30th Annual Conference of the European Society for Biomaterials Together with the 26th Annual Conference of the German Society for Biomaterials (DGBM)

9 – 13 September 2019
Dresden, Germany
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Developing surgical innovations, fascinating users and paying dividends. This has made us a worldwide leading supplier in many fields of medical engineering.
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Welcome Message by the ESB President
Pamela Habibović

Dear members of the European Society for Biomaterials,
Dear colleagues and friends,

It is my pleasure to welcome you to the 30th Annual Meeting of our society, to be held 9-13 September 2019 in the beautiful city of Dresden. This is the fourth time that an ESB conference is held in Germany, after Hamburg in 1982, Heidelberg in 1989 and Stuttgart in 2003, but it is the very first time that the conference will take place in the eastern part of the country. And for a very good reason! Idyllically located on the banks of Elbe, with a rich offer of architectural highlights and fine arts, Dresden makes a wonderful location for our conference.

Dresden is at least as rich from a scientific point of view. It hosts one of Germany’s top universities, TU Dresden, that, in collaboration with numerous Max Planck-, Fraunhofer- and Leibniz Institutes, as well as smaller and larger industrial partners, has established a unique ecosystem for creative and productive research and development activities. This is certainly the case for the field of biomaterials, where activities in the materials science and engineering are intertwined with the activities of the medical faculty and university hospital to develop and implement improved medical devices and regenerative therapies.

Our hosts, Professor Michael Gelinsky, Professor Stefan Rammelt and their team, have set up an excellent scientific program, where the latest developments in the field will be presented and discussed. Moreover, the social program, reflecting Dresden’s beauty and hospitality, will offer plenty of opportunities to further discuss science, meet old friends and make new ones.

Together with the rest of the ESB Council, I very much look forward to meeting you all in Dresden!

Kind regards,

Pamela Habibović
ESB President
Welcome Message by the DGBM President
Wilhelm Jahnen-Dechent

Dear attendees of the 2019 Annual Conference of the European Society for Biomaterials,

on behalf of the Executive Board of the German Society for Biomaterials, I would like to cordially welcome you in Dresden to the 30th Annual Meeting of the European Society for Biomaterials. The city is lovingly remembered as “Florence of the North” for its rich cultural and architectural heritage. Dresden was utterly destroyed at the end of WW2, but has risen from the ashes as you will see walking the streets of the city. TU Dresden has played a major part in Dresden’s successful comeback, with material sciences being one particular stronghold. Thus, Dresden is the perfect place to host the ESB 2019 Annual conference.

When Michael Gelinsky enquired a couple of years ago, whether the German Society for Biomaterials (DGBM) would support his bid for conference presidency in 2019, the Board of our Society immediately and unanimously assured him of their full support. It is an honor to host this prestigious conference, but at the same time this entails extra commitment and work, as anybody knows who ever organized a conference. Therefore, I would like to commend Professor Gelinsky and his team on the fantastic program of this conference, the excellent selection of topics, sessions and talks. Biomaterials research, tissue engineering, and related fields are multidisciplinary by necessity. Covering a multiverse of material science, cell and molecular biology, medicine, immunology and many more interesting topics, the conference will be fascinating as ever. I am sure we will all have an interesting and entertaining week in Dresden.
The 26th Annual Conference of the German Society of Biomaterials is embedded in the ESB conference. We encouraged all our members to participate, and we provided extra support for junior DGBM researchers. The ESB decision to grant membership for the following year to every participant of their Annual conference is highly appreciated. This policy will undoubtedly foster more participation and collaborations within the ESB as well.

For me personally, this will be the last conference that I will attend as chairman of the DGBM. I would like to thank my colleagues on the Board for all their support throughout these past three years. I look forward to meeting new people and novel topics taking centerstage in the next years. Finally, I would like to encourage all members of DGBM to attend the general assembly to endorse the newly elect Board with a strong mandate, and to actively participate in shaping the future of the German Society of Biomaterials.

Wilhelm Jahnen-Dechent
DGBM President
Welcome Message by the Mayor of the city of Dresden, Dirk Hilbert

Welcome to Dresden!

Welcome to the 30th Annual Conference of the European Society for Biomaterials in the City of Dresden. You have chosen an excellent location for your 30th conference. Dresden is not only one of the most beautiful cities in Central Europe; it is also one of the most important German and European biomaterial research locations.

Digitalisation plays a major role for clinics and other institutions in our city that use biomaterials every day or conduct research in this field. Particularly additive manufacturing and 3D bioprinting, both fields that are extremely important to Dresden’s research landscape, rely on digital processes.

As a research and business location, networking is one of our strengths. More than 45 institutions, such as TU Dresden, which is one of Germany’s Universities of Excellence, the University Hospital Carl Gustav Carus Dresden, the Max Bergmann Center of Biomaterials, various Leibniz and Fraunhofer institutes or the Helmholtz Center bundle their expertise at numerous shared interfaces. In topic-related collaborations with businesses, these institutions utilise synergies and are also supported by the public sector.

However, I do hope that despite your many exciting presentations, dear delegates, you will also have time to discover some of the highlights of Dresden’s tourist attractions. Of course, Dresden has far more to offer than just the Zwinger, the Semperoper, the Frauenkirche and the Neumarkt. You could also learn more about Dresden simply by going for a walk along the banks of the Elbe, for example.

I hope that your conference will be a stimulating exchange of ideas. And please come back another time – Dresden is always worth a visit!

Dirk Hilbert
the Mayor of the city of Dresden
Dear colleagues and friends,

Welcome to the 30th annual conference of the European Society for Biomaterials and the 26th conference of the German Society for Biomaterials (DGBM), which are held together this year and welcome to Dresden, the capital of the Free State of Saxony which in former times was a kingdom of European importance.

Based on your submissions – both of suggestions for Special Sessions and approximately 700 abstracts we have received – we have prepared a programme which covers the whole field of biomaterials research and development. It will provide a broad overview about current research directions in the field and for sure will stimulate vivid discussions amongst all of us.

We want to thank all individuals, organisations and companies who have supported the congress. Without their tremendous help and support such a big conference could not be organised successfully. Beside many others we would like to acknowledge the ESB council for the honour of selecting Dresden as the place for this meeting and the DGBM for their decision to combine their annual meeting with that of the ESB. We want to thank all committee members for either the thorough evaluation of the abstracts or the help with selecting the contributions as well as the preparation of the programme. We also want to express our gratitude to all sponsors and exhibitors for their support, financial or otherwise and encourage all participants to visit the industrial exhibition in which organisations and companies with relevance for our field will inform you about their work and products.

We are especially thankful for the submissions and participants from outside Europe, making this event not only the biggest European conference on biomaterials but providing a true international and even intercontinental character.
WELCOME MESSAGES

Due to the diverse and exciting scientific programme you will not find much time during the congress to explore the more than 800 year-old city and its lovely surroundings – but you should at least take the opportunity to take a walk through the historic city centre which is in close walking distance to the conference venue. We are convinced that you will find Dresden worth another visit that will allow you to explore its architectural landmarks, world-famous art galleries and vibrant cultural life.

Thank you for coming to Dresden; enjoy your stay and the conference!

Prof. Michael Gelinsky
Conference Chair
University Hospital and Faculty of Medicine of TU Dresden
Centre for Translational Bone, Joint and Soft Tissue Research Dresden, Germany

Prof. Stefan Rammelt
Co-Chair
University Hospital and Faculty of Medicine of TU Dresden
Center for Orthopedics and Trauma Surgery Dresden, Germany
AWARD WINNERS

International Award 2019

The International Award is a prestigious recognition by the ESB of scientists who have generally spent their career outside Europe, who have been internationally recognised, have a high scientific profile, and have made major contributions to the field of biomaterials. Strong evidence of collaborations with members of our scientific community in Europe throughout their career is expected.

Paul Ducheyne

International Award 2019

Professor of Bioengineering and Orthopaedic Surgery Research, University of Pennsylvania, Philadelphia, U.S.A.

Talk: The unbearable lightness of being… a biomaterials scientist
Date: Tuesday, September 10, 2019, 09:15
Room: Hall 3

Paul Ducheyne is Professor of Bioengineering and Professor of Orthopaedic Surgery Research at the University of Pennsylvania, Philadelphia, PA, USA. He has been Director of its Center for Bioactive Materials and Tissue Engineering and was a Special Guest Professor at the KU Leuven, Belgium. Paul Ducheyne is Founder and President of XeroThera, a spin-out from Penn, developing advanced controlled delivery concepts for prophylaxis and treatment of surgical infections.

Professor Ducheyne has been a leading scientist in the field of biomaterial research for decades, with seminal contributions to biomaterials research, especially as it relates to orthopaedics. In bioceramics research, he clearly delineated the unusual properties of engineered bioactive ceramics. Not only was he at the vanguard of the development of these materials, he also generated a fundamental understanding of how these materials exhibit bone bioactive properties and promote skeletal healing. His group has also studied inorganic controlled release materials and has demonstrated the utility of sol-gel synthesized silica-based nanoporous materials for therapeutic use. These materials may well represent a next generation of agents for delivery of drugs, including antibiotics, analgesics, and osteogenic and anti-inflammatory molecules.

Paul Ducheyne graduated from the KU Leuven in Materials Science and Engineering. As an NIH International Postdoctoral Fellow, he performed research at the University of Florida. Upon his return to the KU Leuven, he was one of the co-founders of the Post-Graduate Curriculum in Bioengineering and organized the Fourth European Conference on Biomaterials (1983). Other significant meetings under his purview followed soon after joining Penn, including the Engineering Foundation Conference on Bioceramics (1986) and the 6th International Symposium on Ceramics in Medicine (1993).
Professor Ducheyne has lectured around the world and has served on the editorial board of countless scientific journals in the biomaterials, bioceramics, bioengineering, tissue engineering, orthopaedics and dental fields. He was a member of the editorial board, and then an Associate Editor of Biomaterials (Elsevier) since its inception in the late 1970s. His papers have been cited more than 12,600 times with an “h-factor” of 64; his ten most visible papers have been cited more than 3,200 times. He has edited 16 books and book volumes and is Editor-in-Chief of Comprehensive Biomaterials, a 7-volume, 4,850-page major reference work published by Elsevier (2011, 2017).

Paul Ducheyne founded Orthovita, the first osteobiologics company to become publicly listed. Orthovita was the leading, independent biomaterials company in the world with more than 250 employees at the time of its acquisition by Stryker in June 2011. He also founded Gentis, Inc., which focuses on breakthrough concepts for spinal disorders, and XeroThera. Many of Ducheyne’s PhD students and postdoctoral fellows have become leaders of the next generation. Among his students are Professors at UC Berkeley, the University of Michigan, Columbia University, Georgia Institute of Technology, Kyushu University, the KU Leuven and other. Among nine Associate Editors of the Journal for Biomedical Materials Research, three were his PhD students.

Paul Ducheyne has been Secretary of the European Society for Biomaterials, is Past President of the Society for Biomaterials (USA) and of the International Society for Ceramics in Medicine. He has been recognized as a fellow of the American Association for the Advancement of Science (AAAS), fellow of the American Institute of Medical and Biological Engineering (AIMBE), and fellow of the International Association of Biomaterials Societies. He was the first Nanyang Visiting Professor at the Nanyang Institute of Technology, Singapore. He has received the C. William Hall Award from the Society for Biomaterials, as well as its Founders Award for his “long-term, landmark contributions to the discipline of biomaterials”. He has been awarded the Inaugural Bioceramics Pioneer Award by the International Society for Ceramics in Medicine for “outstanding lifetime achievements”, and he is this year’s recipient of ESB’s International Award.
Klaas de Groot Award 2019

The Klaas de Groot award is a prestigious recognition by the European Society for Biomaterials of scientists who have shown a distinct ability to provide excellent mentorship and guidance to young researchers, helping them to establish their own independent career. We look for colleagues who have nurtured young talent, and who have selflessly invested in this talent, creating a next generation biomaterials scientists in Europe. The award will be presented annually during the ESB conference.

Maria-Pau Ginebra

Klaas de Groot Award 2019

Director of the Biomaterials Division of the Research Centre for Biomedical Engineering at the Technical University of Catalonia (UPC), Barcelona, Spain

Talk: Bioinspired strategies for bone regeneration: a teamwork
Date: Thursday, September 12, 2019, 09:15
Room: Hall 3

Professor Maria-Pau Ginebra is full professor and Head of the Department of Materials Science and Metallurgy of the Universitat Politècnica de Catalunya (UPC) in Barcelona, Spain, as well as Director of the Biomaterials Biomechanics and Tissue Engineering Group, a team of 30 multi-disciplinary researchers in the Centre for Research in Biomedical Engineering of the UPC. She is also Associated Researcher at the Institute for Bioengineering of Catalonia. Her research has resulted in relevant contributions in the development of new biomaterials for bone regeneration, bone tissue engineering and controlled drug release. Her focus is on the processing and characterisation of a new generation of biomimetic calcium phosphates, which imitate the extracellular matrix of bones. Furthermore, she explores new strategies of biofabrication, including injectable cements and foams, scaffolds for tissue engineering, bioinspired substrates and 3D printing of implants for regenerative medicine.

She is author of more than 190 articles in peer reviewed indexed international journals and 220 contributions to international congresses, in addition to having edited 3 books and being author of 16 book chapters. She has been visiting professor in several foreign Universities, such as Dankook University (Korea) and University of Minnesota (USA) and has imparted more than 40 invited lectures in international Congresses.

She is actively involved in translational research to the clinics and industry, being the inventor of 10 patents. In 2013 she co-founded the spin-off company Mimetis Biomaterials. She is member of the editorial board of Acta Biomaterialia, Tissue Engineering and the International Journal of Molecular Sciences. In 2013, she received the Racquel LeGeros Award by the International Society for Ceramics in Medicine, for her contribution to the research in calcium phosphate biomaterials.
AWARD WINNERS

George Winter Award 2019

The George Winter award is established by the European Society for Biomaterials to recognize, encourage and stimulate outstanding research contributions to the field of biomaterials. The nominee must have contributed significantly to the knowledge in the field of biomaterials through basic, experimental and/or clinical research. The award will be presented annually during the ESB conference.

María Vallet-Regí

George Winter Award 2019

Department of Chemistry in Pharmaceutical Sciences at Universidad Complutense de Madrid (UCM), Spain
Leader of the Smart Biomaterials Research Group
Group leader of the Biomedical Research Networking centre in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), and of the Research Institute of the Hospital 12 de Octubre (i+12), Madrid, Spain

Talk: From Bone Replacements to Nanomedicine: a path in Biomaterials
Date: Wednesday, September 11, 2019, 09:15
Room: Hall 3

Professor María Vallet-Regí is a Spanish chemist, scientist and Professor at Universidad Complutense de Madrid, Spain. She is recognized as a pioneer in the field of ceramic materials applied to medicine. She was the pioneer who suggested introducing drugs into the pores of mesoporous silica materials, which inspired thousands of publications worldwide involving mesoporous silica nanoparticles for drug delivery. She is a Highly Cited Researcher 2018 (Clarivate Analytics). Her publications have been cited over 37,800 times and her h-index is 91. Prof. Vallet-Regí has been awarded many important International prizes. She has recently obtained an ERC Advanced Grant entitled “Polyvalent mesoporous nanosystem for bone diseases”.
AWARD WINNERS

Other ESB Awards

European Doctoral Award
This award is established to recognise, encourage and stimulate outstanding translational research contributions to the field of biomaterials. The candidate applies for and completes his/her Ph.D. according with the rules of his/her own country and university. This award demonstrates that the winners have all received high standard research education and training at a European level in the fields of Biomaterials and Tissue Engineering, and that they are also able to produce scientific results deserving recognition by being published and accepted in high quality journals and conferences.

Winners will be announced during the General Assembly of the YSF on Tuesday, September 10, 2019 at 18:20 in Hall 3.

Rudolf Cimdins Scholarship Awards (Travel Awards)
The ESB supports student participation at the ESB Annual conference through the travel award scheme. Candidates apply to the ESB Council and the award covers a contribution to registration and travel. The winners still need to pay their registration etc, but they will get the money reimbursed by the ESB Treasurer after the conference. It should be noted that the awards are normally given to candidates who would not otherwise be able to attend the ESB conference as they come a long way/come from a poorly funded country/group. Recipients will be announced at the General Assembly of the YSF on Tuesday, September 10, 2019 at 18:20 in Hall 3.

Best Student Oral | Poster Presentations
All candidates must be students, must have an accepted abstract as presenting author and should have indicated on the registration form their desire to be considered for these awards. Oral presentations and posters will be assessed by the Conference Award Committee. Winners will be announced during the Closing Ceremony on Friday, September 13, 2019 at 13:00.

Racquel LeGeros Award
This award is given to two graduate students per year who would like to pursue their research in international or European academic laboratories or companies dedicated to biomaterials and regenerative medicine with the aim to increase their knowledge in a specific topic and/or a technology. Awardees must be ESB members and graduate or students from European universities. The exchange program should last 3 months. The applicant should be an author of an abstract during the next ESB conference.

Winners will be notified during the Young Scientist Forum (YSF) General Assembly on Tuesday, September 10, 2019 at 18:20 in Hall 3.
**AWARD WINNERS**

**2019 RCS Biomaterials Science Lectureship**

The Biomaterials Science Lectureship is an annual award that honours an early-career researcher for their significant contribution to the biomaterials field. The recipient is selected by the Biomaterials Science Editorial Board from a list of candidates nominated by the community.

April M. Kloxin, Ph.D., is an Associate Professor in Chemical & Biomolecular Engineering, Materials Science & Engineering, and Biomedical Engineering (affiliate) at the University of Delaware (UD) and a member of the Breast Cancer Research Program at the Helen F. Graham Cancer Center and Research Institute in the Christiana Care Health System. She obtained her B.S. (Summa Cum Laude) and M.S. in Chemical Engineering from North Carolina State University and Ph.D. in Chemical Engineering from the University of Colorado, Boulder, as a NASA Graduate Student Research Program Fellow. She trained as a Howard Hughes Medical Institute postdoctoral research associate at the University of Colorado before joining the faculty at UD in 2011. Her group aims to create unique materials with multiscale property control for addressing outstanding problems in human health. Her research currently focuses on the design of responsive biomaterials and development of controlled, dynamic models of disease and regeneration. She has published over 40 papers and given over 50 invited presentations and currently serves on the Editorial Advisory Board for multiple journals, including ACS Macro Letters, ACS Biomaterials Science & Engineering, and Biomacromolecules. Her honors include the Biomaterials Science Lectureship (2019), ACS PMSE Arthur K. Doolittle Award (2018), a Susan G. Komen Foundation Career Catalyst Research award (2016), a NSF CAREER award (2013), and a Pew Scholars in Biomedical Sciences award (2013).
Peter Fratzl is director at the Max Planck Institute of Colloids and Interfaces in Potsdam, Germany, heading the Department of Biomaterials. He received an engineering degree from Ecole Polytechnique in Paris, France, and a doctorate in Physics from the University of Vienna, Austria. He is honorary professor at Humboldt University Berlin and at Potsdam University. Currently he is serving as chair of the Chemistry, Physics and Technology Section of the Max Planck Society.

Peter Fratzl's lab studies the relation between (hierarchical) structure and mechanical behaviour of biological and bio-inspired composite materials, and conducts research on osteoporosis and bone regeneration. His research interests include biomaterials systems for mechanosensing and actuation, as well as interdisciplinary research together with cultural science and design. Peter Fratzl has received a number of awards, including the Max Planck Prize of the Humboldt Foundation and the Leibnitz Prize of the DFG. He published about 600 papers in journals and books and he is member of several Academies of Science and of the German Academy of Engineering.

Joachim Kohn, PhD, FBSE is a research entrepreneur, a multi-disciplinary translational scientist, and a national leader in the field of biomaterials science. In 1997, Kohn founded the New Jersey Center for Biomaterials (NJCBM), which has grown into a collaborative network spanning 25 institutions and 40 laboratories. Research at the NJCBM focuses on design, synthesis, characterization and fabrication of new biomaterials for regenerative medicine, tissue engineering and drug delivery. Kohn has pioneered the use of combinatorial
PLENARY SPEAKER

and computational methods for the optimization of biomaterials for specific medical applications. He is mostly known for his seminal work on “pseudo-poly(amino acid)s”- a new class of polymers that combine the non-toxicity of individual amino acids with the processability and strength of high-quality engineering plastics. Medical devices (a coronary stent and an antimicrobial device to prevent infections in pace maker patients) using these materials have been implanted in more than 250,000 patients and are currently approved for use in 46 countries. As a translational scientist, Kohn has 72 issued US Patents on novel biomaterials and seven companies have licensed his technologies. He is the scientific founder of three spin-off companies.

Didier Letourneur

Director of Research at the CNRS
Head of Inserm U1148-University Paris Diderot – University Paris 13, Villetaneuse, France
President of BIOMAT, French Society for Biomaterials

Talk: Examples of industrial and clinical transfers of research works on biomaterials

Date: Wednesday, September 11, 2019, 08:50
(Double Plenary with A. Pandit)

Room: Hall 3

Didier Letourneur, Engineer in Material Sciences, PhD in Chemistry, is Research Director at CNRS. Since 2014, he is the Director of the Laboratory for Vascular Translational Science (LVTS with about 230 persons) affiliated to Inserm and Universities Paris Diderot and Paris 13. D Letourneur is actively involved in several national and European grants (European coordinator of NMP large scale project “NanoAthero”). He is the author of 180 international publications and inventor of 16 patents.

He won several prizes including Coup d’Elan from Bettencourt Foundation 2001, Cardiovascular Innovation Award 2011 from French Medical Research Foundation, the 2016 G Winter Award from the European Society for Biomaterials, and the 2017 Asian Polymer Association Jubilee Award.

In 2016, he found the company SILTISS for the development of innovative implants from polysaccharide-based materials. He was vice-chairman for Regenerative Medicine at the European Technology Platform for Nanomedicine and is now General Secretaire. From 2016, he is the President of the Inserm committee on Health Technologies & Social Sciences. From 2009, he is President of BIOMAT, French Society for Biomaterials.
Abhay Pandit
Scientific Director, CÚRAM, Centre for Research in Medical Devices, National University of Ireland, Ireland

Talk: Enabling Biomaterials Translation: It’s not all about laboratory to bedside
Date: Wednesday, September 11, 2019, 08:30
(Double Plenary with D. Letourneur)
Room: Hall 3

Abhay Pandit is an Established Professor of Biomaterials at the National University of Ireland, Galway. He is the Scientific Director of the Centre for Research in Medical Devices (CÚRAM), a multi-disciplinary academic-industry-clinician translational research centre funded by Science Foundation Ireland (E49M). Prof. Pandit’s research integrates material science and biological paradigms in developing solutions for chronic diseases. Prof Pandit has developed next generation reservoir delivery vehicles with high payload capacity, programmable degradation profiles and inbuilt gradients of physical, chemotropic and protective cues which facilitate spatiotemporal localised sustained delivery of multiple biomolecules to target injury mechanisms at the molecular and cellular levels.

These biomaterial platforms have been validated to act as inductive templates for constructive remodelling and as templates for the induction of de novo functional, site-appropriate, tissue formation. These platforms have been developed for neural, musculoskeletal and cardiovascular clinical targets with numerous other targets currently under development.

Prof. Pandit has received numerous awards and distinctions. He was inducted as an International Fellow in Biomaterials Science and Engineering by the International Union of Societies for Biomaterials Science and Engineering and elected as a Fellow of the Tissue Engineering and Regenerative International Society. He was also elected to the American Institute of Medical and Biological Engineering (AIMBE) College of Fellows in recognition of his outstanding contributions to establishing a national centre which will develop transformative device-based solutions to treat global chronic diseases.

Prof Pandit has published more than 250 papers in peer-reviewed journals, filed numerous patent applications and has licensed four technologies to medical device companies. Prof Pandit is an Executive Editorial Board of the Tissue Engineering journal and is an Associate Editor of the Biomaterials journal. He has coordinated four EU grants to date and has generated research contracts from industry and government funding agencies totaling €90M.
PLENARY SPEAKER

Julia Weber
Director of the Porcelain Collection, Dresden State Art Collections, Dresden, Germany

Talk: Saxon porcelain - domestic artwork, status symbol and biomaterial
Date: Friday, September 13, 2019, 08:30
Room: Hall 3

Dr. Julia Weber studied art history, archaeology, and French literature at the Universities of Augsburg, Bonn, and Basel. As an intern at Waddesdon Manor, The Rothschild Collection, she developed a taste for the applied arts of the eighteenth century. Her master’s thesis tracing the competitive exchange of porcelain gifts between the Saxon-Polish and the French court in the late 1740s was awarded the “Helmut Seling Prize” by the Central Institute of Art History, Munich. From 2008 to 2012, she prepared a comprehensive catalogue of Meissen porcelain with East Asian decorations in the Ernst Schneider Collection at Lustheim Palace, which was published in 2013 by the Bavarian National Museum. She then worked there as a curator of ceramics. In August 2016, Weber was appointed director of the Porcelain Collection, Staatliche Kunstsammlungen Dresden. Her research focus is eighteenth-century porcelain and its artistic, sociocultural, political, and economic context.
Dilbar Aibibu holds a MSc and PhD degree in mechanical engineering from Technische Universität Dresden, Germany (1999 and 2005). Her career included positions as head of the department of medical textiles and postdoctoral fellow at the RWTH Aachen (2005 – 2007) as well as head of the competence center “Medical Textiles” at the German Institutes of Textile and Fiber Research Denkendorf, Germany (2007 – 2011). Currently, she leads the research group for “Biomedical Technology” at the Institute of Textile Machinery and High Performance Material Technology of Technische Universität Dresden.

Together with numerous cooperation partners from clinics and companies worldwide, her team conducts research along the value chain from biomaterials to the (pre-) clinical testing of fiber-based implants so her team has long-standing expertise in basic and application-oriented research in the field of fiber based biomedical technology as well as access to all necessary equipment and testing laboratories. Her team’s current research focus is on bio-inspired biomaterials, such as chitosan, collagen and silk fibroin, customized implants and scaffolds for hard and soft tissue regeneration as well as drug delivery systems by means of textile technology, 3D printing and electro spinning. The computational modeling and characterization of materials as well as the use of sensors are also addressed by her research team.

Matt’s research interests include the synthesis and characterization of well-defined polymeric systems and dynamic materials to mimic the cellular environment and to influence cellular behaviour. Of particular interest is the use of reversible supramolecular interactions
(e.g. host-guest, supramolecular polymers, hydrogen bonding) to build these materials, the use of mechanochemistry to influence and measure cellular responses, and the use of 3D printing to recapitulate a macroscale construct. Matt received his B.S. in chemistry (2006) at Clemson University, and he obtained his PhD in 2012 in Physical Organic Chemistry under the guidance of Ronald K. Castellano at the University of Florida. He then moved to Eindhoven University of Technology to design and characterize water soluble supramolecular polymers and became interested in the use of aqueous supramolecular systems as biomaterials.

In 2015, he joined the MERLN institute as a researcher, and in 2017 as an assistant professor. Rooted in synthetic and organic chemistry, his group aims to enhance the synthetic chemistry and materials used within regenerative medicine, while also exploring the utility of customizable polymers for 3D printing, the use of dynamic polymers as cell-culture matrices, and mechano-chemistry in understanding and enhancing cell-material interactions.

**Bikramjit Basu**
Indian Institute of Science, Bangalore, Karnataka, India  
Honorary Professor, University of Manchester, UK  
Guest Professor, Wuhan Univ. of Technology, China

**Talk:** Biophysical stimulation of stem cells on biomaterials and in biomicrofluidic device: in vitro and in silico studies  
**Session:** IX-OS34 - Biophysical stimulation of cells  
**Date:** Thursday, September 12, 2019, 16:45  
**Room:** Conference room 4+5

Prof. Bikramjit Basu has been serving on the faculty of Indian Institute of Science, Bangalore, since 2011 and is currently a Professor at the Materials Research Center with joint appointment at Center for Biosystems Science and Engineering. He is currently Honorary Professor at University of Manchester, UK and Guest Professor at Wuhan University of Technology, China. Following a brief post-doctoral stint at University of California, Santa Barbara; he served as a faculty of IIT Kanpur during 2001-2011.

Prof. Basu’s contributions in Engineering Science have been widely recognised. He is the recipient of India’s most coveted science and technology award, Shanti Swarup Bhatnagar Prize (2013). A Chartered Engineer of UK, he is an elected Fellow of the American Institute of Medical and Biological Engineering (2017), National Academy of Medical Sciences (2017), Indian National Academy of Engineering (2015), Society for Biomaterials and Artificial Organs (2014) and National Academy of Sciences, India (2013). He is on the advisory board of several National R & D labs and medical device manufacturing companies in India and is recently invited to serve as an independent board of Directors of AMTZ Medi Valley Incubation Council, Visakhapatnam. He is currently leading India’s major Translational Center of Excellence on biomaterials for orthopaedic and dental applications, with an interdisciplinary team of 50 researchers, clinicians and companies. His research group invented
KEYNOTE SPEAKER

Marc Bohner
Bioceramics & Biocompatibility Group, RMS Foundation, Bettlach, Switzerland

**Talk:** Material-induced heterotopic ossification
**Session:** VI-SY11 - Calcium phosphate materials-induced osteogenicity: from orthotopic bone formation to heterotopic bone induction
**Date:** Wednesday, September 11, 2019, 16:45
**Room:** Hall 4

Marc Bohner holds a MSc and PhD degree in Materials Science from the Swiss Federal Institute of Technology of Lausanne (1990 and 1993). His career included positions as post-doctoral fellow at the University of Utah (1994 – 1995), and the Swiss Federal Institute of Technology of Zurich (ETH Zurich; 1995 – 1998). Currently he leads the “Bioceramic & Biocompatibility Group” of the RMS Foundation in Bettlach, Switzerland. He is also member of the management board. His career focus has been biomaterials, in particular bone graft substitutes / calcium phosphates. His interests comprise the synthesis, nanostructuration, and use of various calcium phosphates, the improvement of present delivery techniques for bone substitutes (in particular calcium phosphate and polymer cements), and the application of these materials, methods, and concepts in clinical applications. He holds over fifteen distinct patents, is the inventor of 4 commercial products, and has published and presented widely in his field (120 articles; h = 48). He has given 130 invited lectures in English, French, and German. His teaching positions have included adjunct and affiliated appointments at the University of Sherbrooke (2004 – 2016), the University of Berne, and ETH Zurich.

His professional service has included: Editor of Acta Biomaterialia (2008 – present); Co-chair of the annual congress of the European Society for Biomaterials (2009); Secretary, vice-president and president of the Swiss Society for Biomaterials, (2004 – 2012); Secretary and president of “GRIBOI” (2007 – 2016); Secretary and then treasurer of the European Society for Biomaterials (2013 – present); Member of the Research Council of the Swiss National Science Foundation (2016 – present); Editorial board member of “J Biomed Mater Res B” (2006 – present), and “Biomaterials” (2008-2011). In 2013, he received a “honorary life membership” from the Swiss Society for Biomaterials. In 2014, he was awarded the “Racquel LeGeros Award” of the “International Society for Ceramics in Medicine” for his contribution to calcium phosphate research. In 2016, he became “honorary president” of GRIBOI.
KEYNOTE SPEAKER

Paul Dalton
University of Würzburg, Germany

Talk: Why Polymer Melts are Excellent Fluids for High-resolution 3D printing
Session: III-SY4 - Electrohydrodynamic Additive Manufacturing Technologies
Date: Tuesday, September 10, 2019, 17:15
Room: Hall 3

Paul Dalton is Germany’s first Professor in Biofabrication, based at the University of Würzburg. He is originally from Perth, Australia, where he worked on an artificial cornea from concept to the clinic. He became a world traveler, post-doccing at the University of Toronto, at RWTH Aachen and at the University of Southampton. As faculty, he split his time between Shanghai and Brisbane, Australia until 2014. With over 25 years’ experience across several disciplines, he pioneered melt electrowriting as a distinct class of 3D printing.

Jennifer H. Elisseeff
Translational Tissue Engineering Center; Johns Hopkins University, Baltimore, USA

Talk: New frontiers in biomaterial research: engaging the immune system
Session: IV-SY6 - RSC Biomaterials Science Lectureship
Date: Wednesday, September 11, 2019, 10:30
Room: Hall 3

Dr. Elisseeff is the Morton Goldberg Professor and Director of the Translational Tissue Engineering Center at Johns Hopkins Department of Biomedical Engineering and the Wilmer Eye Institute with appointments in Chemical and Biological Engineering, Materials Science and Orthopedic Surgery. She was elected a Fellow of the American Institute of Medical and Biological Engineering, the National Academy of Inventors, and a Young Global Leader by World Economic Forum. In 2018, she was elected to the National Academy of Engineering and National Academy of Medicine.

Jennifer received a bachelor’s degree in chemistry from Carnegie Mellon University and a PhD in medical engineering from the Harvard–MIT Division of Health Sciences and Technology. Later she was a Fellow at the National Institute of General Medical Sciences, Pharmacology Research Associate Program, where she worked in the National Institute of Dental and Craniofacial Research. She has published over 200 papers, book chapters, and patent applications and received a number of awards including the Carnegie Young Alumni Award and in 2002 she was named by MIT Technology Review as a top innovator under 35.
KEYNOTE SPEAKER

Jennifer’s research focus is the development of biomaterials for regenerative medicine applications in orthopedics, plastic and reconstructive surgery, and ophthalmology. She is now studying Biomaterials-directed Regenerative Immunology and the role of the adaptive immune system in tissue repair. She is committed to the translation of regenerative biomaterials and has founded several companies and participates in several industry advisory boards.

Matteo D’Este
AO Research Institute Davos, Switzerland

Talk: Local antibiotics delivery with hydrogels: from infection prevention to infection eradication in orthopedic trauma

Session: II-SY2 - Local antibiotics delivery with hydrogels: from infection prevention to infection eradication in orthopedic trauma

Date: Tuesday, September 10, 2019, 13:00

Room: Hall 4

Matteo’s approach to Biomaterials Science has been unconventional. He graduated with a MSc in Physical Chemistry in 2002 and he earned his PhD in Chemical Sciences at the University of Padova (Italy) with a research project in Theoretical Chemistry, completing his academic education without even knowing what PubMed was. After the PhD graduation this changed though, since Matteo started working as researcher in pharmaceutical industry being involved among other things in developing a hydrogel-based class III medical device from scratch. For this product he has been developing the chemistry of the production process, filed the patent application (now granted), contributed to the development of analytical methods and quality aspects, regulatory dossier with achievement of CE mark. Additionally, he gained experience in engineering/industrial aspects related to GMP production scale-up, GMP production of pilot-scale batches for clinical trials, process validation and in project management. After almost 5 years in industry, since March 2011 he joined the AO Research Institute Davos, Switzerland where now he is employed as Senior Research Scientist. This move gave him the opportunity to start his path in Biomaterials Science. Between 2017 and 2018, Matteo spent more than half a year as Visiting Scholar at the Department of Bioengineering of the University of Pennsylvania, Polymeric Biomaterials Laboratory Prof Jason Burdick.

Matteo’s core competencies include biopolymers modification, 3D printing/bioprinting, electrospinning of hydrogel-based stimuli-responsive nanofibers, tissue engineering of the musculoskeletal system for fundamental and translational research; musculoskeletal infection and drug delivery, medical devices development; planning, administrating, budgeting and reporting of research projects to EU, Swiss National Science Foundation, and to his employer for intramural projects (externally peer-reviewed). Matteo is personally tasked by the Institute director with development of gels with full consideration for translation to the clinics, as opposed to pure scientific publishing.
KEYNOTE SPEAKER

After the industry experience, he has been supervising around 20 students and guest scientists at AO. Matteo is author of 5 patents and more than 30 papers. He is member of the Swiss Society for Biomaterials and Regenerative Medicine, of the European Society for Biomaterials and of the Society for Biohydrogels, and he is reviewer for major journals in the field of Biomaterials and Tissue Engineering and for European national funding agencies.

Sandra Franz
University of Leipzig, Germany

Talk: Immunomodulating biomaterials support cutaneous wound healing
Session: III-SY5 - DGBM SY: Matrix engineering in skin and bone regeneration
Date: Tuesday, September 10, 2019, 17:15
Room: Hall 5

Sandra Franz has a Ph.D. in immunology from the University of Erlangen where her work focused on immune cell functions in autoimmunity and chronic inflammation. Her career included positions as postdoctoral fellow at the University of Erlangen, University of Edinburgh and Leipzig University. She is now group leader at the Department of Dermatology at Leipzig University. The research interest of her group focusses on understanding the regulatory interplay of immune cells, tissue cells and the extracellular environment during dermal tissue repair and how failures in the regulatory process leads to wound healing disorders. Based on this her groups develops new biomaterial-based therapeutic approaches for modulating impaired wound healing in the skin.

Josef Goding
Imperial College London, Royal School of Mines, London, UK

Talk: Engineering Neural Interfaces in the Central and Peripheral Nervous Systems
Session: V-SY9 - Ex vivo Models to Study Neural Plasticity, Regeneration and Interactions with Electronic Interfaces
Date: Wednesday, September 11, 2019, 14:45
Room: Hall 5

Dr. Josef Goding is a Postdoctoral Research Associate in the Department of Bioengineering at Imperial College London in the Polymer Bionics Lab Group. He received his PhD from the University of New South Wales, Australia, for the development of bioactive conductive hydrogel coatings for neuroprosthetic electrodes. His research interests include soft and flexible materials for bioelectronics with a focus on functional materials for neural interfaces.
Liam Grover
University of Birmingham, Birmingham, UK

Talk: Developing models and treatments for pathological ossification
Session: II-SY3 - DGBM SY: Biomineralization and Calcification in Regenerative Medicine
Date: Tuesday, September 10, 2019, 13:30
Room: Conference room 4+5

Professor Liam Grover is a Professor in Biomaterials Science, Deputy Head of the School of Chemical Engineering and the Director of the Healthcare Technologies Institute at the University of Birmingham.

Professor Grover has been at the University of Birmingham since 2006. Prior to this time he was a Skeletal Health Scholar at McGill University, Montreal. His group (www.TRAILab.net) focuses on the application of materials science and chemical engineering to the design of novel technologies for the regeneration of tissues. He is also interested in the fundamental science behind the mechanical performance of both ceramics and soft solids and how they may be influenced by physiological conditions.

His research has been funded by numerous funding agencies, including the UK research councils (EPSRC, BBSRC, MRC), the EU (FP6 and FP7), the regional development agency (AWM), the CIHR, the Furlong Charitable Foundation, the Malaysian Government, the NSF (China), Smith and Nephew, Boots, and JRI.

He has published more than 150 full peer reviewed papers, 20 extended conference papers, more than 70 reviewed conference abstracts, three book chapters and has filed seven patent applications. His work has been cited on more than 3500 occasions. He is also serving on the editorial board of Scientific Reports, Journal of Biomaterials Applications, Advances in Applied Ceramics and have guest edited two special editions of the journal. His work has been featured in Nature Materials, Materials World, and on the BBC. In addition, He is a Fellow of the IOM3 and have given more than fifty invited talks internationally, and maintains active collaborations with the University of Würzburg, McGill University, UC Davis, Central South University (China), Scuola Superiore Santa Anna (Pisa), and the Italian Institute of Technology.
Zhen Gu
UCLA, Los Angeles, U.S.A.

Talk: **Leverage Physiology for Bioresponsive Cancer Immunotherapy**
Session: IV-SY7 - Adaptive functional biomaterials
Date: Wednesday, September 11, 2019, 11:00
Room: Hall 5

Dr. Zhen Gu is a Full Professor in the Department of Bioengineering and Director of the NIH Biotechnology Training in Biomedical Sciences and Engineering Program at the University of California, Los Angeles (UCLA). Dr. Gu received his B.S. degree in Chemistry and M.S. degree in Polymer Chemistry and Physics from Nanjing University. In 2010, he obtained Ph.D. at UCLA, under the guidance of Dr. Yi Tang in the Department of Chemical and Biomolecular Engineering. He was a Postdoctoral Associate working with Dr. Robert Langer at MIT and Harvard Medical School during 2010 to 2012. Before he moved to UCLA in 2018, he had been appointed as a Jackson Family Distinguished Professor in the Joint Department of Biomedical Engineering at the University of North Carolina at Chapel Hill and North Carolina State University. Dr. Gu’s group studies controlled drug delivery, bio-inspired materials and nanobiotechnology, especially for cancer and diabetes treatment.

He has published over 160 research papers and applied over 50 patents. He is a co-founder of five start-up companies. He serves as an Associate Editor for Nano Research and Focus Group Chair of Bioinspired and Biomimetic Drug Delivery (BBDD) in the Controlled Release Society (CRS). Dr. Gu is the recipient of the Sloan Research Fellowship (2016), Biомaterials Science Lectureship Award (2018), Young Investigator Award of CRS (2017), Alcoa Foundation Research Achievement Award (2017), Pathway Award of the American Diabetes Association (ADA, 2015) and Young Innovator Award in Cellular and Molecular Engineering of the Biomedical Engineering Society (BMES, 2015). MIT Technology Review listed him in 2015 as one of the global top innovators under the age of 35 (TR35). He was elected to the College of Fellows of the American Institute for Medical and Biological Engineering (AIMBE) in 2019.
KEYNOTE SPEAKER

**Christoph Hehrlein**
University Heart Center Freiburg, Medical Center University of Freiburg, Germany

**Talk:** Zn- and Mg alloys as biodegradable materials of cardiovascular devices  
**Session:** VII-SY12 - DGBM SY: Biodegradable metallic implants  
**Date:** Thursday, September 12, 2019, 11:00  
**Room:** Conference room 4+5

In the early 1990s, I was a fellow in Cardiology at the Dept. of Internal Medicine, University of Heidelberg (Chairman: Wolfgang Kuebler, MD). At that time I was heading the Vascular Brachytherapy Program at University of Heidelberg and developed the first radioactive vascular stent studied worldwide. After a 2 years tenure as guest professor at the University of Grand Rapids, Michigan, USA, I continued as a consulting Cardiologist and Angiologist at the University of Freiburg in the year 2001 with a primary research interest in drug eluting- and bioresorbable stents and stent materials.

**Sarah Heilshorn**
Stanford University, UK

**Talk:** Adaptable Hydrogels as Custom Bioinks  
**Session:** V-SY8 - ISBF: Hydrogel bioinks for bioprinting and biofabrication  
**Date:** Wednesday, September 11, 2019, 14:15  
**Room:** Hall 3

Sarah Heilshorn is Associate Professor and Otterson Faculty Scholar in the Materials Science & Engineering Department at Stanford University. Her laboratory integrates concepts from materials engineering and protein science to design new, bioinspired materials. These materials are being explored for applications in regenerative medicine, 3D bio-printing, and ex vivo human tissue mimics. She has been selected for the US National Science Foundation Career Award and the US National Institute of Health New Innovator Award. She completed her PhD in Chemical Engineering at Caltech and was a postdoctoral scholar in Molecular and Cell Biology at the University of California, Berkeley. Prof. Heilshorn is a fervent supporter of diversifying the engineering community and serves in multiple leadership roles to help achieve this goal. She is a Fellow of the American Institute for Medical and Biological Engineering and the Royal Society for Chemistry. She serves as an Associate Editor for Science Advances.
Dietmar W. Hutmacher
Queensland University of Technology, Brisbane, Australia

Talk: Historicity of Bioprintomics – Can we in fact print tissue and organs or did we neglect genuinely that biology matters

Session: III-SY4 - Electrohydrodynamic Additive Manufacturing Technologies

Date: Tuesday, September 10, 2019, 16:45
Room: Hall 3

Distinguished Professor Dietmar W. Hutmacher is the Director of the Centre in Regenerative Medicine and Director of the Australian Research Council Centre in Additive Biomanufacturing at the Queensland University of Technology (QUT). He holds a MBA from the Royal Henley Management College and a PhD from the National University of Singapore. He has a distinctive research record, educational and scholarly career combined with a former leadership position and industry experience. His international standing and impact on the field are illustrated by his publication record, with more than 300 journal articles, 24 book chapters, 14 edited books; and outstanding citation record: more than 30,000 citations and an h-index of 85 in Scopus. In 2012 he was, 1) elected to join the highly esteemed International College of Fellows Science and Engineering; 2) elected to become one of the 23 founding members of the International Fellows of Tissue Engineering and Regenerative Medicine Society (TERMIS); 3) presented the Research Excellence Award from the Australasian Society for Biomaterials and Tissue Engineering. In 2013, he received the highly prestigious Hans Fischer Senior Fellowship from the Technical University in Munich. In 2017 he was 1) given the most prestigious award of the European Society for Biomaterials; 2) QUT awarded him the title Distinguished Professor. In 2018 he received the Humboldt Research Award and Ramaciotti medal for excellence in biomedical research.

Gun-II Im
Dongguk University, Korea

Talk: Development of adipose stem cell therapeutics with enhanced angiogenic and osteogenic potential to treat bone defects and osteonecrosis of the femoral head

Session: VI-SY16 - Korean-European symposium: Advances in musculoskeletal regeneration

Date: Wednesday, September 11, 2019, 16:15
Room: Hall 2

Dr. Im is currently Professor in Department of Orthopaedics and Director of Integrative Research Institute for Regenerative Biomedical Engineering, Dongguk University, Goyang, Korea. Dr. Im received his M.D in Seoul National University in 1988 and finished his training as an orthopaedic surgeon at Seoul National University Hospital in 1993. He then obtained his
KEYNOTE SPEAKER

Ph.D. degree in Korea University in 1999. Dr. Im began his academic career as an Assistant Professor at Dept. of Orthopaedics, Hallym University Hospital in 1996 and moved to Dept. of Orthopaedics, Dongguk University Ilsan Hospital in 2006 and has been working in the institution until now.

Dr. Im was a Visiting Scholar to Tubingen University, Germany, to Bern University, Switzerland, and to Kyushu University, Japan. He also spent one and half years (2000-2001) as a Research Fellow at Massachusetts General Hospital, Harvard University, USA. Dr. Im has participated in global academic activity in the field of musculoskeletal research during last two decades, and possesses numerous connections with researchers overseas. He is an associate editor or editorial board member of several international peer-reviewed journals.

Dr. Im has been working on the field of stem cell and tissue regeneration of musculoskeletal system since 1996. He has published 130 peer-reviewed scientific papers in international journals and holds 15 national and international patents. He has accumulated rich knowledge in the research on the regeneration of bone and cartilage regeneration. Dr. Im has been performing multidisciplinary research in cooperation with scientist and engineers of various fields to translate the research product into clinical application. Based on his works, he has been awarded several prestigious awards from the Korean governments, academic societies and his university.

Wilhelm Jahnen-Dechent
RWTH Aachen University, Germany

Talk: Mud in the blood: Protein-Mineral Complexes in Mineralization and Calcification
Session: II-SY3 - DGBM SY: Biomineralization and Calcification in Regenerative Medicine
Date: Tuesday, September 10, 2019, 13:00
Room: Conference room 4+5

Wilhelm E. Jahnen-Dechent is Professor for Biointerface Science at the RWTH Aachen University, and the managing director of the Helmholtz Institute for Biomedical Engineering at RWTH Aachen. Professor Jahnen-Dechent has published over 200 peer-reviewed research papers on the structure and function of proteins in highly diverse areas including plant pathogen defense, fertility research, and cell-materials interaction in medicine and biotechnology. His work has been cited more than 14,800-fold resulting in an h-factor of 56 (Google Scholar).
KEYNOTE SPEAKER

Stefan Jockenhövel
RWTH Aachen University, Germany & Maastricht University, The Netherlands

Talk: Biohybrid Implants – Fostering Clinical Translation by Textile Reinforcement
Session: VIII-SY14-DGBMT - DGBMT SY: Biohybrid Implants
Date: Thursday, September 12, 2019, 13:00
Room: Hall 5

Univ.-Prof. Dr. med. Stefan Jockenhövel (*1967), RWTH Aachen and Maastricht University, is director of the Dept. for Biohybrid & Medical Textiles (BioTex) and the Aachen-Maastricht-Institute for Biobased Materials (AMIBM) at the RWTH Aachen and Maastricht University. He has studied medicine at the RWTH Aachen University and earned his MD in the Dept. of Physiology in the field of oxygenator development for pediatric applications. He was trained as a cardiovascular and thoracic surgeon at the University Hospital Aachen, Zurich and the Heart Center Lahr and the Institute National Chirurgie Cardiaque (INCCI), Luxembourg. Since 2015 he was leading the group of Tissue Engineering & Biomaterials at the Institute for Applied Biomedical Engineering (AME) at the Helmholtz Institute Aachen. In 2010 he was habilitated in Applied Medical Engineering and is a full professor since 2011 at the RWTH Aachen University and since 2015 at the Maastricht University.

Julian Jones
Imperial College London, South Kensington Campus, London, UK

Talk: Bouncy Bioglass for Cartilage and Bone Regeneration
Session: I-SY1 - Bioactive glasses: from the laboratory to the clinic
Date: Tuesday, September 10, 2019, 10:30
Room: Hall 4

Julian R. Jones (Professor of Biomaterials at Imperial College London) leads a research group on bioactive glasses and hybrids, particularly 3D scaffolds and therapeutic nanoparticles. He has >130 articles (h index 42, > 1000 cites pa, Web of Science) and 4 patent applications and has co-edited three biomaterials text books. He was elevated to Fellow of the Society for Glass Technology in 2018, Fellow of the American Ceramics Society in 2015 and was awarded an ISCM (International Society for Ceramics in Medicine) Excellence Award in 2016; the 2014 Vittorio Gottardi Award from the International Commission on Glass (ICG) and the Robert L. Coble Award (American Ceramics Society) in 2010. He is Chair of the Applications Cluster of Technical Committees of the International Commission on Glass (ICG) and Chair-elect of the Bioceramics Division of the American Ceramics Society.
Dr Daniel Kelly is the Professor of Tissue Engineering and Director of the Trinity Centre for Bioengineering in Trinity College Dublin. He is a past recipient of a Science Foundation Ireland President of Ireland Young Researcher Award, a Fulbright Visiting Scholar grant (at the Department of Biomedical Engineering in Columbia University, New York) and three European Research Council awards (Starter grant 2010; Consolidator grant 2015; Proof of Concept 2017). Prof Kelly leads a multidisciplinary musculoskeletal tissue engineering group based in the Trinity Centre for Bioengineering. The goal of his lab is to understand how environmental factors regulate the fate of adult stem cells. This research underpins a more translational programme aimed at developing novel biomaterial, tissue engineering and 3D bioprinting strategies to regenerate damaged and diseased musculoskeletal tissues. To date he has published over 160 articles in peer-reviewed journals.

Professor Christine Knabe is Professor of Experimental Orofacial Medicine at the school of dental medicine of the Philipps University Marburg, Germany. The focus of her work is on translational research from bench to bedside in the context of clinically relevant subjects in regenerative medicine and biomaterials research. Her research deals with various aspects of regenerative medicine, bone regeneration and bone tissue engineering utilizing bioactive resorbable bone grafting materials and 3D printed bioactive ceramic scaffolds mainly in the context of implant dentistry and orthopaedics.
From 1999 on, Professor Knabe-Ducheyne built her own independent research program, specifically focusing on cellular reaction pathways triggered by the presence of bioactive implant materials and on translational research, which takes new biomaterials and therapeutic concepts for bone and tissue regeneration from basic research via preclinical studies involving large animal models and clinical trials to the clinical arena. These studies led to the FDA approval and clinical use of a novel bioactive silica containing calcium alkali orthophosphate based bone grafting material. Professor Knabe-Ducheyne’s work furthermore deals with elucidating the effect of host factors on craniofacial bone regeneration with bioactive calcium phosphate bone grafts in the context of individualized medicine. Professor Knabe-Ducheyne also collaborates extensively with colleagues at the University of Pennsylvania in the pursuit of much better treatments of resistant infections, caused or not by implant placement as well as in the pursuit of identifying undesirable immune and inflammatory responses in human tissue after implantation of polypropylene meshes and other polymers for the treatment of organ prolapse. This has also lead to the collaborative work with colleagues of the University of North Carolina at Charlotte and the Universities of Vermont and Southern Denmark on the development and preclinical testing of novel bioceramic microparticle urethral bulking agents, which includes detailed evaluation of the tissue responses to these novel bioceramic urethral bulking agents at a molecular level and testing for possible immune and inflammatory reactions.

Prof. Knabe obtained her DDS at the University of Göttingen, Germany, in 1988. She subsequently pursued doctoral studies with Professor U. Gross at the Institute for Pathology of the Freie Universität Berlin, Germany, and was awarded her PhD in 1990. She then joined a private practice, but soon returned to academia and continued her training for 16 months in Oral Surgery and Periodontology at the University of Tübingen, Germany. In 1992, she joined the Department of Prosthetic Dentistry at the Freie Universität Berlin. She complemented her training by various study periods abroad. In 1993, with Professor J. E. Davies at the University of Toronto, Canada. She also trained with Professor U. Belser at the University of Geneva, Switzerland, in clinical implant dentistry in 1994. From 1992-2010, she held various positions with increasing responsibilities in the departments of Prosthetic Dentistry (1992-1996), Restorative Dentistry and Periodontology (1996-1997), and was director (first as assistant and then as associate professor) of the division of Biomaterials and Dental Materials of the Dept. of Experimental Dentistry (1997-2010) at the Charité University Medical Center. 1999-2000 she spent a sabbatical with Prof. Rolfe Howlett at the Bone Biomaterial Unit of the University of New South Wales in Sydney, Australia to study molecular biological issues regarding implant-tissue interactions. Since 2007 she also has been visiting associate professor at the Division of Orthopaedic Surgery of the Thomas Jefferson University in Philadelphia (Director Prof. I. Shapiro). In January 2011, she joined the Philipps University Marburg, where she chairs the department of Experimental Orofacial Medicine.
KEYNOTE SPEAKER

Ayala Lampel
CUNY Advanced Science Research Center, New York, U.S.A.

Talk: Sequence-Encoded Peptide Pigment Materials
Session: IV-SY7 - Adaptive functional biomaterials
Date: Wednesday, September 11, 2019, 10:30
Room: Hall 5

Ayala Lampel is an assistant professor at the School of Molecular Cell Biology and Biotechnology at Tel Aviv University since August 2019. Ayala received a PhD in Biotechnology from Tel Aviv University for her work in the group of Prof. Ehud Gazit, focusing on virus proteins self-assembly. For her postdoc, Ayala joined Prof. Rein Ulijn’s research group at the Advanced Science Research Center of the City University of New York.

She worked on molecular self-assembly of peptides and the design of supramolecular nanomaterials, and was awarded the Israeli Council for Higher Education Postdoctoral Fellowship. The main research interests of her group are design of peptide and protein-based biomaterials by mimicking biological manufacturing processes including compartmentalization of self-assembly and enzymatic reactions and utilizing supramolecular order/disorder.

Thomas Lenarz
Hanover Medical School, Germany

Talk: Biohybrid Cochlear Implant Electrode
Session: VIII-SY14-DGBMT - DGBMT SY: Biohybrid Implants
Date: Thursday, September 12, 2019, 13:30
Room: Hall 5

Thomas Lenarz studied medicine and biochemistry at the universities of Tübingen, Erlangen, Heidelberg and London from 1975 until 1981 and received his doctoral degree in medicine. Ph.D. in pharmacology of the auditory system in 1987. Postdoctoral research fellow at the University of California in San Francisco in 1989. Since 1993 Chairman and Professor at the Department of Otolaryngology, Hanover Medical School. Coordinator of the Collaborative Research Program (SFB 599) “Sustainable Biodegradable and Permanent Implants of Metallic and Ceramic Materials” and co-director of the Cluster of Excellence Hearing4All Hanover-Oldenburg. Director of the German Hearing Centre and the Research Institute of Audio- and Neurotechnology in Hanover.
KEYNOTE SPEAKER

Member of the German National Academy of Sciences (Leopoldina) and the German Academy Technology (acatech). Current President of the German Society of Biomedical Technology.

Research interests in the area of auditory implants, biomaterials for medical implants, audiology and neurotology.

Christoph Leyens
Fraunhofer IWS Dresden, Germany & TU Dresden, Germany

Talk: Additive Manufacturing of patient-specific implants – technological opportunities and limitations
Session: TRS 1: Additive manufacturing of patient-specific implants
Date: Wednesday, September 11, 2019, 10:30
Room: Hall 2

Prof. Dr.-Ing. Christoph Leyens studied and graduated in materials science and engineering, earned his Ph.D. in the field of coatings for and engineering of titanium alloys, and finally habilitated on materials for aerospace – RWTH Aachen being his alma mater. He has worked at DLR – German Aerospace Center as research scientist, group leader and finally acting director of the Institute of Materials Research before he accepted a full professorship in Metallurgy and Materials Technology at BTU Cottbus in 2004. Here he was also board member of the Light Weight Development Center Panta Rhei and served as the university’s Vice President for Research, Development and Innovation for more than two years. In 2009 he accepted the full professorship for Materials Technology at TU Dresden, and since 2010 he serves as the director of the Institute of Materials Science at TU Dresden. After several management positions at the Fraunhofer Institute for Materials and Beam Technology IWS, Dresden, he was appointed its director in 2016.

Prof. Leyens has covered a wide range of research topics including science and technology of high temperature and lightweight materials, surface engineering and coatings development, (laser-based) thermal surface technology, laser processing and additive manufacturing. He has published more than 200 scientific papers, seven books and hold numerous patents.
KEYNOTE SPEAKER

Nina Lindfords
Head of Division of Teaching and Research, Department of Musculoskeletal- and Plastic Surgery, Helsinki University Hospital, Finland

Talk:  Bioactive glass: from the laboratory to the clinic
Session:  I-SY1 - Bioactive glasses: from the laboratory to the clinic
Date:  Tuesday, September 10, 2019, 11:00
Room:  Hall 4

Assoc. Prof. Nina Lindfors studied medicine at Turku University Hospital and graduated in 1992. She also studied chemical engineering at the Åbo Akademi University from which she graduated in 1995. She has a PhD from Helsinki University on bioactive glass. She is specialized in orthopedic and hand surgery and works partly as a physician at the Helsinki University Hospital (HUS). From the beginning of 2015 she was appointed to Head of Department of Musculoskeletal- and Plastic Surgery at HUS and is administratively responsible for all teaching and research concerning musculoskeletal and plastic surgery. She is an Assoc. Prof. at the Helsinki University and teaches medical students in orthopedic and hand surgery. Her research group is focused on bioactive glass, bone regeneration and infection treatment with focus on new bioactive glasses for treatment of demanding bone defects.

Berit Løkensgard Strand
NOBIPOL, NTNU Norwegian University of Science and Technology, Trondheim, Norway

Talk:  Chemical and enzymatic tailoring of alginate for biomedical applications
Session:  VI-OS20 - Alginate and biopolymers
Date:  Wednesday, September 11, 2019, 16:15
Room:  Hall 5

Berit Løkensgard Strand is professor in biopolymer materials at NTNU Norwegian University of Science and Technology, Department of Biotechnology and Food Science (IBT) where she is also deputy head of research. Her research interests are biopolymer engineering based on alginate and the use of biopolymers in biomedical applications, in particular alginate based tissue engineering and capsules for cell therapy. Strand has a MSc in chemical engineering, and finished her PhD at NTNU in 2002. She has been a visiting fellow at University of Alberta, Canada and University of Illinois at Chicago, USA and has a broad network of collaboration in Europe and USA. At present she leads a group of 5 PhDs/post docs in addition to leading the larger research group "Biopolymers and Biomaterials" at IBT, the Tissue Engineering Research Stream at NTNU Biotechnology.
KEYNOTE SPEAKER

Sheila MacNeil
University of Sheffield, UK

Talk: Development of biomaterials to stimulate wound healing and tissue regeneration in skin, cornea and the pelvic floor
Session: XI-SY18 - Biobased Polymers and their use in Wound Healing Applications
Date: Friday, September 13, 2019, 11:30
Room: Hall 5

Sheila is Emeritus Professor of Tissue Engineering at Sheffield University with expertise in tissue engineering of skin, oral mucosa, urethra, oesophagus and cornea with a strong focus on translating research to the clinic. She has published over 500 peer-reviewed articles with over 8500 citations and has an h-index of 51. Since 1992 she has worked with clinicians in Sheffield, delivering autologous keratinocytes to burns patients and developed and commercialised improved delivery of skin cells to patients with MySkin™ and Cryoskin™ (autologous and allogeneic cell therapy for wound healing), available for NHS patients via Regenerys Ltd (www.regenerys.com). She has also worked extensively with NHS Urologist Professor Chris Chapple in Sheffield to develop tissue engineered oral mucosa for reconstruction of urethral stricture and published a 9 year follow-up on this. Another key project is developing cell delivery membranes for corneal defects (Wellcome Trust Affordable Healthcare for India) working with colleagues in India. She has also been developing an alternative material for support of the urethra with Professor Chris Chapple over the last 6 years which will better withstand the dynamic pressures in the pelvic floor. In recent years she has worked with colleagues in Pakistan (Dr Muhammed Yar) to develop novel biomaterials to promote angiogenesis in chronic wounds.

She received the UK Society of Biomaterials President’s medal for her contributions to Biomaterials in both the UK and overseas in September 2014 and the Institute of Materials, Minerals and Mining (IOM3) Chapman Medal for Biomedical Materials and Biomaterials Innovation in 2018.
João F. Mano (CEng, PhD, DSc) is a Full Professor at the Chemistry Department of University of Aveiro, Portugal, where he is directing both the MSc and PhD programs of Biotechnology. He is the founder and director of the COMPASS Research Group, from the Associated Laboratory CICECO – Aveiro Institute of Materials. His research interests include the use of advanced biomaterials and cells towards the progress of transdisciplinary concepts to be employed in regenerative and personalised medicine. In particular, he has been applying biomimetic and nano/micro-technology approaches to polymer-based biomaterials and surfaces in order to develop biomedical devices with improved structural and (multi-)functional properties, or in the engineering of microenvironments to control cell behaviour and organization, to be exploited clinically in advanced therapies or in drug screening.

João F. Mano is author of more than 610 papers in international journals (23000+ citations, h=76, WoS). He has been part of a series of scientific societies and editorial boards of international journals, and is the Editor-in-Chief of Materials Today Bio (Elsevier). He has been coordinating or involved in many national and European research projects, including Advanced and Proof-of-Concept Grants from the European Research Council.

Diego Mantovani
Quebec University Hospital, Laval University, Québec City, Canada

Talk: Biodegradable Metals with Extreme Properties for Innovative Biomaterials
Session: VII-SY12 - DGBM SY: Biodegradable metallic implants
Date: Thursday, September 12, 2019, 10:30
Room: Conference room 4+5

Holder of the Canada Research Chair in Biomaterials and Bioengineering for the Innovation in Surgery (2012-2026), professor at the Department of Materials Engineering at Laval University, senior scientist at the Division of Regenerative Medicine of the Research Center of the CHU de Québec, Diego Mantovani is a recognised specialist in biomaterials. At the frontier between engineering, medicine and biology, within his team, their works aim to improve
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the clinical performances of medical devices for effective functional replacement, and to envisage the next generations of biomaterials to develop strategies based on regenerative medicine susceptible to enhance the quality of the life of patients. He has authored more than 260 original articles, holds 5 patents, and presented more than 190 keynotes, invited and seminar lectures worldwide in the field of advanced materials for biomedical applications. His works received more than 7500 citations. In 2012, he was nominated Fellow of the International Union of Societies for Biomaterials Science & Engineering (FBSE) for his leadership and contribution to biomaterials for medical devices, and in 2019 he was nominated Fellow of the American Society for Materials Intl for seminal contributions to innovative biomedical materials and coatings to replace and regenerate tissue and organs that lost their functionality. He was Executive Co-Chair of the 10th World Biomaterials Congress 2016. He is advisor of three medical devices consortium in the Americas, Asia and Europe.

Jordan Miller
Rice University, Houston, USA

Talk: Illuminating progress on 3D Bioprinting of Vascularized Tissues and Organoids
Session: VIII-SY13 - Light-based 3D printing of hydrogels
Date: Thursday, September 12, 2019, 13:30
Room: Hall 3

Jordan Miller received his bachelor’s degree in Biology from MIT in 2003, and PhD in Bio-engineering from Rice University in 2008. His primary research interests combine synthetic chemistry, 3D printing, microfabrication, and molecular imaging to direct cultured human cells to form more complex organizations of living vessels and tissues for research in regenerative medicine. Precisely engineered in vitro systems at the molecular, micro- and meso-scale are well suited to decouple the relationship between tissue architecture and cell function. These systems are now permitting comprehensive closed-loop design and optimization of large-scale engineered tissues through refinement with computer models of mass transport and assessment of their therapeutic potential in vivo.
Fintan Moriarty is leader of the musculoskeletal infection group at AO Research Institute (ARI) in Davos, Switzerland. Dr. Moriarty has received his Ph.D. degree in pharmaceutical microbiology in 2007 from the Queen’s University of Belfast where his work focused on cystic fibrosis lung infection. He is a visiting lecturer at the ETH in Zurich and the Bern University of applied science, and is a scientific editor of the eCM journal. At ARI he is leading a research group focussed on implant related bone infection. His experience includes the customisation of preclinical in vivo models to more closely match the clinical situation. As regulatory bodies demand preclinical models to more closely resemble the eventual clinical use of any new device, this has become a critical point in the translation of antimicrobial technologies to the clinic. He has edited a book on the issue of device associated infection and established a GLP accredited laboratory for the preclinical evaluation of antimicrobial technologies.

Nicola Origlia is a group leader at the Institute of Neuroscience of the National Research Council of Italy (CNR) in Pisa. He received his Ph.D. degree in Immunology and pharmacology in 2007 from the University of Pisa. He is adjunct professor of Neurobiology at the University of Pisa. Research in his laboratory centers on the molecular mechanisms underlying synaptic dysfunction in cortical areas affected during neurodegenerative disorders such as Alzheimer’s disease (AD). In particular, by conjugating electrophysiology and behavioral analysis to molecular biology and pharmacology he has investigated the neuroinflammatory mechanisms associated with neurodegeneration in AD animal models.
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Nicola Origlia received research grants from International funding agencies, including the Alzheimer’s Association and NIH-(NIA) and has developed collaboration with important scientific institutions (Columbia University, University of Kansas, Scuola Normale Superiore). He has published 50 peer-reviewed papers mainly in the field of neuroscience and has been invited as a speaker in several international meetings.

Dr. Liliang Ouyang received a B.Eng. Degree in Mechanical Engineering (2012) and Ph.D. Degree in Materials Science and Engineering under the supervision of Prof. Wei Sun (2017) from Tsinghua University, China. He also got the training in Bioengineering by taking one-year visiting research with Prof. Jason Burdick at the University of Pennsylvania (2015-2016). He is currently working with Prof. Molly Stevens as a Research Associate in the Department of Materials at Imperial College London.

Dr. Ouyang’s research interest is in biofabrication and 3D bioprinting. His work in bioprinting has been published in high-impact journals, such as Adv Mater, Biofabrication, ACS Appl Mater Interfaces, and ACS Biomater Sci Eng. He has been recognized for his research work by numerous awards, including IOP Top Cited Author Award (2018), IOP Outstanding Reviewer Award (2018), GE Foundation Tech Award (2016), Best Poster Awards in 252th ACS Annual Meeting (2016) and ISBF Annual Meeting (2017), Best Doctoral Dissertation of Tsinghua University (2017), etc. He is an editorial board member of International Journal of Tissue Engineering Research and serves as a reviewer for Biofabrication, Biomacromolecules, ACS Biomater Sci Eng, 3 Biotech, 3D Printing and Additive Manufacturing, etc.
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Aleksandr Ovsianikov
Technical University Vienna, Austria

Talk: High Definition 3D Printing of Photopolymers for Biomedical Applications
Session: VIII-SY13 - Light-based 3D printing of hydrogels
Date: Thursday, September 12, 2019, 13:00
Room: Hall 3

Prof. Aleksandr Ovsianikov is a head of the research group 3D Printing and Biofabrication at the TU Wien (Vienna, Austria), a member of the Austrian Cluster for Tissue Regeneration (www.tissue-regeneration.at). His research is dealing with the use of additive manufacturing technologies and bioprinting for tissue engineering and regeneration.

Prof. Ovsianikov has background in laser physics and material processing with femtosecond lasers. A particular focus his current research is the development of multiphoton lithography technologies for engineering of biomimetic 3D cell culture matrices and realization of novel tissue engineering scaffolds. He was awarded a prestigious Starting Grant in 2012 and a Consolidator Grant in 2017 from the European Research Council (ERC) for projects aimed at these topics (http://amt.tuwien.ac.at/Ovsianikov)

Stefan Rammelt
University Hospital Carl Gustav Carus, Dresden, Germany & DFG-Centre for Regenerative Therapies Dresden (CRTD), Germany

Talk: Matrix engineering to enhance bone regeneration
Session: III-SY5 - DGBM SY: Matrix engineering in skin and bone regeneration
Date: Tuesday, September 10, 2019, 16:45
Room: Hall 5

Stefan Rammelt is Head of the Foot & Ankle Center at the University Center for Orthopaedics and Traumatology of the Technische Universität (TU) in Dresden, Germany. He is Professor of Trauma and Reconstructive Surgery and Leader of the Trauma Research Laboratory and Research Group. Besides clinical and biomechanical studies in Foot & Ankle Surgery his scientific work focuses on biomaterials, bone-implant interactions, surface modifications of orthopaedic implants and cell-matrix interactions in bone. In this field he received several peer-reviewed grants by the DFG (German Research Society) and other organizations. He contributed more than 200 peer-reviewed articles to the literature as well as books and book chapters in German and English. Stefan Rammelt is Past President of the German Society of Biomaterials (DGBM).
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Awards include Travel Fellowships to Italy and the USA, the AE Scientific Award from the German Society for Arthroplasty (for basic research on coating of orthopaedic implants), the Zahradniček Memorial Award for the best scientific article of Acta Chir Orthop Traumatol Cechoslov in 2014 and the Strohmeyer Award of the German Trauma Society (DGU) for the best German book in Orthopaedic and Trauma Surgery in 2015 and the DGU Innovation Award in 2018. Stefan Rammelt is a Honorary Member of several scientific societies. In 2016 he was Visiting Professor at the University of Utah School of Medicine in Salt Lake City, USA, and in 2018 at Kyungpook National University Hospital, Daegu, Republic of Korea. In 2018, he was appointed as a permanent Guest Professor at Charles University, Prague, Czech Republic.

Ipsita Roy
University of Westminster, London, UK

Talk: 3D Cancer Disease modelling using Polyhydroxyalkanoates
Session: IX-SY15 - 3D Structures in Tissue Engineering and Disease Modelling
Date: Thursday, September 12, 2019, 16:45
Room: Hall 5

Professor Ipsita Roy is an expert in microbial biotechnology, natural biomaterials and their biomedical applications. She is currently a Professor at the School of Life Sciences, University of Westminster, London and will be joining the Department of Material Science and Engineering, University of Sheffield in September, 2019. Ipsita was awarded the prestigious Inlaks Scholarship and the Overseas Research Students Award to study for her Ph.D. at the University of Cambridge. During her time at Cambridge she was awarded the Churchill College Scholarship, the Lundgren Scholarship, Leche Trust Scholarship and the Cambridge University Philosophical Society Fellowship Award. Her PhD at the Department of Biochemistry was on a B12-dependent enzyme, methylmalonyl-CoA mutase. Her postdoctoral work was at the University of Minnesota, USA, at the Bioprocess Technology Institute, where she worked on fatty acid biosynthesis.

Subsequently, Professor Roy taught at the Indian Institute of Technology, India, for four years as an Assistant Professor. During this time she worked actively on the production of biodegradable polymers from Streptomyces. Ipsita has been at the University of Westminster since 2000, is now the Research Director of the School of Life Sciences and leads the Applied Biotechnology Research Group. She has published over 100 papers in high ‘Impact Factor’ journals such as Biomaterials, Biomacromolecules, Journal of Royal Society Interface, Acta Biomaterialia and ACS Applied Materials Interfaces. She has presented her work at numerous international conferences. Her group is currently focussed on the production of novel polyhydroxyalkanoates (PHAs), a group of FDA-approved natural polymers and their characterisation.
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She has pioneered the production of PHAs from Gram positive bacteria which lack immunogenic properties and hence are excellent materials for medical applications. Her group is involved in the application of PHAs in the area of hard tissue engineering, soft tissue engineering, wound healing and drug delivery. She is an editor of the Journal of Chemical Technology and Biotechnology (JCTB) and was the special editor of an In Focus Issue of JCTB on Biodegradable polymers and Controlled Drug Delivery. She is on the BBSRC, EPSRC, NSERC, Canada, FWF, Austria and NSFC, China, ESF, MUIR grant-reviewing panels. Her work has been funded by the EPSRC, EU, DuPont and WESTFOCUS, London. Ipsita has been the scientific coordinator of two large EU projects REBIOSTENT, worth 4.9 million Euros with 14 consortium members and HYMEDPOLY, worth 3.5 million Euros with 12 consortium members, She was also the work package leader of another large EU FP7 project, NEURIMP, worth 4.4 million Euros with 8 consortium members. Recently she has initiated working on another H2020 project POLBIOSKIN worth 3 million Euros with 12 consortium members. All four projects involve the use of PHAs for medical applications, drug eluting biodegradable stents, nerve guidance conduits, antibacterial polymers and wound healing. Also, she has recently received EPSRC funding for the development of smart wound healing patches (CYCLOPS) and drug eluting biodegradable stents.

Osamu Suzuki
Tohoku University Graduate School of Dentistry, Tohoku, Japan

Talk: Osteogenic and angiogenic capabilities of octacalcium phosphate involving ionic dissolution through its chemical property

Session: VI-SY11 - Calcium phosphate materials-induced osteogenicity: from orthotopic bone formation to heterotopic bone induction

Date: Wednesday, September 11, 2019, 16:15
Room: Hall 4

Prof. Suzuki carried out his PhD study in Tohoku University School of Medicine, Sendai, Japan on octacalcium phosphate (OCP) bone substitute materials until 1991 and MSc study in Yamagata University Graduate School of Engineering, Yonezawa, Japan on strength design of biomaterials until 1986, and is the chair of Division of Craniofacial Function Engineering, Tohoku University Graduate School of Dentistry, Sendai, Japan since 2004. The division is in charge of education and research in the field of biomaterials science and tissue engineering. He studied the materials synthesis and physicochemical properties in various calcium phosphates in Forsyth Dental Center, Physical Chemistry Department, Boston, USA from 1992 to 1994 as visiting scientist. He was researcher in Japan Fine Ceramics Co. Ltd., Sendai, and JGC Corp., Yokohama/Oarai, Japan from 1986 to 2004. He has been developing OCP-based bone substitute materials and also studying the mechanism about how OCP displays the bioactive properties in bone regeneration processes in relation to the materials property up to now. He received the Award of Japanese Society for Biomaterials (JSB) in 2015 on the studies of OCP materials. He is an Executive Committee Members of the JSB and the Japanese Society for Dental Materials and Devices (JSDMD), respectively, and Editor-in-Chief of Dental Materials Journal since 2018.
Wojciech Swieszkowski
Warsaw University of Technology (WUT), Warsaw, Poland

**Talk:** Recent advances and challenges in 3D biofabrication of bone and soft tissue

**Session:** VI-SY16 - Korean-European symposium: Advances in musculoskeletal regeneration

**Date:** Wednesday, September 11, 2019, 16:45

**Room:** Hall 2

Wojciech Swieszkowski is a professor at Faculty of Materials Science and Engineering, Warsaw University of Technology (WUT), POLAND. He received PhD in biomechanics and Habilitation in Materials Science and Engineering at WUT. He did his 4-year PostDoc at Delft University of Technology. He was visiting professor at several universities, such as Harvard University, NIMS Japan, or TU Vienna. He is an expert in the field of biofabrication and bioprinting, biomaterials for implants and tissue engineering, computational modeling and characterization of materials. He leads BioMaterials Group (9 post doctorate and 10 PhD students, www.bio.materials.pl). He has been leader and project manager of 10 international and 15 national projects with total funding > 10M EURO. He plays a role of Director of Materials Design Division and he acts as a Faculty Coordinator of ERASMUS Program. He has been an author of more than 100 publications, 16 book chapters and 9 patents, over 2000 citations. He was a laureate of several awards including 1st Prize of Prime Minister of Poland (2001) and Prizes from the Rector of the Warsaw University of Technology for scientific achievement (2011, 2012, 2013, 2014).

Christos Tapeinos
Smart Bio-Interfaces Group - CMBR – IIT, Pontedera, Italy

**Talk:** Brain-derived lipidic nanoparticles with enhanced neuroprotective properties for the treatment of cerebral ischemia

**Session:** X-SY17 - Tackling brain diseases: biomaterials-based approaches to understand and bypass biological barriers

**Date:** Friday, September 13, 2019, 10:00

**Room:** Conference room 2+3

Dr. Christos Tapeinos received his bachelor degree in Material Science from the University of Patras in 2006. He got his MSc (2009) and his PhD. (2013) from the same university in Material Science in collaboration with the National Centre for Scientific Research “Demokritos” in the area of stimuli-responsive drug delivery systems. From 2015 to 2017 he worked at the National University of Ireland Galway as a Marie Curie postdoctoral research fellow and at the Centre for Research in Medical Devices (CÚRAM) under the supervision of Prof. Abhay Pandit. Dr. Tapeinos was also a visiting Researcher at the University of Chicago from
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October 2016 to January 2017 where he collaborated with Prof. J. Hubbell’s group, studying the differentiation of human monocytes under oxidative stress and under treatment with collagen nanospheres. His research interest is focused on delivery systems that respond to various stimuli, including pH, temperature, alternating magnetic field and reactive oxygen species (ROS). In addition, Dr. Tapeinos has fabricated a variety of biomaterial-based structures, including nanospheres, microspheres and fibers using natural (collagen & hyaluronic acid) and/or synthetic polymers (PMMA,PAA,PHPMA,PLGA) for the treatment of various diseases, like Intervertebral Disc Degeneration, Myocardial Infarction and Cancer (breast, prostate and multiple myeloma). Moreover, one of his expertise is the synthesis and characterization of inorganic nanoparticles including MnO2, CeO2, CuO, ZnO etc. Dr. Tapeinos studies also the biological interactions of the synthesized materials in living cells and tissues. One of his last research projects was related on the fabrication of Solid Lipid Nanoparticles (SLN) and Nanostructured Lipid Carriers (NLC) for the treatment of Glioblastoma Multiforme.

Currently, Dr. Tapeinos works as an Experienced Researcher funded by an individual Marie-Curie Fellowship, at the Smart Bio-Interfaces group of Gianni Ciofani, where he focuses his research on the fabrication of biomimetic and neuroprotective nanocapsules for the treatment of post-ischemic stroke effects.

Horst A. von Recum
Case Western Reserve University, Cleveland, Ohio, U.S.A.
President, Society for Biomaterials; Associate Editor, Experimental Biology and Medicine Fellow, AIMBE, (American Institute for Medical and Biological Engineering)

Talk: Drug refillable polymers for chronic and recurrent disease
Session: VII-OS25 - Polymers for drug release
Date: Thursday, September 12, 2019, 10:30
Room: Hall 5

Horst A. von Recum is a Professor, and Executive Vice Chair in the Department of Biomedical Engineering, at Case Western Reserve University. His research is on polymers for drug delivery in chronic and recurrent disease. He has authored more than 60 journal articles, review papers, and book chapters. His article on electrospinning published in Biomaterials, the top journal in the field, is one of the top cited articles in that journal. Currently he is President for the Society for Biomaterials; Associate Editor for the journal Experimental Biology and Medicine; and a Fellow in the American Institute for Medical and Biological Engineers. Prof. von Recum attained his Master’s and undergraduate degrees in Chemical Engineering and Biochemistry at Rice University; his PhD in Bioengineering at the University of Utah; and was a postdoctoral fellow both at the Massachusetts Institute of Technology and the University of Washington. He has received numerous awards in his career including a CAREER Award from the National Science Foundation, RC1 „Challenge“ Grant from the National Institutes of Health, and the Glennan Fellowship from Case Western Reserve University.
Carsten Werner
Max Bergmann Center for Biomaterials Dresden, Leibniz Institute of Polymer Research and TU Dresden, Germany
adjunct professorship at the University of Toronto, Canada

Talk: Multifunctional polymer matrices to recapitulate key features of hematopoietic microenvironments in vitro
Session: VII-OS23 - Multifunctional polymeric biomaterials
Date: Thursday, September 12, 2019, 10:30
Room: Hall 2

Carsten Werner is professor for biofunctional polymer materials at the TU Dresden Center for Regenerative Therapies, directs the biomaterials program at the Leibniz Institute of Polymer Research Dresden e.V. (within the Max Bergmann Center of Biomaterials), Germany, and holds an adjunct faculty position at the Institute of Biomaterials and Biomedical Engineering, University of Toronto, Canada. His research aims at recapitulating functionalities of living matter in engineered polymer materials and includes studies on electrosurface phenomena, hemocompatible interfaces, cell-instructive materials platforms for regenerative therapies and tissue models, and biomimicry approaches to surface engineering. Carsten Werner has published more than 350 peer reviewed research articles, organized several scientific conferences and is co-founder of a successful spin-off enterprise.

Paul A. Wieringa
Maastricht University (Moroni Lab), The Netherlands

Talk: Neurogenic Tissue Engineering: Perspectives, Challenges, and 3D in vitro Models
Session: V-SY9 - Ex vivo Models to Study Neural Plasticity, Regeneration and Interactions with Electronic Interfaces
Date: Wednesday, September 11, 2019, 14:15
Room: Hall 5

Paul Wieringa, PhD, is an Assistant Professor leading the Neural Engineering activities in the Complex Tissue Engineering Department of the MERLN Institute for Technology-Inspired Regenerative Medicine at Maastricht University. His research focuses on developing 3D in vitro platforms to explore the role of pancreas innervation in Diabetes as well as other pathologies and tissues. Originally from Canada, Paul obtained his Bachelors in Applied Science in the Integrated Engineering Program at the University of British Columbia, Vancouver. His Master’s at the University of Twente, the Netherlands, specialized in Neural Engineering, during which he studied neurite growth within microfluidic channels. This lead him to a Ph.D. in the development of a regenerative neural interface, beginning his studies into the development of 3D scaffolds for neural regeneration at Scuola Superiore Sant’Anna in Pisa, Italy, and later completing his degree at the University of Twente in the Tissue Regeneration Department.
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This was followed by a post-doctoral fellowship from 2014 to 2017 at the MERLN Institute, where he focused on the technological development of electrospinning, melt electrowriting (MEW), and hybrid scaffolds to create specifically designed cell micro-niches for neural and regenerative medicine applications. In 2017, he was awarded the VENI personal grant by the NWO and was promoted to Assistant Professor in 2018.

Chengtie Wu
Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

**Talk:** 3D-Printing of Bioactive Materials for Bone Tissue Engineering
**Session:** V-OS16 - Bioactive materials for regeneration of bone 2
**Date:** Wednesday, September 11, 2019, 14:15
**Room:** Hall 4

Prof. Chengtie Wu is now working in Shanghai Institute of Ceramics, Chinese Academy of Sciences (SIC, CAS). He completed his Ph.D in 2006, and then he worked in the University of Sydney, TU Dresden, Germany and Queensland University of Technology where he was awarded Vice-Chancellor Research Fellow, APDI Fellow and Alexander von Humboldt Fellow. In 2012, Dr Wu has been recruited to work in SIC, CAS, as One-Hundred Talent Program of Chinese Academy of Sciences. Then he was awarded Recruitment Program of Global Young Experts of China (One-Thousand Young Talent Program), Shanghai Pujiang Talent Program, Shanghai Outstanding Academic Leaders and Academic Leader of Chinese Ministry of Science and Technology. Prof Wu’s research focuses on bioactive inorganic materials for tissue engineering. Up to now, Prof Wu has published more than 180 SCI peer-review journal papers, including Mater Today, ACS Nano, Adv Funct Mater, Biomaterials, Chem Mater, Acta Biomater. etc. The papers have been cited more than 7500 times, H Index 51 via SCI, Web of Science. Prof Wu has been awarded 25 patents, in which 3 of them have been transferred to companies. Prof Wu was awarded the Journal of Materials Chemistry Lectureship in 2015, Young Scientists of Chinese Biomaterials Society in 2016, and Outstanding Young Scientists of Chinese Ceramics Society in 2018", and he is now the Associate editors for “Applied Materials Today”, and “Journal of Inorganic Materials", as well as the editorial board member of “Acta Biomaterialia”.

recent European Commission ‘skelGEN’ consortia project. He has attracted over NZ$23 million in competitive research funding as a Principal or Named Investigator through grants from the Royal Society of New Zealand, MBIE, HRC, AO Foundation. He is currently Executive Board member and Vice President of the International Society for Biofabrication (ISBF) and past President of the Australasian Society for Biomaterials & Tissue Engineering (ASBTE). He sits on the Tissue Engineering and Regenerative Medicine International Society (TERMIS) Asia Pacific Council, and is Editorial Board member for Biofabrication, APL Bioengineering, and Frontiers in Bioengineering & Biotechnology.
Ylenia Zambito
University of Pisa, Italy

Talk: Carbohydrate biopolymers as antimicrobials and wound healing accelerators
Session: XI-SY18 - Biobased Polymers and their use in Wound Healing Applications
Date: Friday, September 13, 2019, 12:00
Room: Hall 5

Prof. Zambito studied Pharmaceutical Chemistry at the University of Pisa, Italy and graduated as MS in 1999. She received her PhD degree in 2004 at the same Institution. In 2007 she obtained the position of researcher at the University of Pisa. She is now full professor of Biopharmaceutics and Pharmaceutical Legislation at the Department of Pharmacy of the University of Pisa. She has published about 50 research articles in SCI(E) journals.

Y. Shrike Zhang
Brigham and Women’s Hospital, Harvard Medical School, Cambridge, U.S.A.

Talk: Formulating Bioinks for Tissue Bioprinting
Session: I-OS1 - Bioinks for bioprinting
Date: Tuesday, September 10, 2019, 10:30
Room: Hall 3

Dr. Zhang received a B.Eng. in Biomedical Engineering from Southeast University, China in 2008, after which he then obtained a M.S. in Biomedical Engineering from Washington University in St. Louis (2011) and a Ph.D. in Biomedical Engineering at Georgia Institute of Technology and Emory University School of Medicine (2013). Dr. Zhang then pursued postdoctoral training at Brigham and Women’s Hospital, Harvard Medical School, Harvard-MIT Division of Health Sciences and Technologies, and Wyss Institute for Biologically Inspired Engineering. Dr. Zhang is currently an Assistant Professor of Medicine at Harvard Medical School and Associate Bioengineer in the Division of Engineering in Medicine at the Brigham and Women’s Hospital. Dr. Zhang’s research is focused on innovating medical engineering technologies, including 3D bioprinting, organs-on-chips, microfluidics, and bioanalysis, to recreate functional tissues and their biomimetic models. In collaboration with a multidisciplinary team encompassing biomedical, mechanical, electrical, and computer engineers as well as biologists and clinicians, his laboratory seeks to ultimately translate these cutting-edge technologies into the clinics. He is an author of >150 peer-reviewed publications and his scientific contributions have been recognized by >40 international, national, and regional awards. More information can be read on his website (www.shrikezhang.com).
Additive Manufacturing (AM) is currently a hot topic in biomaterials research and several sessions are related to these technologies. But AM is no longer something to come in future but already has reached clinical application. As AM allows fabrication of individual, patient-specific implants (PSI) based on 3D CT or MRI data it is of special importance for the treatment of severe or complex defects, up to now mostly limited to bone tissue or for joint replacements.

The Translational Research Session 1 is dedicated to this topic and we will learn and discuss about the material- and technology-related opportunities and limitations, how a company, active in this field, is dealing with the specific challenges to fabricate such implants – and will be informed by a maxillofacial surgeon about advantages and disadvantages of PSI, made by AM technologies.

This session might be of great relevance for all using AM technologies in their lab who want to translate their results once into clinical applications.

Before a new biomaterial, implant or tissue engineering product can be used in the clinics it has to be approved by the respective authorities. Based on the type of product both the procedure and the responsible agency might be different.

In the European Union, a new Medical Device Regulation (MDR) will become effective in May 2020 which will lead to several, partly severe changes compared to the current approval process. Experts are convinced that the new MDR will lead to significant changes on the European market, both for already approved products (which have to be re-approved following the new rules) and new types of biomaterials and implants, entering clinical application for the first time.

In the Translational Research Session 2 three experts, representing branch association, large companies as well as small and medium enterprises will report about their experiences with the new European MDR and the expected consequences.

As approval of medical devices for clinical application is the major bottleneck on the way from lab to bedside this session should be of special importance for all researchers aiming in clinical applicability of their most promising biomaterial developments.
ICF-BSE SPECIAL FELLOWS SESSION

ICF-BSE Debate Session
Date: Thursday, September 12, 2019, 10:30
Room: Hall 3

A Perspective of Biomaterials Science in the Year 2050

The “Special Fellows Session” is organized by the International College of Fellows of Biomaterials Science and Engineering (ICF-BSE). Fellows of ICF-BSE are elected in a worldwide competition every four years and are among the most accomplished in the field of biomaterials. Special Fellows Sessions explore important and sometimes controversial topics and are designed to be interactive: the audience will have an opportunity to participate and will vote on the issues.

This year a group of four fellows will offer different visions for the future of biomaterials science in the coming decades. The speakers will explore the current status of biomaterials science, identify important trends, and speculate how these trends may change the path of biomaterials research. The four presentations will be followed by an opportunity for the audience to participate, ask questions, and offer their own thoughts. The audience will then be asked to vote which of the four different perspectives is most likely to influence the future path of biomaterials research.

Moderator and Chair: Joachim Kohn, FBSE
Speakers:
- Luigi Ambrosio, F.A.I.M.B.E., FBSE
- John Hunt, FBSE
- Malgorzata Lewandowska-Szumiel, FBSE
- Paolo Netti, FBSE

Biographies

Joachim Kohn
Director, the New Jersey Center for Biomaterials
Board of Governors Professor
Rutgers University, Piscataway, NJ USA

Dr. Joachim Kohn is a national leader in the field of biomaterials science. In 1997, Kohn founded the New Jersey Center for Biomaterials (NJCBM), which has grown into a large collaborative network. Current research at the NJCBM focuses on the design, of new biomaterials for regenerative medicine, tissue engineering and drug delivery with an emphasis on treating peripheral nerve and spinal cord injuries. Kohn has pioneered the use of combinatorial and computational methods for the optimization of biomaterials for specific medical applications. He is mostly known for his seminal work on “pseudo-poly(amino acid)s”- a new class of polymers that combine the non-toxicity of individual amino acids with the processability and strength of high-quality engineering plastics.
ICF-BSE SPECIAL FELLOWS SESSION

Medical devices (a coronary stent and an antimicrobial device to prevent infections in pace maker patients) using these materials have been implanted in more than 300,000 patients and are currently approved for use in 46 countries. As a translational scientist, Kohn has 72 issued US Patents on novel biomaterials and seven companies have licensed his technologies. He is the scientific founder of three spin-off companies.

**Luigi Ambrosio**
Director, Institute of Polymers, Composites & Biomaterials  
National Research Council, Naples, Italy

Luigi Ambrosio is a Director at Institute of Polymer, Composites & Biomaterials, National Research Council, Naples, Italy. Director of Chemical Sciences & Materials Technology Department, CNR (2011-2017). President of the European Society of Biomaterials (2007-2013). Member of the High-Level Group on Key Enabling Technologies, European Commission (2010-2015). Member of the International Advisor Board of Sichuan University, Chengdu, China. co-Chairmen of the Working group on “Advanced Materials and Nanotechnologies” Italy-USA Cooperation on Science and Technology, 12th JCM. Italian Ministry of Foreign Affairs and International Cooperation (since 2016). He is FAIMBE, FBSE and FEMBES. Editor-in-Chief of Journal of Materials Science: Materials in Medicine.

Research interests include design and characterization of polymers and composites for medical applications and tissue engineering, rheology of biological fluids, structural properties of natural tissue, properties and processing of polymers and composites and nanostructures, hydrogels and biodegradable polymers, additive technologies. Publications include over 300 papers in international scientific journals and books, 18 patents, over 140 invited lectures and over 500 presentations at international and national conferences.

**John A. Hunt**
Theme Lead for Medical Technologies and Advanced Materials, Nottingham Trent University

Dr. John A. Hunt is a full time Professor and research Theme Leader at Nottingham Trent University, leading the theme Medical Technologies and Advanced Materials. He is NTU’s academic lead for their Medical Technologies Innovation Facility (MTIF). In these roles, the aim is to accelerate pipeline development and deliver healthcare applications across all aspects of medical technologies for human and animal health.
ICF-BSE SPECIAL FELLOWS SESSION

John’s research focuses on developing breakthrough therapies, devices and technology to repair, replace, augment and in the future regenerate diseased, infected and damaged tissues in humans and other mammals using material interventions. He is a Fellow of the Royal Society of Chemistry and the Chairperson of the committee for the specialist interest group Analytical Biosciences. He is an honorary clinical academic consultant at the Liverpool Heart and Chest NHS trust hospital. He is a Fellow of the International College of Fellows for Biomaterials Science and Engineering and elected committee member and the treasurer of the college. He is the International editorial board member for the journal Biomaterials and the Biomaterials and Nanotechnology section editor in the International journal of Artificial Organs.

Malgorzata Lewandowska-Szumiel
Professor at the Medical University of Warsaw
Founding Director of the Laboratory for Cell Research and Application
Head of the Tissue Engineering Team at the Department of Histology and Embryology
Warsaw University of Technology in Materials Science and Engineering, Warsawa, Poland

Malgorzata Lewandowska-Szumiel, PhD, FBSE, is the Professor at the Medical University of Warsaw - the Founding Director of the Laboratory for Cell Research and Application and a Head of the Tissue Engineering Team at the Department of Histology and Embryology. Her research is focused on: tissue engineering, adult stem cells, biomaterials and scaffolds to control cell behavior prior-to-implantation.

She was graduated from the Warsaw University of Technology in Materials Science and Engineering (M.Sc., Eng.), she earned her PhD and habilitation degrees in Medical Sciences and holds a Titular Professorship in Medicine. As a translational scientist, she is directing many interdisciplinary collaboration programs which involve materials scientists, biologists and clinicians. She published numerous scientific articles (awarded by the Polish Academy of Sciences) and invented several patents concerning original systems for cell culture and tissue engineering. She was engaged as an expert for the EU negotiations on the Regulation on advanced therapy medicinal products (ATMP). The Laboratory, she governs, holds GMP certificate and authorization to produce cell-containing products for the clinical trials and application, which gives outstanding and unique opportunities for advanced cell and biomaterials research in regenerative medicine.
Paolo A. Netti
Professor at the University of Naples “Federico II”
Founding Director, Centre for Advanced Biomaterials for Health Care (IIT@CRIB)
University of Naples, Naples, Italy

Paolo A. Netti is a full professor of Bioengineering at the University of Naples “Federico II”, where he also chairs the Bioengineering Master Science course. He is also the founding director of the Centre for Advanced Biomaterials for Health Care (IIT@CRIB) of the Italian Institute of Technology. He has pioneered the concept of integrating molecular sequestration and release mechanisms in the design of novel biomaterial scaffolds able to control and guide the complex process of tissue growth at single cell level. Following this bioinspired approach, he has proposed a novel class of cell instructive materials, that by recapitulating the basic functions of the extracellular matrix, provide a tight spatial and temporal control of the cellular microenvironment and offer the potentiality to control cell and tissue fate. He has served on several European Scientific Commission panels for defining a viable European roadmap for the development of novel biomaterials platforms (VII framework program), he is currently the panel chair of the ERC Advanced Grant committee for the PE5 domain and has also served as a scientific tutor for several research platforms from the Italian Minister of Research and University (Program FIRB by MIUR). He is member of several advisory boards and committees and has authored over 400 scientific articles accumulating over 12000 citations.
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CONFERENCE VENUE

The meeting will be held at the International Congress Centre Dresden (ICD), situated right on the banks of the Elbe and not far from the attractions of the historic city center. The Semperoper, the Church of Our Lady, the Green Vault and much more are just a few minutes away on foot. Hotels of all categories are located within a walking distance.

International Congress Centre Dresden
Ostra-Ufer 2 | 01067 Dresden | Germany

Conference rooms are situated in the Hall floor, Hall 2 to 5, and in the Conference floor, room conference room 2+3 and 4+5.
Poster exhibition, technical exhibition and coffee breaks are held in the Hall floor, rooms Hall 1 & Great Hall.

International Congress Centre Dresden | copyright: DML, Foto: Frank Exß
CONFERENCE VENUE

ICD International Congress Centre Dresden | Groundplan Hall floor

ICD International Congress Centre Dresden | Groundplan Conference floor
ACCESS

The International Congress Centre Dresden (ICD) is easy to reach by public transportation. From the airport, you can take the local train (S-Bahn) connecting the airport directly with the city center (15-20 min) and the conference venue. The S-Bahn stop next to the ICD is "Dresden Mitte". Any S-Bahn from the airport stops here; the ride takes 16 min. which is much faster than by taxi (cab ride ca. 20 €). Closest railway station, served by both local and long-distance trains, is "Dresden-Neustadt". From here you can take tram No. 11 (direction Zschertnitz) or tram No. 6 (direction Postplatz) and exit at "Kongresszentrum / Haus der Presse" (the next but one stop). From there it is only a short walk to the ICD, walking downhill towards the river Elbe. Also most of the long-distance busses stop at the station "Dresden-Neustadt" / Schlesischer Platz. From the city center and most of the hotels you can reach the conference venue easily by foot within a few minutes. More information about public transport, tickets and timetables can be found at www.dvb.de or with the mobile phone App "HandyTicket".

PARKING

An underground car park is available 24 hours daily at the International Congress Centre. 

Height limit: 2.10 meters 
Charges: 2.00 € | 1 hour, 22.00 € | 24 hours
GENERAL INFORMATION

ABSTRACT BOOK
The abstracts will be published solely in the electronic abstract book on USB flash drive, that you find in your conference bag.

BANKING AND CURRENCY EXCHANGE
Euro is the official currency. Opening times differ from one bank to the next, with most open weekdays from 9 am to 4 pm. Most bank branches have cash machines (ATMs) that allow you to withdraw cash and get bank statements 24 hours/day.

CERTIFICATE OF ATTENDANCE
The certificate of attendance will be sent electronically to all delegates after the end of ESB 2019.

CLOAKROOM
A cloakroom is located in the terrace level, near main entrance of the congress centre.

DISCLAIMER
The organizers are not liable for damages and/or losses of any kind which may be incurred by the conference delegates or by any other individuals accompanying them, both during the official activities as well as going to/from the conference. Delegates are responsible for their own safety and belongings.

ELECTRICITY
Electric sockets are 230 volts AC, 50 Hz. European-style round two-pin plugs are in use. You might need a transformer and a plug that fits the German socket.

EMERGENCY TELEPHONE NUMBERS
Calls to 112 are free of charge and can be made from a landline, pay phone or mobile phone, even without a SIM card. Dialling the number will direct you to an operator who will notify the appropriate service, typically the local fire and rescue service. It can be used for any life-threatening situation, including serious medical problems, fire-related incidents, crimes and life-threatening situations. You can also call an ambulance through this number. In addition to German, calls can be answered in English.

ESB COUNCIL ROOM
ESB Council Room will be accommodated in Seminar level SR 5 during the days of the conference.
GENERAL INFORMATION

GENERAL ASSEMBLIES
The General Assembly of YSF, ESB and DGBM will take place in Hall 2 or Hall 3. Please, look at the program overview for the individual dates and rooms.

INDUSTRIAL EXHIBITION
The Industrial Exhibition will take place throughout the whole conference.

Opening hours
Sept 9, 2019  17:00 - 19:00
Sept 10, 2019  08:30 - 18:30
Sept 11, 2019  08:30 - 17:30
Sept 12, 2019  08:30 - 19:00
Sept 13, 2019  08:30 - 11:00

In order to have an excellent interaction between participants and exhibitors, coffee breaks, poster sessions and exhibition are held in the same area (Great Hall + Hall 1).

INTERNET
Public Wi-Fi is available for the participants of the ESB 2019 conference free of charge. The Wi-Fi access code is ESB-Dresden.

Conference homepage: www.esb2019.org

LOST AND FOUND
Lost and found items can be recovered at the registration desk.

NAME BADGES
Participants and accompanying persons are required to wear the official conference name badge on all conference occasions. Without the name badge admission cannot be granted!

OFFICIAL LANGUAGE
The conference language is English.
GENERAL INFORMATION

ORAL CONTRIBUTIONS
Please check date and time of your contribution at the scientific programme. Please prepare your presentations in MS Powerpoint (ppt or pptx, format 16:9) or Adobe Acrobat (pdf) format. Please take care that special fonts/characters and videos are properly integrated.

Bring a copy of your presentation on a USB flash drive to the Media Check at the gallery in Hall 1 (exhibition room) as early as possible, at the latest during the break immediately preceding your session (or at the end of the sessions of the day before) so that it can be uploaded onto the central computer system to ensure a smooth change over between speakers. A technician will be available to assist you with the upload.

It is not possible to use your own notebook or any other file format for the presentations.

Duration of talks:
Oral Presentations: 15 minutes including 3 minutes for discussion
Keynote Lectures: 30 minutes including 5 minutes for discussion
Plenary Lectures: 40 minutes
Rapid Fire Presentation: 5 minutes / 5 slides (or less)

POSTER PRESENTATIONS
The poster sessions will be held at the Great Hall + Hall 1 and the Great Hall Foyer of the International Congress Centre. The sessions have been scheduled for Tuesday, September 10, 2019 from 14:45 – 16:15 and for Thursday, September 12, 2019 from 14:45 – 16:15.

Posters of Poster Session 1 should be put up latest by the end of Tuesday’s coffee break 10:30 and be on display until the end of the lunch break 14:15 on Wednesday.
Posters of Poster Session 2 should be put up from Wednesday, 15:45 until Thursday’s coffee break 10:30 latest and be on display until closing session on Friday.

The size of the poster panels is 120 cm (height) x 90 cm (width), and comfortably accommodates posters in A0 portrait (upright) format. Posters can only be fixed on poster boards using the fixing material provided at the poster desk. No responsibility will be assumed for posters, not removed at the abovementioned times!

During the poster session authors are kindly asked to be present in the area of their posters in order to answer questions that interested viewers may have.

PROGRAMME UPDATES
Programme updates will be included in the online system of the conference as accessible via the conference web pages (www.esb2019.org) as soon as possible.
GENERAL INFORMATION

REGISTRATION DESK
The registration desk will be located at the Hall Foyer and will be open at the following hours:
Sept 9, 2019    12:00 - 20:00
Sept 10, 2019   07:30 - 19:00
Sept 11, 2019   07:30 - 18:00
Sept 12, 2019   07:30 - 19:00
Sept 13, 2019   07:30 - 13:00

Phone:
Anja Binning +49 176 | 22 30 34 96

Registration fees on site*
Regular:     870,00 €
Students:    590,00 €

*The registration costs for regular participants include admission to scientific programme, admission to the exhibition area, printed programme booklet, access to abstracts in electronic form, welcome reception on September 9, free Wi-Fi at the congress centre, membership in the European Society for Biomaterials (ESB) until March 31, 2021.

TIME ZONE
The time zone in Germany is Central European Summer Time (UTC+02:00) at the time of the conference.
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## SCHEDULE – WEDNESDAY 11 SEPTEMBER, 2019

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- **8:00 - 8:30**: PL2 Plenary Lecture 2
- **9:00 - 9:30**: GW AW George Winter Award
- **10:00 - 10:30**: COFFEE BREAK
- **12:00 - 12:30**: ESB GA ESB General Assembly
- **13:30 - 14:00**: LUNCH BREAK
- **16:00 - 16:30**: COFFEE BREAK
- **20:00 - 20:30**: YSF Night Out
# SCHEDULE – THURSDAY 12 SEPTEMBER, 2019

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<td>10:30</td>
<td>ICF-BSE Session</td>
<td>VII-OS23</td>
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<td>VII-SY12</td>
<td>VII-OS26</td>
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<td>ICF-BSE Debate Session</td>
<td>Multi-functional polymeric biomaterials</td>
<td>Calcium phosphates 2</td>
<td>Polymers for drug release</td>
<td>DGBM: Biodegr. metals</td>
<td>Antibact./drug delivery 1</td>
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<td>Light-based 3D printing of hydrogels</td>
<td>Polymers 2</td>
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<td>Fibrous and textile biomaterials</td>
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<td>Biophysical stimulation of cells</td>
<td>Drug delivery 3</td>
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# SCHEDULE – FRIDAY 13 SEPTEMBER, 2019

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<td>X-SY17 Biomater. to bypass biolog. barriers</td>
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**LEGENDE**

AW ...... Award Lecture  
GA ...... General Assembly  
KL ...... Keynote Lecture  
OS ...... Oral Session  
PL ...... Plenary Lecture  
PS ...... Poster Session  
SY ...... Special Symposium  
WS ...... Workshop  
I-XI ...... parallel session number
During the multidisciplinary YSF opening workshop, the focus will be put on a variety of topics, not to be missed by researchers at early stages of their career. The workshop will be divided in two sections.

Section 1: “Patent and Intellectual Property” and “Translating Academic Research to Industry”
What will happen if the material you synthesized, processed and characterized seems to lead to Intellectual Property and a Patent?
We are all performing research, but how can this research be linked to industry? What are the differences and the similarities?
In the first half of the YSF opening Workshop, the speakers try to answer all your questions regarding patents and the translation of academic research towards industry.

Section 2 “Science writing with a focus on how to illustrate results (educational symposium)”
Drafting manuscripts and illustrating excellent-quality data/graphs for publication is a tough, yet essential step in the routine work of young scientists. Clear and concise scientific writing is pivotal to successfully disseminate the impact of your work to your peers.
In the second half of the YSF opening Workshop, the speakers will give the audience interesting advices and tips on how to prepare effective and well-written manuscripts, with a special focus on efficient ways to illustrate results.

During the multidisciplinary YSF opening workshop, the focus will be put on a variety of topics, not to be missed by researchers at early stages of their career. The workshop will be divided in different sections.
SECTION TRANSLATING ACADEMIC RESEARCH TO INDUSTRY
15.50 – 16.30 Value creation through innovation
Dr. Yves Bayon

SECTION SCIENTIFIC WRITING - HOW TO ILLUSTRATE RESULTS (EDUCATIONAL SYMPOSIUM)
16.30 – 17.10 Presenting your research and results – a publisher’s guide
Prof. Neil Hammond

17:00 – 19:00 HALL 1 | EXHIBITION AREA
INDUSTRIAL EXHIBITION

18:00 – 19:00 HALL 2+3
OPENING
OPENING AND WELCOMING REMARKS
Musical contribution
Annekathrin Rammelt (Violin)
Constanze Sandmann (Violin)
Alexander Ernst (Viola)
Christian Bergert (Violoncello)
Welcome address by Dirk Hilbert
1st Mayor of the city of Dresden
Welcome address by Gerhard Rödel
Vice-Rector for Research of TU Dresden
Welcome address by Pamela Habibović
ESB President
Welcome address by Michael Gelinsky & Stefan Rammelt
Chairmen ESB 2019, University Hospital and Faculty of Medicine of TU Dresden
Musical contribution

19:00 – 20:30 TERRACE LEVEL ICD
OPENING RECEPTION
see page 243, Social Programme
The structural interplay between cells, organic matrix and mineral in collagenous tissues

Peter Fratzl¹, Zhaoyong Zou¹, Tengteng Tang¹, Elena Macias-Sánchez¹, Mahdi Ayoubi¹, Andreas Roschger¹, William J. Landis², Paul Roschger³, Klaus Klaushofer³, Wolfgang Wagnermaier¹, Richard Weinkamer¹, Luca Bertinetti¹

¹Max Planck Institute of Colloids and Interfaces, Potsdam, Germany; ²University of California San Francisco, San Francisco, USA; ³Ludwig Boltzmann Institute of Osteology, Vienna, Austria

The unbearable lightness of being… a biomaterials scientist

Paul Ducheyne

Professor of Bioengineering and Orthopaedic Surgery Research, University of Pennsylvania, Philadelphia, USA
ORAL SESSION | TUESDAY, SEPTEMBER 10, 2019

11:00 I-OS1-02 An injectable scaffold based on temperature responsive hydrogel and factors loaded nano-particles for potential application of vascularization in tissue engineering
Dan He, Ansha Zhao
Southwest Jiaotong University, Chengdu, China

11:15 I-OS1-03 Biomimetic 3D bioprinted periodontium modules for periodontal defect repair
Yue Ma, Bo Yang, Weidong Tian
Sichuan University/West China Hospital of Stomatology, Chengdu, China

11:30 I-OS1-04 Fabrication of high-resolution poly(trimethylene)-based scaffolds using 2-photon polymerization
Gregor Weisgrab¹,³, Olivier Guillaume¹,³, Zhengchao Guo², André Poot², Dirk Grijpma², Aleksandr Ovsianikov¹,³
¹Technical University Vienna, Vienna, Austria; ²University of Twente, Enschede, Netherlands; ³Austrian Cluster for Tissue Engineering, Vienna, Austria

11:45 I-OS1-05 The interplay between chondrocyte spheroids and mesenchymal stem cells boots cartilage regeneration within a 3D natural-based hydrogel
Annachiara Scalzone¹, Ana M. Ferreira-Duarte¹, Chiara Tondaturo², Gianluca Ciardelli², Kenneth Dalgarno¹, Piergiorgio Gentile¹
¹Newcastle University, Newcastle upon Tyne, UK; ²Politecnico di Torino, Turin, Italy

10:30 – 12:00 HALL 2
I-OS2 BIOMATERIALS FOR TISSUE ENGINEERING APPLICATIONS 1

10:30 I-OS2-01 Structurally Graduated Collagen Scaffolds for the ex vivo generation of blood platelets
Jennifer H. Shepherd¹,², Daniel Howard¹, Eleonora Vriend¹, Cedric Ghevaert¹, Serena M. Best¹, Ruth E. Cameron¹
¹University of Cambridge, Cambridge, UK; ²University of Leicester, Leicester, UK

10:45 I-OS2-02 Platelet Pro-angiogenic Factors or Hyaluronan Oligomers Promote Revascularization of Injectable Hydrogels Aiming Endodontic Regeneration
Pedro S. Babo¹,², Cristiana R. Silva¹,², Ana L. Silva¹,², Rui M. A. Domingues¹,², Rui L. Reis¹,², Manuela E. Gomes¹,²
¹University of Minho, Barco - Guimarães, Portugal; ²University of Minho, Braga/Guimarães, Portugal
11:00  I-OS2-03  Eumelanin decorated polylactic acid electrospun substrates as new strategy for neurodegenerative diseases treatment

Ines Fasolino¹, Maria G. Raucci¹, Irene Bonadies¹, Alessandra Soriante¹, Alessandro Pezzella², Eva Carvalho³, Ana P. Pêgo³, Luigi Ambrosio¹

¹Institute of Polymers, Composites and Biomaterials, Naples, Italy; ²Department of Chemical Sciences, Naples, Italy; ³Instituto de Engenharia Biomédica (INEB) and i3S-Instituto de Investigação e Inovação em Saúde, Porto, Portugal

11:15  I-OS2-04  Porous scaffolds with precise microarchitecture and spatiotemporal release properties prepared by a new bottom-up approach

Giuseppe Cesarelli¹,², Aurelio Salerno², Paolo A. Netti¹

¹University of Naples, Naples, Italy; ²Istituto Italiano di Tecnologia, Naples, Italy

11:30  I-OS2-05  3D nano fiber scaffolds for the generation of tissue models

Tobias Weigel¹, Tobias Schmitz¹, Kristina Andelovic¹, Maren Jannasch¹, Sebastian Schürlein¹, Jan Hansmann¹,²

¹University Hospital Würzburg, Würzburg, Germany; ²Fraunhofer ISC, Würzburg, Germany

11:45  I-OS2-RF06  Electrospun biopolymeric patterned structures to support ovarian follicles growth: fabrication and characterization

Liliana Liverani¹, Nathalie Raffel², Amir Fattahi², Inge Hoffmann², Matthias W. Beckmann², Ralf Dittrich², Aldo R. Boccaccini¹

¹Institute of Biomaterials, Department of Materials Science and Engineering, University of Erlangen-Nuremberg, Erlangen, Germany; ²Department of Obstetrics and Gynecology, Erlangen University Hospital, Friedrich Alexander University of Erlangen–Nuremberg, Comprehensive Cancer Center ER-EMN, Erlangen, Germany

11:50  I-OS2-RF07  Fiber-based structures lead to superior mechanical properties in 3D hydrogel systems

Ronny Brünler, Dilbar Albibu, Chokri Cherif
TU Dresden, Dresden, Germany

11:55  I-OS2-RF08  Effect of Conventional Self-Assembled Molecules with Different Functional Groups on Cardiac Differentiation of Induced Pluripotent Stem Cells

Ozgen Ozturk-Oncel¹, Carlos Heras-Bautista², Lokman Uzun³, Deniz Hür⁴, Kurt Pfannkuche², Bora Garipcan¹

¹Boğaziçi University, İstanbul, Turkey; ²University of Cologne, Cologne, Germany; ³Hacettepe University, Ankara, Turkey; ⁴Eskisehir Technical University, Eskişehir, Turkey
The biomaterial “bioactive glass” celebrates this year its first 50 years since its invention by Prof. Larry Hench in 1969. The special symposium at ESB 2019 is organized to highlight the current status in the broad field of bioactive glasses, both from the fundamental and application viewpoints. Indeed, over the last 50 years, bioactive glasses, originally intended for applications as bone substituting materials and small orthopedic implants, have expanded in their functionalities and applications. Novel chemical compositions and advanced processing techniques pave the way to a great variety of medical applications, including biomedical coatings, dental care, scaffolds for tissue engineering, advanced drug delivery devices, wound healing, soft tissue repair and cancer treatment. Various applications of bioactive glasses will be presented and discussed in this special symposium.

10:30 I-SY1-KL01 Bouncy Bioglass for Cartilage and Bone Regeneration

Julian R. Jones
Imperial College London, London, UK

11:00 I-SY1-KL02 Bioactive glass: from the laboratory to the clinic

Nina Lindfors, Robert Björkenheim, Gustav Strömberg, Jukka Pajarinne, Elin Eriksson
Helsinki University, Helsinki, Finland

11:30 I-SY1-03 Development and characterization of B and Co ions co-doped 45S5 bioactive glass for possible use in angiogenesis

Si Chen¹, Martin Michálek¹, Dagmar Galusková¹, Monika Michálková¹, Peter Švančárek¹, Ali Talimian¹, Hana Kaňková¹, Jozef Kraxner¹, Liliana Liverani², Dušan Galusek¹, Aldo R. Boccaccini²
¹TnU AD, Trenčín, Slovakia; ²University of Erlangen-Nuremberg, Erlangen, Germany

11:45 I-SY1-04 Oxyfluorophosphate bioactive glasses and glass-ceramics

Amy Nommeots-Nomm¹, Amel Houaoui², Laetitia Petit¹, Emmanuel Pauthe², Michel Boissière², Jonathan Massera¹
¹Tampere University, Tampere, Finland; ²Université de Cergy-Pontoise, Cergy, France
Can graphene be the key for a successful application of pHEMA in cardiovascular devices?

Andreia T. Pereira
Patrícia C. Henriques
Karl Schneider
Maria C. L. Martins
Fernão D. Magalhães
Helga Bergmeister
Inês C. Gonçalves

1INEBi3s - Instituto Nacional de Engenharia Biomédica, Porto, Portugal; 2ICBAS - Instituto de Ciências Biomédicas Abel Salazar, Porto, Portugal; 3Center for Biomedical Research Medical, Vienna, Austria; 4Ludwig Boltzmann Cluster of Cardiovascular Research, Vienne, Austria; 5LEPABE – Laboratório De Engenharia De Processos, Ambiente, Biotecnologia e Energia, Porto, Portugal

Poly(2-oxazoline)/Poly(2-oxazine) based Copolymers: Physical gelation and related properties

Lukas Hahn
Matthias Maier
Benedikt Sochor
Matthias Beudert
Tessa Lühmann
Robert Luxenhofer
Julius-Maximilians-Universität Würzburg, Würzburg, Germany

Production of inductive heatable nanocomposite fibres for use in hyperthermia tumour therapy

Benedict Bauer
Benedikt Mues
Jeanette Ortega
Thomas Gries
Thomas Schmitz-Rode
Andreas Blaeser
Ioana Slabu
RWTH Aachen University, Aachen, Germany

Peptide-protein co-assembly to organise graphene oxide hierarchically into hybrid bioactive scaffold materials

Anna Majkowska
Alvaro Mata
Queen Mary University of London, London, UK

Temperature-responsive biodegradable injectable hydrogel for adhesion prevention materials

Yuichi Ohya
Takuya Nagata
Yuta Yoshizaki
Soichiro Fujiwara
Shinji Takai
Denan Jin
Akinori Kuzuya

1Kansai University, Suita, Japan; 2Osaka Medical College, Takatsuki, Japan

Electrospun Collagen Based Fibers Featuring Electrical Conductivity for Cardiac Tissue Engineering Application

Lena Vogt
Kaveh Roshanbinfar
Florian Ruther
Felix B. Engel
Aldo R. Boccaccini
Friedrich-Alexander-Universität Erlangen-Nuremberg, Erlangen, Germany
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<th>Time</th>
<th>Session ID</th>
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<th>Authors</th>
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<tbody>
<tr>
<td>11:40</td>
<td>I-OS3-RF07</td>
<td>Characterization of electrically conductive polylactic acid (PLA) – polypyrrole (PPy) substrates for neural tissue engineering</td>
<td>Fernando Gisbert Roca¹, Jorge Más Estellés¹², Cristina Martínez Ramos¹, Manuel Monleón Pradas¹²</td>
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<td></td>
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<td>¹Universitat Politècnica de València (UPV), Valencia, Spain; ²Bio-medical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Valencia, Spain</td>
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<tr>
<td>11:45</td>
<td>I-OS3-RF08</td>
<td>Design of a novel 3D combined bioactive tissue matrices for skeletal muscle tissue repair</td>
<td>Nergis Zeynep Renkler¹, Sedat Odabas², Kadriye Tuzlakoglu¹</td>
</tr>
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<td></td>
<td></td>
<td>¹Yalova University, Yalova, Turkey; ²Ankara University, Ankara, Turkey</td>
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**CONFERENCE ROOM 4+5**

**APPLICATION-RELATED ASPECTS**

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<tbody>
<tr>
<td>10:30</td>
<td>I-OS4-01</td>
<td>Biocompatibility of F-127 as lubricant for orthopaedic implants</td>
<td>Ruben del Campo, Seunghwan Lee</td>
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<td>Technical University of Denmark, Lyngby, Denmark</td>
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<td>10:45</td>
<td>I-OS4-02</td>
<td>Graphene and MXene nanomaterial variants for biomedical remediation</td>
<td>Tochukwu Ozulumba¹, Ganesh Ingavle¹², Patrick Dyer¹, Susan Sandeman¹</td>
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<td></td>
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<td>¹University of Brighton, Brighton, UK; ²Symbiosis International University, Maharashtra, India</td>
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<tr>
<td>11:00</td>
<td>I-OS4-03</td>
<td>Surface texturation of breast implant impacts extracellular matrix and inflammatory gene expression even in asymptomatic capsule</td>
<td>Isabelle Brigaud¹, Charles Garabedian², Nathalie Bricout³, Laurent Pieuchot¹, Arnaud Ponche¹, Raphael Deltombe², Remi Delille², Maxence Bigerelle², Karine Anselme¹</td>
</tr>
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<td></td>
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<td>¹CNRS, Mulhouse, France; ²Université de Valenciennes et du Hainaut-Cambresis, Valenciennes, France; ³Hospital Saint Germain, Saint Germain-en-laye, France</td>
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From plasma polymer to bladder cancer diagnostic device: A story about the journey from the laboratory to industrial scale production

Thomas D. Michl¹, Kola Ostrikov¹, Kit M. Chan¹, Hanieh S. Shirazi¹, Melanie MacGregor¹, Simon Belcher², Stephen Robb², Alex Grochowski², Adam DiFiore², Jonathan Gleadle³, Jordan Li³, Krasimir Vasilev¹
¹University of South Australia, Mawson Lakes, Australia; ²Mot-herson Innovations, Lonsdale, Australia; ³Flinders University, Adelaide, Australia

Bioengineering Stem Cell based Nanostructured Tissue Engineered Constructs for Women’s Health

Shayanti Mukherjee¹,², Saeedeh Darzi¹, Kallyanashish Paul¹,², Fiona Cousins¹,², Anna Rosamilia²,³, Jerome Werkmeister¹,², Caroline Gargett¹
¹Hudson Institute of Medical Research, Clayton, Australia; ²Monash University, Clayton, Australia; ³Monash Health, Clayton, Australia

Bio-tribocorrosion and trunnion fatigue fractures in total hip arthroplasty – two case reports and review of the literature

Peter G. van Doesburg¹, Evert J. van Langelaan², Iulian Apachitei², Suzan H. M. Verdegaal¹
¹Alrijne Ziekenhuis, Leiderdorp, Netherlands; ²Delft University of Technology, Delft, Netherlands

Genipin cross-linked extracellular matrix hydrogels developed for neural tissue repair

Karel Vyborny¹,², Kristyina Kekulova¹,², Jana Vallova¹,², Sarka Kubinova¹
¹Czech Academy of Sciences, Prague, Czech Republic; ²Charles University, Prague, Czech Republic

Surface functionalisation of magnetic nanoparticles by β-amyloid 1-42 peptide (Aβ₄₂)-specific aptamers as a concentration tool in early diagnosis of Alzheimer’s disease

Cheryl M. Collins¹, Valeria Perugini¹, Manuel González Gómez², Yolanda Piñeiro², José Rivas², Matteo Santin¹
¹University of Brighton, Brighton, UK; ²Universidad de Santiago de Compostela, Santiago de Compostela, Spain
### ORAL SESSION | TUESDAY, SEPTEMBER 10, 2019

**CONFERENCE ROOM 2+3**

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<th>Time</th>
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<tr>
<td>10:30</td>
<td>I-OS5-01</td>
<td>Injectable hybrid PVA hydrogels for nucleus pulposus substitution</td>
<td>Gemma Leone, Marco Consumi, Agnese Magnani University of Siena, Siena, Italy</td>
</tr>
<tr>
<td>10:45</td>
<td>I-OS5-02</td>
<td>Bioreponsive therapeutic nanoparticles for drug-free cocktail therapy and hypoxia amelioration in Bladder cancer</td>
<td>Wen-Hsuan Chen, Hung-Wei Yang National Sun Yat-sen University, Kaohsiung, Taiwan</td>
</tr>
<tr>
<td>11:00</td>
<td>I-OS5-03</td>
<td>Protein-modified porous membranes as new wound dressing for skin repair</td>
<td>Jana Markhoff, Naiana Suter, Karsten Stapelfeldt, Kurosch Rezwan, Dorothea Brüggemann University of Bremen, Bremen, Germany</td>
</tr>
<tr>
<td>11:15</td>
<td>I-OS5-04</td>
<td>Injectable thermosensitive hydrogels for localized delivery of biomolecules in chronic skin wound treatment</td>
<td>Arianna Grivet Brancot¹, Monica Boffito¹,², Susanna Sartori², Simona Bronco¹, Gianluca Ciardelli¹,² ¹Consiglio Nazionale delle Ricerche, Pisa, Italy; ²Politecnico di Torino, Turin, Italy</td>
</tr>
<tr>
<td>11:30</td>
<td>I-OS5-05</td>
<td>Transferring the in vitro setup of adipose tissue to an extrusion based bioprinting process with methacrylated gelatin and mature adipocytes</td>
<td>Ann-Cathrin Volz¹, Franziska B. Atzinger¹, Kirsten Borchers², Petra J. Kluger¹ ¹Reutlingen University, Reutlingen, Germany; ²University of Stuttgart, Stuttgart, Germany</td>
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<td>11:45</td>
<td>I-OS5-06</td>
<td>Photocurable Silk Fibroin adhesives for corneal wound repair</td>
<td>Inês A. Barroso, Sophie C. Cox, Saaeha Rauz, Anita K. Ghag University, Birmingham, UK</td>
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**12:00 – 13:00**

**HALL 1 | EXHIBITION AREA**

**LUNCH BREAK**
HYDROGELS FOR TISSUE ENGINEERING 1

13:00  II-OS6-01  Injectable oligomer-cross-linked chitosan hydrogels and nanocomposite hydrogels as potential regenerative materials
Iram Maqsood, Jörg Lenzner, Hafiz Awais Nawaz, Michaela Schulz-Siegmund, Michael C. Hacker
Leipzig University, Leipzig, Germany

13:15  II-OS6-02  Development of a cell-free and growth factor-free hydrogel capable to induce angiogenesis and innervation after subcutaneous implantation
Bruno Paiva dos Santos¹, Bertrand Garbay², Elisabeth Garanger², Sebastien Lecommandoux², Hugo Oliveira¹, Joelle Amédée¹
¹Bioingénierie Tissulaire (BioTis), Inserm U1026, Bordeaux, France; ²Laboratoire de Chimie des Polymères Organiques (LCPO), UMR 5629 CNRS, Pessac, France

13:30  II-OS6-03  Evaluating stress relaxation of poly(acrylamide-co-acrylic acid) hydrogels
Emilie Prouvé¹,², Bernard Drouin¹, Pascale Chevallier¹, Marie-Christine Durrieu²,³, Gaétan Laroche¹
¹Université Laval, Québec, Canada; ²Université de Bordeaux, Pessac, France; ³CNRS, Pessac, France

13:45  II-OS6-04  Bioactive multicomponent injectable hybrids – structural stabilization via attachment of inorganic particles to the biopolymeric network
Joanna Lewandowska-Łańcucka¹, Adriana Gilarska¹,², Aleksandra Bula¹, Wojciech Horak², Anna Łatkiewicz¹, Maria Nowakowska¹
¹Jagiellonian University, Kraków, Poland; ²AGH University of Science and Technology, Kraków, Poland

13:50  II-OS6-05  Influence of Polyacrylamide Hydrogel Stiffness on Podocyte morphology, phenotype and mechanical properties
Maya S. Abdallah¹, Marta Martin³, Sebastien Balme¹, Frederic Cuisinier¹, Csilla Gregely³, Mario Tahchi², Wissam Faour⁴, Maria Bassil³, Mikhael Bechelany¹
¹University of Montpellier - France, Montpellier, France; ²Lebanese University, Beirut, Lebanon; ³University of Montpellier II - France, Montpellier, France; ⁴School of Medicine - Gilbert and Rose Marie Chaghoury, Jbeil, Lebanon
Oxidized Alginate Hydrogels from Mixed Secondary Aldimine Crosslinkers Exhibit Tunable Mechanical and Viscoelastic Properties

Francis L. C. Morgan, Shahzad Hafeez, Huey Wen Ooi, Lorenzo Moroni, Matthew B. Baker
Maastricht University, Maastricht, Netherlands

Rational Design of Collagen Scaffolds for Co-Culture

Nima Meyer¹, Daniel V. Bax¹, Jochen Beck², Ruth E. Cameron¹, Serena M. Best¹
¹University of Cambridge, Cambridge, UK; ²Geistlich Pharma AG, Wolhusen, Switzerland

Piezoelectric Ultrafine Fibers for Bone and Neural Tissue Engineering

Bahareh Azimi¹², Massimiliano Labardi³, Delfo D’Alessandro⁴, Luisa Trombi²⁴, Claudia Dell’Amico⁵, Matteo Baggiani¹, Marco Onorati¹, Stefano Berrettini¹, Serena Danti¹²
¹University of Pisa, Pisa, Italy; ²Interuniversity National Consortium of Materials Science and Technology, Firenze, Italy; ³Institute for Chemical-Physical Processes, Pisa, Italy

Engineering a dynamic model of the alveolar interface for the study of aerosol deposition

Roberta Nossa, Ludovica Cacopardo, Joana Costa, Giorgio Mattei, Arti Ahluwalia
University of Pisa, Pisa, Italy

In situ tissue engineering concept for enhanced bone defect healing – Biomimetic scaffolds functionalized with an osteoinductive factor mix from hypoxia-conditioned hBMSC

Mandy Quade¹, Anastasia Gabrielyan², Anja Lode¹, Seemun Ray³, Angela Roesen-Wolff², Volker Alt¹, Michael Gelinsky¹
¹TU Dresden, Dresden, Germany; ²University Hospital Carl Gustav Carus, Dresden, Germany; ³Justus Liebig University, Gießen, Germany
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<tr>
<td>13:45</td>
<td>II-OS7-04</td>
<td>Macromolecular crowding, mechanical stimulation, anisotropic topography and oxygen tension in tissue engineering – A step closer to cell-assembled biomaterials</td>
<td>Dimitrios Zeugolis, Diana Gaspar, Dimitrios Tsiapalis NUI Galway, Galway, Ireland</td>
</tr>
<tr>
<td>14:00</td>
<td>II-OS7-05</td>
<td>Preparation of a porous solid fibroin scaffold based on a foaming and UV crosslinking procedure of a methacrylate fibroin solution: influence of the composition on the sponge properties</td>
<td>Alessio Bucciarelli¹, Devid Maniglio¹, Antonella Motta¹, Alberto Quaranta¹, Gilson Khang² ¹Univerità di Trento, Trento, Italy; ²Chonbuk National University, Jeonju, Republic of Korea</td>
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<tr>
<td>14:15</td>
<td>II-OS7-RF06</td>
<td>Aerogel-loaded scaffolds obtained by supercritical foaming for bone regeneration</td>
<td>Carlos A. García-González¹, Araceli Delgado², Carmen Évora², Ricardo Reyes², Angel Concheiro¹, Jose Luis Gómez-Amoza¹, Carmen Alvarez-Lorenzo¹ ¹Universidade de Santiago de Compostela, Santiago de Compostela, Spain; ²Universidad de La Laguna, La Laguna, Spain</td>
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<tr>
<td>14:20</td>
<td>II-OS7-RF07</td>
<td>Obtaining of Cellprene® Epoxidized Fibers Using Electrospinning Process</td>
<td>Rafael M. Carazzai, Nathália O. Muniz, Nayrim B. Guerra, Luís Alberto L. dos Santos Federal University of Rio Grande do Sul, Porto Alegre, Brazil</td>
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LOCAL ANTIBIOTICS DELIVERY WITH HYDROGELS:
FROM INFECTION PREVENTION TO INFECTION ERADICATION IN ORTHOPEDIC TRAUMA

Proposer: Richards, Geoff
AO Research Institute Davos, Davos Platz, Switzerland

Proposer | Chair: David Eglin
AO Research Institute Davos, Davos Platz, Switzerland

Co-Chair: Fintan Moriarty
AO Research Institute Davos, Davos Platz, Switzerland

Infection is a dreaded risk in orthopedic and trauma surgery with devastating consequences for the patients and huge social costs. While antibiotic-loaded biomaterials are available, there is still large potential for improving the available products and the clinical standards.

In this symposium, a hydrogel for the local delivery of antibiotics and its development will be presented. Biomaterial requirements, rational design, regulatory hurdles, proof of concept studies in small animals, comparison with clinical standards, large animal models and the challenge of raising from a model of prevention up to eradication of an antibiotics-resistant infection will be illustrated.

Local antibiotics delivery with hydrogels: from infection prevention to infection eradication in orthopedic trauma

Matteo D’Este, Fintan T. Moriarty
AO Research Institute Davos, Davos, Switzerland

Development of a Novel Multi Composite Bone Cement with Long-Lasting Antibacterial Effect: From Paste to Injectable Formulation

Maria Francesca Di Filippo¹, Silvia Panzavolta¹, Adriana Bigi¹, Luisa S. Dolci¹, Nadia Passerini¹, Paola Torricelli², Annapaola Parrilli², Francesca Bonvicini¹, Beatrice Albertini¹, Milena Fini², Giovanna A. Gentilomi¹
¹Alma Mater Studiorum - University of Bologna, Bologna, Italy; ²IRCCS Rizzoli Orthopaedic Institute, Bologna, Italy
14:15  II-SY2-04  Microparticles with enhanced bone affinity for efficient antibiotic delivery to infected bone fractures

Stijn G. Rotman\textsuperscript{1,2}, Minqi Wang\textsuperscript{3}, Shengbing Yang\textsuperscript{3}, Dirk Grijpma\textsuperscript{2}, Robert G. Richards\textsuperscript{1}, David Eglin\textsuperscript{1}, Fintan T. Moriarty\textsuperscript{1}, Ting Ting Tang\textsuperscript{3}, Olivier Guillaume\textsuperscript{1}

\textsuperscript{1}AO Research Institute Davos, Davos Platz, Switzerland; \textsuperscript{2}University of Twente, Enschede, Netherlands; \textsuperscript{3}Shanghai Key Laboratory of Orthopedic Implants, Shanghai Ninth People’s Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

13:00 – 14:30  HALL 5

II-OS8  COMPOSITES AND STIMULI RESPONSIVE BIOMATERIALS 2

13:00  II-OS8-01  Development of Silk Fibroin/CNF Scaffolds for Cardiac Patch Applications

Yigithan Tufan\textsuperscript{1}, Hayriye Öztatl\textsuperscript{2}, Bora Garipcan\textsuperscript{2}, Batur Ercan\textsuperscript{1}

\textsuperscript{1}Middle East Technical University, Ankara, Turkey; \textsuperscript{2}Boğaziçi University, İstanbul, Turkey

13:15  II-OS8-02  Spatiotemporal Material Functionalization via Competitive Supramolecular Complexation of Avidin and Biotin Analogs

Tom Kamperman, Michelle Koerselman, Cindy Kelder, Jan Hendriks, João Crispim, Xandra De Peuter, Piet Dijkstra, Marcel Karperien, Jeroen Leijten

University of Twente, Enschede, Netherlands

13:30  II-OS8-03  Smart liposomes for delivery at stenosed vessels - a study combining microfluidics with spatially resolved small-angle X-ray scattering

Marzia Buscema\textsuperscript{1}, Sofiya Matviykov\textsuperscript{1}, Andreas Zumbuehl\textsuperscript{4}, Bert Müller\textsuperscript{1}, Hans Deyhle\textsuperscript{1,2}, Thomas Pfohl\textsuperscript{1,3}

\textsuperscript{1}University of Basel, Allschwil, Switzerland; \textsuperscript{2}University of Southampton, Southampton, UK; \textsuperscript{3}Universität Freiburg, Freiburg, Germany; \textsuperscript{4}University of Fribourg, Fribourg, Switzerland

13:45  II-OS8-04  Design of multifunctional nanocomposites of mesoporous silica nanoparticles and hydroxyapatite nanocrystals for biomedical applications.

Catherine Harvey\textsuperscript{1}, Daniel Lozano\textsuperscript{1,2}, Raúl Zazo\textsuperscript{1}, Elvis Cabrera\textsuperscript{1}, Blanca González\textsuperscript{1,2}, Isabel Izquierdo-Barba\textsuperscript{1,2}, María Vallet-Regí\textsuperscript{1,2}

\textsuperscript{1}Universidad Complutense de Madrid, Madrid, Spain; \textsuperscript{2}Networking Research Center on Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Madrid, Spain
14:00  II-OS8-05  Incorporation of metals in mesoporous silica nanoparticles for infection treatment
Blanca González¹,²,³, Elena Álvarez¹, Manuel Estévez¹, Jimena Soler¹, Elba Garcia¹, Isabel Izquierdo-Barba¹,²,³, Maria Vallet-Regí¹,²,³
¹Universidad Complutense de Madrid, Madrid, Spain; ²Hospital 12 de Octubre i+12, Madrid, Spain; ³Networking Research Center on Bioengineering, Biomaterials and Nanomedicine, Madrid, Spain

14:15  II-OS8-06  Screening Cell-Biomaterial Interactions in three dimensions
Maria Gabriella Fois, Alex Guttenplan, Zeinab N. Tahmasebi Birgani, Stefan Giselbrecht, Roman Truckenmüller, Pamela Habibović
Maastricht University, Maastricht, Netherlands

13:00 – 14:30  CONFERENCE ROOM 4+5
II-SY3  GERMAN SOCIETY FOR BIOMATERIALS (DGBM) SY: BIOMINERALIZATION AND CALCIFICATION IN REGENERATIVE MEDICINE

Proposer:
German Society for Biomaterials (DGBM)
Chairs:
Wilhelm Jahnen-Dechent
RWTH Aachen University, Helmholtz Institute for Biomedical Engineering, Biointerface Lab, Aachen, Germany
Liam Grover
University of Birmingham, School of Chemical Engineering, Birmingham, UK

Biomineralization includes minerals that would not exist if it were not for living organisms, which metabolize existing non-biogenic minerals and turn them into complex materials. Biominerals thus comprise a wide range of simple metabolic products like magnetite in bacteria, to complex compound materials like bone in vertebrates. During this session we present current concepts and applications of biomineralization with a focus on the mineral-tissue interface as well as biomimetic biomaterials for implants and tissue engineering. Mechanisms of pathological mineralization in the human body, also known as calcification, will likewise be addressed.
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| 13:00  | II-SY3-KL01 | Mud in the blood: Protein-Mineral Complexes in Mineralization and Calcification | Wilhelm Jahnen-Dechent  
?RWTH Aachen University, Aachen, Germany |
| 13:30  | II-SY3-KL02 | Developing models and treatments for pathological ossification        | Liam M Grover  
University of Birmingham, Birmingham, UK |
| 14:00  | II-SY3-03   | Understanding the cytotoxicity of doped hydroxyapatite nanoparticles on osteosarcoma cells | Mar Bonany\(^1\), Montserrat Espanol\(^1\), Zhitong Zhao\(^1\), Maria-Pau Ginebra\(^{1,2}\)  
\(^1\)UPC, Barcelona, Spain; \(^2\)IBEC, Barcelona, Spain |
| 14:15  | II-SY3-04   | A biphasic mineralized in vitro hydrogel model for the systematic study of cell-matrix and heterotypic cell-cell communications involved in breast cancer bone metastasis | Jana Sievers\(^{1,2}\), Petra Welzel\(^1\), Wolfgang Wagermaier\(^2\), Claudia Fischbach\(^3\), Peter Fratzl\(^2\), Carsten Werner\(^{1,4}\)  
\(^1\)Leibniz Institute of Polymer Research Dresden, Dresden, Germany; \(^2\)Max Planck Institute of Colloids and Interfaces, Potsdam, Germany; \(^3\)Cornell University, Ithaca, US; \(^4\)TU Dresden, Dresden, Germany |

**13:00 – 14:30**  
**CONFERENCE ROOM 2+3**  
**II-OS9**  
**STRATEGIES FOR VASCULARISATION**

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| 13:00  | II-OS9-KL01 | Bioinstructive supports for endothelial cells in bone tissue engineering | João F. Mano  
CICECO - Aveiro Institute of Materials, University of Aveiro, Aveiro, Portugal |
| 13:30  | II-OS9-02   | Pre-endothelialization of sacrificial microvessel structures for biofabrication of tissue models | Hatice Genç\(^1\), Matthias Ryma\(^2\), Dominik Schneidereit\(^3\), Ali Nadernezhad\(^2\), Jürgen Groll\(^2\), Iwona Cicha\(^1\)  
\(^1\)University Hospital Erlangen, Erlangen, Germany; \(^2\)University Hospital Würzburg, Würzburg, Germany; \(^3\)Friedrich Alexander University, Erlangen, Germany |
| 13:45  | II-OS9-03   | Multi-layer vascularized magnetic cell sheets for bone regeneration   | Ana S. Silva, Lúcia I. Santos, João F. Mano  
University of Aveiro, Aveiro, Portugal |
| Time   | Session | Title                                                                 | Authors                                                                
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<td>14:00</td>
<td>II-OS9-04</td>
<td>Printable formulations based on dynamic catechol-metal crosslinking</td>
<td>Malgorzata K. Wlodarczyk-Biegun², Julieta I. Paez², Maria Villiou¹², Jun Feng¹², Aranzazu del Campo¹²</td>
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<td>¹INM - Leibniz Institute for New Materials, Saarbrucken, Germany;</td>
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<td></td>
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<td>²Saarland University, Saarbrucken, Germany</td>
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<td>14:15</td>
<td>II-OS9-05</td>
<td>Real time imaging of oxygen in bioprinted hydrogels – characterizing O₂ diffusion properties and applications in tissue engineering.</td>
<td>Ashwini R. Akkineni¹, Sarah Duin¹, Erik Trampe², Klaus Koren², Anja Lode¹, Michael Kühl², Michael Gelinsky¹</td>
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<td>¹TU Dresden, Dresden, Germany; ²University of Copenhagen, Helsingør, Denmark</td>
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3D printing technologies are an established tool for biomaterial processing, however greater resolution is required for the next generation of biomedical materials. Adding an electrical field to extrusion-based 3D printing can generate an additional driving force and increases the resolution of the process down to the micron and sub-micron range. Highly resolved porous constructs fabricated in this manner have great utility for both in vitro and in vivo applications and represents the future of 3D printing for biomedical applications.

This special symposia will highlight the latest development in such high-resolution 3D printing technologies based on electrohydrodynamics.

16:45 III-SY4-KL01 Historicity of Bioprintomics – Can we in fact print tissue and organs or did we neglect genuinely that biology matters
Dietmar W. Hutmacher
Queensland University of Technology, Brisbane, Australia

17:15 III-SY4-KL02 Why Polymer Melts are Excellent Fluids for High-resolution 3D printing
Paul D. Dalton
University Clinic Würzburg, Würzburg, Germany

17:45 III-SY4-03 A rapid screening toolkit instructs the formulation of printable biomaterials for melt electrowritten scaffolds
Naomi C. Paxton, Trent L. Brooks-Richards, Madison J. Ainsworth, Jiongyu Ren, Cynthia Wong, Mark C. Allenby, Maria A. Woodruff
Queensland University of Technology, Brisbane, Australia

18:00 III-SY4-04 Melt electro written biomimetic tympanic membrane implant for therapy of chronically infected middle ears
Max von Witzleben, Thomas Stoppe, Tilman Ahlfeld, Anne Bernhardt, Matthias Bornitz, Marcus Neudert, Michael Gelinsky
TU Dresden, Dresden, Germany
ORAL SESSION | TUESDAY, SEPTEMBER 10, 2019

16:45 – 18:15

HALL 2

III-OS10

POLYMERIC BIOMATERIALS 1

16:45  III-OS10-01

PEGDA and PETA as potential materials for drug delivery system development for a novel additive manufacture process

Natalia Rekowska¹, Daniela Arbeiter¹, Andreas Brietzke¹, Jan Konasch², Alexander Reiss², Robert Mau², Thomas Eickner¹, Hermann Seitz², Niels Grabow¹, Michael Teske¹

¹University Medical Centre Rostock, Rostock-Warnemünde, Germany; ²University of Rostock, Rostock, Germany

17:00  III-OS10-02

Novel Conducting and Biodegradable Macromonomer for Biomaterials

Aruã C. Da Silva, Susana I. C. De Torresi

University of São Paulo, São Paulo, Brazil

17:15  III-OS10-03

Development of an in-situ-forming albumin hydrogel for glucagon-like peptide-1 analogue delivery by subcutaneous injection indicated for type 2 diabetes mellitus

Gillian Murphy¹,², Abhay Pandit¹, Michael Fitzgerald²

¹National University of Ireland, Galway, Galway, Ireland; ²Mylan, Galway, Ireland

17:30  III-OS10-04

Structural analysis of self-assembled fibrinogen nanofiber scaffolds

Karsten Stapelfeldt¹, Stephani Stamborowski², Polina Mednikova¹, Dorothea Brüggemann¹

¹University of Bremen, Bremen, Germany; ²Fraunhofer Institute for Manufacturing Technology and Advanced Materials, Bremen, Germany

17:45  III-OS10-05

Laminin-Mimicking Hyperbranched Polymer Drives the Formation of Perivascular Stem Cell Niche Organoids in 2D Culture Conditions

Valeria Perugini, Matteo Santin

University of Brighton, Brighton, UK

18:00  III-OS10-06

Novel fabrication of multi-compartmental biodegradable polymeric microneedles for drug intradermal release

Rezvan Jamaledin, Raffaele Vecchione, Paolo A. Netti

Italian Institute of Technology, Largo Barsanti e Matteucci, Naples, Italy
Combining fibrinogen and magnesium to produce immunomodulatory biomaterials: impact on macrophages and their crosstalk with mesenchymal stem/stromal cells

Mafalda Bessa-Gonçalves¹,², Bérèngere J. C. Luthringer-Feyerabend³, Regine Willumeit-Römer³, Mário A. Barbosa¹,², Susana G. Santos¹,²
¹i3S – Instituto de Investigação e Inovação em Saúde, Porto, Portugal; ²Instituto Ciências Biomédicas Abel Salazar, Porto, Portugal; ³Institute of Materials Research, Geesthacht, Germany

Bioactivity improvement of the Titanium alloy using ZrO₂ based glass-ceramic coatings for implant applications

Eimy Caldas¹, Laura Santa¹, Javier Jurado¹, William Aperador², Oscar Zambrano³, Clara Goyes¹
¹Universidad Autónoma de Occidente, Cali, Colombia; ²Universidad Militar Nueva Granada, Bogotá, Colombia; ³Universidad del Valle, Cali, Colombia

Scavenging of bone catabolic proteins by sulfated-GAG modified functional materials

Mathis Gronbach¹, Benno Müller¹, Vicky Lidzba¹, Franziska Mitrach¹, Stephanie Möller², Matthias Schnabelrauch², Michael C. Hacker¹, Michaela Schulz-Siegmund¹
¹University of Leipzig, Leipzig, Germany; ²INNOVENT, Jena, Germany

Application of a liquid TEM cell to study a 45S5 bioactive glass dissolution

Elkin M. Lopez-Fontal¹, Richard Langford¹, Shaz Khan²
¹University of Cambridge, Cambridge, UK; ²Glaxo Smith Kline, Weybridge, UK

Phosphate based glass coatings for rapid Ga³⁺ release: the challenges of balancing cytocompatibility with antimicrobial effects

Kathryn G. Thomas¹, Bryan W. Stuart², Steve Atkinson¹, Colin A. Scotchford¹, David M. Grant¹
¹University of Nottingham, Nottingham, UK; ²University of Oxford, Oxford, UK

Wear Behaviour of Zirconia Containing Dispersion Ceramics Combined with Accelerated Ageing

Thomas Oberbach¹, Mazen Al-Hajjar², Laurent Gremmilard³, Karen Hans³, Jerome Chevalier³, Louise Jennings²
¹Mathys Orthopaedie GmbH, Moersdorf, Germany; ²University of Leeds, Leeds, UK; ³University of Lyon, Villeurbanne Cx, France
Dual-setting brushite-silica gel cements with high cross-linking density precursors

Ib Holzmeister, Jürgen Groll, Uwe Gbureck
University Hospital of Würzburg, Würzburg, Germany

Antibacterial phosphate-based glasses for wound healing applications

Athanasios Nikolaou¹,², Farzad Foroutan¹, Jorge Gutierrez-Merino¹, Daniela Carta¹
¹University of Surrey, Guildford, UK; ²Fourth State Medicine Ltd., Haslemere, UK

Matrix engineering to enhance bone regeneration

Stefan Rammelt¹,², Sabine Schulze¹, Christin Neuber³, Jens Pietzsch³
¹University Hospital Carl Gustav Carus, Dresden, Dresden, Germany; ²DFG-Center for Regenerative Therapies Dresden (CRTD), Dresden, Germany; ³Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

Treatment of both non-healing cutaneous wounds and critical size bone defects still represents a significant clinical challenge. The use of biomaterials based on artificial extracellular matrix (ECM) components has evolved as a promising approach to create a favourable environment for both skin and bone healing under critical conditions. In a series of in vitro and in vivo experiments, the application of glycosaminoglycans (GAG) as part of the native ECM has been investigated. GAGs such as hyaluronic acid with different degrees of sulfatation were shown to modulate the function of immune and bone forming cells either directly or via alteration of the bioactivity of key cytokines and growth factors controlling the immune response and new bone formation.
<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:15</td>
<td>III-SY5-KL02</td>
<td>Immunomodulating biomaterials support cutaneous wound healing</td>
<td>Sandra Franz, University Leipzig, Leipzig, Germany</td>
</tr>
<tr>
<td>17:45</td>
<td>III-SY5-03</td>
<td>Biocatalytic self-assembly of supramolecular gels is controlled by the choice of the amphiphile regioisomer</td>
<td>Alexandra Brito, Rui L. Reis, Rein V. Ulijn, Ricardo A. Pires, Iva Pashkuleva, University of Minho, Braga, Portugal, City University of New York, New York, US</td>
</tr>
<tr>
<td>18:00</td>
<td>III-SY5-04</td>
<td>Hyaluronan/Collagen Based Hydrogels as Release System for Sulfated Hyaluronan and Proteins</td>
<td>Norbert Halfter, Sandra Rother, Linda Köhler, Albrecht Berg, Stephanie Möller, Matthias Schnabelrauch, Joanna Blaszkiewicz, Jörg Rademann, Vera Hintze, TU Dresden, Dresden, Germany, INNOVENT e.V., Jena, Germany, Freie Universität Berlin, Berlin, Germany</td>
</tr>
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16:45 – 18:15

CONFERENCE ROOM 4+5

III-OS12 CANCER MODELS

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speakers</th>
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</thead>
<tbody>
<tr>
<td>16:45</td>
<td>III-OS12-01</td>
<td>Tumor engineered model for peritoneal metastasis with controllable stiffness</td>
<td>Elly De Vlieghere, Wim Ceelen, Bruno De Geest, Heidi Declercq, Sandra Van Vlierbergh, Olivier De Wever, Ghent University, Ghent, Belgium</td>
</tr>
<tr>
<td>17:00</td>
<td>III-OS12-02</td>
<td>Activation of Breast Cancer Cell Invasion by the Biophysical Network Characteristic of 3D Fibrillar Collagen Networks</td>
<td>Jiranuwat Sapudom, Liv Kalbitzer, Steve Martin, Tilo Pompe, Leipzig University, Leipzig, Germany</td>
</tr>
<tr>
<td>17:15</td>
<td>III-OS12-03</td>
<td>Soft matrix composites as three-dimensional models mimicking Glioblastoma in vitro</td>
<td>Annalena Wieland, Pamela L. Strissel, Ezgi Bakirci, Paul D. Dalton, Andreas Feigenspan, Carmen Villmann, Reiner Strick, University Hospital Erlangen, Erlangen, Germany, University Hospital Würzburg, Würzburg, Germany, Friedrich-Alexander University, Erlangen, Germany</td>
</tr>
<tr>
<td>17:30</td>
<td>III-OS12-04</td>
<td>Twin protein superglues give hydrogels mimicking cell cell interactions</td>
<td>Robert Wieduwild, Mark Howarth, Universität Leipzig, Leipzig, Germany, University of Oxford, Oxford, UK</td>
</tr>
</tbody>
</table>

withdrawn
## ORAL SESSION | TUESDAY, SEPTEMBER 10, 2019

### 17:45  III-OS12-05

**Use of Polymeric Doxorubicin Nanoparticles in Metastatic Oral Cancer**  
**Sabrina Marcazzan**, Elena M. Varoni, Guodong Zhang, Ali Dadbin, Elvin Blanco, Giovanni Lodi, Haifa Shen, Mauro Ferrari  
1 Università Degli Studi di Milano, Milan, Italy; 2 Houston Methodist Research Institute, Houston, US

### 18:00  III-OS12-06

**Characterisation of oxidized alginate-gelatin hydrogels for breast tumour in vitro models**  
**Chen Zhao**, Lekha Shah, Enrique Lallana, Ayse Latif, Kaye Williams, Annalisa Tirella, Ponpawee Pingrajai  
University of Manchester, Manchester, UK

### 16:45 – 18:15  YSF GRANT WRITING WS

**YSF GRANT WRITING WS**

**Organiser: YSF Board and National Chapters**

During the “YSF Grant writing workshop”, tips, tools and tricks on how to prepare a successful proposal will be shared by successful grant laureates. Starting from the selection of the proper call (European vs national projects; research grants vs individual fellowship), the speakers will propose the “key-stones” and the “to-do-list” for writing an efficacious and high-quality proposal. Experts in writing successful proposals and in the management of funded research projects will be, thus, invited to share their experience and knowledge with the young audience.

The YSF presents an exciting opportunity for learning about European young researcher grants and the chances and pitfalls of starting their own research group – at first hand from two fantastic local experts:

### 16.45 – 17.15

**What’s in it for me and how do I get it? – Horizon 2020 and Horizon Europe for Early Stage researchers**  
**Rick Glöckner**  
European Project Center, TU Dresden

### 17.15 – 17.45

**Building your own group based on third-party funding**  
**Prof. Michael Gelinsky**  
University Hospital Carl Gustav Carus of TU Dresden, Dresden, Germany

### 18:20 – 19:00  YSF GA

**YSF GENERAL ASSEMBLY**
08:30 – 09:15  HALL 2+3
PL2  PLENARY LECTURE 2

08:30  PL2-01  Enabling Biomaterials Translation: It’s not all about laboratory to bedside
Abhay Pandit
CÚRAM, Center for Research in Medical Devices, National University of Ireland, Galway, Ireland

08:50  PL2-02  Examples of industrial and clinical transfers of research works on biomaterials
Didier Letourneur
Inserm U1148-University Paris Diderot – University Paris 13, Villetaneuse, France

09:15 – 10:00  HALL 2+3
GW AW  GEORGE WINTER AWARD

From Bone Replacements to Nanomedicine: a path in Biomaterials
María Vallet-Regí
Dpto. Química Inorgánica y Bioinorgánica, Universidad Complutense de Madrid, Madrid, Spain; CIBER de Bioingeniería, Madrid, Spain

10:00 – 10:30  HALL 1 | EXHIBITION AREA
COFFEE BREAK
IV-SY6  RSC BIOMATERIALS SCIENCE LECTURESHIP

Chairs:
Neil Hammond
Royal Society of Chemistry, Cambridge, UK

Biomaterials Science, published by the Royal Society of Chemistry, and the official journal of the ESB, explores the science of biomaterials as well as their translation towards clinical use. In this special session, Biomaterials Science Editor-in-Chief will shed light on the role of biomaterials in controlling immune response, and the recipient of the 2019 Biomaterials Science Lectureship, April Kloxin (University of Delaware) will present her research into the role of the extracellular matrix in cell activation. The prestigious Biomaterials Science Lectureship is awarded annually, recognising an early career researcher who has made a significant contribution to the field through his/her independent research. Previous winners are Zhen Gu (2018), Zhuang Liu (2017), Fan Yang (2016), Joel Collier (2015), and Suzie Pun (2014).

10:30  IV-SY6-KL01  New frontiers in biomaterial research: engaging the immune system
Jennifer H. Elisseeff
Johns Hopkins University School of Medicine, Baltimore, USA

11:00  IV-SY6-KL02  Designing and applying synthetic extracellular matrices with multiscale property control to probe key regulators of cell function and fate
(RSC BIOMATERIALS SCIENCE LECTURE)
April M. Kloxin
University of Delaware, Newark, USA

11:30  IV-SY6-03  Antibacterial efficacy of nitric oxide releasing hydrogels on 2D and 3D human skin models
Robert C. Deller, Jenny Aveyard, Rachel L. Williams, Raechelle A. D’Sa
University of Liverpool, Liverpool, UK

11:45  IV-SY6-04  TEMPO Oxidation of Hyaluronic Acid for Stable Hydrogel Formation via Schiff Base Chemistry
Junwen Shan, Thomas C. Böck, Jörg Tessmar, Jürgen Groll
Universitätsklinikum Würzburg, Würzburg, Germany
### ORAL SESSION | WEDNESDAY, SEPTEMBER 11, 2019

**HALL 2**

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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>10:30</td>
<td>TRS-SY1-KL01</td>
<td>Additive Manufacturing of patient-specific implants – technological opportunities and limitations</td>
<td>Christoph Leyens(^{1,2}), Frank Brückner(^{1,3}), Elena López(^1), Udo Klotzbach(^1), Tim Kunze(^1)</td>
</tr>
<tr>
<td>10:30</td>
<td></td>
<td></td>
<td>(^1)Fraunhofer Institute for Material and Beam Technology IWS Dresden, Germany; (^2)TU Dresden, Dresden, Germany; (^3)Luleå University of Technology, Luleå, Sweden</td>
</tr>
<tr>
<td>11:00</td>
<td>TRS-SY1-02</td>
<td>Additive manufacturing of patient-specific implants - the company perspective</td>
<td>Frank Reinauer</td>
</tr>
<tr>
<td>11:00</td>
<td></td>
<td></td>
<td>Karl Leibinger Medizintechnik GmbH/KLS Martin Group, Mühlheim a. d. Donau, Germany</td>
</tr>
<tr>
<td>11:15</td>
<td>TRS-SY1-03</td>
<td>Additive manufacturing of patient-specific implants - the clinical perspective</td>
<td>Guido Sigron</td>
</tr>
<tr>
<td>11:15</td>
<td></td>
<td></td>
<td>Universitätsspital Basel (USB), Basel, Switzerland</td>
</tr>
<tr>
<td>11:30</td>
<td></td>
<td>Panel discussion and questions from the audience</td>
<td></td>
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### HALL 4

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30</td>
<td>IV-OS13-KL01</td>
<td>Calcium alkali orthophosphate-based bioactive bone grafting materials and 3D printed scaffolds for bone tissue engineering stimulate osteogenesis and facilitate bone repair in vivo – Translational research in craniofacial surgery and implant dentistry</td>
<td>Christine Knabe-Ducheyne(^1), Georg Berger(^2), Renate Gildenhaar(^2), Jens Günster(^2), Michael Stiller(^1)</td>
</tr>
<tr>
<td>10:30</td>
<td></td>
<td></td>
<td>(^1)Philipps-University Marburg, Marburg, Germany; (^2)Federal Institute for Materials Research and Testing, Berlin, Germany</td>
</tr>
</tbody>
</table>
In vivo evaluation of 3D printed BCP scaffolds for maxillofacial bone reconstruction in a critical-size bone defect model of rabbit

Matthias Schlund¹,², Arnaud Depeyre¹,³, Vincent Hornez⁴, Jean-Christophe Hornez⁵, Thomas Wojcik⁶, Pierre Machandise⁷, Guillaume Penel⁷, Pierre Gosset⁸, Baptiste Delaire⁸, Nicolas Blanchemain¹, Joel Ferri¹,², Feng Chai¹
¹Université de Lille, Inserm U1008, CHU Lille, Lille, France; ²CHU Lille, Lille, France; ³Centre Hospitalier Universitaire de Clermont-Ferrand, Clermont-Ferrand, France; ⁴CryoCeram-Startup, Valenciennes, France; ⁵Université polytechnique des Hauts-de-France, Valenciennes, France; ⁶Centre Oscar Lambret, Lille, France; ⁷Université de Lille, Lille, France; ⁸Hôpital Saint Vincent de Paul, Lille, France

Degradation behavior and biocompatibility of open-pored magnesium scaffolds LAE442 and La2 in vivo

Nadine Kleer¹, Stefan Julmi², Lisa Wurm¹, Franziska Feichtner¹, Christian Klose², Andrea Meyer-Lindenberg¹
¹Ludwig-Maximilians University, Munich, Germany; ²Leibniz Universität Hanover, Garbsen, Germany

In vivo analysis of bone regeneration, biocompatibility and tissue response of a volume stable barrier membrane for Guided Bone Regeneration based on a collagen membrane combined with a HF-coated magnesium mesh

Lennart Kühnel, Mike Barbeck, Ralf Smeets, Clarissa Precht, Martin Gosau, Ole Jung
University Medical Center Hamburg-Eppendorf, Hamburg, Germany

Development of bioactive three-dimensional scaffolds as platforms in cartilage tissue engineering

Nimrah Munir, Alison McDonald, Anthony Callanan
The University of Edinburgh, Edinburgh, UK

10:30 – 12:00

HALL 5

ADAPTIVE FUNCTIONAL BIOMATERIALS

Proposer | Chairs:
Manfred Maitz
Leibniz Institute of Polymer Research, Dresden, Germany
Carsten Werner
Leibniz Institute of Polymer Research Dresden, Max Bergmann Center of Biomaterials, Dresden, Germany
Living tissues are regulated by multiple molecular feedback systems. Current biomedical implants and drug delivery systems lack such interactive properties and often impair the function of these fine-tuned systems. The development of biomaterials capable of adapting their bioactive functions in faithful response to the physiological status of the recipient's organism will create unprecedented possibilities for future medical devices. This session will cover recent related approaches to adaptive functional materials targeting various different applications.

**10:30 IV-SY7-KL01**

**Sequence-Encoded Peptide Pigment Materials**

*Ayala Lampel*¹², Scott A. McPhee², James Aramini², Ye He², Rein V. Ulijn²³

¹Tel Aviv University, Tel Aviv, Israel; ²City University of New York (CUNY), New York, USA; ³Graduate Center of the City University of New York, New York, USA

**11:00 IV-SY7-KL02**

**Leverage Physiology for Bioresponsive Cancer Immunotherapy**

*Zhen Gu Qian Chen*

University of California, Los Angeles, Los Angeles, USA

**11:30 IV-SY7-03**

**Hydrogels for inflammation-responsive release of immunomodulatory bioactives**

*Tina Helmecke*, Dominik Hahn, Manfred F. Maitz, Carsten Werner

Leibniz Institute of Polymer Research Dresden, Dresden, Germany

**11:45 IV-SY7-04**

**Designing stimuli-sensitive hydrogels for localized therapeutic delivery**

*Gianluca Ciardelli*, Rossella Laurano, Alessandro Torchio, Monica Boffito

Politecnico di Torino, Turin, Italy

10:30 – 12:00

**CONFERENCE ROOM 4+5**

**IV-OS14**

**CELL MATERIAL INTERACTIONS 1**

**10:30 IV-OS14-01**

**The Effect of Nanoscale Surface Electrical Properties of Biodegradable PEDOT-co-PDLLA Conducting Polymers on Protein Adhesion Investigated by Atomic Force Microscopy**

*Aruã C. Da Silva*¹, Michael J. Higgins², Susana I. Córdoba de Torresi¹

¹Universidade de São Paulo, São Paulo, Brazil; ²University of Wollongong, Wollongong, Australia
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
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<tbody>
<tr>
<td>10:45</td>
<td>IV-OS14-02</td>
<td>Cell adhesion force activation on nano/micro-topographical substrates</td>
<td>Tamaki Naganuma</td>
<td>National Institute for Materials Science, Ibaraki, Japan</td>
</tr>
<tr>
<td>11:00</td>
<td>IV-OS14-03</td>
<td>Molecular weight influence on cell internalization kinetics of amphiphilic biodegradable nanoparticles decorated with hyaluronic acid</td>
<td>Assunta Borzacchiello¹, Francesca Della Sala¹,², Teresa Silvestri², Laura Mayo², Marco Biondi², Luigi Ambrosio¹</td>
<td>¹National Research Council of Italy, Napoli, Italy; ²University of Naples, Napoli, Italy; ³University of Campania, Caserta, Italy</td>
</tr>
<tr>
<td>11:15</td>
<td>IV-OS14-04</td>
<td>3D linear stiffness gradient hydrogel to study the effect of cell volume expansion in stem cell mechanotransduction and differentiation</td>
<td>Yu Suk Choi¹, Luke Major¹, Andrew Holle², Jennifer Young², Joachim Spatz²</td>
<td>¹University of Western Australia, Perth, Australia; ²Max Planck Institute for Medical Research, Heidelberg, Germany</td>
</tr>
<tr>
<td>11:30</td>
<td>IV-OS14-05</td>
<td>Fe/electrospun PCL hybrid structure as an innovative coronary stent</td>
<td>Francesca Salmistraro¹, Valeria Perugini², Nicola Contessi Negrini¹,², Matteo Santin², Silvia Farè¹,³</td>
<td>¹Politecnico di Milano, Milan, Italy; ²University of Brighton, Brighton, UK; ³INSTM, Milan, Italy</td>
</tr>
<tr>
<td>11:45</td>
<td>IV-OS14-RF06</td>
<td>3D bioplotting of neonatal porcine islets - towards complex co-culture systems</td>
<td>Sarah Duin¹, Susann Lehmann¹, Christiane Paßkönig¹, Elisabeth Kemter², Eckhard Wolf², Anja Lode¹, Michael Gelinsky¹, Barbara Ludwig¹</td>
<td>¹University Hospital Carl Gustav Carus of TU Dresden, Dresden, Germany; ²Ludwig-Maximilians University Munich, Munich, Germany</td>
</tr>
<tr>
<td>11:50</td>
<td>IV-OS14-RF07</td>
<td>Synthesis, characterization and antibacterial activity of alginate nanoparticles containing nitric oxide donor and silver nanoparticles</td>
<td>Amedea B. Seabra¹, Alessandro L. Urzedo¹, Marcella C. Gonçalves², Mônica H. M. Nascimento¹, Gerson Nakazato², Christiane B. Lombello¹</td>
<td>¹Universidade Federal do ABC, Santo André, Brazil; ²Universidade Estadual de Londrina, Londrina, Brazil</td>
</tr>
</tbody>
</table>
The physical properties of collagen biomaterials determine their degradation kinetics and angiogenesis within the biomaterial

Carlos Herrera-Vizcaino, Sarah Al-Maawi, Joseph Choukroun, Robert Sader, Shahram Ghanaati
University Hospital Frankfurt Goethe University, Frankfurt am Main, Germany
Titania nanotube spacing influences in vitro cellular response

Madalina G. Necula¹, Anca Mazare², Selda Ozkan², Raluca Ion¹, Patrik Schmuki², Anisoara Cimpean¹

¹University of Bucharest, Bucharest, Romania; ²University of Erlangen-Nuremberg, Erlangen, Germany

Hydrogels are the most common materials used as bioinks in bioprinting and biofabrication. Recent advances in tissue engineering have shown that more sophisticated, responsive and dynamic materials are needed to mimic the cellular environment and create engineered tissues. In this symposium, novel strategies will be presented for the synthesis of dynamic hydrogels as bioinks. Both invited keynote speakers, Sarah Heilshorn and Matthew Baker, are leading experts in the field of biomaterials applied to tissue engineering. This symposium is supported by the International Society for Biofabrication (ISBF) and aims to bring together people from the fields of bioprinting, tissue engineering and materials science.
14:15 V-SY8-KL01 Adaptable Hydrogels as Custom Bioinks
Sarah Heilshorn
Stanford University, Stanford, USA

14:45 V-SY8-KL02 From static to dynamically crosslinked bioinks for 3D printing
Matt B. Baker
Maastricht University, Maastricht, Netherlands

15:15 V-SY8-03 Multiscale and cell-preserving 3D bioprinting of human cells by nozzle-free acoustic droplet ejection
Stefan Jentsch, Horst Fischer
RWTH Aachen University Hospital, Aachen, Germany

15:30 V-SY8-04 Elastin-Like Recombinamers as a new generation of bioinks for 3D bioprinting
Soraya Salinas-Fernández, Fernando González-Pérez, Jose Carlos Rodríguez-Cabello, Matilde Alonso, Mercedes Santos
University of Valladolid, Valladolid, Spain

14:15 – 15:45 HALL 2
TRS-SY2 TRANSLATIONAL RESEARCH SYMPOSIUM (TRS) 2 IMPACT OF THE NEW EUROPEAN MEDICAL DEVICE REGULATION

14:15 TRS-SY2-01 CE marking: the changing face of industry standards explained …and it does matter to you!
Yves Bayon
Distinguished Scientist & Medtronic Technical Fellow for Medtronic, Trévoux, France

14:35 TRS-SY2-02 Impact of the New EU Medical Devices Regulation (MDR) on Industry and Innovation
Oliver Bisazza
MedTech Europe, Brussels, Belgium

14:55 TRS-SY2-03 Impact of the new European MDR on SME
Christine Böhm
curasan AG, Kleinostheim, Germany

15:15 Panel discussion and questions from the audience
### ORAL SESSION | WEDNESDAY, SEPTEMBER 11, 2019

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<th>Institution(s)</th>
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<tbody>
<tr>
<td>14:15</td>
<td>V-OS16</td>
<td>BIOACTIVE MATERIALS FOR REGENERATION OF BONE 2</td>
<td>Chengtie Wu</td>
<td>Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China</td>
</tr>
<tr>
<td>14:15</td>
<td>V-OS16-KL01</td>
<td>3D-Printing of Bioactive Materials for Bone Tissue Engineering</td>
<td>Morgan Lowther, Liam Grover, Sophie Cox</td>
<td>University of Birmingham, Birmingham, UK</td>
</tr>
<tr>
<td>14:45</td>
<td>V-OS16-02</td>
<td>Formulation of an Antimicrobial Silver-doped Magnesium Oxychloride Cement</td>
<td>Pichaporn Sutthavas, Pamela Habibović, Sabine van Rijt</td>
<td>Maastricht University, Maastricht, Netherlands</td>
</tr>
<tr>
<td>15:00</td>
<td>V-OS16-03</td>
<td>Creation of inorganic bioactive nanoparticle composites for bone regenerative applications</td>
<td>Yassine Maazouz, Iris Rentsch, Bin Lu, Bastien Le Gars Santoni, Marc Bohner</td>
<td>RMS Foundation, Bettlach, Switzerland</td>
</tr>
<tr>
<td>15:15</td>
<td>V-OS16-04</td>
<td>Local changes induced by β-Tricalcium phosphate granules immersed in SBF: confinement matters</td>
<td>Xiyu Li, Wei Li</td>
<td>Sichuan University, Chengdu, China</td>
</tr>
<tr>
<td>14:15</td>
<td>V-SY9</td>
<td>EX VIVO MODELS TO STUDY NEURAL PLASTICITY, REGENERATION AND INTERACTIONS WITH ELECTRONIC INTERFACES</td>
<td>Sahba Mobini</td>
<td>Institute of Micro and Nanotechnology (CSIC) / Centro de Biología Molecular Severo Ochoa (CSIC), Tres Cantos, Madrid, Spain</td>
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<td></td>
<td>Maria Ujue Gonzalez</td>
<td>Institute of Micro and Nanotechnology (CSIC), Tres Cantos, Madrid, Spain</td>
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</table>
Ex vivo/in vitro models are in vitro platforms, consisting of relevant cells, microenvironment (biomaterial/scaffold) and stimuli (biochemical/electrical/mechanical/magnetic), which are designed for testing drugs and/or treatments in well-defined conditions. The ultimate goal of ex vivo/in vitro models is to provide reproducible, scalable and physiologically relevant testing environment facilitating translation to clinical application.

In this symposium, we will focus on models for mimicking CNS and/or PNS healthy and diseased tissues. In addition, we will cover the emerging field of neural interfaces and their integration with in vitro models for both stimulation and recording neural activity.

14:15 V-SY9-KL01 Neurogenic Tissue Engineering: Perspectives, Challenges, and 3D In Vitro Models
Paul A. Wieringa
Maastricht University, Maastricht, Netherlands

14:45 V-SY9-KL02 Engineering Neural Interfaces in the Central and Peripheral Nervous Systems
Josef Goding, Rylie Green
Imperial College London, London, UK

15:15 V-SY9-03 Highly aligned collagen-based scaffolds with controllable stiffness for neural regeneration
Robert C. Murphy, Daniel Bax, Ruth E. Cameron, Serena M. Best
University of Cambridge, Cambridge, UK

15:30 V-SY9-04 Nanoclay Doped Printable Conductive Hydrogel
Teuku F. Akbar$^{1,2}$, Christoph Tondera$^{1,2}$, Alvin K. Thomas$^1$, Carsten Werner$^2$, Yixin Zhang$^1$, Volker Busskamp$^1$, Ivan R. Minev$^1$
$^1$TU Dresden, Dresden, Germany; $^2$Leibniz Institute of Polymer Research Dresden (IPF), Dresden, Germany

14:15 – 15:45 CONFERENCE ROOM 4+5
V-OS17 IMMUNOMODULATORY BIOMATERIALS

14:15 V-OS17-01 In Vitro Granuloma Formation Model for Immunomodulatory Biomaterial Development and Assessment
Nihal E. Vrana$^{1,2}$, Celine B. Muller$^{1,2}$, Cynthia Calligaro$^2$, Philippe Lavalle$^2$
$^1$Protip Medical, Strasbourg, France; $^2$INSERM, Strasbourg, France
<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>14:30</td>
<td>V-OS17-02</td>
<td>Harnessing chitosan and poly(y-glutamic acid) nanoparticles to reprogram the breast tumor microenvironment</td>
<td>Flávia Castro&lt;sup&gt;1,2,3&lt;/sup&gt;, Catarina L. Pereira&lt;sup&gt;1,2,3&lt;/sup&gt;, Marta L. Pinto&lt;sup&gt;1,2&lt;/sup&gt;, Karine Serre&lt;sup&gt;4&lt;/sup&gt;, Mário A. Barbosa&lt;sup&gt;1,2,3&lt;/sup&gt;, Fátima Gartner&lt;sup&gt;1,3&lt;/sup&gt;, Raquel M. Gonçalves&lt;sup&gt;1,2,3&lt;/sup&gt;, Olivier de Wever&lt;sup&gt;5,6&lt;/sup&gt;, Maria J. Oliveira&lt;sup&gt;1,2,7&lt;/sup&gt;</td>
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<td>iIS, Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal;</td>
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<td>INEB, Instituto de Engenharia Biomédica, Universidade do Porto, Portugal;</td>
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<td>ICBAS, Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Portugal;</td>
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<td>IMM, Instituto de Medicina Molecular João Lobo Antunes, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal;</td>
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<td>LECR, Laboratory of Experimental Cancer Research, Gent, Belgium;</td>
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<td>CRIG, Cancer Research Institute Gent, Ghent University, Gent, Belgium;</td>
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<td>Departamento de Patologia e Oncologia, Faculdade de Medicina, Universidade do Porto, Porto, Portugal</td>
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<td>14:45</td>
<td>V-OS17-03</td>
<td>The NLRP3 inflammasome response in macrophages is impaired by 3D chitosan scaffolds</td>
<td>Daniela P. Vasconcelos&lt;sup&gt;1,2,3&lt;/sup&gt;, Carlos Torre-Minguela&lt;sup&gt;5&lt;/sup&gt;, Ana I. Gomez&lt;sup&gt;5&lt;/sup&gt;, Artur P. Águas&lt;sup&gt;3,4&lt;/sup&gt;, Mário A. Barbosa&lt;sup&gt;1,2,3&lt;/sup&gt;, Pablo Pelegrín&lt;sup&gt;5&lt;/sup&gt;, Judite N. Barbosa&lt;sup&gt;1,2,3&lt;/sup&gt;</td>
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<td>iIS - Instituto de Inovação e Investigação em Saúde, Porto, Portugal;</td>
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<td>UMIB - Unit for Multidisciplinary Biomedical Research, Porto, Portugal;</td>
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<td>Biomedical Research Institute of Murcia (IMIB-Arrixaca), Hospital Clínico Universitario Virgen de la Arrixaca, Murcia, Spain</td>
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<td>15:00</td>
<td>V-OS17-04</td>
<td>3D collagen network composition triggers immunological imprinting of human monocyte-derived macrophages</td>
<td>Colin Logie&lt;sup&gt;1&lt;/sup&gt;, Tom van Schaajik&lt;sup&gt;1&lt;/sup&gt;, Tilo Pompe&lt;sup&gt;2&lt;/sup&gt;, Katja Franke&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>Radboud University, Nijmegen, Netherlands;</td>
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<td>Leipzig University, Leipzig, Germany</td>
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<td>15:15</td>
<td>V-OS17-05</td>
<td>Understanding immune responses to biomaterials: identifying the major players using an in vitro model of the human immune system</td>
<td>Florian Billing&lt;sup&gt;1&lt;/sup&gt;, Meike Jakobi&lt;sup&gt;1&lt;/sup&gt;, Matthias Becker&lt;sup&gt;1&lt;/sup&gt;, Dagmar Martin&lt;sup&gt;1&lt;/sup&gt;, Antje Biesemeier&lt;sup&gt;2&lt;/sup&gt;, Sören Segen&lt;sup&gt;1&lt;/sup&gt;, Thomas Joos&lt;sup&gt;1&lt;/sup&gt;, Ulrich Rothbauer&lt;sup&gt;3&lt;/sup&gt;, Claus Burkhardt&lt;sup&gt;1&lt;/sup&gt;, Hanna Hartmann&lt;sup&gt;1&lt;/sup&gt;, Nicole Schneiderhan-Marra&lt;sup&gt;1&lt;/sup&gt;, Christopher Shipp&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>Natural and Medical Sciences Institute (NMI) at the University of Tübingen, Reutlingen, Germany;</td>
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<td>University Hospital Tübingen, Tübingen, Germany;</td>
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<td>University of Tübingen, Tübingen, Germany</td>
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<td>15:30</td>
<td>V-OS17-RF06</td>
<td>Myofibroblast Behavior Controlled by Macrophages in a 3D <em>in vitro</em> Coculture Model</td>
<td>Franziska Ullm, Katja Franke, Tilo Pompe</td>
</tr>
<tr>
<td>15:35</td>
<td>V-OS17-RF07</td>
<td>Dose-depending effect of therapeutic active ions released from borate bioactive glasses on immune cells</td>
<td>Katharina Schuhladen¹, Lena Stich¹, Xiaoju Wang², Leena Hupa², Alexander Steinkasserer¹, Aldo R. Boccaccini¹, Elisabeth Zinser¹</td>
</tr>
<tr>
<td>15:40</td>
<td>V-OS17-RF08</td>
<td>Long term <em>in vivo</em> biocompatibility study of modified Ti₆Al₇Nb in the aspect of local effects after implantation</td>
<td>Barbara Zawidlak-Węgrzyńska¹, Małgorzata Gonsior¹, Karolina Janiczak¹, Danuta Gonsior¹, Piotr Ścigała¹, Roman Kustosz¹, Tadeusz Wierzychò¹, Michał Tarnowski², Romuald Wojnicz³, Edyta Raichman-Warmusz³</td>
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14:15 – 15:45

CONFERENCE ROOM 2+3

V-OS18

PATTERNING AND COATINGS 2

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<th>Title</th>
<th>Authors</th>
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<tr>
<td>14:15</td>
<td>V-OS18-01</td>
<td>Immune suppressive functionality of polyelectrolyte multilayer coatings</td>
<td>Alexander Rudt¹, Xin Xiong², Rumen Krastev¹,²</td>
<td>Reutlingen University, Reutlingen, Germany; NMI Natural and Medical Science Institute at the University of Tübingen, Tübingen, Germany</td>
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<tr>
<td>14:30</td>
<td>V-OS18-02</td>
<td>Bioactive polymer grafting on Titanium nanotubes: Enhancing cell growth and inhibiting bacteria adhesion</td>
<td>André Rangel¹, Céline Falentin-Daudré¹, Carlos E. Vergani², Véronique Migonney¹, Ana Paula R. Alves Claro³</td>
<td>Université Paris 13, Villelaineuse, France; UNESP – São Paulo State University, Araraquara, Brazil; UNESP – São Paulo State University, Guaratingueta, Brazil</td>
</tr>
</tbody>
</table>
14:45 V-OS18-03  Antibacterial and bioactive coatings on titanium alloy implant surfaces
Anke Bernstein¹, Hermann O. Mayr¹, Rainer Gadow², Michael Seidenstücker¹, Sophie Burtscher¹, Philip Przybilla¹, Karola Müller¹, Andreas Killinger²
¹Medical Center - Albert-Ludwigs-University of Freiburg, Faculty of Medicine, Freiburg, Germany; ²University of Stuttgart, Stuttgart, Germany

15:00 V-OS18-04  A Novel Growth Factor Delivery Polymer-Coating System to Enhance the Osseointegration of Bioinert Implants
Noura M. Alotaibi, Kurt B. Naudi, Matthew J. Dalby, Manuel Salmerón-Sánchez, Ashraf F. Ayoub
University of Glasgow, Glasgow, UK

15:15 V-OS18-05  Multiscale 3D printed nanopatterned scaffolds
Mahdiyeh Nouri-Goushki, Michelle Minneboo, Urs Stauffer, Lidy E. Fratila-Apachitei, Amir A. Zaadpoor
Delft University of Technology, Delft, Netherlands

15:30 V-OS18-06  Natural antibacterial coating on dental implants and/or abutments for the prevention and treatment of peri-implantitis
Zeqian Xu¹, Stefanie Krajewski¹, Xingting Han¹, Ping Li¹, Evi Kimmerle-Müller¹, Ernst Schweizer¹, Tobias Weindl², Jürgen Geis-Gerstorfer¹, Lutz Scheideler¹, Hans Peter Wendel¹, Frank Rupp¹
¹Tübingen University, Tübingen, Germany; ²Aimecs GmbH, Pfarrkirchen, Germany

15:45 – 16:15  HALL 1 | EXHIBITION AREA
COFFEE BREAK

16:15 – 17:45  HALL 3
VI-SY10  ISBF SY: ADVANCED BIOFABRICATION STRATEGIES AND APPLICATIONS

Proposer | Chairs:
Jos Malda
University Medical Center Utrecht, Utrecht, Netherlands
Miguel Castilho
University Medical Center Utrecht, Utrecht, Netherlands
Biofabrication strategies in regenerative medicine have gained increasing attention due to their potential to engineer 3D tissue substitutes, capable of replacing lost and damaged tissues. During the last two decades, multiple biofabrication technologies together with cell-based therapies have been subjects of thorough investigation. This symposium will focus on new strategies for biofabrication and novel combinations of these, with special attention for recent developments in the field of 3D bioprinting for musculoskeletal tissue engineering. Both invited speakers Danny Kelly and Liliang Ouyang, have developed pioneering work in 3D bioprinting and in engineering bioactive tissue-like constructs. This symposium aims to strengthen the links between the biofabrication and biomaterials communities, as well as to reach out to new research fields to the already incredible interdisciplinary field of Biofabrication.

16:15 VI-SY10-KL01 3D Bioprinting for Bone and Joint Regeneration
Daniel J. Kelly
Trinity College Dublin, Dublin, Ireland

16:45 VI-SY10-KL02 3D Bioprinting of Hydrogels: towards Generalization and Simplicity
Liliang Ouyang
Imperial College London, London, UK

17:15 VI-SY10-03 3D Printed Bone Lego: Preliminary Design, Mechanical and Biological Characterization
Adel F. Badria¹, Abdelrahman Hussein², Emre Ergene¹, Orcun Güvener¹, Cagdas Oto¹, Byungki Kim², Pinar Yilgor Huri¹
¹Ankara University, Ankara, Turkey; ²Korea University of Technology and Education, Chungcheongnam-do, Republic of Korea

17:30 VI-SY10-04 4D Biofabrication by Shape-Morphing Polymers
Leonid Ionov
University of Bayreuth, Bayreuth, Germany
KOREAN-EUROPEAN SYMPOSIUM: ADVANCES IN MUSCULOSKELETAL REGENERATION

Proposer:
Korean Society for Biomaterials (KSBM)

Chairs:
Ki-dong Park
Department of Molecular Science and Technology, Applied Chemistry and Biological Eng, Biomed Eng, Ajou University, Suwon, Republic of Korea

Michael Gelinsky
University Hospital and Faculty of Medicine of TU Dresden, Germany

Korean Society for Biomaterials (KSBM) is the hosting organization for WBC 2024 that will be held in Daegu, South Korea. KSBM is striving to promote the friendship and collaboration with colleagues all over the world for the success of WBC 2024. In this spirit, KSBM is having joint symposium with EU partners during annual ESB meetings starting from 2017 meeting in Athens. In ESB 2019, under the theme title “Advances in musculoskeletal regeneration”, Prof. Gun-Il Im from Dongguk University and Prof. Swieszkowski from Warsaw University of Technology will deliver keynote speeches representing KSBM and ESB respectively.

16:15 VI-SY16-KL01 Development of adipose stem cell therapeutics with enhanced angiogenic and osteogenic potential to treat bone defects and osteonecrosis of the femoral head
Gun-Il Im
Dongguk University, Goyang, Republic of Korea

16:45 VI-SY16-KL02 Recent advances and challenges in 3D biofabrication of bone and soft tissue
Wojciech Swieszkowski
Warsaw University of Technology, Warsaw, Poland

17:15 VI-SY16-03 Restoring impaired bone healing in diabetic patients using HIF-mimicking materials
Azadeh Rezaei, Kaveh Shakib, Gavin Jell
University College London, London, UK

17:45 VI-SY16-04 Elastin-like polypeptide as a neural progenitor cell carrier for treating Parkinson’s disease
Won Bae Jeon, Jung-Hee Kim, Kyeong-Min Lee
DGIST, Daegu, Republic of Korea
Calcium phosphate materials are recognized to display direct bone bonding properties. However, there is a still controversy whether they show osteoinductive property, i.e., the capacity of ectopic bone formation. It is of interest to learn about what is the factor leading to acquiring such an active property not only in orthotropic bone formation but also in ectopic bone formation from the view of the materials science and biological responses. The aim of this symposium therefore is to discuss the recent progress of osteoinductive/osteoconductive and specific cellular activation capacities related to the biodegradation, ionic dissolution, material volume, architecture, composition and crystal phase in calcium phosphates including OCP, β-TCP and HA ceramic materials.

Osteogenic and angiogenic capabilities of octacalcium phosphate involving ionic dissolution through its chemical property

Osamu Suzuki¹, Takahisa Aanada¹,², Yukari Shiwaku¹, Ryo Hamai¹
¹Tohoku University Graduate School of Dentistry, Sendai, Japan; ²Kyushu University, Fukuoka, Japan

Material-induced heterotopic ossification

Marc Bohner
RMS Foundation, Bettlach, Switzerland

Setting mechanism of an apatite forming α tricalcium phosphate (α-TCP) cement modified by sodium phytate (IP6) addition for better injectability

Jan Weichhold¹, Friedlinde Götz-Neunhoeffer², Katrin Hurle², Uwe Gbureck¹
¹University Hospital of Würzburg, Würzburg, Germany; ²Friedrich-Alexander University of Erlangen- Nuremberg, Erlangen, Germany
Calcium/Strontium Phosphates for Treatment of Osteoporotic Imbalance of Bone Cells

Benjamin Kruppke¹, Alena S. Wagner², Seemun Ray², Marcus Rohnke², Volker Alt², Sabine Wenisch², Thomas Hanke¹
¹TU Dresden, Dresden, Germany; ²Justus-Liebig-University Giessen, Giessen, Germany

Chemical and enzymatic tailoring of alginate for biomedical applications

Berit Løkensgard Strand
NOBIPOL, Trondheim, Norway; NTNU Norwegian University of Science and Technology, Trondheim, Norway

Modified-alginate microfibers as instructive matrix for guiding tissue regeneration

Chiara E. Campiglio¹,²,³, Silvia J. Bidarra¹,⁴, Lorenza Draghi²,³, Cristina C. Barrias¹,⁴,⁶
¹i3S - Instituto de Inovação e Investigação em Saúde, Porto, Portugal; ²Politecnico di Milano, Milan, Italy; ³INSTM – National Interuniversity Consortium of Materials Science and Technology, Milan, Italy; ⁴INEB – Instituto de Engenharia Biomédica, Universidade do Porto, Porto, Portugal; ⁵ICBAS – Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Porto, Portugal

Corn silk extract and hyaluronic acid based antibacterial thermosensitive hydrogels: biosynthesis, characterization and wound healing potential

Assunta Borzacchiello¹, Pooyan Makhvandi¹,², Francesca Della Sala¹,², Ghareib W. Ali³, Wafa I. Abdel-Fattah³, Luigi Ambrosio¹
¹National Research Council of Italy, Napoli, Italy; ²University of Naples Federico II, Napoli, Italy; ³National Research Centre of Cairo, Cairo, Egypt; ⁴University of Study of Campania, Caserta, Italy

Fabrication of tubular structure to mimic the osteon structure

Mairon Trujillo Miranda, Juan Uribe, Indra Apsitse, Elise DeSimone, Leonid Ionov, Sahar Salehi
University of Bayreuth, Bayreuth, Germany

Sophisticated cell microfactories co-encapsulating osteoblastic and adipose stem cells for bone regeneration

Sara S. Nadine, Clara R. Correia, Sónia G. Patrício, João F. Mano
University of Aveiro, Aveiro, Portugal
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<tr>
<td>16:15</td>
<td>VI-OS21</td>
<td>Chitosan/Gelatin scaffolds loaded with dental stem cells under dynamic conditions promote fibrochondrogenic differentiation</td>
<td>Maria Bousnaki³, Athina Bakopoulou³, Emmanouil Vereroudakis², Anthie Georgopoulou¹, Aristidis Kritis³, Maria Chatzinikolaidou¹, Petros Koidis³. ¹University of Crete, Heraklion, Greece; ²Foundation for Research and Technology Hellas (FORTH), Heraklion, Greece; ³Aristotle University of Thessaloniki, Thessaloniki, Greece.</td>
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<td>16:30</td>
<td>VI-OS21</td>
<td>Curvature-dependent epithelial tissue migration and orientation</td>
<td>Pablo Rougerie², Laurent Pieuchot¹, Rafaela Silva dos Santos², Julie Marteau³, Maxence Bigerelle³, Pierre-François Chauvy⁴, Marcos Farina², Karine Anselme¹. ¹CNRS, Mulhouse, France; ²UFRJ, Rio de Janeiro, Brazil; ³UPHF, Valenciennes, France; ⁴Micropat S.A., Lausanne, Switzerland.</td>
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<td>17:00</td>
<td>VI-OS21</td>
<td>Study of ECM proteins adsorption on poly(glycerol sebacate) surfaces cured at different temperatures for HUVEC adhesion and migration enhancement</td>
<td>Rubén Martín-Cabezuelo¹, Fernando Espinosa-Asensio¹, Maria Herrero-Herrero¹, Jose C. Rodríguez-Hernández¹, Ana Vallés-Lluch¹,². ¹Universitat Politècnica de València, Valencia, Spain; ²Biomedical Research Networking Centre in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Valencia, Spain.</td>
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<td>17:15</td>
<td>VI-OS21</td>
<td>Volume-by-volume bioprinting of chondrocytes-alginate bioinks in high temperature thermoplastic scaffolds for cartilage regeneration</td>
<td>Jose M. Baena. REGEMAT 3D, Granada, Spain.</td>
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</table>
A cell-instructive microgel-in-gel material platform to guide the faithful in vitro reconstitution of tissues

Petra B. Welzel¹, Dejan Husman¹², Steffen Vogler³, Laura J. Bray⁴, Nicole Träber⁵, Jens Friedrichs¹, Vincent Körber¹, Mikhail V. Tsurkan¹, Uwe Freudenberg¹, Julian Thiele¹, Carsten Werner¹²
¹Leibniz-Institut für Polymerforschung Dresden e.V. (IPF), Max Bergmann Center of Biomaterials Dresden (MBC), Dresden, Germany; ²TU Dresden, Dresden, Germany; ³Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE), Dresden, Germany; ⁴Queensland University of Technology (QUT), Brisbane, QLD, Australia

Morphological control of electrospun ECM-PCL scaffolds for liver tissue engineering

Thomas S. R. Bate, Anthony Callanan
University of Edinburgh, Edinburgh, UK

Quercitrin functionalized nanostructured titanium surfaces for the improvement of cardiovascular stents

Maria Antonia Llopis-Grimalt¹², Victor Alcolea-Rodriguez¹, Maria Antonia Forteza-Genestra¹², Joana Maria Ramis¹², Marta Monjo¹²
¹University of Balearic Islands, Palma, Spain; ²Balearic Islands Health Research Institute (IdISBa), Palma, Spain

CONFERECE ROOM 2+3

PEEK/silicon nitride composites for biomedical implant applications

Francesco Boschetto, Giuseppe Pezzotti, Elia Marin, Wuenliang Zhu
Kyoto University, Kyoto, Japan

Prevention of encrustation and biofilm formation on ureteral catheters - which surface parameters are directive for the development of novel catheter materials?

Henrike Rebl¹, Jürgen Renner², Bernd Zacharias³, Wolfgang Kram¹, Armin Springer¹, Jürgen Weisser¹, Nele Fritsch¹, Matthias Schnabelrauch², Harald Hansmann², Oliver Hakenberg¹, Marion Wieniecke³, Barbara Nebe¹
¹Rostock University Medical Center, Rostock, Germany; ²Institute for Polymer Technologies, Wismar, Germany; ³Materion GmbH, Wismar, Germany; ⁴INNOVENT e.V., Jena, Germany
| Time  | Session   | Title                                                                 | Authors                                                                                       | Affiliations                                                                 |
|-------|-----------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 16:45 | VI-OS22-03| Design and optimization of KHYG-1 cell membrane coated spheres to develop an artificial Natural Killer (NK) cell mimics | Vaishali Chugh, Vaibhav Patil, Vijaya K. Kanala, Eva Szegezdi, Abhay Pandit                      | National University of Ireland, Galway, Ireland                                      |
| 17:00 | VI-OS22-04| Selective Laser Sintering (SLS) of calcium phosphate minerals on hard tissues | Antonios Anastasiou, Simon Strafford, Andrew Brown, Animesh Jha                                | University of Leeds, Leeds, UK                                                       |
| 17:15 | VI-OS22-05| Characterization of Tissue Transglutaminase as potential Biomarker for Tissue Response towards Biomaterials | Sandra Hauser¹, Robert Wodtke¹, Christoph Tondera², Johanna Wodtke¹, Reik Löser¹,², Jens Pietzsch¹,² | ¹Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; ²TU Dresden, Dresden, Germany |
| 17:30 | VI-OS22-06| High-throughput screening to elucidate biomaterial-induced fibrosis   | Torben A. B. van der Boon                                                                  | University of Groningen/University Medical Center Groningen, Groningen, Netherlands   |

19:30

YSF NIGHT OUT
see page 244, Social Programme
PL3

PL3

Advances in biology change the way we think about bioactive scaffolds
Lour Serrano De La Pena, Joachim Kohn
New Jersey Center for Biomaterials at Rutgers University, Piscataway, USA

KDG AW

KLAAS DE GROOT AWARD

Bioinspired strategies for bone regeneration: a teamwork
Maria-Pau Ginebra
Universitat Politècnica de Catalunya (UPC), Barcelona, Spain; Barcelona Research Center in Multiscale Science and Engineering, UPC, Barcelona, Spain

ICF-BSE SESSION

ICF-BSE DEBATE SESSION: A PERSPECTIVE OF BIOMATERIALS SCIENCE IN THE YEAR 2050

The “Special Fellows Session” is organized by the International College of Fellows of Biomaterials Science and Engineering (ICF-BSE). Fellows of ICF-BSE are elected in a worldwide competition every four years and are among the most accomplished in the field of biomaterials. Special Fellows Sessions explore important and sometimes controversial topics and are designed to be interactive: the audience will have an opportunity to participate and will vote on the issues.
This year a group of four fellows will offer different visions for the future of biomaterials science in the coming decades. The speakers will explore the current status of biomaterials science, identify important trends, and speculate how these trends may change the path of biomaterials research. The four presentations will be followed by an opportunity for the audience to participate, ask questions, and offer their own thoughts. The audience will then be asked to vote which of the four different perspectives is most likely to influence the future path of biomaterials research.

Moderator and Chair:
Joachim Kohn, FBSE

Debaters:
Luigi Ambrosio, F.A.I.M.B.E., F.B.S.E.
National Research Council of Italy, Director of Chemical Science & Materials Technology Department, Rome, Italy

John Hunt, FBSE
University of Liverpool, The Institute of Ageing and Chronic Disease, Liverpool, UK

Malgorzata Lewandowska-Szumiel, FBSE
Medical University of Warsaw, Head of the Laboratory for Cell Research and Application, Warsaw, Poland

Paolo Netti, FBSE
University of Naples Federico II | UNINA, Department of Chemical, Materials and Industrial Production Engineering, Naples, Italy

10:30 – 12:00
HALL 2

VII-OS23
MULTIFUNCTIONAL POLYMERIC BIOMATERIALS

10:30  VII-OS23-KL01  Multifunctional polymer matrices to recapitulate key features of hematopoietic microenvironments in vitro
Marina Prewitz¹, Eike Müller¹, David Gvaramia¹, Laura J. Bray¹, Laura J. Bray¹, Tilo Pompe¹,³, Martin Bornhäuser², Carsten Werner¹,²
¹Leibniz Institute of Polymer Research Dresden, Dresden, Germany; ²TU Dresden, Dresden, Germany; ³University of Leipzig, Leipzig, Germany; ⁴Queensland University of Technology, Brisbane, Australia

11:00  VII-OS23-02  Glycosaminoglycan hydrogels promote chronic wound healing
Uwe Freudenberg¹, Passant Atallah¹, Lucas Schirmer¹, Carsten Werner¹,²
¹Leibniz Institute of Polymer Research Dresden, Dresden, Germany; ²TU Dresden, Dresden, Germany
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<tr>
<td>11:15</td>
<td>VII-OS23-03</td>
<td>Supramolecular Functionalization and Tuning of Peptide Modified Bioorthogonally Crosslinked Hyaluronan-Poly(ethylene glycol) Hydrogels</td>
<td>Christopher Aronsson, Michael Jury, Jonas Christoffersson, Robert Selegård, Daniel Aili</td>
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<td>Linköping University, Linköping, Sweden</td>
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<td>11:30</td>
<td>VII-OS23-04</td>
<td>Cytocompatible, injectable and electroconductive soft adhesives with hybrid covalent/non-covalent dynamic network</td>
<td>Yong Xu¹, Panagiotis A Patsis¹, Sandra Hauser², Dagmar Voigt¹, Rebecca Rothe¹², Markus Günther¹, Meiying Cui², Xuegeng Yang², Robert Wieduwild¹, Kerstin Eckert², Christoph Neinhuis¹, Teuku F. Akbar¹³, Ivan R Minev¹, Jens Pietzsch¹², Yixin Zhang¹</td>
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<td>¹TU Dresden, Dresden, Germany; ²Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Dresden, Germany; ³Leibniz Institute of Polymer Research Dresden (IPF), Dresden, Germany</td>
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<td>University of Pisa, Pisa, Italy</td>
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10:30 – 12:00

HALL 4

VII-OS24

CALCIUM PHOSPHATES 2

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<td>10:30</td>
<td>VII-OS24-01</td>
<td>Interaction of Femtosecond Pulsed Lasers with Fe²⁺/Fe³⁺ Doped Calcium Phosphates for Bone Tissue Engineering</td>
<td>Emaan Alsubhe¹, Antonios Anastasiou¹, El Mostafa Raif², Chiranjeevi Maddi¹, Animesh Jha¹</td>
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<td></td>
<td>¹School of Chemical and Process Engineering, Leeds, UK; ²School of Dentistry, Leeds, UK</td>
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<td>10:45</td>
<td>VII-OS24-02</td>
<td>Rheology, microstructure and mechanical strength of an injectable, macroporous calcium phosphate cement reinforced with modified polycaprolactone fibres</td>
<td>Edgar B. Montufar¹, Kristýna Valová¹, Matěj Dzurov¹, Karel Slámečka¹, Aida Mata¹, Jana Brtníková¹, Michala Rampichová², Matěj Buzgo², Lucy Vojtova¹</td>
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<td>¹Brno University of Technology, Brno, Czech Republic; ²Academy of Sciences of the Czech Republic, Praha, Czech Republic</td>
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11:00 VII-OS24-03 Effect of CaP Phase on Bone Growth into a Novel Porous Scaffold Based on a Marine Sponge Template
Susan A. Clarke¹, Nicola McClelland¹, Caroline Newe¹, Alex Lennon¹, Eoin Cunningham¹, Fraser J. Buchanan¹, Nicholas J. Dunne²
¹Queen’s University Belfast, Belfast, UK; ²Dublin City University, Dublin, Ireland

11:15 VII-OS24-04 Engineered β-tricalcium-phosphate (β-TCP) scaffolds with a tailored interconnecting channel structure as a mimetic niche for the growth of metastatic neuroblastoma cells
Sanja Aveic¹, Roswitha Davtalab¹, Michael Vogt¹, Michael Weber¹, Patricia Buttlar¹, Gian Paolo Tonini², Horst Fischer¹
¹RWTH Aachen University Hospital, Aachen, Germany; ²Fondazione Istituto di Ricerca Pediatrica Città della Speranza, Padova, Italy

11:30 VII-OS24-05 Calcium phosphate nanoparticles as genetically active coating for cochlear implant electrodes
Karolin Wey¹, Ronja Schirrmann², Detlef Diesing¹, Stephan Lang², Sven Brandau², Stefan Hansen², Matthias Epple¹
¹University of Duisburg-Essen, Essen, Germany; ²University Hospital Essen, Essen, Germany

11:45 VII-OS24-06 Single-phase and phase mixtures of metastable and stable calcium pyrophosphate and tricalcium phosphate nanopowders for new biomaterials production
Zoltan Zyman¹, Matthias Epple², Anton Goncharenko¹, Olha Khavroniuk¹, Dmytro Rokhmistrov¹
¹V.N. Karazin Kharkiv National University, Kharkiv, Ukraine; ²University of Duisburg-Essen, Essen, Germany

10:30 – 12:00 HALL 5

VII-OS25 POLYMERS FOR DRUG RELEASE

10:30 VII-OS25-KL01 Drug refillable polymers for chronic and recurrent disease
Horst A. von Recum
Case Western Reserve University, Cleveland, US; Society for Biomaterials, Mount Laurel, USA

11:00 VII-OS25-02 A novel family of fully biodegradable peg-dendrimers as efficient carriers for gene therapy
Victoria Leiro, Ana P. Spencer, Natália Magalhães, Ana P. Pêgo
Universidade do Porto, OPO, Portugal
11:15 VII-OS25-03 Delivering microRNA-31 via Electrospun Nanofibres for the Treatment of Non-healing Wounds
Eoghan J. Mulholland¹, Nicholas J. Dunne¹,², Helen McCarthy¹, Monika Ziminska¹
¹Queen’s University Belfast, Belfast, UK; ²Dublin City University, Dublin, Ireland

11:30 VII-OS25-04 Hyaluronan/Collagen-Based Hydrogels as Scavenging and Release Systems For Improved Wound Healing
Sandra Rother¹, Stephan Thönes², Vera Krönert¹, Nicolas Hauck³, Tom Wippold², Albrecht Berg¹, Stephanie Moeller⁴, Matthias Schnabelrauch¹, Julian Thiele³, Dieter Scharnweber¹, Ulf Anderegg², Vera Hintze¹
¹TU Dresden, Dresden, Germany; ²Leipzig University, Leipzig, Germany; ³Leibniz-Institut für Polymerforschung Dresden e.V., Dresden, Germany; ⁴INNOVENT e.V., Jena, Germany

11:45 VII-OS25-05 Nanoparticles based on dexamethasone and naproxen for the combined treatment of inflammatory processes
Eva Espinosa-Cano¹,², Maria Rosa Aguilar¹,², Yadileiny Portilla³, Domingo Barber³, Julio San Roman¹,²
¹Institute of Polymer Science and Technology (ICTP-CSIC), Madrid, Spain; ²Networking Biomedical Research Centre in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Madrid, Spain; ³Spanish National Center of Biotechnology (CNB-CSIC), Madrid, Spain

10:30 – 12:00
CONFERENCE ROOM 4+5
VII-SY12 GERMAN SOCIETY FOR BIOMATERIALS (DGBM) SY: BIODEGRADABLE METALLIC IMPLANTS

Proposer | Chairs:
Regine Willumeit-Römer
Helmholtz Center Geesthacht, Geesthacht, Germany
Anke Bernstein
Department of Orthopedics and Trauma Surgery, Medical Center University of Freiburg, Freiburg, Germany

Degradable metals are an emerging field in biomaterial development and tissue regeneration. They offer an alternative when load-bearing implants are needed and ions can be utilized to stimulate tissue response. In addition, degradable metal stents can play an important role for cardiovascular applications. Several metals are currently investigated: Iron, zinc and magnesium.
Most advanced is probably the work on magnesium because here medical devices are already approved for osteosynthesis and cardiovascular interventions. However, in some cases the degradation of magnesium could be too fast resulting in a too fast loss in mechanical properties. The alternatives could be devices from zinc or iron, especially for cardiovascular applications because they have usually more suitable mechanical properties but they degrade quite slow. All degradable metals have in common that the degradation products such as ions might interfere with biological processes in cells and tissue. Therefore, research on this class of implant materials has to cover both: in depth knowledge about materials and their processing as well as extensive cell biological and in vivo studies to understand the physiological role of the released degradation products.

10:30 VII-SY12-KL01  Biodegradable Metals with Extreme Properties for Innovative Biomaterials
Diego Mantovani
Laval University, Quebec University Hospital, Québec, Canada

11:00 VII-SY12-KL02  Zn- and Mg alloys as biodegradable materials of cardiovascular devices
Christoph Hehrlein
University of Freiburg, Freiburg, Germany

11:30 VII-SY12-03  Fe-Fe$_2$O$_3$ nanocomposites for biodegradable load-bearing implants: processing, properties, loading and release of drugs
Aliya Sharipova$^{1,3}$, Irena Gotman$^2$, Sergey Psakhie$^3$, Ronald Unger$^4$, Elazar Gutmanas$^1$
$^1$Technion, Haifa, Israel; $^2$ORT Braude Academic College, Karmiel, Israel; $^3$Institute of Strength Physics and Materials Science of Siberian Branch Russian Academy of Sciences, Tomsk, Russia; $^4$University Medical Center of the Johannes Gutenberg University, Mainz, Germany

11:45 VII-SY12-04  Histological comparison of degradation and biocompatibility of two different pore sizes within LAE442 scaffolds in a long-term rabbit model
Julia Augustin$^1$, Stefan Julmi$^2$, Lisa Wurm$^1$, Christian Klose$^2$, Anja-Christina Waselau$^1$, Andrea Meyer-Lindenberg$^1$
$^1$Ludwig-Maximilians-University, Munich, Germany; $^2$Leibniz Universität Hanover, Garbsen, Germany
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<tr>
<td>10:30</td>
<td>VII-OS26-01</td>
<td>Antibacterial activity and cytotoxicity of chemically treating Ti alloy and bioactive glass doped with silver</td>
<td>Seiji Yamaguchi¹, Rina Iwatsuki¹, Sara Ferraris², Marta Miola², Martina Cazzola², Enrica Verne², Silvia Spriano², Andrea Cochis³, Hiroaki Takadama¹</td>
<td>¹Chubu University, Kasugai-city, Japan; ²Politecnico di Torino, Turin, Italy; ³Università del Piemonte Orientale, Novara, Italy</td>
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<td>11:00</td>
<td>VII-OS26-03</td>
<td>Multifunctional and Antibacterial Zein-Cu doped Bioactive Glass Composite Coatings for Bone Tissue Engineering</td>
<td>Andrea Cochis¹, Laura Ramos Rivera², Sara Ferraris³, Sarah Biser², Ajay Kumar¹, Hiba Mohammed¹, Aldo R. Boccaccini², Lia Rimondini¹</td>
<td>¹University of Piemonte Orientale UPO, Novara, Italy; ²University of Erlangen - Nuremberg, Erlangen, Germany; ³Politecnico di Torino, Turin, Italy</td>
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<td>11:15</td>
<td>VII-OS26-04</td>
<td>Local Delivery of LLKKK18 Antimicrobial Peptide Released from Oxidized Dextrin Hydrogel to Treat Osteomyelitis</td>
<td>Alexandra Machado¹, Isabel Pereira¹, Vanessa Silva²,³, Luís Costa²,², Isabel Pires², Justina Prada², Patrícia Poeta²,³, José E. Pereira², Miguel Gama¹</td>
<td>¹University of Minho, Braga, Portugal; ²University of Trás-os-Montes and Alto Douro, Vila Real, Portugal; ³University NOVA of Lisbon, Caparica, Portugal</td>
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<td>11:30</td>
<td>VII-OS26-05</td>
<td>The road to understanding the cellular uptake of nano-silver by bacteria, a systematic study using AgAu alloy nanoparticles</td>
<td>Frederic Stein¹, Carmen Streich¹, Juri Jakobi¹, Christoph Rehbock¹, Sebastian Grade², Mark Kühnel², Vadim Migunov³,⁴, Meike Stiesch², Stephan Barcikowski¹</td>
<td>¹University Duisburg-Essen, Essen, Germany; ²Hanover Medical School, Hanover, Germany; ³Research Centre Juelich, Peter Grünberg Institute, Juelich, Germany; ⁴RWTH Aachen University, Aachen, Germany</td>
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Within the biofabrication field, two main material strategies are currently being explored. When a biomaterial is applied to produce the structure, the material can either be used as a biomaterial ink or as a bioink. Biomaterial ink refers to the use of a prefabricated scaffold obtained via additive manufacturing for subsequent cell seeding. The term bioink refers to a mixture already containing cells prior to additive manufacturing.
Lithography-based bioprinting offer some advantages compared to conventional technologies. During this special symposium both biomaterial inks and bioinks processed using light-based techniques (stereolithography, two-photon polymerization, photo-crosslinking during extrusion) will be covered. Abstracts covering hydrogels of natural or synthetic nature, in which hypotheses-driven biological properties are linked to structural, chemical and/or processing features interacting with cells of any kind are particularly sought in this symposium. With a transversal approach, this symposium will discuss the key factors of light-based processing of hydrogels which modulate the in vitro microenvironment and elucidate how the newly developed knowledge will enable clinical translation and commercialisation of light-based 3D printing in the years to come.

13:00  VIII-SY13-KL01  High Definition 3D Printing of Photopolymers for Biomedical Applications
Aleksandr Ovsianikov
Technische Universität Wien (TU Wien), Vienna, Austria; Austrian Cluster for Tissue Regeneration, Austria, Austria

13:30  VIII-SY13-KL02  Illuminating Progress on 3D Bioprinting of Vascularized Tissues and Organoids
Jordan Miller
Rice University, Houston, USA

14:00  VIII-SY13-03  In situ prevascularization designed by Laser-Assisted Bioprinting: Effect on bone regeneration
Olivia Kérourédan1,2,3, Davit Hakobyan1, Murielle Rémy1, Sophia Ziane1,2,3, Nathalie Dusserre1, Jean-Christophe Fricain1,2,3, Samantha Delmond1, Noélie Bruneilde Thébaud1,2,3, Raphaël Devillard1,2,3
1INSERM U1026, Bordeaux, France; 2Université de Bordeaux, Bordeaux, France; 3CHU de Bordeaux, Bordeaux, France

14:15  VIII-SY13-04  Fabrication of Hydrogels with Stiffness Gradient by Two-Photon Polymerization for analyzing the Durotaxis of Cells
Nicole Hauptmann, Holger Rothe, Gerhard Hildebrand, Klaus Liefeith
Institute for Bioprocessing and Analytical Measurement Techniques (iba), Heilbad Heiligenstadt, Germany
Degradable PLA micro-structured scaffolds as cells guidance

Louis Gangolphe\textsuperscript{1,2}, Coline Pinese\textsuperscript{1}, Audrey Bethry\textsuperscript{1}, Benjamin Nottelet\textsuperscript{1}, Frédéric Bossard\textsuperscript{2}, Xavier Garric\textsuperscript{1}

\textsuperscript{1}Department of Artificially Biopolymers, Max Mousseron Institute of Biomolecules (IBMM), UMR CNRS 5247, University of Montpellier, Montpellier, France; \textsuperscript{2}Institute of Engineering, Univ. Grenoble Alpes, France, Grenoble, France

Microscale cryogels as devices for focal therapeutic delivery

Dimitri Eigel\textsuperscript{1}, Petra B. Welzel\textsuperscript{1}, Julian Thiele\textsuperscript{1}, Carsten Werner\textsuperscript{1,2}, Ben Newland\textsuperscript{3}

\textsuperscript{1}Leibniz Institute of Polymer Research Dresden, Dresden, Germany; \textsuperscript{2}TU Dresden, Dresden, Germany; \textsuperscript{3}Cardiff University, Cardiff, UK

The osteoinductive activity of poly(3-hydroxybutyrate) and its natural functions

Vera V. Voinova\textsuperscript{1}, Garina A. Bonartseva\textsuperscript{2}, Irina I. Zharkova\textsuperscript{1}, Alexey V. Volkov\textsuperscript{3,4}, Alexander A. Muraev\textsuperscript{2}, Anton P. Bonartsev\textsuperscript{1,2}

\textsuperscript{1}M.V.Lomonosov Moscow State University, Moscow, Russia; \textsuperscript{2}Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia; \textsuperscript{3}Peoples’ Friendship University of Russia, Moscow, Russia; \textsuperscript{4}N.N. Priorov National Medical Research Center of Traumatology and Orthopaedics, Healthcare Ministry of Russia, Moscow, Russia

Polydopamine nanoparticles as an organic multitasking tool for localized neuronal stimulation

Matteo Battaglini\textsuperscript{1,2}, Attilio Marino\textsuperscript{1}, Chiara Martinelli\textsuperscript{1}, Gianni Ciofani\textsuperscript{1,3}

\textsuperscript{1}Istituto Italiano di Tecnologia, Pontedera, Italy; \textsuperscript{2}Scuola Superiore Sant’Anna, Pontedera, Italy; \textsuperscript{3}Politecnico di Torino, Turin, Italy

Key effect of the Poly(glycerol sebacate) synthesis during early stages and its monitoring

Rubén Martin-Cabezuelo\textsuperscript{1}, Alicia Naderpour-Peñalver\textsuperscript{1}, Guillermo Vilarriño-Feltrer\textsuperscript{1}, Ana Vallés-Lluch\textsuperscript{1,2}

\textsuperscript{1}Universitat Politècnica de València, Valencia, Spain; \textsuperscript{2}Biomedical Research Networking Centre in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Valencia, Spain
Magnetic gold nanorod-encapsulated biodegradable polymeric matrix for combined photothermal and chemo-cancer therapy

Pei-Ying Chen¹, Rih-Yang Huang¹, Chun-Chiao Chuang¹, Chih-Chi Cheng¹, Chieh Lo¹, Min-Hsiung Shih², Chien-Wen Chang¹
¹National Tsing Hua University, Hsinchu, Taiwan; ²Academia Sinica, Taipei, Taiwan

Cellular Uptake of Silicate Species

Joel Turner¹, Azadeh Rezaei¹, Julian R. Jones², Alexandra Porter², Akiko Obata³, Gavin Jell¹
¹University College London, London, UK; ²Imperial College London, London, UK; ³Nagoya Institute of Technology, Nagoya, Japan

Bone sialoprotein functionalized 3D printed polylactide-collagen composite materials induce bone regeneration in a rat femur model

Ulrike Ritz, Tanja Habeck, Anja Klein, Hermann Götz, Andreas Baranowski, Pol M. Rommens
University Medical Center Mainz, Mainz, Germany

Mesoporous bioactive glasses as building blocks in biomaterials for hard-tissue regeneration

Matthias Schumacher, Pamela Habibović, Sabine van Rijt
Maastricht University, Maastricht, Netherlands

Examination of a novel absorbable fiber-based bone substitute material

Carsten Linti¹, Priscilla Füllemann¹, Katrin Malunat², Nicole Müschenborn², Sven Oberhoffner², Michael Doser¹
¹Deutsche Institute für Textil- und Faserforschung, Denkendorf, Germany; ²ITV Denkendorf Produktservice GmbH, Denkendorf, Germany

Hemocompatibility of single crystalline ceramics: role of crystallographic orientation on the platelet activation

Zümray V. Parlak¹, Rafal Zybara²,³, Stephan Rütten⁴, Norina Labude⁴, Sabine Neuss⁴, Rainer Telle¹, Karolina Schickle¹
¹RWTH Aachen University, Aachen, Germany; ²Warsaw University of Technology, Warsaw, Poland; ³Institute of Electronic Materials Technology, Warsaw, Poland; ⁴RWTH Aachen University Hospital, Aachen, Germany
Characterization of a poly(lactic-co-glycolic) acid-hydroxyapatite 3D-printed scaffolds for bone tissue engineering

Joanna Babilotte¹, Vera Guduric¹, Reine Bareille¹, Damien Le Nihouannen¹, Jean-Christophe Fricain¹,², Sylvain Catros¹,²
¹INSERM U1026 BioTis, Bordeaux, France; ²Faculty of Dentistry, Bordeaux, France

A combined biological and chemical/physical bone characterization for the development of customized 3D-printed scaffolds

Caterina Licini¹,², Giulia Molino², Chiara Novara², Fabrizio Giorgis², Giorgia Cerqueni¹, Sonia Fiorilli², Gabriela Ciapetti³, Monica Mattioli-Belmonte¹, Chiara Vitale-Brovarone²
¹Università Politecnica delle Marche, Ancona, Italy; ²Politecnico di Torino, Turin, Italy; ³Istituto Ortopedico Rizzoli, Bologna, Italy

Novel concept of bioresorbable bioactive fracture fixation plates for load-bearing applications by tailored fibre placement

Artem Plyusnin¹, Oliver Liesmäki¹, Julia Kulkova¹, Axel Spiokenheuer², Lars Bittrich², Cindy Elschner², Annette Breier², Niko Moritz¹
¹University of Turku, Turku, Finland; ²Leibniz-Institut für Polymerforschung Dresden e. V. (IPF Dresden), Dresden, Germany

Biohybrid implants, i.e. implants that are made by combining synthetic or natural materials with the body’s own cells or tissues are on the rise. They allow for better and faster tissue formation and integration, less short-, mid- and long term side effects and overall better clinical outcome.
Our symposium will present the latest developments in 4D biofabrication of biohybrid implants, the use of biohybrids in Cochlear Implant Electrodes, the “evolution” of cardiovascular and respiratory tissue-engineered implants from complete autologous towards biohybrid textile reinforced constructs and the application of biohybrid constructs for cartilage regeneration.

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| 13:00 | VIII-SY14-   | Biohybrid Implants – Fostering Clinical Translation by Textile        | Stefan Jockenhoevel  
|       | DGBMT-KL01   | Reinforcement                                                        | RWTH Aachen University, Aachen, Germany; Maastricht University, Maastricht, Netherlands |
| 13:30 | VIII-SY14-   | Biohybrid Cochlear Implant Electrode                                   | Thomas Lenarz, Athanasia Warnecke  
|       | DGBMT-KL02   |                                                                       | Hanover Medical School, Hanover, Germany                                                      |
| 14:00 | VIII-SY14-   | Bioprinting in 3D and 4D for novel in vitro models and biohybrid      | Horst Fischer  
|       | DGBMT-03     | implants                                                              | RWTH Aachen University Hospital, Aachen, Germany                                             |
| 14:15 | VIII-SY14-   | New perspectives in cartilage repair through an in-situ gelling        | Katrin Sternberg¹, Detlef Schumann¹, Christoph Gaisssmaier²,  
|       | DGBMT-04     | hydrogel with anti-inflammatory, anti-angiogenic and chondrogenesis     | Karin Benz², Kai Stuckensen²  
|       |              | supportive properties                                                 | ¹Aesculap AG, Tuttlingen, Germany; ²TETEC AG, Reutlingen, Germany                           |

13:00 – 14:30  
**CONFERENCE ROOM 4+5**

**VIII-OS29**  
**METALLIC BIOMATERIALS AND COATINGS**

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| 13:00 | VIII-OS29-01 | Influence of two pretreatments and their combination prior to NaF   | Christine Schille, Ernst Schweizer, Jürgen Geis-Gerstorfer  
|       |              | coating on the electrochemical corrosion behavior of five experimental magnesium alloys | University Hospital Tübingen, Tübingen, Germany                                             |
| 13:15 | VIII-OS29-02 | Implant Proteomics: Determination of the hip implant proteome        | Herbert P. Jennissen¹, Marcus Jäger¹, Marcel Haversath¹, Andre Busch¹, Thomas Grupp²,  
|       |              |                                                                       | Andrea Sowislok¹, Monika Herten¹  
|       |              |                                                                       | ¹University of Duisburg-Essen, Essen, Germany; ²Aesculap AG, Tuttlingen, Germany           |
Self-limiting effective antibacterial coating of short-term magnetron sputtered silver-platinum nanopatches induced by sacrificial anode effect

Christina Sengstock1, Adham Abuayyash1, Marina Breisch1, Julian Möllenhoff1, Nadine Ziegler2, Hajo Meyer2, Michael Meischein2, Christian Rurainsky2, Marc Heggen3, Christina Scheu4, Alba Garzon-Manjon4, Kristina Tschulik2, Alfred Ludwig2, Manfred Köller1

1BG University Hospital Bergmannsheil Bochum, Bochum, Germany; 2Ruhr University Bochum, Bochum, Germany; 3Research Center Jülich GmbH, Jülich, Germany; 4Max-Planck-Institut für Eisenforschung GmbH, 40237 Düsseldorf, Germany

Integration of the trace elements copper and zinc into calcium phosphate coatings and their in vitro characterization

Rene Beutner1, Claus Moseke2, Uwe Gbureck3, Cornelia Wolf-Brandstetter1

1TU Dresden, Dresden, Germany; 2University of Applied Sciences Gießen, Gießen, Germany; 3University of Würzburg, Würzburg, Germany

Evaluation of innovative polymer coatings on titanium regarding stability of antibacterial effects under storage and sterilization conditions

Andreas Winkel1, Anne K. Seiffert2, Jasmin Grischke1, Sebastian Stelljes2, Henning Menzel2, Meike Stiesch1

1Hanover Medical School, Hanover, Germany; 2Technical University of Braunschweig, Braunschweig, Germany

A PEO-based black TiO2 nanoceramic coating on titanium with wear-resistance and visible-light photocatalysis activity for enhanced dental implant decontamination

Hao Wu, Li Xie, Weidong Tian
Sichuan University, Chengdu, China

Bio-selective bacteriostatic and fungistatic surfaces made of recombinant spider silk proteins

Gregor Lang1, Sushma Kumari1, Elise DeSimone1, Christian Spengler2, Susanne Lücker3, Martina Hude1, Karin Jacobs2, Norbert Krämer3, Thomas Scheibel1

1University of Bayreuth, Bayreuth, Germany; 2Saarland University, Saarbrücken, Germany; 3Justus-Liebig University Gießen, Gießen, Germany
13:15  VIII-OS30-02  New advances in the design of mesoporous silica nanoparticles for the treatment of infection
Isabel Izquierdo-Barba, Blanca González, María Vallet-Regí
Universidad Complutense de Madrid, Madrid, Spain; CIBER-BBN, Madrid, Spain

13:30  VIII-OS30-03  Polymeric Microspheres for the Controlled Release of Whole Plant Cannabis Medicinal Extract
Almog Uziel¹, Gil M. Lewitus², Anat Gelfand², Keren Amsalem², David Meiri², Dan Y. Lewitus¹
¹Shenkar Engineering Art Design, Ramat Gan, Israel; ²Technion Israel Institute of Technology, Haifa, Israel

13:45  VIII-OS30-04  Research on Biomedical Chitosan Based Drug-loaded Microspheres for Controlled Release Delivery System
Qin Zou¹, Junfeng Li², Yubao Li³
¹Sichuan University, Chengdu, China; ²Chengdu University of Technology, Chengdu, China

14:00  VIII-OS30-05  Boosting Efficacy and Decreasing Toxicity of Antimicrobial Nanoparticles Mediated by Cyclodextrin: The Case of Amino Acid – Functionalized Gold
Marija Vukomanovic¹², Lea U dovć¹, Laura Moya², Maria del Mar Cendra², Eduard Torrents²
¹Jozef Stefan Institute, Ljubljana, Slovenia; ²Institute for Bioengineering of Catalonia (IBEC), The Institute of Science and Technology (BIST), Barc, Spain

14:15  VIII-OS30-RF06  Tuning drug delivery with block copolymer-based biomaterials
Clara Mattu, Giulia Brachi, Gianluca Ciardelli
Politecnico di Torino, Turin, Italy

14:20  VIII-OS30-RF07  Development of a 3D Printed Scaffold Allowing Multiple Drug Delivery for the Treatment of Bone Metastasis in Breast Cancers
Habib Belaid¹², Catherine Teyssièr², David Cornu¹, Vincent Cavailles², Mikhael Bechelany¹
¹Université de Montpellier, Montpellier, France; ²Université de Montpellier, Montpellier, France

14:45 – 16:15  PS2  POSTER SESSION 2
See page 187
### ORAL SESSION | THURSDAY, SEPTEMBER 12, 2019

#### HALL 1 | EXHIBITION AREA

**16:15 – 16:45**

**COFFEE BREAK**

#### HALL 1 | EXHIBITION AREA

**16:15 – 18:15**

**INDUSTRIAL EXHIBITION & POSTER EXHIBITION II**

#### HALL 3

**16:45 – 18:15**

**ADDITIVE MANUFACTURING 1**

**16:45 IX-OS31-01**

A 3D Bioprinted Meniscus Implant Reinforced by Chitosan/ Poly(Vinyl Alcohol) Fibres

**Elli Käpylä**¹, Mostofa Kamal Khan¹, Sheng Pan¹, Reza Nicknesh¹², Simon Beyer¹, Joe Ault³, Julia Hwang³, Tamer Mohamed¹, Sam Wadsworth¹

¹Aspect Biosystems Ltd., Vancouver, Canada; ²UBC Centre for Hip Health & Mobility, Vancouver, Canada; ³DePuy Synthes, Raynham, USA

**17:00 IX-OS31-02**

Antimicrobial 3D-printed scaffolds of composite fibers containing poly(ε-caprolactone) and graphene oxide

**Sofia F. Melo**, Sara C. Neves, Andreia T. Pereira, Inês Borges, Pedro Granja, Fernão D. Magalhães, Inês C. Gonçalves

University of Porto, Porto, Portugal

**17:15 IX-OS31-03**

Melt-Electrowritten 3D Scaffolds Based on Aligned Nano-Structured Microfibers for Topography-Mediated Immunomodulation of Human Macrophages

**Matthias Ryma**, Tina Tylek, Julia Blöhmbaum, Robin Fernandez, Jürgen Groll

Universitätsklinikum Würzburg, Würzburg, Germany

**17:30 IX-OS31-04**

3D Printed PLA/BN Scaffolds for Bone Tissue Engineering Application

**Habib Belaid**¹², Catherine Teyssier², David Cornu¹, Vincent Cavailles², Mikhael Bechelany¹

¹Université de Montpellier, Montpellier, France; ²Université de Montpellier, Montpellier, France

**17:45 IX-OS31-05**

Evaluating three different extrusion-based bioprinting systems using cell-laden alginate-based bioinks

**Rainer Detsch**, Jonas Hazur, Emine Karakaya, Sonja Kuth, Susanne Heid, Aldo R. Boccaccini

University of Erlangen-Nuremberg, Erlangen, Germany
18:00 IX-OS31-06 Functional bioprinted skin replacement
Desiree M. Eckerlin, Jan Schöneberg, Yvonne Marquardt, Ruth Heise, Jens Baron, Horst Fischer
RWTH Aachen University Hospital, Aachen, Germany

16:45 – 18:15 HALL 2
IX-OS32 FIBROUS AND TEXTILE BIOMATERIALS

16:45 IX-OS32-KL01 Fiber based concept for regenerative medicine
Dilbar Aibibu
TU Dresden, Dresden, Germany

17:15 IX-OS32-02 Preparation and evaluation of selenium nanoparticles on cationized cotton fabrics for the development of antimicrobial healthcare textiles
Qiaoyi Wang¹, Irina Savina¹, Carol Howell¹, Matthew Illsley², Patrick Dyer¹, Lara-Marie Barnes¹
¹University of Brighton, Brighton, UK; ²Advanced Nanostructured Materials Design and Consultancy Ltd. (ANAMAD), Brighton, UK

17:30 IX-OS32-03 Graded Implants Releasing Two Growth Factors with Spatio-Temporal Control
Henning Menzel¹, Dominik de Cassan¹, Steffen Sydow¹, Julius Sundermann¹, Heike Bunjes¹, Laura Burmeister², Yvonne Roger², Andrea Hoffmann³, Birgit Glasmacher³, Robert Hänsch¹
¹TU Braunschweig, Braunschweig, Germany; ²Hanover Medical School, Hanover, Germany; ³Gottfried Wilhelm Leibniz University Hanover, Hanover, Germany; ⁴Lower Saxony Centre for Biomedical Engineering, Implant Research and Development (NIFE), Hanover, Germany

17:45 IX-OS32-04 Influence of the covalent grafting of bioactive polymers onto PCL fiber scaffolds: Surface characterization, and In vitro biological response
Céline Falentin-Daudre¹, Gana Amokrane¹, Vincent Humblot², Emile Jubeli³, Najet Yagoubi³, Salah Ramtani¹, Véronique Migonney¹
¹University of Paris 13, Villetaneuse, France; ²UPMC, Paris, France; ³University of Paris-Sud, Chatenay-Malabry, France
Development and characterization of a stretching bio-reactor for radial strain conditioning of cells cultured on textile scaffolds

Christoph D. Melcher¹, Nikola Glimpel¹, Klaas Kossel¹, Sonja Djudjaj², Peter Boor², Thomas Gries¹, Andreas Blaeser¹
¹Institut für Textiltechnik (ITA), RWTH Aachen University, Aachen, Germany; ²University Hospital, RWTH Aachen University, Aachen, Germany

Principles of the Pore Forming Mechanisms of the Freeze Foaming Process for Manufacturing Bone-Mimicking Scaffolds

Matthias Ahlhelm¹, David Werner¹, Eric Schwarzer¹, Johanna Maier², Thomas Behnisch², Tassilo Moritz¹, Alexander Michaelis¹, Maik Gude²
¹Fraunhofer Society, Dresden, Germany; ²TU Dresden, Dresden, Germany

The lubrication molecular mechanisms of TiCuN films in protein solution

Qiaoyuan Deng, Yongxiang Leng
Southwest Jiaotong University, Chengdu, China

(Fe/Sr) co-doped biphasic calcium phosphate with tailored osteoblast cell functionality

Subhadip Basu¹, Aritri Ghosh², Ananya Barui², Bikramjit Basu¹
¹Indian Institute of Science, Bangalore, India; ²Indian Institute of Engineering Science and Technology, Howrah, India

Biomaterial-induced endochondral bone healing via multiscale optimization of architectural and mechanical cues

Ansgar Petersen¹, Hans Leemhuis², Christoph Gayer³, Martina Tortorici¹, Dag Wulsten¹, Sophie Schreivogel¹, Aaron Herrera¹, Ingo Heschel², Georg Duda¹
¹Charité - Universitätsmedizin Berlin, Berlin, Germany; ²Matricel GmbH, Herzogenrath, Germany; ³Fraunhofer Institute for Laser Technology ILT, Aachen, Germany
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<th>Time</th>
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<tr>
<td>17:45</td>
<td>IX-OS33-05</td>
<td>Insights into the structure of bio-glasses and -glass-ceramics using lab-based high-resolution 3D X-ray microscopy</td>
<td>Araceli de Pablos Martín¹, Qaisar Nawaz², Altair T. Contreras Jaimes³, Juliana Martins de Souza e Silva¹⁴, Christian Patzig¹, Delia S. Brauer³, Aldo R. Boccaccini²</td>
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<td></td>
<td></td>
<td>¹Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Halle, Germany; ²University of Erlangen-Nuremberg, Erlangen, Germany; ³Friedrich Schiller University, Jena, Germany; ⁴Martin Luther University Halle-Wittenberg, Halle, Germany</td>
</tr>
<tr>
<td>18:00</td>
<td>IX-OS33-RF06</td>
<td>Glycosaminoglycan sulfation enhances the regenerative potential of bone cells and hematopoetic stem cell maintenance</td>
<td>Juliane Salbach-Hirsch¹, Martina Rauner¹, Mario Lüttwitz¹, Sandra Rother¹, Vera Hintze¹, Stephanie Möller², Matthias Schnabelrauch², Manja Wobus¹, Lorenz Hofbauer¹</td>
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<td></td>
<td>¹TU Dresden, Dresden, Germany; ²INNOVENT e. V, Jena, Germany</td>
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<tr>
<td>18:05</td>
<td>IX-OS33-RF07</td>
<td>Bioactive chitosan-based scaffold as smart materials for bone fracture treatment</td>
<td>Alessandra Soriente¹, Soledad Perez Amodio², Ines Fasolino¹, Maria G. Raucci¹, Christian Demitri³, Elisabeth Engel López², Luigi Ambrosio¹</td>
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<td>¹Institute of Polymers, Composites and Biomaterials, Naples, Italy; ²Institute for Bioengineering of Catalonia, Barcelona, Spain; ³Department of Engineering for Innovation, Lecce, Italy</td>
</tr>
<tr>
<td>18:10</td>
<td>IX-OS33-RF08</td>
<td>3D-Bioprinting of bone grafts for alveolar defects – a preclinical pilot study</td>
<td>Paula Korn¹², Tilman Ahlfeld², Winnie Pradel³, Anja Lode², Adrian Franke³, Martina Rauner⁴, Ursula Range⁶, Bernd Stadlinger⁶, Günter Lauer⁶, Michael Gelinsky²</td>
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<td>¹Charité – Universitätsmedizin Berlin, Department of Oral and Maxillofacial Surgery, Berlin, Germany; ²Centre for Translational Bone, Joint and Soft Tissue Research, TU Dresden, Dresden, Germany; ³Department of Oral and Maxillofacial Surgery, TU Dresden, Dresden, Germany; ⁴Division of Endocrinology, Diabetes, and Bone Diseases, TU Dresden, Dresden, Germany; ⁵Institute for Medical Informatics and Biometry, TU Dresden, Dresden, Germany; ⁶Clinic of Cranio-Maxillofacial and Oral Surgery, University Hospital Zurich, Zurich, Switzerland</td>
</tr>
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</table>
Tissue structure is inherently 3D in nature, hence 3D culture is the only method to truly mimic tissues and organs. This symposium will aim to highlight the intricacies of 3D scaffolds, including shape, microporosity, biomaterial and active factor distribution, required to model tissue, normal and diseased. A variety of biomaterials, both natural and synthetic will be discussed; cell types will include cell lines, primary cells and diseased cells; active factors will include growth factors, anti-inflammatory factors, microRNAs, antimicrobial factors. Processing technology such as electrospinning (melt and solution); 3D printing including multimaterial printing; layer by layer technology will be discussed.

16:45  IX-SY15-KL01  3D Cancer Disease modelling using Polyhydroxyalkanaotes

**Ipsita Roy**¹, Pooja Basnett¹, Pinar U. Onganer¹, Aakansha Tomar², Uttam Pati²
¹University of Westminster, London, UK; ²Jawaharlal Nehru University, New Delhi, India

17:15  IX-SY15-KL02  Synthetic and bioartificial polymers by design as enabling tools for 3D structures hosting cells

**Gianluca Ciardelli**
Politecnico di Torino, Turin, Italy

17:45  IX-SY15-03  Marine demosponges skeletal elements as inspiration on the fabrication of 3D Collagen-Silica composites envisaging bone tissue regeneration

**Eva Martins**¹², Gabriela S. Diogo¹², Ricardo A. Pires¹²³, Rui L. Reis¹²³, Tiago H. Silva¹²
¹³B’s Research Group, I3B’s – Research Institute on Biomaterials, Biodegradables and Biomimetics, University of Minho, Barco - Guimarães, Portugal; ²ICVS/3B’s - PT Government Associate Laboratory, Braga/Guimarães, Portugal; ³The Discoveries Centre for Regenerative and Precision Medicine, Barco - Guimarães, Portugal
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<th>Time</th>
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<th>Authors</th>
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| 18:00 | IX-SY15-04| Decellularized three-dimensional plant structures as scaffolds for human tissues regeneration | Nicola Contessi Negrini\textsuperscript{1,2}, Nadia Toffoletto\textsuperscript{1}, Silvia Farè\textsuperscript{1,2}, Lina Altomare\textsuperscript{1,2}  
\textsuperscript{1}Politecnico di Milano, Milan, Italy; \textsuperscript{2}INSTM, National Consortium of Materials Science and Technology, Milan, Italy |
| 16:45 – 18:15 | CONFERENCE ROOM 4+5 | BIOPHYSICAL STIMULATION OF CELLS | |
| 16:45 | V-OS34-KL01 | Biophysical stimulation of stem cells on biomaterials and in biomicrofluidic device: \textit{in vitro} and \textit{in silico} studies | Bikramjit Basu  
Indian Institute of Science, Bangalore, India |
| 17:15 | IX-OS34-02 | Nanovibrational stimulation drives mesenchymal stem cells for 3D osteogenesis in freeze dried collagen sponge-hydrogels composite for bone tissue engineering | Wich Orapiriyakul\textsuperscript{1,6}, Penelope Tsimbouri\textsuperscript{1}, Peter Childs\textsuperscript{1}, Dominic Meek\textsuperscript{2}, Elizabeth Tanner\textsuperscript{3}, Manuel Salmeron-Sanchez\textsuperscript{1}, Richard Oreffo\textsuperscript{4}, Stuart Reid\textsuperscript{5}, Matthew Dalby\textsuperscript{1}  
\textsuperscript{1}University of Glasgow, Glasgow, UK; \textsuperscript{2}Southern General Hospital, Glasgow, UK; \textsuperscript{3}Queen Mary University of London, London, UK; \textsuperscript{4}University of Southampton, Southampton, UK; \textsuperscript{5}University of Strathclyde, Glasgow, UK; \textsuperscript{6}Prince of Songkla University, Songkhla, Thailand |
| 17:30 | IX-OS34-03 | Effect of sinusoidal alternating current stimulation at substrate surface on differentiation of osteoblast-like cell | Ryosuke Tsujita, Koji Yamamoto, Eiji Nakamachi, Yusuke Morita  
Doshisha University, Kyotanabe, Japan |
| 17:45 | IX-OS34-04 | Synthetic multi-scale topography inspired by the ECM of bone enhances osteogenic differentiation of hBM-MSCs | Liangliang Yang\textsuperscript{1}, Qihui Zhou\textsuperscript{2}, Lu Ge\textsuperscript{1}, Patrick V. Rijn\textsuperscript{1}  
\textsuperscript{1}University of Groningen, Groningen, Netherlands; \textsuperscript{2}Qingdao University, Qingdao, China |
| 18:00 | IX-OS34-05 | Development of dual-stimuli responsive nanofibrous magnetic device: a new cancer theranostic approach | Paula I. P. Soares, Joana Romão, João P. Borges  
FCT NOVA, Caparica, Portugal |
### IX-OS35 | DRUG DELIVERY 3

**16:45 IX-OS35-01**

**Curcumin attenuates effects of (reduced)-Graphene Oxide tetrapodal networks as novel implant materials on cytotoxicity, inflammation & glial scarring in murine acute brain slices and human cell lines in vitro**

Christina Schmitt¹, Florian Rasch¹, Fabian Schütt¹, Yogendra Kumar¹, Martin Lohe², Ali S. Nia², Xinliang Feng², Ralph Lucius¹, Janka Held-Feindt³, Rainer Adelung¹, Kirsten Hattermann¹

¹University of Kiel, Kiel, Germany; ²TU Dresden, Dresden, Germany; ³UKSH Kiel, Kiel, Germany

**17:00 IX-OS35-02**

**Collagen-based multilayer films for wound healing**

Muhammad H. Iqbal¹, Fouzia Boulmedais¹, Florent Meyer²

¹Centre National de la Recherche Scientifique, CNRS UPR 22, Strasbourg, France; ²Université de Strasbourg, Strasbourg, France

**17:15 IX-OS35-03**

**Physical immobilization of particles inspired by pollination**

Lúcia F. Santos, Ana S. Silva, Clara R. Correia, João F. Mano

University of Aveiro, Aveiro, Portugal

**17:30 IX-OS35-04**

**A pH-responsive nanoparticle for functional miR-199a/b-3p delivery in hepatocellular carcinoma**

Shiyi Shao¹, Qida Hu¹, Wangteng Wu¹,², Tingbo Liang¹, Guping Tang²

¹The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China; ²Zhejiang University, Hangzhou, China

**17:45 IX-OS35-05**

**Polydopamine-coated Zein-curcumin nanoparticles for targeted therapy of glioblastoma**

Huaiying Zhang, Inge S. Zuhorn

University of Groningen, Groningen, Netherlands

**18:00 IX-OS35-06**

**A photocurable and degradable polyester for nitric oxide release**

Matheus F. de Oliveira, Marcelo G. de Oliveira

University of Campinas, Campinas, Brazil

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**18:15 – 19:15**

**DGBM GA**

**DGBM GENERAL ASSEMBLY**

**20:00**

**CONFERENCE DINNER**

See page 245, Social Programme
08:30 – 09:15
PL4
PLENARY LECTURE 4

Saxon porcelain - domestic artwork, status symbol and biomaterial

**Julia Weber**
Director of the Porcelain Collection, Dresden State Art Collections, Dresden, Germany

09:30 – 11:00
X-OS36
ADDITIVE MANUFACTURING 2

09:30  X-OS36-01
Developing a Polymer Blend for Laser Sintered Oral Solid Dosage Forms

**Marina-Eirini Mitrousi**, Christopher J. Tuck, Ruth D. Goodridge
University of Nottingham, Nottingham, UK

09:45  X-OS36-02
Laser assisted bioprinting in combination with Raman spectroscopy as a versatile tool for single cell isolation

**Nadine Nottrodt**, Richard Lensing, Martin Wehner, Arnold Gillner
1Fraunhofer Institute for Laser Technology, Aachen, Germany; 2RWTH Aachen, Chair for laser technology, Aachen, Germany

10:00  X-OS36-03
A novel weight-bearing antibiotic eluting temporary hip spacer manufactured by selective laser melting

**Sophie E. T. Louth**, Parastoo Jamshidi, Neil Eisenstein, Mark Webber, Hany Hassanin, Moataz Attallah, Duncan Shepherd, Owen Addison, Liam Grover, Kenneth Nai, Sophie C. Cox
1University of Birmingham, Birmingham, UK; 2Kingston University, London, UK; 3Renishaw PLC, Wotton-under-Edge, UK; 4Royal Centre for Defence Medicine, Birmingham, UK

10:15  X-OS36-04
3D Printed Elastic Fibers with Optical, Microfluidic and Actuating Functionality

**Markos Athanasiadis**, Anna Pak, Dzmitry Afanasenkau, Ivan R. Minev
TU Dresden, Dresden, Germany
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<tr>
<td>10:30</td>
<td>X-OS36-05</td>
<td>Ultra Porous Additive Manufactured Scaffolds Designed for Biomedical Implant Development</td>
<td>Faezeh Shalchy¹, Christopher Lovell², Atul Bhaskar¹</td>
<td>¹University of Southampton, Southampton, UK; ²Lucideon Ltd., Stoke-on-Trent, UK</td>
</tr>
<tr>
<td>10:45</td>
<td>X-OS36-06</td>
<td>3D Bioprinting of volumetric osteochondral tissue substitutes with an individualized design and an anisotropic internal architecture</td>
<td>David Kilian, Stefan Holtzhausen, Philipp Sembdner, Tilman Ahlfeld, Ashwni R. Akkineni, Anja Lode, Ralph Stelzer, Michael Gelinsky</td>
<td>TU Dresden, Dresden, Germany</td>
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<td>09:30 – 11:00</td>
<td>HALL 2</td>
<td>BIOPOLYMERS AND ARTIFICIAL ECM 1</td>
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<td>09:30</td>
<td>X-OS37-01</td>
<td>Corneal Stromal Biomaterials Inspired by Supramolecular Chemistries</td>
<td>Antonio J. Feliciano¹, Floor A. A. Ruiter¹, Stefan Giselbrecht¹, Lorenzo Moroni¹, Patricia Y. Dankers², Clemins Blitterswijk¹, Tonny Bosman³, Matthew B. Baker¹</td>
<td>¹Maastricht University, Maastricht, Netherlands; ²Eindhoven University of Technology, Eindhoven, Netherlands; ³SupraPolix, Eindhoven, Netherlands</td>
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<td>09:45</td>
<td>X-OS37-02</td>
<td>Double network photocrosslinked hydrogels from modified hyaluronic acid and Poly(ethylene glycol) diacrylate for load bearing tissue</td>
<td>Alfredo Ronca¹, Ugo D’Amora¹, Maria Grazia Raucci¹, Hai Lin², Yujiang Fan², Xingdong Zhang², Luigi Ambrosio¹</td>
<td>¹National Research Council (CNR), Napoli, Italy; ²Sichuan University, Chengdu, China</td>
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<tr>
<td>10:00</td>
<td>X-OS37-03</td>
<td>Fabrication of a novel class of regenerative collagen membranes by electrophoretic deposition</td>
<td>David J. Barrett, Matthew Linley, Serena M. Best, Ruth E. Cameron</td>
<td>University of Cambridge, Cambridge, UK</td>
</tr>
<tr>
<td>10:15</td>
<td>X-OS37-04</td>
<td>Biomimetic materials toward enhanced bioengineered tissue vascularisation</td>
<td>Fengying Tang¹, Marissa Baptist¹, Xiaoting Lin¹, Shouyuan Jiang¹, Cesar Alcala-Orozco², John Whitelock¹, Khoon Lim², Megan Lord¹, Jelena Rnjak-Kovacina¹</td>
<td>¹University of New South Wales, Sydney, Australia; ²University of Otago Christchurch, Christchurch, New Zealand</td>
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| 10:30 | X-OS37-05| A low-temperature, high-pressure sintering procedure for the rapid fabrication of biosubstrates starting from dry silk fibroin | Devid Maniglio, Alessio Bucciarelli, Antonella Motta, Alberto Quaranta  
University of Trento, Trento, Italy                                                                                                                                       |
| 10:45 | X-OS37-06| Elettrical responsive scaffolds for endogenous regeneration          | Francesca Scalera¹, Anna G. Monteduro¹², Giuseppe Maruccio¹², Laura Blasi¹, Clara Piccirillo¹  
¹CNR, Lecce, Italy; ²University of Salento, Lecce, Italy                                                                                                                     |
| 09:30 – 11:00 | HALL 4 | HYDROGELS FOR TISSUE ENGINEERING 2                                   |                                                                                                                                                                                                                                     |
| 09:30 | X-OS19-01| Antibacterial injectable bionanocomposite containing green synthesized silver nanoparticles for bone tissue engineering | Assunta Borzacchiello¹, Pooyan Makvandi¹², Francesca Della Sala¹, Ghareib W Ali³, Wafa I. Abdel-Fattah³, Luigi Ambrosio¹  
¹National Research Council, Napoli, Italy; ²University of Naples Federico II, Napoli, Italy; ³National Research Centre, Cairo, Egypt |
| 09:45 | X-OS19-02| Tuning the transport of signaling molecules in heparin based-hydrogels | Yanuar D. P. Limasale¹, Passant Atallah¹, Uwe Freudenberg¹, Carsten Werner¹², Ralf Zimmermann¹  
¹Leibniz Institute of Polymer Research Dresden, Dresden, Germany; ²TU Dresden, Dresden, Germany                                                                 |
| 10:00 | X-OS19-03| An affinity-based approach to engineer human laminin-presenting cell instructive microenvironments | Daniela Barros¹²³, Paula Parreira¹², Joana Furtado²⁴, Frederico Ferreira-da-Silva²⁴, Eduardo Conde-Sousa¹², Andrés J. Garcia⁵⁶, Maria C. L. Martins¹³⁶, Isabel F. Amaral¹², Ana Paula Pêgo¹²³  
¹INEB - Instituto de Engenharia Biomédica, Universidade do Porto, Porto, Portugal; ²3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; ³Universidade do Porto, Porto, Portugal; ⁴IBMC - Instituto de Biologia Molecular e Celular, Porto, Portugal; ⁵Georgia Institute of Technology, Atlanta, USA; ⁶Georgia Institute of Technology, Atlanta, USA |
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<tr>
<td>10:15</td>
<td>X-OS19-04</td>
<td>Rapid Visible Light Crosslinking of Silk Hydrogels for Cartilage Tissue Engineering</td>
<td>Steven Cui¹, Jun Li¹, Cesar Alcala-Orozco¹, Tim Woodfield¹, Jelena Rnjak-Kovacina², <strong>Khoon Lim⁰</strong></td>
<td>¹University of Otago, Christchurch, New Zealand; ²University of New South Wales, Sydney, Australia</td>
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<tr>
<td>10:30</td>
<td>X-OS19-05</td>
<td>The extracellular matrix as biomaterial: comparison of native decellularized and in vitro cell-derived adipose extracellular matrix</td>
<td><strong>Svenja Nellinger</strong>, Ralf Kemkemer, <strong>Petra J. Kluger</strong></td>
<td>Reutlingen University, Reutlingen, Germany</td>
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<tr>
<td>10:45</td>
<td>X-OS19-RF06</td>
<td>Controlling structural relaxations, mechanical properties, and degradation timescale of PLLA during hydrolytic degradation</td>
<td><strong>Reece N. Oosterbeek</strong>¹, <strong>Patrick Duffy</strong>², <strong>Sean McMahon</strong>², <strong>Xiang C. Zhang</strong>³, <strong>Serena M. Best</strong>¹, <strong>Ruth E. Cameron</strong>¹</td>
<td>¹University of Cambridge, Cambridge, UK; ²Ashland Specialties Ireland Ltd., Dublin, Ireland; ³Lucideon Ltd., Stoke-on-Trent, UK</td>
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<td>10:50</td>
<td>X-OS19-RF07</td>
<td>Oxygen-generating Bioadhesive Hydrogel via Calcium Peroxide-mediated Crosslinking Reaction</td>
<td><strong>Sohee Lee</strong>, Kyung Min Park</td>
<td>Incheon National University, Incheon, Republic of Korea</td>
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<tr>
<td>10:55</td>
<td>X-OS19-RF08</td>
<td>Optimization of poly(diol citrates) composition for small-diameter blood vessel tissue engineering</td>
<td><strong>Agata Flis</strong>¹, <strong>Filip Koper</strong>², <strong>Wiktor Kasprzyk</strong>², <strong>Elżbieta Pamuła</strong>¹</td>
<td>¹AGH University of Science and Technology, Kraków, Poland; ²Tadeusz Kościuszko Cracow University of Technology, Kraków, Poland</td>
</tr>
</tbody>
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**09:30 – 11:00**

**HALL 5**

**X-OS38**

**BIOCOMPATIBILITY AND DEGRADATION**

**09:30**  **X-OS38-01**

Biomaterial biocompatibility assessment by complement proteins adsorption and macrophage polarization

**Nuno Araújo-Gomes**¹, Francisco Romero-Gavilán¹, Yang Zhang², Cristina Martínez-Ramos¹, Felix Elortza³, Mikel Azkargorta⁴, José J. Martín de Llano⁴, Iñaki García-Arnaéz⁵, Mariló Gurruchaga⁵, Isabel Goñi⁵, Jeroen J. van den Beucken², **Julio Suay**¹

¹Universitat Jaume I, Castellón de la Plana, Spain; ²Radboud UMC, Nijmegen, Netherlands; ³CicBiogune, Derio, Spain; ⁴Universitat de Valencia, Valencia, Spain; ⁵Universidad del Pais Vasco, San Sebastián, Spain
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<th>Authors</th>
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<tr>
<td>09:45</td>
<td>X-OS38-02</td>
<td>Novel biodegradable FeMnCS alloy processed by selective laser melting</td>
<td>Julia Hufenbach, Fabian Kochta, Stefan Pilz, Uta Kühn, Annett Gebert</td>
<td>Leibniz Institute for Solid State and Materials Research (IFW), Dresden, Germany</td>
</tr>
<tr>
<td>10:00</td>
<td>X-OS38-03</td>
<td>Impact of chemical crosslinking on the cellular response to collagen I-based biomaterials.</td>
<td>Daniel Bax, Jean-Daniel Malcor, Richard Farndale, Serena M. Best, Ruth E. Cameron</td>
<td>University of Cambridge, Cambridge, UK</td>
</tr>
<tr>
<td>10:15</td>
<td>X-OS38-04</td>
<td>In Vitro Inflammatory Response of Bioresorbable Polymers at Clinically-Relevant Extents of Degradation</td>
<td>Lucy Geddes, Louise Carson, Efrosyni Themistou, Fraser J. Buchanan</td>
<td>Queen's University Belfast, Belfast, UK</td>
</tr>
<tr>
<td>10:30</td>
<td>X-OS38-05</td>
<td>Differentiation and heterogeneity of biomaterial-induced multinucleated giant cells: connection between inflammation and tissue regeneration</td>
<td>Mike Barbeck¹, Ronald E. Unger²</td>
<td>¹University Medical Center Hamburg-Eppendorf, Hamburg, Germany; ²University Medical Center of the Johannes Gutenberg University, Mainz, Germany</td>
</tr>
<tr>
<td>10:45</td>
<td>X-OS38-RF06</td>
<td>Effect of sandblasting treatment on in vitro degradation behavior and cytotoxicity of zinc and its alloys</td>
<td>Ping Li¹, Junyu Qian², Wentai Zhang², Christine Schille¹, Ernst Schweizer¹, Alexander Heiss³, Claudia Legner³, Ulrich E. Klotz³, Guojian Wan², Jürgen Geis-Gerstofr₁, Lutz Scheideliner¹</td>
<td>¹University Hospital Tübingen, Tübingen, Germany; ²Southwest Jiaotong University, Chengdu, China; ³Research Institute for Precious Metals and Metals Chemistry (fem), Schwäbisch Gmünd, Germany</td>
</tr>
<tr>
<td>10:50</td>
<td>X-OS38-RF07</td>
<td>Resorbable films from lauroyl derivatives of hyaluronan as temporary implants</td>
<td>Jiří Mrázek¹, Josef Chmelar¹, Martina Hermannová¹, Lukáš Kubalá², Kristina Nešporová¹, Ludmila Grusová¹, Tomáš Drmota¹</td>
<td>Contipro a.s., Dolní Dobrouč, Czech Republic; Czech Academy of Sciences, Brno, Czech Republic</td>
</tr>
<tr>
<td>10:55</td>
<td>X-OS38-RF08</td>
<td>In vivo degradation and biocompatibility of injectable non-covalent starPEG-based hydrogels</td>
<td>Rebecca Rothe¹,², Sandra Hauser¹, Yong Xu³, Alvin K. Thomas³, Yixin Zhang³, Jens Pietzsch¹,²</td>
<td>¹Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; ²TU Dresden, Dresden, Germany; ³BCUBE - Center for Molecular and Cellular Bioengineering, TU Dresden, Dresden, Germany</td>
</tr>
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</table>
The brain is protected by the blood-brain barrier (BBB), a tight semi-permeable membrane that isolates the brain parenchyma from the blood circulation. Bypassing the BBB is a key challenge to efficiently deliver drugs or other molecules to treat brain diseases. This symposium will discuss the new biomaterials-based approaches for in vitro modelling of the brain micro-environment, their potential application in drug screening, and how the properties of biomaterials can be leveraged to increase our understanding and improve treatment of brain diseases.
Transcytosis of microgels across the blood-brain barrier: influence of microgel size and stiffness

Laís Ribovski¹,², Olga Mergel¹, Valtencir Zucolotto², Patrick Van Rijn¹, Inge S. Zuhorn¹
¹University of Groningen, Groningen, Netherlands; ²University of São Paulo, São Carlos, Brazil

Peri-implant infection models: 2D versus 3D

Alexandra Ingendoh-Tsakmakidis¹, Carina Mikolai¹, Andreas Winkel¹, Christine S. Falk¹, Angela Rossi², Heike Walles²,³, Jörg Eberhard¹,⁴, Meike Stiesch¹
¹Hanover Medical School, Hanover, Germany; ²Fraunhofer Institute of Silicate Research ISC, Würzburg, Germany; ³University Hospital of Würzburg, Würzburg, Germany; ⁴University of Sydney, Westmead, Australia

A novel collagen-based assay for measuring dermal fibroblast contractility influenced by natural ageing

Zhuonan Yu¹, Matthew J. Smith², Richard C. M. Siow², Lidong Liu¹, Kuo-Kang Liu¹
¹University of Warwick, Coventry, UK; ²King’s College London, London, UK

Inhibition of acute and chronic neuroinflammation and glial scarring by liposomal curcumin on murine acute brain slices and human cell lines in vitro

Christina Schmitt¹,², Anna Lechanteur², Coarlie Bellefroid², Katharina Siemsen¹, Christine Selhuber-Unkel¹, Janka Held-Feindt³, Ralph Lucius¹, Geraldine Piel², Kirsten Hattermann¹
¹University of Kiel, Kiel, Germany; ²University of Liège, Liège, Belgium; ³UKSH Kiel, Kiel, Germany
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<th>Time</th>
<th>Session</th>
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<th>Authors</th>
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| 12:15 | XI-OS39-04 | Establishing an *in vitro* system to screen for human infertility by using primary endometrial cells and trophoblast cell line-derived spheroids | Michaela Bienert\(^1,\)\(^2\), Volker Buck\(^1\), Irmgard Classen-Linke\(^1\), Rudolf Leube\(^1\), Dominique Peter\(^3\), Christa Thöne-Reineke\(^3\), Oleg Tsypkyov\(^2\), Roman Skoblo\(^2\), Benjamin Rösing\(^1\)  
\(^1\)University Hospital RWTH Aachen University, Aachen, Germany; \(^2\)IFLb Laboratoriumsmedizin Berlin GmbH, Berlin, Germany; \(^3\)Freie Universität Berlin, Berlin, Germany |
| 12:30 | XI-OS39-05 | Development of versatile stratified 3D tissues through magnetic cell sheet engineering | Lúcia F. Santos, Ana S. Silva, João F. Mano  
University of Aveiro, Aveiro, Portugal |
| 12:45 | XI-OS39-06 | Engineered 3D Tumor Microenvironment to Explore the Drug Resistance of Lung Carcinoma | Dong Shin Lee, Sanguine Byun, Kyung Min Park  
Incheon National University, Incheon, Republic of Korea |

11:30 – 13:00  
**HALL 2**  
**XI-OS40**  
**BIOPOLYMERS AND ARTIFICIAL ECM 2**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<th>Authors</th>
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</table>
| 11:30 | XI-OS40-01 | Hierarchical nanostructuration of antimicrobial recombinant block copolymers based on antimicrobial peptides and elastin-like recombinamers | Sergio Acosta\(^1\), Zhou Ye\(^2\), Matilde Alonso\(^1\), Conrado Aparicio\(^2\), José Carlos Rodríguez-Cabello\(^1\)  
\(^1\)Bioforge lab, CIBER-BBN, University of Valladolid, Valladolid, Spain; \(^2\)MDRCBB, Minneapolis, USA |
| 11:45 | XI-OS40-02 | Development and characterization of a cell-derived extracellular matrix with azide functionalities | Silke Keller\(^1\), Valentin Wittmann\(^3\), Günter E. M. Tovar\(^1,\)\(^2\), Alexander Southan\(^1\), Monika Bach\(^5\), Petra J. Kluger\(^4\)  
\(^1\)University of Stuttgart, Stuttgart, Germany; \(^2\)Fraunhofer IGB, Stuttgart, Germany; \(^3\)University of Konstanz, Konstanz, Germany; \(^4\)Reutlingen University, Reutlingen, Germany; \(^5\)University of Hohenheim, Stuttgart, Germany |
| 12:00 | XI-OS40-03 | Charge-tuning of glycosaminoglycan-based hydrogels to program biomolecular signaling | Passant Atallah, Uwe Freudenberg, Yanuar D. P. Limasale, Carsten Werner  
Leibniz Institut Für Polymerforschung, Dresden e.V., Dresden, Germany |
12:15  XI-OS40-04  Corneal endothelial tissue engineering using multi-layered polymer membranes
Jasper Delaey¹, Jasper Van Hoorick¹, Bert Van Den Bogerd², Carina Koppen², Peter Dubruel¹, Sandra Van Vlierberghe¹
¹Ghent University, Ghent, Belgium; ²University of Antwerp, Wilrijk, Belgium

12:30  XI-OS40-05  Riboflavin as a command set crosslinker for collagen membranes
David J. Barrett, Serena M. Best, Ruth E. Cameron
University of Cambridge, Cambridge, UK

12:45  XI-OS40-06  Collagen-Poly(caprolactone) Biphasic Scaffolds for Tendon and Ligament Regeneration
Pedro J. Gouveia¹,³, Alan J. Ryan¹,³, Sara Romanazzo²,³, Simon Carroll²,³, Isabel Amado¹, Tom Hodgkinson¹, Joanna Zawadzka¹, Sally Ann Cryan¹, Daniel J. Kelly²,³, Fergal O’Brien¹,³
¹Royal College of Surgeons in Ireland, Dublin, Ireland; ²Trinity Centre for Bioengineering, Dublin, Ireland; ³Advanced Materials and Bioengineering Research (AMBER) Centre, Dublin, Ireland

11:30 – 13:00  HALL 4
XI-OS41  NOVEL PERSPECTIVES IN BIOMATERIALS RESEARCH

11:30  XI-OS41-01  Plasmonic Janus hybrids for detection of small metabolites
Jing Cao, HaiYang Su, Kun Qian
Shanghai Jiao Tong University, Shanghai, China

11:45  XI-OS41-02  Creating a curation pipeline for biocompatibility data of experimental scaffolds and implants from the scientific literature - towards an open-access database of biomaterials
Osnat Hakimi¹,², Fabio Curi², Dmitry Repchevski², Josep L. Gelpi², Maria-Pau Ginebra¹
¹Universitat Politecnica de Catalunya, Barcelona, Spain; ²Barcelona Supercomputing Center, Barcelona, Spain

12:00  XI-OS41-03  Therapeutic Electrical Stimulation for Regenerative Medicine Application: A Need for a Credible in vitro Model System
Sahba Mobini
CSIC (CEI UAM+CSIC), Tres Cantos, Madrid, Spain; Universidad Autónoma de Madrid, Madrid, Spain
ORAL SESSION | FRIDAY, SEPTEMBER 13, 2019

12:15  XI-OS41-04  Nature inspires biophotonic devices: Design of Bio-Based Photoacoustic Nanoprobes  
Brigida Silvestri¹, Giulio Pota¹, Alessandro Pezzella¹, Paolo Armanetti², Giuseppe Vitiello¹, Gennaro Santità¹, Annalisa Lamberti¹, Luca Menichetti², Giuseppina Luciani¹, Marco D’Ischia¹  
¹University of Naples Federico II, Naples, Italy; ²National Research Council, Pisa, Italy

12:30  XI-OS41-05  Validation of eardrum replacement scaffolds made from electrospinning  
Philipp Kempert¹, Thomas Stoppe¹, Shivesh Anand², Lorenzo Moroni², Stefano Berrettini³, Serena Danti³, Carlos Mota², Marcus Neudert¹  
¹TU Dresden, Dresden, Germany; ²Maastricht University, Maastricht, Netherlands; ³Università di Pisa, Pisa, Italy

12:45  XI-OS41-RF06  Material inks for inkjet printed biomedical sensor applications  
Marco Fritsch, Sindy Mosch, Nikolai Trofimenko, Viktar Sauchuk, Natalia Beshchasna, Mihails Kusnezoff, Mykola Vinnichenko  
Fraunhofer IKTS Institute, Dresden, Germany

12:50  XI-OS41-RF07  Measuring bacterial adhesion forces on implant materials  
Katharina Doll, Andreas Winkel, Meike Stiesch  
Hanover Medical School, Hanover, Germany

12:55  XI-OS41-RF08  Pushing forward Gellan gum-based hydrogels: the impact of inorganic fillers on mechanical and biological performances  
Maria A. Bonifacio¹, Stefania Cometa², Piergiorgio Gentile³, Annachiara Scalzone³, Andrea Cochis⁴, Lia Rimondini⁴, Giuseppe Procino⁵, Serena Milano⁵, Elvira De Giglio¹  
¹University of Bari ‘Aldo Moro’ Department of Chemistry, Bari, Italy; ²Jaber Innovation s.r.l., Roma, Italy; ³Newcastle University, Newcastle upon Tyne, UK; ⁴Università del Piemonte Orientale UPO, Novara, Italy; ⁵University of Bari, Bari, Italy
BIOBASED POLYMERS AND THEIR USE IN WOUND HEALING APPLICATIONS

Proposer | Chairs:
Ipsita Roy
University of Westminster, London, UK
Serena Danti
University of Pisa, Pisa, Italy

Biobased polymers are a sustainable source of polymers which need to replace petrochemical-based polymers. This symposium will focus on the application of biobased polymers for wound healing, exploiting their high biocompatibility, processability and antimicrobial activity. Novel studies on wound healing will be presented including biobased polymers such as chitosan, alginate, collagen, Polyhydroxyalkanoates, γ-Polyglutamic acid. In addition, active factors such as antibacterial properties, growth factors, paracrine factors, cellular therapy including stem cells will be included. Finally, and not the least various processing techniques such as electrospinning (melt and solution), gyropinning and 3D printing will be discussed.

11:30 XI-SY18-KL01 Development of biomaterials to stimulate wound healing and tissue regeneration in skin, cornea and the pelvic floor
Sheila MacNeil¹, Anthony J. Bullock¹, Serkan Dikici¹, Naside Mangir¹, Joanna Shepherd¹, Mohammed Yar²
¹University of Sheffield, Sheffield, UK; ²COMSATS University, Lahore, Pakistan

12:00 XI-SY18-KL02 Carbohydrate biopolymers as antimicrobials and wound healing accelerators
Ylenia Zambito, Anna Maria Piras, Chiara Migone, Angela Fabiano, Francesca Felice, Rossella Di Stefano
University of Pisa, Pisa, Italy

12:30 XI-SY18-03 In Vivo Comparison of 3 Dermal Scaffolds using the Porcine Animal Model of Acute Wound Healing
Stuart J. Brown¹, Vaibhav Sharma¹, Elena Garcia-Gareta¹, Lilian Hook²
¹Restoration of Appearance and Function Trust, Rickmansworth, UK; ²Smart Matrix Limited, London, UK
12:45  XI-SY18-04  Bioengineered, xenogen-free 3D human skin equivalents (HSE) as wound infection models
Ayesha Idrees1,3, Valeria Chiono1, Gianluca Ciardelli1, Richard Viebahn2, Siegfried Shah3, Jochen Salber2,3
1Politecnico di Torino, Turin, Italy; 2UMC Knappschaftskrankenhaus Bochum, Bochum, Germany; 3Ruhr-Universität Bochum, Bochum, Germany

13:05 – 14:00  HALL 3  CLOSING & AWARDS
Awards for Best Student Oral & Poster Presentations

Awards of the German Society for Biomaterials
The German Society for Biomaterials awards annual awards for young researchers, one for the best doctoral thesis and one for the best master's thesis. The theses will be presented by the winners in a five-minute lecture.

Kshama Shree Sen
Awardee best doctoral thesis
Faculty of Georesources and Materials Engineering, RWTH Aachen University
Department of Dental Materials and Biomaterials Research

Thomas Kreller
Awardee best master's thesis
Friedrich-Alexander-University Erlangen-Nuremberg, Department of Materials Science and Engineering - Institute for Biomaterials

14:00 – 14:30  HALL FOYER  TAKE AWAY LUNCH
1. Enhancing the corrosion resistance and biological response of 3D-printed Ti-Nb-Zr-Sn alloy scaffold surface immobilized with type I collagen
   Chia-Fei Liu, Her-Hsiung Huang
   National Yang-Ming University, Taipei, Taiwan

2. Plasmonic silver nanoshells for drug and metabolite detection
   Lin Huang, Kun Qian
   Shanghai Jiao Tong University, Shanghai, China

3. Apatite-forming ability of NaOH-treated Ti-Zr alloys with various compositions
   Toshiki Miyazaki¹, Tomoya Hosokawa¹, Ken’ichi Yokoyama¹, Takanobu Shiraishi²
   ¹Kyushu Institute of Technology, Kitakyushu, Japan; ²Nagasaki University, Nagasaki, Japan

4. Dental implant treatment with sinus floor elevation using octacalcium phosphate collagen composite: a case study
   Tadashi Kawai¹,², Shinji Kamakura³, Keiko Matsui², Yushi Ezoè², Osamu Suzuki², Tetsu Takahashi²
   ¹Iwate Medical University School of Dentistry, Morioka, Japan; ²Tohoku University Graduate School of Dentistry, Sendai, Japan; ³Tohoku University Graduate School of Biomedical Engineering, Sendai, Japan

5. Micro-CT as a key tool in the characterisation of structurally variable collagen scaffolds for cell sieving applications
   Jennifer H. Shepherd², Serena M. Best¹, Ruth E. Cameron¹
   ¹University of Cambridge, Cambridge, UK; ²University of Leicester, Leicester, UK

6. Influence of bioactive polymers size grafting on the biological response
   Céline Falentin-Daudré, Hamza Chouirfa, Véronique Migonney
   University of Paris 13, Villetaneuse, France

7. Deformation Behavior of Au-28Cu-22Al Biomedical Shape Memory Alloy Micropillars
   Akira Umise¹,², Kenji Goto¹,³, Tso Fu Mark Chang¹, Masaki Tahir¹, Masato Sone¹, Takao Hanawa², Hideki Hosoda¹
   ¹Tokyo Institute of Technology, Kanagawa, Japan; ²Tokyo Medical and Dental University, Tokyo, Japan; ³Tanaka Kikinzoku Kogyo K.K., Kanagawa, Japan

8. Cytotoxicity of iron nitride nanoparticles for biomedical applications
   Misaki Shibata, Hiroyasu Kanetaka, Maiko Furuya, Kotone Yokota, Tomoyuki Ogawa, Masakazu Kawashita
   Tohoku University, Sendai, Japan
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<td>9</td>
<td>Fe$^{2+}$ Effect on Functionalization of Polycaprolactone for Anterior Crucial Ligament Applications</td>
<td>Tuan N. Nguyen, Amelie Leroux, Andre Rangel, Veronique Migonney Paris 13 University, Villetaneuse, France</td>
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<td>10</td>
<td>Turbulent Flow Feature Characteristics through Multi Vessel Model with 50% Stenotic Lesion</td>
<td>Hoseong Ji, Byubghui Kim Pusan National University, Busan, Republic of Korea</td>
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<td>11</td>
<td>Apatite-forming ability and visible light-enhanced antibacterial activity of copper- or silver-doped titanium</td>
<td>Masakazu Kawashita, Kanae Suzuki, Misato Iwatsu, Takayuki Mokudai, Hiroyasu Kanetaka Tohoku University, Sendai, Japan</td>
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<tr>
<td>12</td>
<td>Novel Titanate Conversion of DC Magnetron Sputtered Titanium Thin Film Coatings For Biomedical Applications</td>
<td>Matthew D. Wadge, Burhan Turgut, Reda M. Felfel, Ifty Ahmed, David M. Grant University of Nottingham, Nottingham, UK</td>
</tr>
</tbody>
</table>
| 13| Strategies in tribological model system testing with biological and biomimetic materials | Florian Rummel, Kartik S. Pondicherry, Tobias Nill  
1Anton Paar GmbH, Graz, Austria; 2Anton Paar Germany GmbH, Ostfildern, Germany |
| 14| A sacrificial anode system with enhanced antimicrobial effects and osteo-promotive activity | Christina Sengstock, Marina Breisch, Alexander Rostek, Kevin Pappert, Kateryna Loza, Christian Rutainsky, Kristina Tschulik, Matthias Epple, Marc Heggen, Thomas A. Schildhauer, Manfred Köller  
1BG University Hospital Bergmannsheil Bochum, Bochum, Germany; 2University of Duisburg-Essen, Essen, Germany; 3Ruhr University Bochum, Bochum, Germany; 4Research Center Jülich GmbH, Jülich, Germany |
| 15| Systemic toxicity evaluation after subcutaneous implantation of titanium with TiN layer | Karolina Janiczak, Barbara Zawidłak-Wegrzyńska, Małgorzata Gonsior, Danuta Gonsior, Piotr Ściągła, Roman Kustosz, Tadeusz Wierzchoń, Michał Tarnowski, Romuald Wojnicz, Edyta Reichaman-Warmusz  
1Foundation of Cardiac Surgery Development, Zabrze, Poland; 2Warsaw University of Technology, Warsaw, Poland; 3Medical University of Silesia, Zabrze, Poland |
| 16| Antibacterial mechanism of calcium chloride-treated raw silk fabric | Hiroki Chigama, Hiroyasu Kanetaka, Maiko Furuya, Kotone Yokota, Masakazu Kawashita Tohoku University, Sendai, Japan |
| 17 | **An alternative, quantitative method for measurement of bacterial cell coverage on flat and scaffold samples using SEM image analysis**  
**Michal Zurawski**, Colin Scotchford, Steve Atkinson, Reda M. Felfel, David Grant  
University of Nottingham, Nottingham, UK |
|---|---|
| 18 | **In vitro Corrosion Characteristic of Bioactive glass and β-TCP Nanostructures coated CP-Ti Substrates and its Hemocompatibility Assessment**  
**Durgalakshmi Dhinasekaran**, Gopi Saravanan K, Balakumar Subramaniam, Aruna Prakasa Rao, Ganesan Singaravelu  
1Anna University, Chennai, India; 2Sathyabama Institute of Science and Technology, Chennai, India; 3National Centre for Nanoscience and Nanotechnology, Chennai, India |
| 19 | **Nanostructured Tantalum to Enhance Biocompatibility**  
**Ece Uslu**, Batur Ercan  
Middle East Technical University, Ankara, Turkey |
| 20 | **Fast and improved in vitro test procedure for full in vitro-assessment of degradable magnesium**  
**Ole Jung**, Ralf Smeets, Frank Feyerabend, Martin Klein, Frank Walther, Dominic Stangier, Anders Henningsen, Carsten Rendenbach, Max Heiland, Martin Gosau, Alexander Kopp, Mike Barbeck  
1University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Helmholtz-Zentrum Geesthacht, Geesthacht, Germany; 3TU Dortmund, Dortmund, Germany; 4Charité-Universitätsmedizin Berlin, Berlin, Germany; 5Berlin Analytix GmbH, Berlin, Germany; 6Meotec GmbH & Co. KG, Aachen, Germany |
| 21 | **Characterization of adsorbed protein films on UV-C treated Ti6Al4V and Ti6Al7Nb by TOF-SIMS**  
**Margarita Hierro-Oliva**, Daniel Romero-Guzmán, Amparo M. Gallardo-Moreno, M. Luisa González-Martín  
1University of Extremadura, Badajoz, Spain; 2Networking Research Center on Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Badajoz, Spain; 3University Institute of Biosanitary Research of Extremadura (iNube), Badajoz, Spain |
| 22 | **Unidirectional rotating molecular motors direct the fate of mesenchymal stem cells**  
**Patrick van Rijn**  
University Medical Center Groningen, Groningen, Netherlands |
| 23 | **Strontium-enriched sol-gel coatings for highly osteoregenerative biomaterials development**  
**Iñaki García-Arnáez**, Nuno Araújo-Gomes, Francisco Romero-Gavilán, Felix Elortza, Mikel Azkargorta, Julio Suay, Isabel Goñi, Marioló Gurrruchaga, Andreia Cerqueira  
1Universidad del País Vasco, San Sebastián, Spain; 2Universitat Jaume I, Castellón de la Plana, Spain; 3CicBiogune, Derio, Spain |
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<td>24</td>
<td>A new technology for zeta potential measurement: cmPALS</td>
<td>Bastian Arlt. <strong>Anton Paar Germany GmbH, Ostfildern, Germany</strong></td>
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<td>25</td>
<td>Adsorption of Model Protein BSA on Implant Surfaces</td>
<td>Bastian Arlt¹, Thomas Luxbacher², Christine Körner². ¹Anton Paar Germany GmbH, Ostfildern, Germany; ²Anton Paar GmbH, Graz, Austria</td>
</tr>
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<td>26</td>
<td>Alternative approach to analyze the foreign body reaction to biomaterials on a molecular level – a new strategy for the reduction of in vivo experiments</td>
<td>Mais Olabi¹, Jens Pissarek³, Matthias Stein³, Holger Zagst³, Imke Oltmann-Norden¹, Ole Jung², Hermann Wätzig¹. <strong>Mike Barbeck²,⁴</strong>, ¹Technische Universität Braunschweig, Braunschweig, Germany; ²University Medical Center Hamburg-Eppendorf, Hamburg, Germany; ³botiss biomaterials GmbH, Berlin, Germany; ⁴BerlinAnalytix GmbH, Berlin, Germany</td>
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<td>27</td>
<td>Implantomics – A New Paradigm in Implantology</td>
<td>Herbert P. Jennissen. <strong>Universität Duisburg-Essen, Essen, Germany</strong></td>
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<td>28</td>
<td>Fabrication of bottle-shaped TiO₂ nanotubes for drug delivery system</td>
<td>Sayaka Miyabe, Yushi Fujinaga, Hiroaki Tsuchiya, Shinji Fujimoto. <strong>Osaka university, Suita, Japan</strong></td>
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<td>29</td>
<td>Improvement in Mechanical Performance of Biomaterial Ti alloy by Controlling Volume Fraction of Martensite Phase</td>
<td>Toshikazu Akahori, Shota Ino, Saki Tanaka, Tomokazu Hattori. <strong>Meijo University, Nagoya, Japan</strong></td>
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<td>30</td>
<td>Design and manufacture of customized medical implants</td>
<td>Bozena Rokita¹, Marcin Elgalal²,⁴, Bogdan Walkowiak¹,², Piotr Ulanski³, Tomasz Kubiak¹, Piotr Komorowski¹,², Krzysztof Makowski³, Andrzej Styczynski³, Jacek Sawicki³, Marcin Domzalski³. ¹Lodz University of Technology, Lodz, Poland; ²Bionanopark LTD, Lodz, Poland; ³Pafana SA, Pabianice, Poland; ⁴Medical University of Lodz, Lodz, Poland</td>
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<td>Surface modified Ti-based nanostructures for improving hemo-compatibility of vascular stents</td>
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**Barbara Zawidlak-Węgrzyńska**1, Małgorzata Gonsior2, Karolina Janiczak1, Danuta Gonsior1, Piotr Ścigała1, Roman Kustosz1, Tadeusz Wierzchoń2, Michał Tarnowski2, Romuald Wojnicz3, Edyta Raichman-Warmusz3

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**SeokWoo Chang**

Kyung Hee University, Kyung Hee University Dental Hospital, Seoul, Republic of Korea

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**Radka Gorejová**1, Renáta Oriňaková1, Andrej Oriňak1, Miriam Kupková2, Monika Hrubovčáková2

1Pavol Jozef Šafárik University in Košice, Košice, Slovakia; 2Slovak Academy of Science, Košice, Slovakia

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Maastricht University, Maastricht, Netherlands
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1Foundation of Cardiac Surgery Development, Zabrze, Poland; 2Medical University of Silesia, Katowice, Poland; 3Medical University of Silesia, Zabrze, Poland

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1Professor Zbigniew Religa Foundation of Cardiac Surgery Development, Zabrze, Poland; 2Medical University of Silesia, Department of Histology and Cell Pathology, Zabrze, Poland; 3Center for Experimental Medicine, Medical University of Silesia, Katowice, Poland

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1Middle East Technical University, Ankara, Turkey; 2Gaziantep University, Gaziantep, Turkey

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1Medical Center - Albert-Ludwigs-University of Freiburg, Freiburg, Germany; 2University Stuttgart, Stuttgart, Germany

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1Mathys Orthopaedie GmbH, Moersdorf, Germany; 2University of Leeds, Leeds, UK; 3University of Lyon, Villeurbanne Cx, France

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¹Philipps University, Marburg, Germany; ²Ain Shams University, Cairo, Egypt

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¹Yalova University, Yalova, Turkey; ²Ankara University, Ankara, Turkey

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¹University of Minho, Braga, Portugal; ²University of Trás-os-Montes and Alto Douro, Vila Real, Portugal

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¹Babeş-Bolyai University, Cluj Napoca, Romania; ²University of Agricultural Sciences and Veterinary Medicine, Cluj Napoca, Romania; ³University of Szeged, Szeged, Hungary

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¹University Paris Diderot, Paris, France; ²University Paris 13, Villetaneuse, France; ³SILAB SA, Saint-Viance, France; ⁴SILTISS, Saint-Viance, France

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¹Linköping University, Linköping, Sweden; ²Karolinska Institute, Stockholm, Sweden
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¹Instituto Politécnico Nacional, Ciudad de México, Mexico; ²Universidad Iberoamericana, Ciudad de México, Mexico |
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¹RAFT, Northwood, UK; ²SML, Northwood, UK

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University of Bremen, Bremen, Germany

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Shahzad Hafeez¹, René P. M. Lafleur², Nicholas M. Matsumoto², Egbert W. Meijer², Matthew B. Baker¹
¹Maastricht University, Maastricht, Netherlands; ²Eindhoven University of Technology, Eindhoven, Netherlands

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Institute for Bioprocessing and Analytical Measurement Techniques (iba), Heilbad Heiligenstadt, Germany
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Nikita Grigorev, Sabine Neuss-Stein, Norina Labude, Rainer Telle, Karolina Schickle

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Martina Grüning, Jutta Lehnfeld, Thomas Distler, Katja Fricke, Manuela Dubs, Christian Völkner, Rainer Müller, Matthias Schnabelrauch, Aldo R. Boccaccini, Sylvia Speller, Barbara Nebe

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Laura Ramos Rivera, Aldo R. Boccaccini

Department of Materials Science and Engineering, University of Erlangen-Nuremberg, Erlangen, Germany

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Andrea Cochis, Rina Iwatsuki, Seiji Yamaguchi, Sara Ferraris, Marta Miola, Alessandro Scalia, Silvia Spriano, Enrica Vernè, Lia Rimondini, Hiroaki Takadama

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Hiroshi Masumoto, Kenta Takahashi, Mayumi Shiraishi, Naru Shiraishi, Takahisa Anada, Osamu Suzuki, Keiichi Sasaki

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Laura M. Witting, Stefan Julmi, Franziska Feichtner, Anja-Christina Waselau, Christian Klose, Andrea Meyer-Lindenthal

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David M. Grant, Bryan W. Stuart, James W. Murray

1University of Nottingham, Nottingham, UK; 2University of Oxford, Oxford, UK
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**Fabio Alemanno**¹, Davide Olivero², Silvia Maria Spriano³, Deepak H. Veeregowda¹  
¹Global Applications Team, Ducom Instruments Europe B.V., Groningen, Netherlands; ²Politecnico di Torino, Turin, Italy; ³Department of Applied Science and Technology, Turin, Italy |
| 111 | Novel multifunctional thioether-polyglycidol coating with broad bio-functionalization capacity for metal nanoparticles  
**Johanna Lutz**¹, Susanne Feineis¹, Anja M. Steiner², Andreas Fery², Krystyna Albrecht¹, Jürgen Groll¹  
¹University of Würzburg, Würzburg, Germany; ²TU Dresden, Dresden, Germany |
| 112 | Thermoresponsive polyelectrolyte multilayers of chitosan and PNIPAm-modified cellulose sulfate for the generation of cell sheets for tissue engineering  
**Falko Doberenz**¹, Kui Zeng², Kai Zhang², Thomas Groth¹  
¹Martin-Luther-University Halle-Wittenberg, Halle, Germany; ²Georg-August-University Göttingen, Göttingen, Germany |
| 113 | Bioactive glass S520 laser cladding on ultrafine-grained pure titanium substrates  
**Szymon Bajda**¹, Yijun Liu³, Michal Krzyzanowski¹², Stanisław Dymek¹  
¹AGH University of Science and Technology, Krakow, Poland; ²Birmingham City University, Birmingham, UK; ³Manufacturing Technology Centre, Coventry, UK |
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**Andrea Friedmann**, Tobias Hedtke, Julius Rubers, Christian E. H. Schmelzer  
Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Halle (Saale), Germany |
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| 113-3 | Incorporation of electrospun fibrous materials into protein-based hydrogels  
**Tobias Hedtke**¹², Thomas Groth², Christian E. H. Schmelzer¹  
¹Fraunhofer Institute for Microstructure of Materials and Systems, Halle (Saale), Germany; ²Martin Luther University Halle-Wittenberg, Halle (Saale), Germany |
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*Nima Meyer*¹, Daniel V. Bax¹, Jochen Beck², Ruth E. Cameron¹, Serena M. Best¹  
¹University of Cambridge, Cambridge, UK; ²Geistlich Pharma AG, Wolhusen, Switzerland

115 **Bioactive chitosan-based scaffold as smart materials for bone fracture treatment**  
*Alessandra Soriente*¹, Soledad Perez Amodio², Ines Fasolini¹, Maria G. Raucci¹, Christian Demitri³, Elisabeth Engel López², Luigi Ambrosio¹  
¹Institute of Polymers, Composites and Biomaterials, Naples, Italy; ²Institute for Bioengineering of Catalonia, Barcelona, Spain; ³Department of Engineering for Innovation, Lecce, Italy

116 **Synthesis and in vitro bioactivity characterization of porous scaffolds from biphasic ceramic in the system Ca₃(PO₄)₂-Ca₂SiO₄**  
*Anabel Díaz-Arca*¹, Patricia Mazón², Piedad N. De Aza¹  
¹Universidad Miguel Hernández, Elche, Spain; ²UCAM-Universidad Católica San Antonio de Murcia, Murcia, Spain

117 **Eutectoid scaffolds that mimic porous human bone tissue**  
*Anabel Díaz-Arca*¹, Patricia Ros-Tárraga², Pablo A. Velásquez¹, Patricia Mazón¹, Piedad N. De Aza¹  
¹Universidad Miguel Hernández de Elche, Elche, Spain; ²UCAM-Universidad Católica San Antonio de Murcia, Murcia, Spain

118 **Bio-composite Materials For Bone Tissue Engineering Scaffolds**  
*Dina Abdulaziz*¹, Antonios Anastasiou¹, Peter Giannoudis², Animesh Jha¹  
¹University of Leeds, Leeds, UK; ²Leeds General Infirmary, Leeds, UK

119 **Transition metal ions as a tool for modulating the properties of chitosan hydrogels**  
*Anamarija Rogina*, Andrea Lončarević, Maja Antunović, Inga Marijanović, Marica Ivanković, Hrvoje Ivanković  
University of Zagreb, Zagreb, Croatia

120 **Structural changes during in vitro crystallization of apatite on 3D-Si-Ca-P ceramic scaffolds**  
*Carlos Navalon*¹, Patricia Ros², Patricia Mazón¹, Piedad N. De Aza¹  
¹Universidad Miguel Hernández, Elche, Spain; ²UCAM-Universidad Católica San Antonio de Murcia, Murcia, Spain

121 **Enhancing Collagen Scaffolds via Blending with Decellularized Plants**  
*Sedat Odabas*, Ece Karakaya, Sila Bilgin, Emel Emreğül  
Ankara University, Ankara, Turkey

122 **Aerogel-loaded scaffolds obtained by supercritical foaming for bone regeneration**  
*Carlos A. García-González*¹, Araceli Delgado², Carmen Évora², Ricardo Reyes², Angel Concheiro¹, Jose Luis Gómez-Amoza¹, Carmen Alvarez-Lorenzo¹  
¹Universidade de Santiago de Compostela, Santiago de Compostela, Spain; ²Universidad de La Laguna, La Laguna, Spain
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| 124     | Multi-structural collagen scaffolds to reconstitute complex tissue   | Marit Baltzer, Hagen Baltzer, Ina Prade, Enno Klüver  
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| 125     | Hybrid scaffolds for architecture-induced endochondral healing of    | Martina Tortorici¹, Georg Duda¹, Hans Leemhuis², Christoph Gayer³, Sara Checa¹, Ansgar Petersen¹  
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| 126     | In vitro and in vivo proves of concept for the use of a chemically    | Sophie Frasca¹, Géraldine Rohman², Sylvie Changotade², Salah Ramtani³, Anne Consalus², Credson Langueh², Jean-Marc Collombet¹, Didier Lutomski²  
          | cross-linked poly(ester-urethane-urea) scaffold as an easy handling  | ¹Institut de Recherche Biomédicale des Armées, Bretigny Sur Orge, France; ²Université Paris 13-UMR CNRS 7244, Bobigny, France; ³Université Paris 13-UMR CNRS 7244, Villetaneuse, France                                                                                                                                 |
          | elastomeric biomaterial for bone regeneration                       | ¹Université Paris 13-UMR CNRS 7244, Villetaneuse, France                                                                                                                                                                                                                                                                           |
| 127     | Microstructure and biocompatibility of an eutectoid 3D-Si-Ca-P       | Carlos Navalon¹, Patricia Ros², Patricia Mazón¹, Piedad N. De Aza³  
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| 129     | Electrospun scaffolds based on polyhydroxyalkanoates/olive leaf      | Jose G. De la Ossa-Guerra¹, Bahareh Azimi²,³, Maria Beatrice Coltelli²,³, Andrea Lazzeri²,³, Rossella Di Stefano², Serena Danti²,³  
          | extract for tissue engineering applications                         | ¹University of Siena, Siena, Italy; ²University of Pisa, Pisa, Italy; ³Interuniversity National Consortium of Materials Science and Technology, Florence, Italy                                                                                                                                                                                    |
| 130     | Fabrication and characterization of NCO-sP(EO-stat-PO) crosslinked    | Mehmet Berat Taskin, Christina Wiesbeck, Jürgen Groll  
<pre><code>      | and functionalized electrospun gelatin scaffolds for tissue         | University Hospital of Würzburg, Würzburg, Germany                                                                                                                                                                                                                                                                                     |
      | engineering applications                                            | ¹University Hospital of Würzburg, Würzburg, Germany                                                                                                                                                                                                                                                                                     |
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<td>University Medical Center Utrecht, Utrecht, Netherlands; Utrecht University, Utrecht, Netherlands</td>
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<td>Saarland University, Saarbrücken, Germany; INM – Leibniz Institute for New Materials, Saarbrücken, Germany</td>
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<td>Hospital Universitario 12 de Octubre, Madrid, Spain; Universidad Complutense de Madrid, i+12 and CIBER-BBN, Madrid, Spain; Universidad de Salamanca, Salamanca, Spain</td>
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Beatriz Olalde1, Iratxe Madarieta1, Beatriz Diez-Buitrago1,2, Nerea Briz1, Goran Bijelic1
1TECNALIA, San Sebastian, Spain; 2CIC biomaGUNE, San Sebastian, Spain

139 Polycaprolactone (PCL)-Graphene porous hollow fibers for cell culture bioreactors

Ana Ayerd1, Oana David1, Maider Muñoz2, David Otaegui2, Garbiñe Atorrasagasti1, Goran Bijelic1
1Fundación TECNALIA, San Sebastian, Spain; 2Instituto Biodonostia, San Sebastian, Spain

140 Microfabricated systems for studying the pathogenesis of Amyotrophic Laterals Sclerosis (ALS) in vitro

Alessandro Polini3, Alessandro Romano3, Eleonora De Vitis3, Velia La Pesa2, Francesca Gervaso2, Angelo Quattrini2, Lorenzo Moroni1,3, Giuseppe Gigli1,4
1CNR NANOTEC – Institute of Nanotechnology, Lecce, Italy; 2IRCCS San Raffaele Scientific Institute, Milan, Italy; 3Maastricht University, Maastricht, Netherlands; 4University of Salento, Lecce, Italy

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Elisa Fiume1, Jonathan Massera2, Francesco Bairo1, Enrica Verné1
1Politecnico di Torino, Turin, Italy; 2Tampere University, Tampere, Finland

142 Modified Hyaluronic Acid as bioink for the design of 3D tissue-engineered scaffolds

Ugo D’Amora1, Alfredo Ronca1, Maria G. Raucci1, Hai Lin2, Yujiang Fan2, Xingdong Zhang2, Luigi Ambrosio1
1Institute of Polymers, Composites and Biomaterials, Naples, Italy; 2National Engineering Research Center for Biomaterials, Chengdu, China

143 In-solution Mineralized-Gelatin Bioink System for Injectable Bone graft/ 3D Printing Applications

Sumit Murab, Karl Mueller, Jesse Li, Govind Krishna, Patrick W. Whitlock
Cincinnati Children’s Hospital Medical Center, Cincinnati, US

144 3D Printing of Lotus Root-Like Biomimetic Materials for Cell Delivery and Tissue Regeneration

Chun Feng1, Wenjie Zhang2, Jiang Chang1, Xinquan Jiang2, Chengtie Wu1
1Chinese Academy of Sciences, Shanghai, China; 2Ninth People’s Hospital affiliated to Shanghai JiaoTong University, Shanghai, China
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FILK gGmbH, Freiberg, Germany

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Sichuan University, Chengdu, China

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1 INM-Leibniz Institute for New Materials, Saarbrücken, Germany; 2 Saarland University, Chemistry Department, Germany

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University Hospital and Medical Faculty, TU Dresden, Dresden, Germany

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Susanne Heid, Rainer Detsch, Aldo R. Boccaccini
Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany

150 Design of cell-free biomaterial-inks for 3D printing
Anuj Kumar, Matari I. Abdullah I, Sung S. Han
Yeungnam University, Gyeongsan, Republic of Korea

151 Development of 3D printed gelatin-based hydrogel scaffolds for hepatocyte support
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1 Ghent University, Ghent, Belgium; 2 Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna, Austria

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Korea Institute of Science & Technology, Seoul, Republic of Korea

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1 University Hospital Tübingen, Tübingen, Germany; 2 University of Basel, Allschwil, Switzerland; 3 University Hospital Basel, Basel, Switzerland
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<td>Univ. Lille, Lille, France; (^2)LATTICE MEDICAL, Loos, France; (^3)University</td>
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<td>Hospitals of Lille, Lille, France</td>
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<td>Univ. Lille, Lille, France; (^2)University of Antwerp, Wilrijk, Belgium</td>
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<td>Chubu University, Kasugai, Japan; (^2)Osaka Yakin Kogyo Co., Ltd., Osaka,</td>
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<td>RWTH Aachen University, Aachen, Germany; (^2)Fraunhofer ILT - Institute for</td>
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<td>Laser Technology, Aachen, Germany</td>
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<td>Technical University of Vienna, Vienna, Austria; (^2)Flanders Make and Vrije</td>
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<td>Wolfgang Steiger(^1), Sandra Van Vlierberghe(^2)(^3), Aleksandr</td>
<td>Universiteit Brussel, Brussels, Belgium; (^3)Ghent University, Ghent, Belgium</td>
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<td>Ovsianikov(^1)</td>
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<td>Leibniz Universität Hanover, Hanover, Germany; (^2)Medizinische Hochschule</td>
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<td>nanoporous silica nanoparticles</td>
<td>Hartwig(^3), Andrea Hoffmann(^2), Meike Stiesch(^2), Peter</td>
<td>Hanover, Hanover, Germany</td>
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<td>Universitat Ramon Llull (URL), Barcelona, Spain; (^2)Sagetis-Biotech, Barce-</td>
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<td>lona, Spain</td>
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<td>Salvador Borrós(^1)(^2)</td>
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Cristina Casadidio¹, Roberta Censi¹, Stefania Scuri¹, Laura Mayol², Marco Biondi², Giuseppe De Rosa², Piera Di Martino¹
¹University of Camerino, Camerino (MC), Italy; ²University of Naples Federico II, Naples, Italy

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School of Biomedical Engineering, Med-X Research Institute, Shanghai, China

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Masaya Shimabukuro¹, Yusuke Tsutsumi²,³, Kosuke Nozaki¹, Peng Chen², Maki Ashida², Hisashi Doi², Takao Hanawa²
¹Tokyo Medical and Dental University, Bunkyo, Japan; ²Tokyo Medical and Dental University, Chiyoda, Japan; ³Research Center for Structural Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

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University of Liverpool, Liverpool, UK

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Helena Knopf-Marques¹,², Julien Barthès¹,², Angela Mutschler⁴, Julie Bystroňová³, Nihal E. Vrana¹,², Philippe Lavalle²
¹PROTiP MEDICAL, Strasbourg, France; ²Inserm, Strasbourg, France; ³Contipro Biotech S. R. O., Dolni Dobrouc, Czech Republic; ⁴ENSCBP - Bordeaux INP, Pessac, France

167 Bioinspired interface design modulates pathogen and immunocyte responses in biomaterial-based anti-infection combination therapy

Jinhua Li
TU Dresden, Dresden, Germany

168 Fluorescent antimicrobial silver nanoclusters with photothermal properties for biomedical applications

Alberto Nakal-Chidiac¹, Olga Garcia¹, Maria Rosa Aguilar¹,², Luis García Fernandez¹,², Francisco Martin-Saavedra²,³, Clara Escudero²,³, Nuria Vilaboa²,³, Julio San Roman¹,²
¹Institute of Polymer Science and Technology, ICTP-CSIC, Madrid, Spain; ²Networking Biomedical Research Centre in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Madrid, Spain; ³La Paz University Hospital, Madrid, Spain
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<td>(^1)School of Chemical &amp; Processing Engineering, Leeds, UK; (^2)Division of Oral Biology, Dental School, Leeds, UK</td>
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<td>(^1)Universidade Federal do ABC, Santo André, Brazil; (^2)Universidad de la Frontera, Temuco, Chile</td>
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<td>(^1)Federal University of São Paulo (UNIFESP), São José dos Campos, Brazil; (^2)Federal Institute of São Paulo (IFSP), São José dos Campos, Brazil; (^3)São Paulo State University (UNESP), São José dos Campos, Brazil</td>
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<td>(^1)Lancaster University, Lancaster, UK; (^2)AGH University of Science and Technology, Krakow, Poland; (^3)Universite de Lille, Lille, France; (^4)Ghent University, Ghent, Belgium</td>
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<td>(^1)Medical University of Warsaw, Warsaw, Poland; (^2)Kazimierz Pulaski University of Technology and Humanities, Radom, Poland</td>
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<td>(^1)Aristotle University of Thessaloniki, Thessaloniki, Greece; (^2)Alexander Technological Educational Institute of Thessaloniki, Thessaloniki, Greece; (^3)University of Sassari, Sassari, Italy</td>
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175 Surface Functionalization of polylactide with antibacterial purpose
**Wanpen Tachaboonyakiat**, Chanikan Rakthongthai, Nutchaya Thawornsilp
Chulalongkorn University, Bangkok, Thailand

176 Broad-spectrum anti-adhesive coating based on a natural marine polymer
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177 Modification of useful properties of nanostructured surfaces on titanium biomaterials and in-situ biofilm monitoring method
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University of Chemistry and Technology, Prague (UCT Prague), Praha 6 – Dejvice, Czech Republic

178 Antibiotic-loaded bone allografts for prophylaxis and treatment of bone infections
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1University Medical Center Hamburg-Eppendorf, Hamburg, Germany; 2Peoples Friendship University of Russia, Moscow, Russia; 3Scientific Research Institute of Traumatology and Orthopedics, Astana, Kazakhstan; 4Justus-Liebig-University Giessen, Giessen, Germany; 5University of Niš, Niš, Serbia; 6Medical University Innsbruck, Innsbruck, Austria; 7BerlinAnalytix GmbH, Berlin, Germany; 8University of Regensburg, Regensburg, Germany

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1University of Santiago de Compostela, Santiago de Compostela, Spain; 2Hamburg University of Technology, Hamburg, Germany

180 Preparation, Characterization and Evaluation of Collagen Sheets for the Delivery of Vancomycin
**Stefanie Eckes**, Joy Braun2, Theresa Stegmann1, Hansgeorg Haupt1, Katja Schmitz1, Ulrike Ritz2, Daniela Nickel1,3
1Technical University of Darmstadt, Darmstadt, Germany; 2Johannes Gutenberg University, Mainz, Germany; 3University of Cooperative Education, Glauchau, Germany

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University of Lille, Lille, France
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<td>$^{1}$Czech Academy of Sciences, Prague, Czech Republic; $^{2}$Charles University, Prague, Czech Republic</td>
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1University of Balearic Islands, Palma, Spain; 2Balearic Islands Health Research Institute (IdISBa), Palma, Spain

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1University Hospital Erlangen, Erlangen, Germany; 2Warsaw University of Technology, Warsaw, Poland

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<p>|                  | ¹Brno University of Technology, Brno, Czech Republic; ²Czech Technical University in Prague, Prague, Czech Republic; ³University Hospital Brno, Brno, Czech Republic; ⁴Veterinary Research Institute, Brno, Czech Republic; ⁵Enantis Ltd, Brno, Czech Republic |</p>
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<td>1Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2TU Dresden, Dresden, Germany; 3BCUBE - Center for Molecular and Cellular Bioengineering; TU Dresden, Dresden, Germany</td>
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<td>1University of Tehran, Tehran, Iran; 2Université libre de Bruxelles, Brussels, Belgium; 3University of Tehran, Rezvanshahr, Iran</td>
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<td>1Dept. of Biohybrid &amp; Medical Textile (BioTex), Aachen, Germany; 2Institut für Textiltechnik of RWTH Aachen University, Aachen, Germany; 3DWI - Leibniz-Institute for interactive materials, Aachen, Germany</td>
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Ozgen Ozturk-Oncel¹, Carlos Heras-Bautista², Lokman Uzun³, Deniz Hür⁴, Kurt Pfannkuche², Bora Garipcan¹
¹Boğaziçi University, İstanbul, Turkey; ²University of Cologne, Cologne, Germany; ³Hacettepe University, Ankara, Turkey; ⁴Eskisehir Technical University, Eskişehir, Turkey

Adhesion of Streptococcus mutans and Porphyromonas gingivalis to bracket materials: a saliva-induced multi-species biofilm study

So-hyun Park¹, Sug-joon Ahn¹, Jung-sub An²
¹Seoul National University, Seoul, Republic of Korea; ²Seoul National University/Dental hospital, Seoul, Republic of Korea

Surface functionalisation of magnetic nanoparticles by ß-amyloid 1-42 peptide (Aß42)-specific aptamers as a concentration tool in early diagnosis of Alzheimer’s disease

Cheryl M. Collins¹, Valeria Perugini¹, Manuel González Gómez², Yolanda Piñeiro², José Rivas², Matteo Santin¹
¹University of Brighton, Brighton, UK; ²Universidade de Santiago de Compostela, Santiago de Compostela, Spain

Cyclic voltammetric biosensor based on graphene and methionine composite film modified screen printed carbon electrode for detection of food colorant

Rungtiva Poo-arpporn, Chutimon Akkapinyo
King Mongkut’s University of Technology Thonburi, Bangkok, Thailand

Tribological investigations of polymer materials on a rolling-sliding knee wear simulator

Jessica Hembus¹, Susann Gierschner¹, Felix Ambellan², Stefan Zachow², Rainer Bader¹
¹Rostock University Medical Centre, Rostock, Germany; ²Zuse Institute Berlin, Berlin, Germany

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Samuel W. Farr, Chloe L. M. Bell, Kevin A. Pereira, Y. M. John Chew, Semali Perera
University of Bath, Bath, UK

Micromechanical and morphological differences of collagen-based materials influence the cell-substrate interaction

Diana Voigt, Ina Prade, Michael Meyer, Enno Klüver
Research Institute of Leather and Plastic Sheeting (FILK) gGmbH, Freiberg, Germany
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Susan Köppen¹, Myriam Uhrhan¹, Martin Kulke², Norman Geist², Walter Langel², Dorothea Brüggemann¹
¹University of Bremen, Bremen, Germany; ²University of Greifswald, Greifswald, Germany

Stem cell mechanosensation on gelatin methacryloyl (GelMA) stiffness gradient hydrogels
Yu Suk Choi¹, Claire Kim¹, Jennifer Young², Andrew Holle², Joachim Spatz²
¹University of Western Australia, Perth, Australia; ²Max Planck Institute for Medical Research, Heidelberg, Germany

Functional fibrin-based hydrogels for controlling cell/biomaterial interactions in biohybrid implants
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RWTH Aachen University, Aachen, Germany

Enhancement of cell-to-cell communications by electrical stimulation on ceramic biomaterials
Miho Nakamura¹², Teuvo Hentunen¹, Jukka Salonen¹, Kimihiro Yamashita²
¹University of Turku, Turku, Finland; ²Tokyo Medical and Dental University, Tokyo, Japan

Cellular traction on compliant scaffolds potentiates BMP signaling
Erik Brauer¹, Sophie Schreivogel¹, Petra Knaus¹², Georg Duda¹, Ansgar Petersen¹
¹Charité - Universitätsmedizin Berlin, Berlin, Germany; ²Freie Universität Berlin, Berlin, Germany

Nanofibrous engineered matrix induces trans-differentiation of C2C12 myoblasts to osteoblast phenotype via BMP-dependent signaling
Hee-Yeon Jo, Joung-Hwan Oh, Jae Hyung Kim, Kyung Mi Woo
Seoul National University, Seoul, Republic of Korea
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<td>1Unidad de Medicina Regenerativa. Grupo de Investigación en Reumatología (GIR). Instituto de Investigación Biomédica de A Coruña (INIBIC). CHUAC. SERGAS., A Coruña, Spain; 2Centro de Investigaciones Científicas Avanzadas (CICA). Universidad de A Coruña (UDC)., A Coruña, Spain; 3Centro de Investigación Biomédica en Red (CIBER)., Madrid, Spain; 4CBQF - Centro de Biotecnologia e Química Fina, Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Porto, Portugal</td>
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¹1st Faculty of Medicine, Charles University, Prague, Czech Republic; ²Faculty of Medicine in Pilsen, Charles University, Pilsen, Czech Republic; ³1st Faculty of Medicine, Charles University and General University Hospital in Prague, Prague, Czech Republic

**229 High-throughput screening of micro-topographical chips for the control of stem cell fate**  
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King’s College London, London, UK

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¹University Medical Center Hamburg-Eppendorf, Hamburg, Germany; ²University of Niš, Niš, Serbia; ³Justus Liebig University of Giessen, Giessen, Germany; ⁴BerlinAnalytix GmbH, Berlin, Germany

**232 Novel Use of a Dextran Sulfate Sodium-induced Colitis Mouse Model in the study of IBD-associated renal disease**  
**Chia Jung Chang**¹,², Pi-Chao Wang³, Akiyoshi Taniguchi¹,²  
¹Waseda University, Tokyo, Japan; ²National Institute for Materials Science, Tsukuba, Japan; ³University of Tsukuba, Tsukuba, Japan

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Sichuan University, Chengdu, China

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¹University Medical Center Greifswald, Greifswald, Germany; ²University Medical Center Rostock, Rostock, Germany
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RMS Foundation, Bettlach, Switzerland |
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<td>Babes-Bolyai University, Cluj-Napoca, Romania; University of Szeged, Szeged, Hungary; Iuliu Hatieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania; University of Agricultural Science and Veterinary Medicine, Cluj-Napoca, Romania</td>
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<td>Queen’s University Belfast, Belfast, UK; St. Cloud State, St Cloud, US</td>
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¹TnU AD, Trenčín, Slovakia; ²TnU AD, Joint Glass Centre of the IIC SAS, TnU AD and FChFT STU, Trenčín, Slovakia; ³University of Erlangen-Nuremberg, Erlangen, Germany |
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¹University of Erlangen-Nuremberg, Erlangen, Germany; ²East China University of Science and Technology, Shanghai, China |
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¹Technical University of Liberec, Liberec, Czech Republic; ²Regional Hospital, Liberec, Czech Republic |
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¹King’s College London, London, UK; ²Friedrich Schiller University Jena, Jena, Germany |
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¹University Hospital Carl Gustav Carus of TU Dresden, Dresden, Germany; ²TU Dresden, Dresden, Germany; ³Max Bergmann Centre of Biomaterials, TU Dresden, Dresden, Germany; ⁴Innovent e.V., Jena, Germany; ⁵University of Erlangen-Nuremberg, Erlangen, Germany |
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¹Cergy-Pontoise university, Neuville sur Oise, France; ²Tampere University, Tampere, Finland |
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*Barbara Zagrajczuk*¹, Michal Dziadek¹, Kinga Dziadek², Kamila Chyzy¹, Katarzyna Cholewa-Kowalska¹  
¹AGH University of Science and Technology, Krakow, Poland; ²University of Agriculture in Krakow, Krakow, Poland

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*Katharina Schuhladen*¹, Lena Stich¹, Xiaoju Wang², Leena Hupa², Alexander Steinkasserer¹, Aldo R. Boccaccini¹, Elisabeth Zinser¹  
¹University of Erlangen-Nuremberg, Erlangen, Germany; ²Abo Akademi University, Turku, Finland

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Athanasios Nikolaou¹,², Farzad Foroutan¹, Jorge Gutierrez-Merino¹, Daniela Carta¹  
¹University of Surrey, Guilford, UK; ²Fourth State Medicine Ltd, Haslemere, UK

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*Reece N. Oosterbeek*¹, Patrick Duffy², Sean McMahon², Xiang C. Zhang³, Serena M. Best¹, Ruth E. Cameron¹  
¹University of Cambridge, Cambridge, UK; ²Ashland Specialties Ireland Ltd., Dublin, Ireland; ³Lucideon Ltd., Stoke-on-Trent, UK

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*Joanna Babilotte*¹, Vera Guduric¹, Reine Bareille¹, Damien Le Nihouannen¹, Jean-Christophe Fricain¹,², Sylvain Catros¹,²  
¹INSERM U1026 BioTis, Bordeaux, France; ²Faculty of Dentistry, Bordeaux, France

#### 261 The use of cold plasma treatment to increase cell migration within elastomeric poly(ester-urethane-urea) scaffolds in tissue engineering applications

Sylvie Changotade¹, Didier Lutomski¹, David Duday², *Géraldine Rohman*¹  
¹Université Paris 13, Bobigny, France; ²LIST, Esch-sur-Alzette, Luxembourg

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1Maastricht University, Maastricht, Netherlands; 2Eindhoven University of Technology, Eindhoven, Netherlands; 3SupraPolix, Eindhoven, Netherlands

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1University of Lille, Lille, France; 2University of Lille, Villeneuve d’Ascq, France

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University of Concepcion, Concepcion, Chile

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Louis Gangolphe1,2, Stéphane Déjean1, Audrey Bethy1, Sylvie Hunger1, Coline Pinese1, Xavier Garric1, Frédéric Bossard2, Benjamin Nottelet1
1Department of Artificialis Biopolymers, Max Mousseron Institute of Biomolecules (IBMM), UMR CNRS 5247, University of Montpellier, Montpellier, France; 2Institute of Engineering, Univ. Grenoble Alpes, Grenoble, France

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RWTH Aachen University, Aachen, Germany

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Łukasz Kaniuk, Mateusz Marzec, Andrzej Bernasik, Urszula Stachewicz
AGH University of Science and Technology, Cracow, Poland

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Lodz University of Technology, Lodz, Poland
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Giulia Brachi¹, Luca Menichetti²,³, Andrei Mikheev⁴, Mauro Ferrari⁵, Clara Mattu¹, Gianluca Ciardelli¹,²
¹Politecnico di Torino, Turin, Italy; ²National Research Council, Pisa, Italy; ³Fondazione Regione Toscana G. Monasterio, Pisa, Italy; ⁴Houston Methodist Research Institute, Houston, US; ⁵University of St.Thomas, Houston, US

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Ben Newland¹,², Katherine Long³,⁴, Dimitri Eigel¹, Sowmya Sekizar⁵, Lida Zoupi⁵, Romy Schuster⁴, Wieland Huttner⁴, Petra Welzel¹, Carsten Werner¹, Anna Williams⁵
¹Leibniz Institute of Polymer Research Dresden, Germany, Dresden, Germany; ²School of Pharmacy and Pharmaceutical Sciences, Cardiff University, Wales, U.K., Cardiff, UK; ³Centre for Developmental Neurobiology and MRC Centre for Neurodevelopmental Disorders, King’s College London, England, U.K., London, UK; ⁴Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany; ⁵MRC-Centre for Regenerative Medicine, University of Edinburgh, Edinburgh, Scotland, U.K., Edinburgh, UK

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Nathália O. Muniz¹,², Fernanda A. Vechietti¹, Guilherme R. Anesi¹, Gustavo V. Guinea², Luís Alberto L. dos Santos¹
¹Federal University of Rio Grande do Sul, Porto Alegre, Brazil; ²Technical University of Madrid, Madrid, Spain

Physicochemical properties of the surfaces as the stem cells fate regulator

Mohsen Shahrousvand¹,², Amin Shavandi², Seyed Hafez Jafari²
¹University of Tehran, Rezvanshahr, Iran; ²Université Libre de Bruxelles, Brussels, Belgium

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Konstantin Malafeev¹, Olga Moskalyuk³, Vladimir Yudin¹,², Elena Popova², Elena Ivan'kova², Vladimir Elokhovskiy²
¹Peter the Great St. Petersburg Polytechnic University, St.Petersburg, Russia; ²Institute of macromolecular compounds, St.-Petersburg, Russia; ³Saint-Petersburg State University of Industrial Technologies and Design, St.-Petersburg, Russia

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Tiziana Fuoco, Anna Finne-Wistrand
KTH Royal Institute of Technology, Stockholm, Germany
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**Alkmini Negka**, Panagiota Koralli, Lida Evmorfia Vagiaki, Antonia Dimitrakopoulou-Strauss, Vasilis Gregoriou, Christos Chochos
1 German Cancer Research Center, Heidelberg, Germany; 2 National Hellenic Research Foundation, Athens, Greece

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Chulalongkorn University, Bangkok, Thailand

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**Ilona Paulus**, Julia Bloebaum, Jörg Tessmar, Jürgen Groll
University of Würzburg, Würzburg, Germany

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**Lida E. Vagiaki**, Alkmini Negka, Panagiota Koralli, Antonia Dimitrakopoulou-Strauss, Dionyssios Mouzakis, Vasilis Gregoriou, Christos Chochos
1 National Hellenic Research Foundation, Athens, Greece; 2 German Cancer Research Center, Heidelberg, Germany; 3 Hellenic Army Academy, Athens, Greece

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**Nicola Contessi Negrini**, Francesco Tamburrino, Armando Razionale, Silvia Farè, Roberto Chiesa, Monica Bordegoni, Sandro Barone
1 INSTM, National Consortium of Materials Science and Technology, Florence, Italy; 2 Politecnico di Milano, Milan, Italy; 3 Università di Pisa, Pisa, Italy

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**Zdenka Capáková**, Věra Kašpárková, Petr Humpolíček
Tomas Bata University in Zlín, Czech Republic

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**Nicoletta Barbani**, Caterina Cristallini
1 University of Pisa, Pisa, Italy; 2 CNR, Pisa, Italy; 3 INSTM, Florence, Italy

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**Made Budiarta**, Wenjing Xu, Sarah Wypysk, Sarah Boesveld, Pavel Strnad, Walter Richtering, Andrij Pich, Tobias Beck
1 RWTH Aachen, Aachen, Germany; 2 DWI-Leibniz Institute for Interactive Materials e.V., Aachen, Germany; 3 University Hospital Aachen, Aachen, Germany
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Sohee Lee, Kyung Min Park
Incheon National University, Incheon, Republic of Korea

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Agata Flis¹, Filip Koper², Wiktor Kasprzyk², Elżbieta Pamuła¹
¹AGH University of Science and Technology, Kraków, Poland; ²Tadeusz Kościuszko Cracow University of Technology, Kraków, Poland

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Clara Mattu, Giulia Brachi, Gianluca Ciardelli
Politecnico di Torino, Turin, Italy

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Amedea B. Seabra¹, Alessandro L. Urzeda¹, Marcelly C. Gonçalves², Mônica H. M. Nascimento¹, Gerson Nakazato², Christiane B. Lombello¹
¹Universidade Federal do ABC, Santo André, Brazil; ²Universidade Estadual de Londrina, Londrina, Brazil

290 Integration of protein containers into polyelectrolyte microgels for drug release and delivery
Made Budiarta¹, Wenjing Xu², Sarah Wypysek¹, Sarah Boesveld³, Pavel Strnad³, Walter Richtering¹, Andrij Pich², Tobias Beck¹
¹RWTH Aachen, Aachen, Germany; ²DWI-Leibniz Institute for Interactive Materials e.V., Aachen, Germany; ³University Hospital Aachen, Aachen, Germany

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National Research Council (CNR), Bologna, Italy

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University of Duisburg-Essen, Essen, Germany

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Iran University of Medical Sciences, Tehran, Iran
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1Institute of Electronic Materials Technology, Warsaw, Poland; 2Warsaw University of Technology, Warsaw, Poland |
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1Second Clinical Medical College of Jinan University, Shenzhen, China; 2Sichuan University, Chengdu, China |
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1Federal University of São Paulo (UNIFESP), São José dos Campos, Brazil; 2National Institute for Space Research (INPE), São José dos Campos, Brazil |
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1National Research Tomsk State University, Tomsk, Russia; 2University of Muenster, Muenster, Germany |

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1Leibniz-Institut für Polymerforschung Dresden e.V., Dresden, Germany; 2Forschungsinstitut für Leder und Kunststoffbahnen FILK gGmbH, Freiberg, Germany; 3Paracelsus Medical University Salzburg and Nuremberg, Nuremberg, Germany |
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\textbf{Angela Semitela}1, Gonçalo Ramalho1, Cátia Sousa2, Soraia Silva2, Alexandrina Mendes2, Paula A. A. P. Marques1, António Completo1  
1University of Aveiro, Aveiro, Portugal; 2University of Coimbra, Coimbra, Portugal |
300 Incorporation of Hyaluronic Acid into Electrospun Thermoplastic Urethane Membranes for Tissue Engineering Applications
Thomas Schneider, Magnus Kruse, Laura Kreinest, Petra Mela, Thomas Gries, Stefan Jockenhoevel, Andreas Blaeser, Benedict Bauer
RWTH Aachen University, Aachen, Germany

301 Biomimetic collagen filaments from high purity collagen for regenerative medicine
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TU Dresden, Dresden, Germany

302 Biodegradable Sol-Gel-Derived Endless Fibers and Their Potential as a Bioactive Scaffold Material in Regenerative Therapies
Bastian Christ¹, Tobias Weigel², Marvin Kaiser¹, Walther Glaubitt¹, Sofia Dembski¹, Jörn Probst¹
¹Fraunhofer ISC, Würzburg, Germany; ²University Hospital Würzburg, Würzburg, Germany

303 Role of the composition of electrospun membranes based on aliphatic co-polyesters on drug delivery thereof
Maria Herrero-Herrero¹, Rubén Martín-Cabezuelo¹, Ana Vallés-Lluch¹,José A. Gómez-Tejedor¹²
¹Universitat Politècnica de València, Valencia, Spain; ²Biomedical Research Networking Centre in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Valencia, Spain

304 Evaluation of a Self-Constructed Diffusion Chamber System Designed for the Determination of the Permeability of Collagen Barriers in Three-Dimensional Textile ACL-Scaffolds
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Leibniz-Institut für Polymerforschung Dresden e.V., Dresden, Germany

305 Development of porous PLLA/DCPA microfiber scaffold to enhance bone formation
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Doshisha University, Kyotanabe, Japan

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Seoul National University, Seoul, Republic of Korea

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Cindy Elschner, Lars Bittrich, Annette Breier, Judith Hahn, Axel Spickenheuer
Leibniz-Institut für Polymerforschung Dresden e.V., Dresden, Germany
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<td>1Institute of Biomaterials, Department of Materials Science and Engineering, University of Erlangen-Nuremberg, Erlangen, Germany; 2Department of Obstetrics and Gynecology, Erlangen University Hospital, Friedrich Alexander University of Erlangen–Nuremberg, Comprehensive Cancer Center ER-EMN, Erlangen, Germany</td>
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<td>1University of Turku, Turku, Finland; 2Leibniz-Institut für Polymerforschung Dresden e.V. (IPF Dresden), Dresden, Germany</td>
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<td>1Friedrich-Alexander-University Erlangen- Nuremberg, Erlangen, Germany; 2Bavarian Polymer Institute (BPI), Fürth, Germany</td>
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<td>Institute of Advanced study in Science and Technol, Guwahati, India</td>
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<td>¹RWTH Aachen University Hospital, Aachen, Germany; ²RWTH Aachen University, Aachen, Germany; ³Paediatric Research Institute Città della Speranza, Padova, Italy</td>
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<td>Helena Hüskens¹, Frederik Böke¹, Yu Yang², Marvin Tamm¹, Adrian Keller², Horst Fischer¹</td>
<td>¹RWTH Aachen University, Aachen, Germany; ²Paderborn University, Paderborn, Germany</td>
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<td>¹Polish Academy of Sciences, Kraków, Poland; ²Joanneum Research Forschungsges mbH, Niklasdorf, Austria; ³Jagiellonian University Medical College, Kraków, Poland</td>
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<td>Vanja Kokol¹, Zdenka Peršin¹, Tomaž Vuherer¹, Bérengère J. C. Luthringer²</td>
<td>¹University of Maribor, Maribor, Slovenia; ²Helmholtz-Zentrum Geesthacht, Geesthacht, Germany</td>
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<td>Gyeong Won Lee¹, Sang Gu Yim¹, Seong Il Yoo², Seung Yun Yang¹</td>
<td>¹Pusan National University, Miryang, Republic of Korea; ²Pukyong National University, Pusan, Republic of Korea</td>
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<td>¹TECNALIA, San Sebastian, Spain; ²Joanneum Research Materials, Weiz, Austria; ³INNOPROT, SL, Derio, Spain</td>
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Oxidized Alginate Hydrogels from Mixed Secondary Aldimine Cross-linkers Exhibit Tunable Mechanical and Viscoelastic Properties
Francis L. C. Morgan, Shahzad Hafeez, Huey Wen Ooi, Lorenzo Moroni, Matthew B. Baker
Maastricht University, Maastricht, Netherlands

Development of Mesoporous Silica Nanocomposite Hydrogels for Bone Regeneration
Aygul Zengin, Pamela Habibović, Sabine Van Rijt
Maastricht University, Maastricht, Netherlands

Living functional hydrogels generated by bioorthogonal cross-linking reactions of azide-modified cells with alkyne-modified polymers
Koji Nagahama, Yuka Kimura, Seika Aoyama
Konan University, Kobe, Japan

Hybrid alginate-silica hydrogels for tissue engineering
Aurora C. Hernández-González, Lucia Téllez-Jurado, Luis M. Rodríguez-Lorenzo
1Instituto Politécnico Nacional, Mexico City, Mexico; 2Networking Biomedical Research Centre in Bioengineering, Biomaterials and Nanomedicine, Madrid, Spain; 3Instituto de Ciencia y Tecnología de Polímeros- CSIC, Madrid, Spain

Regeneration of skeletal muscle tissue by transplantation with injectable cell cross-linked gels
Yuka Kimura, Koji Nagahama
Konan University, Kobe, Japan

Hydrogel-based hybrid magnetic scaffolds for tissue engineering applications
Sylwia Fiejdasz, Adriana Gilarska, Szczepan Zapotoczny, Maria Nowakowska, Czesław Kapusta
1AGH University of Science and Technology, Kraków, Poland; 2Jagiellonian University, Kraków, Poland

Injectable oligomer cross-linked gelatin hydrogels: Effects of gel composition on osteogenic mineralization
Hafiz Awais Nawaz, Kathleen Schröck, Annett Starke, Caroline Kohn-Polster, Christian Kascholke, Michaela Schulz-Siegmund, Michael C. Hacker
1Leipzig University, Leipzig, Germany; 2University of Veterinary and Animal Sciences (UVAS), Lahore, Pakistan

Injectable hydrogel-based delivery of nonviral genetically-engineered stem cells for repairing traumatic brain injury
Yu-Yun Jang, Yen-Hua Chu, Yi-Chen Bai, Rih-yang Huang, Zhuo-Hao Liu, Chien-Wen Chang
1National Tsing Hua University, Hsinchu, Taiwan; 2Chang Gung Memorial Hospital and Chang Gung University, Taoyuan, Taiwan; 3Academia Sinica, Taipei, Taiwan
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<td>¹University Medical Center Rostock, Rostock, Germany; ²Cracow University of Technology, Krakow, Poland; ³AGH University of Science and Technology, Krakow, Poland; ⁴Christian-Albrechts-Universität zu Kiel, Kiel, Germany; ⁵University of York, York, UK; ⁶Lancaster University, Lancaster, UK</td>
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<td>¹RWTH Aachen University Hospital, Aachen, Germany; ²RWTH Aachen University, Aachen, Germany</td>
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<td>Hamid Yousefi-Mashouf¹², Lucie Bailly³, Laurent Orgéas¹, Nathalie Henrich Bernardoni², Sabine Rolland du Roscoat³</td>
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<td>¹Univ. Grenoble Alpes, CNRS, Grenoble INP, Grenoble, France; ²Univ. Grenoble Alpes, CNRS, Grenoble INP, Grenoble, France</td>
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<td>¹CNRS Mateis UMR 5510, Lyon, France; ²CNRS LBTI UMR 5305, Lyon, France</td>
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<td>Regenerative, Modular &amp; Developmental Engineering Laboratory (REMO-DEL), National University of Ireland Galway (NUI Galway), Galway, Ireland; Science Foundation Ireland (SFI), Centre for Research in Medical Devices (CÚRAM), National University of Ireland Galway (NUI Galway), Galway, Ireland</td>
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<td>Institute of Polymers, CSIC, Madrid, Spain; CiBER - BBN, Madrid, Spain</td>
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Enzyme-mediated injectable poly(amino acid)s based hydrogels providing a permissive microenvironment for mesenchymal stem cells

Jana Dvořáková, Ilya Kotelnikov, Zuzana Mikšovská, Bohumila Podhorská, Olga Janoušková, Vladimír Proks
Institute of Macromolecular Chemistry Czech Academy of Science, Prague 6, Czech Republic

One-step dual photocrosslinkable tyramine-enhanced bioglue for in situ tissue repair

Florencia Abinzano1, Khoon Lim3, Paulina Núñez Bernal1, Pau Atienza Roca3, Ane Albillos Sánchez1, Iris A. Otto1, Tim Woodfield3, Jos Malda1,2, Riccardo Levato1
1University Medical Center Utrecht, Utrecht, Netherlands; 2Utrecht University, Utrecht, Netherlands; 3University of Otago Christchurch, Christchurch, New Zealand

The effect of carbon nanoparticles and hydroxyapatite microparticles on the conductivity of hydrogels

Barbara Szaraniec, Marta Raś, Patrycja Domalik-Pyzik, Marcel Zembrzycki, Jan Chłopek
AGH-University of Science and Technology, Kraków, Poland

Thermosensitive bioartificial hydrogels as smart injectable and biocompatible systems allowing post-injection chemical crosslinking

Valeria Chiono, Rossella Laurano, Alice Zoso, Monica Boffito
Politecnico di Torino, Turin, Italy

Halloysite/alkaline phosphatase composite as a component of hydrogel scaffold for bone tissue regeneration

Aneta Pietraszek, Anna Karewicz, Maria Nowakowska
Jagiellonian University, Kraków, Poland

Mineralization of cell laden collagen-alginate microspheres to mimic bone-specific ECM

Sarah Lehnert1, Pawel Sikorski1, David Bassett1,2
1Norwegian University of Science and Technology, Trondheim, Norway; 2University of Birmingham, Birmingham, UK

Development of 3D printed Electrically Conductive Oxidized Alginate and Gelatin based Polypyrrole-Polystyrenesulfonate (PPy:PSS) Hydrogels for Functional Tissue Engineering Applications

Thomas Distler1, Christian Polley2, Rainer Detsch1, Hermann Seitz2, Aldo R. Boccaccini1
1Friedrich-Alexander-University Erlangen-Nuremberg, Erlangen, Germany; 2University of Rostock, Rostock, Germany
361 Oxidized alginate combined with laminin and gelatin (ADA-GEL-LAM) as a suitable hydrogel biomaterial for 3D neuronal networks based on human induced pluripotent stem cell derived neurospheres

Ines Lauria¹, Thomas Distler², Clemens Sauter¹, Farina Bendt¹, Rainer Detsch², Julia Kapr¹, Stephan Rütten³, Aldo R. Boccaccini², Ellen Fritsche¹,⁴
¹Leibniz Research Institute of Environmental Medicine, Düsseldorf, Germany; ²University of Erlangen-Nuremberg, Erlangen, Germany; ³RWTH Aachen University Hospital, Aachen, Germany; ⁴Heinrich-Heine-University of Düsseldorf, Düsseldorf, Germany

362 PEG-heparin microgels as a tool for the modulation of human iPSC-derived kidney organoid differentiation

Valentina Magno¹, Sebastian Kühn¹, Carsten Werner¹,²,³
¹Leibniz Institute of Polymer Research, Dresden, Germany; ²Cluster of Excellence Center for Regenerative Therapies, TU Dresden, Dresden, Germany; ³Cluster of Excellence Physics of Life, TU Dresden, Dresden, Germany

363 General route to anisotropic microgels composed from pure biopolymers

Ivan Rehor¹,², Yadu Nath Vakkipurath Kodakkadan¹, Kristyna Idzakovicova¹, Frantisek Stepanek¹
¹University of Chemistry and Technology Prague, Prague 6, Czech Republic; ²Institute of Organic Chemistry and Biochemistry, Prague, Prague 6, Czech Republic

364 Electron Irradiation Assisted Crosslinking of Biological Hydrogels: Reagent-Free Modification towards Tailored Matrices

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Leibniz Institute of Surface Engineering (IOM), Leipzig, Germany; University Leipzig, Leipzig, Germany

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University of York, Heslington, York, UK

366 Viscoelastic hydrogels drive chondrogenesis of mesenchymal stem cells

Matthew J. Walker, Marco Cantini
University of Glasgow, Glasgow, UK

367 Biocompatibility of Novel Electrically Conductive Scaffolds

Petr Humpolíček¹, Katarzyna A. Radaszkiewicz², Zdenka Capáková¹, Jiří Pacherník², Patrycja Bober³, Věra Kašpárková¹, Petra Rejmontová¹, Marián Lehocký¹, Petr Ponížil³, Jaroslav Stejskal³
¹Tomas Bata University, Zlín, Czech Republic; ²Masaryk University, Brno, Czech Republic; ³Academy of Sciences of the Czech Republic, Prague, Czech Republic
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<td>1\textsuperscript{3B’s Research Group, I3Bs - Biomaterials, Biodegradables and Biomimetics of University of Minho, Headquartes of the European Institute of Excellence on Tissue Engineering and Regenerative Medicine, Guimarães, Portugal; 2ICVS/3B’s – PT Government Associate Laboratory, Guimarães, Portugal; 3The Discoveries Centre for Regenerative and Precision Medicine, Headquaters at University of Minho, Guimarães, Portugal</td>
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<td>Institute (IdISBa), Palma, Spain</td>
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<td>University Medical Center of Groningen, Groningen, Netherlands</td>
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<td>Irene Carmagnola, Alice Zoso, Valeria Chiono Politecnico di Torino, Turin, Italy</td>
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¹University Hospital Würzburg, Würzburg, Germany; ²University of Würzburg, Würzburg, Germany |
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¹Universidade do Porto, Porto, Portugal; ²Hospital São João, Porto, Portugal; ³Hospital CUF, Porto, Portugal |
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¹Leibniz-Institut für Polymerforschung Dresden e.V. (IPF), Max Bergmann Center of Biomaterials Dresden (MBC), Dresden, Germany; ²TU Dresden, Dresden, Germany; ³Leibniz-Institut für Polymerforschung Dresden e.V. (IPF), Dresden, Germany; ⁴Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE), Dresden, Germany; ⁵Queensland University of Technology (QUT), Kelvin Grove, QLD, Australia |
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¹Stanford University, Stanford, US; ²RWTH Aachen, Aachen, Germany |
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¹Université de Montpellier, Montpellier, France; ²Université de Montpellier, Montpellier, France |
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Silvia J. Bidarra\textsuperscript{1,2}, Carla Oliveira\textsuperscript{1,3,4}, Cristina C. Barrias\textsuperscript{1,2,5}
\textsuperscript{1}i3S, Instituto de Inovação e Investigação em Saúde, Universidade do Porto, Porto, Portugal; \textsuperscript{2}INEB-Instituto de Engenharia Biomédica, Universidade do Porto, Porto, Portugal; \textsuperscript{3}IPATIMUP-Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal; \textsuperscript{4}Department of Pathology and Oncology, Faculty of Medicine, University of Porto, Porto, Portugal; \textsuperscript{5}ICBAS-Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Porto, Portugal

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\textsuperscript{1}University of Manchester, Manchester, UK; \textsuperscript{2}Bioncotech Therapeutics S.L., Valencia, Spain

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\textsuperscript{1}Friedrich-Alexander-Universität Erlangen-Nuremberg, Erlangen, Germany; \textsuperscript{2}Fraunhofer Institut, Fürth, Germany

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Doshisha University, Kyoto, Japan

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Ernst-Abbe-Hochschule Jena, Jena, Germany

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\textsuperscript{1}Ankara University, Ankara, Turkey; \textsuperscript{2}Koc University, Istanbul, Turkey

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Friedrich-Alexander-University Erlangen-Nuremberg, Erlangen, Germany
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<sup>1</sup>School of Physics, Camperdown, Australia;  <sup>2</sup>School of Aerospace, Mechanical & Mechatronic Engineering, Camperdown, Australia;  <sup>3</sup>Sydney Nano Institute, Camperdown, Australia;  <sup>4</sup>Charles Perkins Centre, Camperdown, Australia |
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FAU, Erlangen, Germany; FAU, Fürth, Germany

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**Seyedeh Ferdows Afghah**¹,², Mine Altunbek², Bahattin Koc¹,²
¹Sabanci University, Istanbul, Turkey; ²Sabancı University Nanotechnology Research and Application Center (SUNUM), Istanbul, Turkey

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**Sarah Duin**¹, Susann Lehmann², Christiane Paßkönig¹, Elisabeth Kemter³, Eckhard Wolf³, Anja Lode¹, Michael Gelinsky¹, Barbara Ludwig²
¹University Hospital Carl Gustav Carus and Faculty of Medicine of TU Dresden, Dresden, Germany; ²University Hospital Carl Gustav Carus of TU Dresden, Dresden, Germany; ³Ludwig-Maximilians University Munich, Munich, Germany

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Fraunhofer IKTS Institute, Dresden, Germany

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**Michael Teske**¹, Natalia Rekowska¹, Daniela Arbeiter¹, Andreas Brietzke¹, Thomas Eickner¹, Robert Mau², Alexander Riess², Jan Konasch², Hermann Seitz², Niels Grabow³
¹University Medical Center Rostock, Rostock, Germany; ²University of Rostock, Rostock, Germany

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**Andreas Hoffmann**¹, Klaus Kreuels², Martin Wehner¹, Arnold Gillner¹,²
¹Fraunhofer-Institut für Lasertechnik ILT, Aachen, Germany; ²RWTH Aachen, Aachen, Germany

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Queensland University of Technology, Brisbane, Australia
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**Thomas Stoppe**, Max von Witzleben, Matthias Bornitz, Tilman Ahlfeld, Michael Gelinsky, Marcus Neudert  
TU Dresden, Dresden, Germany

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**Christoph Boehm**, Andrei Hrynevich, Gernot Hochleitner, Eoin Jones, Jürgen Groll, Jörg Tessmar, Paul D. Dalton  
University Hospital Würzburg, Würzburg, Germany

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University Hospital Würzburg, Würzburg, Germany

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**Shardul Bhusari**¹,², Shrikrishnan Sankaran¹, Aránzazu del Campo¹,²  
¹INM – Leibniz Institute for New Materials, Saarbrücken, Germany; ²Saarland University, Saarbrücken, Germany

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**Qida Hu**, Wangteng Wu, Guping Tang, Tingbo Liang, Meng Wang  
Zhejiang University, Hangzhou, China

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**Wen Jen Lin**¹,², Hsin Lin Huan¹  
¹School of Pharmacy, College of Medicine, National Taiwan University, Taipei, Taiwan; ²Drug Research Center, College of Medicine, National Taiwan University, Taipei, Taiwan

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**Andreas Scherrieble**, Jan Buggisch, Lisa Lang, Martin Hoss, Martin Dauner, Michael Doser  
DITF, Denkendorf, Germany

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**Fatih Kurtuldu**¹, Dušan Galusek², Aldo R. Boccaccini³  
¹Alexander Dubcek University in Trencin, Trenčín, Slovakia; ²Joint Glass centre of the IIC SAS, TnUAD and FChFT STU, Trenčín, Slovakia; ³University of Erlangen-Nuremberg, Erlangen, Germany

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**Mark T. O’Loughlin**, Colm Delaney, Susan M. Kelleher  
University College Dublin, Dublin, Ireland
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Microenvironment targeted microRNA therapy using a megamer-based delivery system activatable by stepwise stimulation

Qida Hu1, Wangteng Wu1,2, Meng Wang1, Shiyi Shao1, Guping Tang2, Tingbo Liang1
1First Affiliated Hospital of Zhejiang University School of Medicine, Hangzhou, China; 2Zhejiang University, Hangzhou, China

Immunocompatible mechano-responsive liposomes for targeted vasodilator delivery

Sofiya Matviykiv1, Gabriela Gerganova1, Tamás Mészáros2, Gergely T. Kozma2, Janos Szebeni2, Andreas Zumboehl2, Bert Müller1
1University of Basel, Allschwil, Switzerland; 2Semmelweis University, Budapest, Hungary; 3University of Fribourg, Fribourg, Switzerland

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Mitsuru Naito1, Naoto Yoshinaga1, Takehiko Ishii1, Akira Matsumoto2, Kazunori Katoaka3, Kanjiro Miyata1
1The University of Tokyo, Tokyo, Japan; 2Tokyo Medical and Dental University, Tokyo, Japan; 3Innovation Center of NanoMedicine, Kawasaki, Japan

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Amedea B. Seabra1, Joana C. Pieretti1, Wallace R. Rolim1, Milena T. Pelegrino1, Marcelly C. Gonçalves2, Gerson Nakazato1, Ana Carolina S. de Souza1, Olga Rubilar3
1Universidade Federal do ABC, Santo André, Brazil; 2Universidade Estadual de Londrina, Londrina, Brazil; 3Universidad de la Frontera, Temuco, Chile

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Polina Pantelidou1,2, Vagelis Rinotas3, Apostolos Papadopoulos1,4, Efsthathios Efsthathopoulos2, Dionysios Mouzakis2,5, Kyriaki Bakirtzi3, Eleni Douni1,4
1Institute for Bioinnovation, B.S.R.C. “Alexander Fleming”, Vari, Greece; 2National and Kapodistrian University of Athens, Athens, Greece; 3Pharmathen International, Sapes, Rodopi, Greece; 4Agricultural University of Athens, Athens, Greece; 5Hellenic Army Academy, Vari, Greece; 6Sponsored by the Hellenic Society of Biomaterials, Athens, Greece

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1Aristotle University of Thessaloniki, Thessaloniki, Greece; 2University of Sassari, Sassari, Italy; 3Alexander Technological Educational Institute of Thessaloniki, Thessaloniki, Greece
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Markus Witzler¹,², Sarah Vermeeren¹, Daniel Feuser¹, Patrick F. Ottensmeyer¹, Dominik Büchner¹,², Martin Gericke², Thomas Heinze², Edda Tobiasch¹, Margit Schulze¹
¹Bonn-Rhein-Sieg University of Applied Sciences, Rheinbach, Germany; ²Friedrich-Schiller-University Jena, Jena, Germany

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Viktoria Sokolowski, Joachim Nickel, Jürgen Groll
University Würzburg, Würzburg, Germany

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Tomas Bata University, Zlín, Czech Republic

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Lodz University of Technology, Lodz, Poland

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Sumanta Samanta¹, Vignesh K. Rangasami¹, Kenta Aasawa², Yuji Teramura², Oommen P. Oommen¹
¹Tampere University, Tampere, Finland; ²The University of Tokyo, Tokyo, Japan

Targeted drug release from chitosan fiber-based textiles for chronic wound care
Michael Wöltje¹, Luise Hilbig¹, Eva Dohle², Dilbar Aibibu³, Shahram Ghanaati², Chokri Cherif²
¹TU Dresden, Dresden, Germany; ²Universitätsklinikum Frankfurt, Frankfurt am Main, Germany
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Paula Korn¹,², Tilman Ahlfeld³, Winnie Pradel³, Anja Lode³, Adrian Franke³, Martina Rauner⁴, Ursula Range⁵, Bernd Stadlinger⁶, Günter Lauer³, Michael Gelinsky²
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433  A combined biological and chemical/physical bone characterization for the development of customized 3D-printed scaffolds
Caterina Licini¹,², Giulia Molino², Chiara Novara², Fabrizio Giorgis², Giorgia Cerqueni³, Sonia Fiorilli², Gabriela Ciapetti³, Monica Mattioli-Belmonte¹, Chiara Vitale-Brovarone²
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434  2D substrate based on Exfoliated black phosphorus with anticancer and regenerative properties
Maria Grazia Raucci¹, Ines Fasolino¹, Maria Caporali², Manuel Serrano Ruiz², Alessandra Soriente¹, Maurizio Peruzzini², Luigi Ambrosio¹
¹CNR, Naples, Italy; ²CNR, Firenze, Italy

435  A novel osteoblasts-osteoclasts co-culture system of osteoporosis: the dynamic protein corona of magnetic hydroxyapatite scaffold promotion osteoblast proliferation
Yue Zhu
Sichuan University, Chengdu, China

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Sheen Gurrib¹, Serena M. Best¹, Ruth E. Cameron¹, David Sharp²
¹University of Cambridge, Cambridge, UK; ²Ipswich Hospital, Ipswich, UK
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Xin Xiong1, Pia Moosmann2, Ole Jung3, Ralf Smeets3, Mike Barbeck3,4,5, Claus Burkhard1, Jens Pissarek6, Rumen Krastev1,2
1Natural and medical sciences institute at the University of Tübingen, Reutlingen, Germany; 2Reutlingen University, Reutlingen, Germany; 3University Clinic Centre Hamburg-Eppendorf (UKE), Hamburg, Germany; 4Botiss Biomaterials GmbH, Zossen, Germany; 5BerlinAnalytix GmbH, Berlin, Germany; 6Biotrics Bioimplants GmbH, Berlin, Germany

In vitro and in vivo investigation on artificial extracellular matrices for bone regeneration

Sabine Schulze1,2, Yvonne Förster1,2, Christin Neuber3, Suzanne Manthey1,2, Annett Wenke1,2, Ute Hempel2, Jens Pietzsch1,4, Stefan Rammelt1,5
1University Hospital Dresden, Dresden, Germany; 2Medical Faculty, TU Dresden, Dresden, Germany; 3Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 4TU Dresden, Dresden, Germany; 5DFG-Center for Regenerative Therapies Dresden, Dresden, Germany

Osteoblast behavior upon electrical stimulation in vitro

Susanne Staehlke1, Martina Grün1, Julius Zimmermann2, Thomas Freitag1, Alexander Prokopp1, Ingo Barke3, Sylvia Speller2, Ursula van Rienen2, Barbara Nebe1,2
1University Medical Center Rostock, Rostock, Germany; 2University of Rostock, Rostock, Germany

Multifunctional Nano- and Macroporous Bioactive Glass-Composites for Bone Replacement

Nina Ehlert1,3, Marvin Lietzow1,3, Karen Besecke1,3, Jörg Schaeske2,3, Meike Stiesch2,3, Sarah Gnesmer2,3, Andreas Kampmann2,3, Laura Burmeister2,3, Andrea Hoffmann2,3, Franz Körkemeyer1
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Effect of Chitosan Infiltration on the Mechanical Properties of a Porous Xenograft Material Derived from New Zealand Sourced Bovine Cancellous Bone

Niranjan Ramesh, Jithendra T. Ratnayake, Stephen C. Moratti, George J. Dias
University of Otago, Dunedin, New Zealand

Development of Injectable Bone Composites for Biomedical and Surgical Applications

Dhivyaa Anandan, Ankita Das, Arunai Nambiraj, Amit K. Jaiswal
Vellore Institute of Technology (VIT), Vellore, India
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<td>1University of Duisburg-Essen, Essen, Germany; 2Fraunhofer IWM, Halle/S, Germany; 3IPW e.V., Merseburg, Germany</td>
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<td>1Consejo Superior de Investigaciones Científicas, Madrid, Spain; 2Consortio Centro de Investigación Biomédica en Red de Bioingeniería, Biomateriales y Nanomedicina, Madrid, Spain; 3Universidad Complutense de Madrid, Madrid, Spain</td>
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The physical properties of collagen biomaterials determine their degradation kinetics and angiogenesis within the biomaterial.

Carlos Herrera-Vizcaino, Sarah Al-Maawi, Joseph Choukroun, Robert Sader, Shahram Ghanaati
University Hospital Frankfurt Goethe University, Frankfurt am Main, Germany

Development of an integrated workflow for additive manufacturing of individually designed bone augmentation in maxillofacial surgery.

Lysann M. Kroschwald1,2, David Muallah1,2, Matthias C. Schulz3, Philipp Sembdner2, Stefan Holtzhausen2, Antje Schönberg4, André Hutsky5, Daniel Ellmann6, Berthold Nies7, Sascha Heinemann7, Guenter Lauer1
1University Hospital of TU Dresden, Dresden, Germany; 2TU Dresden, Dresden, Germany; 3University of Tübingen, Tübingen, Germany; 4Zahntechnik Schönberg, Dresden, Germany; 5R+K CAD/CAM Technologie GmbH & Co. KG, Berlin, Germany; 6Rübeling+Klar Dental-Labor GmbH, Berlin, Germany; 7Innotere GmbH, Radebeul, Germany


Anantha Narayanan Ramakrishnan1,2, Oliver Röhrle2, Andreas Kiesow1, Stefan Schwan1
1Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Halle, Germany; 2University of Stuttgart, Stuttgart, Germany

A novel polymeric gel to enhance ocular retention of anti-scarring molecules.

Liam M. Grover, Lisa J. Hill
University of Birmingham, Birmingham, UK

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Marcus M. Himmler1,2, Fabian Garreis2, Friedrich Paulsen2, Dirk W. Schubert2, Thomas A. Fuchsluger1
1University Medical Center Rostock, Rostock, Germany; 2Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany

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Tsunehito Horii, Kazuyoshi Jonin, Hiroyuki Tsujimoto, Masayuki Nagasawa, Kenichi Kobayashi, Akeo Hagiwara, Akihiro Kawauchi
Shiga University of Medical Science, Otsu, Japan
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TU Dresden, Dresden, Germany

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**André Rangel**¹, Laila Colaço², Christophe Egles², Veronique Mignonney¹  
¹Université Paris 13, Villetaneuse, France; ²Université de Technologie de Compiègne, Compiègne, France

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Université Paris 13, Villetaneuse, France

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Konan University, Kobe, Japan

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**Arn Mignon**¹, Manon Minsart¹, Iain Allan², Aysu Arslan¹, Tom Gheysens¹, Sandra Van Vlierberghe¹, Peter Dubruel¹  
¹University of Ghent, Gent, Belgium; ²University of Brighton, Brighton, UK

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**Adrian D. Juncos Bombin**¹, Eoghan Mulholland¹, Nicholas J. Dunne², Helen McCarthy¹  
¹Queen’s University Belfast, Belfast, UK; ²Dublin City University, Dublin, Ireland

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**Lucas Schirmer**, Passant Atallah, Uwe Freudenberg, Carsten Werner  
Leibniz-Institut für Polymerforschung Dresden e.V., Dresden, Germany

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**Sodam Kim**, **Ajeesh Chandrasekharan**, Keum-Yong Seong, Sang-Gu Yim, Sungbaek Seo, Jinhwan Yoon, Seung Yun Yang  
Pusan National University, Miryang, Republic of Korea
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¹Doshisha University, Kyotanabe, Japan; ²Shiga University of Medical Science, Seta, Japan |

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Stuart J. Brown, Elena García-Gareta  
The Restoration of Appearance and Function Trust, London, UK |

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Sebastian Kühn¹, Manfred F. Maitz¹, Julian Thiele¹, Uwe Freudenberg¹², Carsten Werner¹²  
¹Leibniz-Institute for Polymer Research Dresden e.V., Dresden, Germany; ²TU Dresden, Dresden, Germany |

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University of Würzburg, Würzburg, Germany |
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Madalina G. Necula$^1$, Anca Mazare$^2$, Selda Özkan$^2$, Roxana Trusca$^3$, Valentina Mitran$^1$, Patrik Schmuki$^2$, Anisoara Cimpean$^1$

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Ilona Vitkauskaite, Cathy L. Merry, Andrew M. Jackson, Ian Spendlove

University of Nottingham, Nottingham, UK

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Akio Kishida$^1$, Rino Tokunaga$^1$, YoshihideHashimoto$^1$, Naoko Nakamura$^2$, Tsuyoshi Kimura$^3$

$^1$Institute of Biomaterials and Bioengineering, Tokyo, Japan; $^2$Department of Bioscience and Engineering, Saitama, Japan

The effect of the needle-like calcium phosphate nanoparticles on cellular uptake and cell function

Zhe Sun, Lenzo Jason, Holden James, O’Brien-Simpson Neil

Melbourne university, Melbourne, Australia

Topography Mediated Cell Migration: Direction, Wavelength, and Amplitude

Lu Ge, LiangLiang Yang, Patrick V. Rijn

University of Groningen, Groningen, Netherlands

Glycoengineering as a tool to control the behavior of bone marrow-derived mesenchymal stromal cells in biofabrication-processes

Stephan Altmann, Jürgen Mut, Natalia Wolf, Julian Bechold, Franz Jakob, Jürgen Seibel, Regina Ebert

Julius-Maximilians-University Würzburg, Würzburg, Germany

Neuronal Networks in 3D Matrix Composites

Dieter Janzen$^1$, Ezgi Bakirci$^1$, AnnaLena Wieland$^2$, Pamela L. Strissel$^1$, Reiner Strick$^2$, Paul D. Dalton$^1$, Carmen Villmann$^1$

$^1$University Hospital Würzburg, Würzburg, Germany; $^2$University Hospital Erlangen, Erlangen, Germany

Calcium Phosphate nanoparticles as carriers of therapeutic biomolecules into cells - an In Vitro study

Nataniel Białas$^1$, Elena K. Müller$^2$, Ingrid Hilger$^2$, Matthias Eppe$^1$

$^1$University of Duisburg-Essen, Essen, Germany; $^2$University Hospital Jena, Jena, Germany
**Poster Session 2 | Thursday, September 12, 2019**

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Mateusz Olejnik¹, Christina Sengstock², Markus Kersting², Kateryna Loza¹, Alexander Rostek¹, Manfred Köller², Götz Westphal³, Nina Rosenkranz³, Jürgen Bünger³, Matthias Epple¹
¹University of Duisburg-Essen, Essen, Germany; ²Ruhr-University Bochum, Bochum, Germany; ³Institute of the Ruhr-University Bochum (IPA), Bochum, Germany

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Rosalía Díez-Orejas¹, Laura Casarrubios¹, María José Feito¹, Natividad Gómez-Cerezo¹, José María Rojo², María Vallet-Regí¹, Daniel Arcos¹, María Teresa Portolés¹
¹Universidad Complutense de Madrid, Madrid, Spain; ²CSIC, Madrid, Spain

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Katharina Doll, Andreas Winkel, Meike Stiesch
Hanover Medical School, Hanover, Germany
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**Booth nb. 26**

**Centre for Translational Bone, Joint and Soft Tissue Research, University Hospital and Faculty of Medicine, TU Dresden**

www.tu-dresden.de/med-mf/fto/

The Centre for Translational Bone, Joint and Soft Tissue Research is a central research facility of University Hospital and Medical Faculty of TU Dresden, Germany. The centre has been founded in 2010. It is led by Professor Michael Gelinsky and is closely connected to the Departments of Orthopedic and Trauma Surgery and Oral and Maxillofacial Surgery. Research focus are novel regenerative therapies, mostly for musculoskeletal diseases and trauma, based on innovative biomaterials and tissue engineering strategies. The lab is also very active in the field of additive manufacturing of biomaterials and 3D bioprinting. (tu-dresden.de/med/fto)

**Booth nb. 17**

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**Booth nb. 3**

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Advanced Test Instruments for Mechanical Characterization of Materials

Founded in 1978, Ducom Instruments has led the way in designing and manufacturing advanced materials testing instruments with a specialization in tribology. Applying cutting-edge technology and strong design principles to its products, Ducom focusses on providing customers with an excellent ownership experience starting with ease of use and maintenance. Our locations in the United States, The Netherlands, Malaysia and India each have an in-house Research & Development initiative coupled with development partnerships with world renowned institutions. As a result, Ducom holds several proprietary technologies, copyrights and patents with additional filings every year. Many of these technologies are applied to our instruments, and work in the background so users can enjoy better results and user experiences.

Our instruments are operational all over the world. Research labs working on cutting edge technology development which requires advanced and highly configurable test systems to standardized quality control requirements which rely on highly repeatable systems to accurately monitor product quality test instruments by Ducom.
Acta Biomaterialia is an international journal that publishes peer-reviewed original research reports, review papers and communications in the broadly defined field of biomaterials science. The emphasis of the journal is on the relationship between biomaterial structure and function at all length scales. Acta Biomaterialia is published by Elsevier on behalf of Acta Materialia Inc.

Biomaterials is an international journal covering the science and clinical application of biomaterials. The journal provides a peer-reviewed forum for the publication of original papers and authoritative review and opinion papers dealing with the most important issues facing the use of biomaterials in clinical practice. The journal is relevant to areas such as cancer diagnosis and therapy, implantable devices, drug delivery systems, gene vectors, bio-nanotechnology and tissue engineering.

EnvisionTEC is a leading global provider of professional-grade 3D printing solutions. Our company invents, develops, manufactures and sells 3D printers and proprietary materials worldwide.

Founded in 2002 with its pioneering commercial DLP printing technology, EnvisionTEC now sells more than 40 printers based on six distinct technologies that build objects from digital design files. The company’s premium 3D printers serve a wide variety of medical, professional and industrial markets, and are valued for precision, surface quality, functionality and speed. EnvisionTEC’s intellectual property includes more than 100 pending and granted patents and 70 proprietary materials.

The European Society for Biomaterials is a non-profit organization at the forefront of the scientific community determined to tackle unmet clinical needs by means of advanced materials for medical devices and regenerative medicine.

We provide a year-long “virtual environment” where scientists, clinicians, industrials and regulatory affair experts can network to maximise R&D and commercial opportunities to the benefit of patients. Our interactive website favours social networking and is a show case for the “innovation” created by our members.
Fraunhofer IKTS offers ceramic materials, components, and systems for dental technology and endoprosthetics, as well as biomedical diagnostics and therapeutics. The institute’s three sites in Dresden and Hermsdorf (Thuringia), Germany, collectively represent Europe’s largest R&D institute dedicated to the study of ceramics. The vast wealth of experience with ceramic materials forms the cornerstone by which Fraunhofer IKTS is able to support industrial and research partners with product development, from raw materials to complete medical devices and equipment. Quality assurance, cost control and enforcement of regulatory requirements: these three pillars are a central part of the medical technology efforts at Fraunhofer IKTS and are guaranteed by its superior technical infrastructure, including certified laboratories. There are longstanding collaborative relationships for the processing of customer-specific tasks as well as in the framework of validation and certification processes.

GeSiM mbH — Integrating the Worlds of Micro and Macro Technology

The privately owned company was founded in 1995 as a service provider for customized microfluidic components made of silicon, glass, and plastic. Meanwhile GeSiM has evolved into a key player in bioinstrumentation, offering instrument platforms for microfluidics, sub-nanolitre liquid dispensing, 3D printing, microcontact printing, chemical synthesis and other facets of lab automation. First and foremost, GeSiM stands for the development of novel technical solutions. Our engineers are keen to design components or complete systems from scratch or customize existing instruments. Being a small enterprise, GeSiM is committed to quick decision making and maintaining close contact to our customers and distributors, and has helped researchers and entrepreneurs around the globe on their way to prospering businesses. We have also frequently taken part in research projects.

The I&L Biosystems GmbH was founded 1991 in Germany and has been growing steadily ever since. The focus of I&L is on sales and distribution of high quality laboratory equipment to customers and researchers in the microbiology, cell biology and biotechnology markets. With our sister companies: LA Netherlands (Benelux countries), I&L France (Southern Europe), I&L United Kingdom (UK) and I&L Nordic we support our customers in sales, application and technical concern all over Europe.
INNOTERE, based in Radebeul near Dresden, is a biomaterials company that develops highly innovative medical devices for bone regeneration. Our key technology is the patented production of pasty calcium phosphate bone cements, ready-to-use in syringes with unlimited application time. In addition, this platform is remarkably versatile and allows 3D printing of porous scaffolds with complex standard shapes or even patient-specific implants. Together with our industrial, clinical and academic partners, we support novel concepts for the benefit of patients and surgeons in orthopedics, traumatology, dentistry and associated fields.

**Booth nb. 8**

**InoCure s.r.o.**  
www.inocure.cz  
ivana@inocure.cz

InoCure is nanotechnology oriented company. The main product is "InoSPIN" - very flexible and compact device dedicated to production of nano/ microfibers and aslo nano/ microparticles. Device has a few rotation and static collectors and special rewind system. There is also high variability of electrodes, the device is unique thanks to special needleless blade electrode and possibility of high-throught production. We provide air condition unit for great regulation of humidity and temperature too which increases reproducibility dramatically.  
We provide also "InoMATRIX" system is a 3D cell culture platform based on fibrous solid scaffolds with biomembrane mimicking native ECM and supporting growth of multiple cell types during *in vitro* cell cultivation. In addition, InoMATRIX is compatible with wide range of functional assays. There is possibility to customize insert size, shape and color.  
In addition, we offer also custom encapsulation services for drug development, so that we can encapsulate any substance to micro/nanofibres or to micro/nanoparticles providing tight regulation of release and improvement of the stability of formulation.  
InoCure brings next-generation nanotechnologies to you!

**Booth nb. 12**

**IOP Publishing**  
www.ioppublishing.org

IOP Publishing provides a range of journals, books, websites, magazines, conference proceedings and services through which leading-edge scientific research is distributed worldwide. Extending to more than 20 journals IOP biosciences is dedicated to providing the essential content covering all areas of medical physics, biophysics and biomedical engineering. Visit iopscience.org/biosciences. IOP ebooksTM is an award-winning book programme that brings together innovative digital publishing with leading voices in scientific, technical, engineering and medical (STEM).  
Link to: iopscience.org/books
Jellagen founded in 2013, is a UK Marine Biotechnologies Company based in Cardiff, whose strategic mission is to use sustainable marine species and natural resources, to develop technical and scientific high value products, meeting state of the art specifications. The first products developed by Jellagen are based on Next Generation Collagen extracted from Jellyfish. The initial range of products developed through this new technology, are cell culture reagents used to grow stem cells in 2D and 3D by the Biotech and Pharma Industry R&D teams. The second range of products will be medical devices and biomaterials in the areas of wound and regenerative medicine, also engineered around jellyfish collagen. Jellagen’s DNA is founded on marine systems and ensures best practices are maintained to respect the sea environment. In the future, the company’s intent is to support foundations to help deliver a better understanding and protection of the sea’s resources.

The KLS Martin Group is an internationally active group of companies for innovative medical technology in almost all areas of surgery. In accordance with our company philosophy "Surgical Innovation is our Passion", we develop and market medical technology solutions such as implant systems, electrosurgery units, surgical laser systems, sterilization containers, operating lights, surgical instruments and individual OR solutions. We have set many new standards with our claim. For example, with distractors that enable guided bone growth for regeneration and healing of severe injuries and deformities. With innovative ultrasound procedures and resorbable implants that save patients second interventions. Or with a holistic solution that brings the virtual workflow into clinical reality and enables individualization of patient implants. In the field of electrosurgery and laser surgery, we have made a name for ourselves in particular with the maXium® electrosurgery unit, reusable systems for vessel sealing and the Limax® laser for metastatic surgery. Innovation at KLS Martin is usually the result of the interaction of very different influences and suggestions. Developed hand in hand by KLS Martin employees, surgeons, research institutes and industry. Our products are used in more than 140 countries all over the world. We are proud of this achievement and will continue advancing patient treatment. Worldwide.
KEYENCE Deutschland GmbH
www.keyence.de

As a leading supplier of sensors, measuring systems, laser markers, microscopes, and machine vision systems worldwide, KEYENCE is at the forefront of factory automation. We strive to develop innovative and reliable products to meet the needs of our customers in every manufacturing industry.

In addition to our world-class products, KEYENCE offers a full range of services to further assist our customers. Our technically trained direct sales force is able to solve tough applications and answer technical questions about our products. We also provide fast shipping so customers can improve their processes as quickly as possible. KEYENCE is dedicated to adding value to our customers by combining superior technology with unparalleled support.

LATTICE MEDICAL
Loos, France
www.lattice-medical.com

1 women on 8 have a breast cancer in the world. Mastectomy is used in 40% of cases to cure the breast cancer. Today, several breast reconstruction methods are used after mastectomy: silicon prosthesis, autologous fat tissues grafting by microsurgical technics (DIEP) or non-vascularise transfer (lipofilling). These methods show different issues such as multiple surgical procedure, complications, costs for healthcare system. LATTICE MEDICAL is developing a bio-absorbable Tissue Engineering Chamber (TEC) to allow a natural, personalized breast reconstruction, all in one surgical procedure with 3D printed bioabsorbable polymer. This original approach use a resorbable husk designed using biomaterials thanks to 3D printing. The TEC is unique to each patient morphology and disappears after 12 months after tissue regeneration. The TEC regenerate autologous fat and guide the tissue reconstruction to recover a full breast volume under 12 months. Due to its integrated platform, LATTICE MEDICAL can offer innovative solutions and the opportunity to explore new technology landscape for biomedical projects. This unique platform is endowed with new 3D printing and extrusion technology that is able to produce prototypes, pre-series and industrial series for R&D trials, pre-clinical and clinical studies with controlled environment in clean room. LATTICE MEDICAL offers medical grade resorbable filaments for 3D printing, packaged in vacuum sealed spools of 100 to 200 grams of polymer.

MDPI | Materials — Open Access Journal
www.mdpi.com/journal/materials
materials@mdpi.com

Materials (ISSN 1996-1944; CODEN: MATEG9) is a peer-reviewed open access journal of materials science and engineering published semi-monthly online by MDPI. Journal Impact Factor in 2018 is 2.972, 5-Year Impact Factor is 3.532. We provides a forum for publishing papers that advance in-depth understandings of the relationships between the structures, properties, applications or functions of all classes of materials. We aim to encourage various scientific communities to publish their original experimental and theoretical research, as well as their reviews.
Nadir is a SME established in 2008 by a group of researchers that worked for several years as scientific consultants in the technological transfer field between academia and industries. Nadir business is focused in the application of an innovative and proprietary cold atmospheric plasma technology and in the development of advanced polymer composites. The company holds an international patent related to the new plasma jet device now emerging in several fields related to the biomedical industry and biomaterials, for surface cleaning, adhesion promotion, and functional coatings deposition. On the other side, thanks to a melt compounding facility, Nadir developed advanced biocompatible or bioresorbable polymers with antibiotic, antimicrobial and electroconductive activity.

Optics11 introduces innovative analysis instruments for the life sciences field. At ESB 2019 we present our new Pavone instrument, designed to enable a quantitative, semi-automated high throughput analysis of the mechanical properties of any soft and/or living material, such as cells, (engineered) tissues or particles. The Pavone integrates high-throughput mechanical analysis with automated microscopy, while providing full incubation capabilities and up to 96-well plate compatibility. An easy-to-use touchscreen-based interface allows to set up large automated experiments, reducing time spent at the instrument and maximizing throughput. In case you would like to explore the possibilities of this equipment to strengthen your R&D or QC goals, please inform us at the ESB conference or contact Pierre Duval (pierre.duval@optics11.com).
We develop, manufacture and market the “smart phone of microscopy”: Truly smart and
digital microscopes, which are disrupting the way microscopy works. PreciPoint stands for
exceptional innovations and highest quality made in Germany built on our in-house engineering
expertise in optics and mechanics, electronics and software. We deliver hardware and
software solutions to automate and digitize microscopy workflows across various industries
such as pathology and hematology.

 Barely no other material has shaped our society as much as polymers in recent decades. With their wide range of applications, they are an essential raw material and material for a large number of different branches of industry and thus an integral part of our high-tech society. New challenges in the pharmaceutical and medical technology sectors - such as the desire for improved long-term stability, the use of modern printing technologies or the increasing individualization of medicine - are increasingly pushing the polymer systems used today to their technical limits. Thus, the research into modified and new polymers and their manufacturing processes is making an important contribution to future innovations in the fields of pharmaceuticals and medical technology. This is supported by the BMBF within the funding programme „Vom Material zur Innovation“ with its announcement „Materialinnovationen für gesundes Leben: ProMatLeben – Polymere“ on research and development work in the field of modified and new polymers for application in the life sciences. Within the funding program, 11 multi-faceted and innovative associated projects with more than 50 project partners will be funded. The focus lies on research/improvement of the material components. The funding measure is part of the German government's new High-Tech Strategy". The focus lies on research/improvement of the material components. The funding program is part of the German government's new High-Tech Strategy.

 RegEMAT 3D is a biotech company focused on regenerative medicine and pioneer in the use of 3D printing for regenerative therapies, a promising area called bioprinting. The potential of bioprinting in regenerative medicine and tissue engineering is huge. There are still many problems to be solved and many hypothesis to be tested in order to find solutions to
tissue regeneration. Our mission is to develop innovative solutions in the area of bioprinting and regenerative medicine towards the clinical application of this amazing technology, aiming at improving people’s quality of life. Present in more than 25 countries, Regemat 3D puts within the reach of research and science a technology designed to measure that is born to integrate the advantages of additive manufacturing with tissue engineering. The personalized configuration of each bioprinter taking into account the specific application and the support of our team of engineers, make it possible every day, obtaining successful results which facilitate the path of each research.

**Booth nb. 28**

**regenHU Ltd.**

www.regenhu.com

Since 2007, regenHU has dedicated its engineering skills to providing the scientific community with cutting-edge 3D bioprinting technologies. Being a pioneer in developing hardware and software tools, as well as biomaterials and labware, we provide turnkey solutions tailored to meet your specific needs. Thanks to our network of academic and industrial partners, we are constantly advancing the field of 3D bioprinting and enabling breakthrough achievements.

**Booth nb. 24**

**Rheolution**

www.rheolution.com

Contact: Cyril van Robais, VP Europe: cyril.vanrobais@rheolution.com

Rheolution Inc. manufactures mechanical testing devices for soft biomaterials. The ElastoSens™ Bio2 allows contactless, non-destructive testing of hydrogels and features removable sample holders for long range studies. Only equipment able to monitor 3D bioprinted scaffolds mechanical properties on the market. With real-time measurements, temperature control, volume detection, and tracking of up to three samples simultaneously, the ElastoSens™ Bio2 will simplify and streamline your research. Rheolution is based in Montreal and has opened its operations in Europe in 2018.

**Booth nb. 11**

**Royal Society Publishing**

www.royalsocietypublishing.org

Biomaterials from the Royal Society

The Royal Society, the UK Academy of Science, recognises, promotes and supports excellence in science. Our journals Interface and Interface Focus offer a range of publishing options for scientists working within biomaterials research. We offer rigorous, constructive peer review by practising experts in the field; high quality author care; efficient processing and rapid publication; open access options; and promotion by a dedicated press office. To find out more about our journals and our editorial processes, please visit booth 11 where our representative Dr. Tim Holt will be happy to answer your questions. Alternatively, visit our website at www.royalsociety.org/journals
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Booth nb. 29

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Spraybase® is a leading supplier of modular solutions for Electrospraying, Electrospinning and Melt Electrospinning/Melt Electro Writing a wide range of particles, fibers, and materials. Our CE-marked technology consists of simple and effective products designed for unparalleled ease of use, safety, reproducibility and flexibility. The end users of the Spraybase® equipment operate in primarily in the Biomedical industry with applications relating to Biomaterials, Tissue Engineering and Regenerative Medicine. Other sectors include Drug Delivery, Textiles, Encapsulation, Energy and Electronics. We know that every electrospraying or electrospinning project has different needs, so we pride ourselves on delivering outstanding customer support. Spraybase® equipment can be found in hundreds of academic and industry research labs around the world. Visit the Spraybase® Team at Booth 29 during ESB 2019 to learn how Spraybase® can enable your research and to see a demonstration of the Spraybase® Melt Electrospinning/Melt Electro Writing Equipment, ideal for creating scaffolds for tissue engineering applications.

Booth nb. 9

Collaborative Research Centre TRR225

„From the fundamentals of biofabrication towards functional tissue models”

www.trr225biofab.de
www.fmz.uni-Würzburg.de

The SFB/TRR 225 „From the fundamentals of biofabrication towards functional tissue models“ started its activities in January 2018 and includes working groups from the Universities of Erlangen-Nuremberg, Bayreuth and Würzburg. As part of this transregional research network, more than 80 scientists from 18 subprojects are collaborating on a cross-location, complementary and interdisciplinary basis within the still young but rapidly growing research field of biofabrication. Biofabrication is the use of automated 3D-printing-processes for the generation of constructs in which cells and materials are positioned simultaneously in a tissue like structure. This approach holds the promise for a standardized generation of so far unreached functional tissue models that would be of tremendous value for replacement of animal models, for pharma- and cancer research and as regenerative therapeutical option. The SFB/TRR 225 initially focusses on the development of materials and methods as well as the exploration of cellular behavior during and after the printing process.
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Booth nb. 21

Sunmax Biotechnology Co., Ltd.
www.sunmaxbiotech.com.tw

Founded in 2001, with technology out of the benchmarking collagen experts from United States, Sunmax has grown into a highly recognized, public-listed biomedical company in Taiwan.

With the capability to develop, manufacture and market high standard collagen-base medical devices, Sunmax is dedicated to have more and more patients to benefit from our innovations in the field of regeneration.

So far Sunmax has developed a series of high compatibility, high quality and non-immunogenic products applying for aesthetics, orthopaedic, dental and other medical field

Booth nb. 31

TA Instruments a Division of Waters GmbH
germany@tainstruments.com
www.tainstruments.com

TA Instruments, the world leader in thermal analysis, rheology, and microcalorimetry instruments, offers TA ElectroForce materials test instruments which are ideally suited for characterizing the mechanical properties of biomaterials, tissues, and medical devices. Providing unmatched performance and versatility, ElectroForce test instruments are available in a range of force capacities and can be configured with a variety of accessories including environmental chambers, an assortment of grips and fixtures, as well as secondary actuators such as torsion or extended stroke. Our BioDynamic bioreactor series combines mechanical stimulation with a sterile environment to support tissue engineering of three-dimensional tissue constructs. Visit our booth to discover how ElectroForce test instruments have revolutionized materials testing.

Booth nb. 29

6th world congress of the Tissue Engineering and Regenerative Medicine International Society (TERMIS2021)

TERMIS 2021 is the 6th world congress of the Tissue Engineering and Regenerative Medicine International Society. The Society brings together the international community of persons engaged or interested in the field of tissue engineering and regenerative medicine, promoting International Education and Collaboration for the Advancement of Tissue Engineering & Regenerative Medicine. The general theme of the congress is “Biologically inspired technology driven regenerative medicine” and will take place from the 31st May until the 4th June 2021 in Maastricht, the Netherlands.

For more information visit www.termis.org.
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Booth nb. 7

TUDATEX GmbH
www.tudatex.de
info@tudatex.de

TUDATEX GmbH in Dresden is a service company for knowledge and technology transfer and aims at application-oriented research and developments in the fields of textile technology and industry, e.g. medicine, automotive industry, civil engineering and lightweight construction. In close collaboration with partners from clinics and companies, TUDATEX develops fibre based biomaterials (collagen, chitosan, silk fibroin...), implants and scaffolds, e.g. for bone regeneration, ligament and tendon reconstruction, cartilage regeneration, drum regeneration and cardiovascular diseases (vascular graft, stent, stent graft, heart valve). The company’s work focusses on the development of transition strategies from research results to marketable products.

Booth nb. 1

World Precision Instruments Germany GmbH
https://www.wpi-europe.com

World Precision Instruments (WPI) founded in 1967 is regarded as a global leader in the design, manufacture and supply of Physiology research instruments. Its products have 1000s of citations in notable peer-reviewed publications.

WPI also has a broad range of instruments and supplies for research in Regenerative Medicine Developmental Biology, Genetics, Oncology, Toxicology, Cardiovascular, Neuroscience etc.

WPI Europe with its partnership with CellScale, offers a range of high precision, mechano-biology systems for testing biomaterials.

WPI is headquartered in USA and has offices in Asia (China), Europe (UK & Germany) and Latin America (Brazil).
Exhibitors
1 WPI Germany GmbH
2 Anton Paar GmbH
3 Curasan AG
4 EnvisionTEC GmbH
5 Jellagen
6 ProMatLeben - Polymere
7 TUDATEX GmbH
8 InoCure s.r.o.
9 SFB | TRR 225
10 I&L Biosystems GmbH
11 Royal Society Publishing
12 IOP Publishing
13 BioFluidix GmbH
14 Keyence Deutschland
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16 Ducom Instruments Europe B.V
17 Contipro a.s.
18 NADIR Srl
19 GeSiM mbH
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21 Sunmax Biotechnology Co., Ltd.
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35 CELLINK
36 Axolotl Biosystems Ltd.
CERASORB®
Bone Regeneration Material

- ICDD Standard
- FDA approved
- CE certified
- Made in Germany
- Pure-phase β-TCP

Implantology
Dentistry
Trauma
Orthopedics
Guided Tissue Regeneration
Maxillofacial Surgery
Spine
Welcome Evening

Date: Monday, September 09, 2019
Time: 19:00 - 20:30
Location: International Congress Centre

The Welcome Evening will be a casual Get Together on the first evening after the conference opening. Let’s enjoy a view of the river Elbe alongside with drinks, snacks and socializing on the terrace. Depending on the weather conditions, the event will take place indoors or outdoors. All participants are invited to this social event at the International Congress Centre.

Exterior view International Congress Centre Dresden | copyright: Maritim Hotelgesellschaft mbH
YSF’s Night Out at Altes Wettbüro (Old Betting Shop)

Event mainly for undergraduate students, graduate students and scientists in early postdoc phase.

Date: Wednesday, September 11, 2019
Time: 19:30 – 01:00
Location: Altes Wettbüro
Antonstraße 8, 01097 Dresden
Price: delegate 15,00 €

Once a casino (its name means ‘the old betting office’), this place is today better employed as a location for the Neustadt’s young, mixed and alternative crowd to dance to a varied music selection. Especially in summer, you can relax in the super cosy garden and its garden bar. Located across the river Elbe in a small villa between Albert square and Neustadt railway station, it is just a 15 minute walk from the congress center and near the Dresden Neustadt where most of the clubs, bars, discotheques and cinemas of the city are located.

Don’t miss this opportunity to make new friends, or meet old ones during a nice party. Registration includes a barbeque and two drinks.

Please register for this event in advance. No entry without ticket.
SOCIAL PROGRAMME

Conference Dinner

Date: Thursday, September 12, 2019
Time: 20:00 – 23:00
Location: atrium of the museum Albertinum
Tzsicherplatz 2, 01067 Dresden
(only 18 min walk from conference venue)
Price: delegate 95,00 € | accompanying person 110,00 €

On Thursday evening, the Conference Dinner will be held as the social highlight of the ESB 2019 conference to give you the opportunity for social networking and to reminisce about the conference.

It will take place in the atrium of the Albertinum in Dresden, a museum for art from romanticism to the present, located in the heart of Dresden near the Church of Our Lady (Frauenkirche) and the Brühl's Terrace. You will enjoy a delicious dinner in an elegant atmosphere. You will have the possibility to visit parts of the permanent collection during the evening.

Albertinum is located within 18 minutes walking distance from the Congress Center: Walk along the Elbe river in the direction of the old town. Walk up the stairs (just before the bridge). Go left and walk up the stairs to the Brühl's Terrace until you reach your destination on your right site. If you arrive by tram take no. 11 until Postplatz, switch to any tram that goes to Pirnaischer Platz, and switch into tram no. 3, 7, 8 or 9. Exit at “Synagoge”. From here it is only a short walk to the Albertinum.

Please register for this event in advance. No entry without ticket.
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