research is focused on applying 3D (bio)printing techniques to generate complex hierarchical scaffolds of polymeric materials for advanced tissue regeneration. She is also interested in the rational design and development of novel polymer-based bioinks with tunable properties allowing to induce a specific cellular response, to produce systems with bio-instructive properties.

She has earned her Master degree in Poland, in Psychology, and in Biomedical Engineering. For her PhD, she decided to continue in the field of Biomedical Engineering. She obtained the title in January 2016, at Wageningen University and Research Center in the Netherlands, working on recombinant proteins for biomedical applications. In the years 2016-2020, she was employed at INM-Leibniz Institute for New Materials, in Germany as a postdoctoral researcher working on biofabrication. In 2017, she was awarded a UNESCO-L'Oréal for Women in Science Prize in recognition of her research qualities and ability to combine excellence in science with being a mother. Since 2020, she has received 3 prestigious grants from NWO (Netherlands Organization for Scientific Research) to conduct her work in the Netherlands. She was awarded NAWA Polish returns grant (2019) to set-up her own research group in Poland, and in the following years two Polish NCN Opus grants to further support her research there. The received funding allows to pursue international collaborative work in biofabrication field.

Prof. Sachiro Kakinoki

Plenary Lecture: **Peptide Immobilization to Create Bioactive and Bioinert Surfaces for Blood-Compatible Medical Devices**

Department of Chemistry and Materials Engineering

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Osaka, Japan

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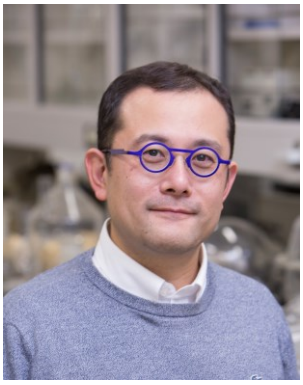

Sachiro Kakinoki is a Professor of Department of Chemistry and Materials Engineering at Kansai University. He earned his Ph.D. in peptide science from Osaka Prefecture University in Japan in 2005. Following his doctoral studies, he underwent postdoctoral training at the Biomaterial Center, National Institute of Materials Science (NIMS: Ibaraki, Japan), and the National Cerebral Cardiovascular Center Institute (NCVC: Osaka, Japan). Subsequently, he worked as a researcher at NCVC focusing on biofunctional surfaces from 2010 to 2015. In 2015, he transitioned to Kansai University as an associate professor and was later promoted to full professor in 2022. He has been honored with several awards, including the Yoshimi Memorial T.M.P Grant Award from the Japanese Society for Artificial Organs in 2011 and the Young Investigator's Award from the Japanese Society for Regenerative Medicine in 2013. He has published about 50 scientific papers in international peer-reviewed journals. Additionally, he serves on the editorial boards of the Journal of Artificial Organs and the Journal of Materials Science: Materials in Medicine.

Prof. Miguel Oliveira

Plenary Lecture: **Engineering Biomaterials for Biofabrication and 3D in vitro Models**

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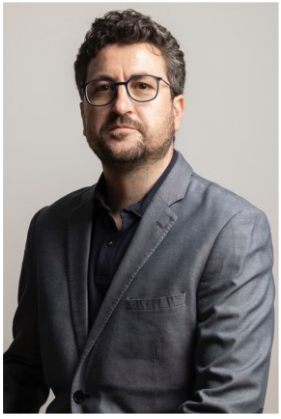

J. Miguel Oliveira BSc, Ph.D. (Portuguese, M, 46 years old) is a Principal Investigator with Habilitation at the 3B's Research Group, member of the PT Government Associate Laboratory ICVS/3B's and Institute 3Bs (I3Bs), University of Minho (Portugal). He is the Vice President of I3Bs and President Elect of the Scientific Council of I3Bs. In addition, he is a member of the National Ethics Committee for Clinical Trials from Serviço Nacional de Saúde (SNS) (PORTUGAL). Over the years he has focused his work on the field of biomaterials for tissue engineering, nanomedicine, stem cells, and cell/drug delivery. He also set up a new research line within the ICVS/3B's on 3D in vitro models for cancer research. As a result of his proficiency, he has published so far more than 450 scientific contributions in scientific journals with the referee.

Dr. Oliveira has approved 22 patents (filled & submitted), published 12 books (plus 3 in preparation), 18 special issues/topic collections in scientific journals, and more than 130 book chapters in books with international circulation. He has participated in more than 700 communications in national/international conferences and has been invited/keynote speaker in more than 100 plenary sessions and seminars. He has an h-index of 72, i10 of 262 and received ~ 18900 citations. He has been awarded several prizes including the prestigious "Investigador FCT 2012 and Investigador FCT 2015" attributed by FCT (Portugal), and Jean Leray Award 2015 from the European Society for Biomaterials for Young Scientists for Outstanding Contributions within the field of Biomaterials. In November 2023, Dr. Oliveira was appointed Fellow Biomaterials Science and Engineering (FBSE) for the excellent professional standing and high achievements in the field of biomaterials science and engineering. He is the Editor-in-chief of the In vitro Models Journal (Springer Nature). He is one of the Editors of the Book Series on Biomaterials, Bioengineering and Sustainability (Springer). In 2020-21, he was listed among the TOP50 worldwide experts in tissue engineering and cartilage by EXPERTSCAPE, and has been listed in the World TOP2% (Career) most cited researchers (2021 and 2022). In 2022 he was listed in the TOP1% (Yearly) most cited researchers.

SPONSORS & EXHIBITORS

The Global Certification Body, based in Warsaw, Poland, as the future notified body, will be the organization designated to assess regulatory compliance and certify products of selected economic and industrial sectors. We support various industries, such as medical devices, machinery, ESG, pharmaceuticals, cosmetics in achieving the highest quality and safety standards. Our knowledge and experience guarantee reliability and professionalism in every step of the certification process. We use our experience to connect industry, science and business.

Pharmaceutics (ISSN 1999-4923) is an open access journal which provides an advanced forum for the science and technology of pharmaceutics and biopharmaceutics. Covered topics include pharmaceutical formulation, process development, drug delivery, pharmacokinetics, biopharmaceutics, pharmacogenetics, and interdisciplinary research involving, but not limited to, engineering, biomedical sciences, and cell biology. The scientific community, the wider community and the general public have unlimited and free access to the content as soon as a paper is published; this open access to your research ensures your findings are shared with the widest possible audience. Please consider publishing your impressive work in this high quality journal. We would be pleased to welcome you as one of our authors.

Polymers (ISSN 2073-4360) is an international, open access journal of polymer science. It publishes research papers, communications and review articles. Polymers provides an interdisciplinary forum for publishing papers which advance the fields of (i) polymerization methods, (ii) theory, simulation, and modeling, (iii) understanding of new physical phenomena, (iv) advances in characterization techniques, and (v) harnessing of self-assembly and biological strategies for producing complex multifunctional structures. Scientists are encouraged to publish their experimental and theoretical results in as much detail as possible.

DevGoMed was created utilizing cooperation of experienced specialists in the field of design, research and implementation into clinical practice of innovative biomaterials and advanced medical devices, including implants. A wide range of assistance in the medical technologies development, DevGoMed relies on experts' many years experience in:

- planning and supervising the medical technology development
- risk management of a medical device along its life cycle
- managing R&D projects
- preclinical and clinical evaluation of medical devices
- implementing a quality management system for the production of a medical device in accordance with ISO 13485
- preparation of technical documentation of products to obtain the CE mark
- post-market surveillance of medical devices

POLBIONICA is a biotech company established by the Foundation on Research and Development of Science to commercialise 3D bionic pancreas research and thinks boldly about the future. The application of the bionic pancreas in clinical practice will revolutionise the treatment of diabetes and become one of the greatest medical successes of the 21st century. Concerning the growing number of patients with type I diabetes and the limitations of available treatments, functional 3D bioprinting is a viable option to overcome the problem of organ shortage and will also reduce the number of complications associated with surgery and the use of long-term immunosuppression after transplantation.
In late 2020, we completed the preclinical phase of 3D bionic pancreas research; we are developing very promising results and we are also preparing for the clinical phase. While working on the 3D bionic pancreas bioprinting project, we created proprietary products crucial for the 3D bioprinting development. These include customised bio inks, a bioreactor, and innovative bioprinting methods.