

A microscopic image of a cell, likely a fibroblast, is shown against a textured blue background. The cell is white and has several long, thin processes extending from its central body. The background has a fine, grid-like or woven texture.

Program

**Euro**

# BioMAT 2015

European Symposium and  
Exhibition on Biomaterials  
and Related Areas

**21 - 22 April 2015**

Weimar, Germany

## BioMAT2015 - Overview

Time	Tuesday, 21.4.2015	Time	Wednesday, 22.4.2015
8:00	Poster Mounting/Registration		Room Goethe
	Room Goethe	8:00	Plenary
9:00	Welcome Address: Prof. W. Rosenthal President of FSU Jena	8:30	Plenary
9:15	Plenary	9:00	Coffee Break
9:45	Plenary		Room Goethe   Room Bach   Room Schiller
10:15	Coffee Break	9:40	Topic N   Topic B   Topic S
	Room Goethe   Room Bach   Room Schiller	10:00	
	Topic A   Topic Q   Topic H	10:20	
11:00		10:40	
11:20		11:00	Coffee Break
11:40			Topic D   Topic B   Topic S
12:00		11:30	
12:20		11:50	
12:40	Lunch Break	12:10	
	Topic I   Topic C   Topic F	12:30	
14:00		12:50	
14:20		13:10	Lunch Break
14:40			Topic D   Topic M   Topic G
15:00		14:15	
15:20		14:35	
15:40	Coffee Break	14:55	Topic L
	Topic I   Topic C   Topic F	15:15	Short Break
16:10			Topic D   Topic P   RoundTable
16:30		15:20	RoundTable
16:50		15:40	RoundTable
	Room Goethe	16:00	RoundTable
17:10	40 Oral Poster Presentations (3 minutes short-lectures)	16:20	
19:30	Posterdiscussion with Snacks and Drinks and networking in the foyer	16:25	Announcement of the Posteraward and Closing Address
		16:40	End of the Conference

BioMAT  
European Symposium on Biomaterials  
and Related Areas

21. - 22. April 2015  
Weimar, Germany

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**Klaus D. Jandt**  
Otto Schott Institute of Materials  
Research (OSIM), Jena  
**Chairman**



**Thomas F. Keller**  
Deutsches Elek-  
tronen-Synchrotron  
- DESY, Hamburg  
**Vice-Chairman**

The international symposium Euro BioMat 2015 addresses the growing interest of science, industry and medicine in the different aspects of the creation, characterization, testing and application of biomaterials and closely related materials.

The motivation is not only the recent scientific progress and new challenges of this exciting, strongly interdisciplinary field of science and engineering but also that engineers, materials scientists, physicists, chemists, biologists in industrial R&D as well as medical professionals are increasingly facing situations where materials are challenged by high performance requirements and a complex biological environment at the same time.

The DGM and its panel of experts in biomaterials address these developments with the European symposium Euro BioMat 2015 in beautiful Weimar with its rich cultural heritage and classical sites. At Euro BioMat 2015, the current state of progress in biomaterials science and in industry will be presented and discussed. Moreover, this symposium stimulates the scientific exchange on several topics with major challenges and urgent need for novel engineering approaches as, e.g., in the fields of antimicrobial biomaterials, bioactive and biodegradable materials, and drug and gene delivery, to name only a few.

Euro BioMat 2015 with more than 200 participants from 25 countries all over the world brings together fascinating science and stimulating people in a delightful setting in Weimar in the very heart of Europe.

The program committee of Euro BioMat 2015 is pleased to announce the following plenary talks:

From Biological Self-Assembly to Peptide Nanostructures of Unique Chemical and Physical Properties  
**Prof. Dr. Ehud Gazit, Tel Aviv University, Israel**

Cell-instructive Surfaces via Nanotopography  
**Prof. Dr. Bo Su, University of Bristol, UK**

Nano-Structurd Biomaterials for Regenerative Tissue Engineering  
**Peter Lelkes, Temple University Philadelphia, USA**

Reduction of implant-associated infections - a clinical view  
**Prof. Dr. Volker Alt, Justus-Liebig-University Giessen (Germany)**

We look forward to welcoming you in Weimar on the 21th -22th of April 2015.

**Klaus D. Jandt, Otto Schott Institute of Materials Research (OSIM), k.jandt@uni-jena.de**

**Thomas F. Keller, Deutsches Elektronen-Synchrotron DESY, thomas.Keller@desy.de**



**Klaus D. Jandt**  
Institute of Materials Science & Technology (IMT), Jena  
**Chairman**



**Thomas F. Keller**  
Deutsches Elektronen-Synchrotron - DESY, Hamburg  
**Vice-Chairman**



**Liga Berzina-Cimdina**  
Riga Technical University (LV)



**Aldo R. Boccaccini**  
University of Erlangen-Nürnberg



**Gabriela Ciapetti**  
Rizzoli Orthopaedic Institute, Bologna (IT)



**Matthias Epple**  
University of Duisburg-Essen



**John Hunt**  
University of Liverpool (UK)



**Willi Jahnen-Dechent**  
RWTH Aachen University, Germany



**Petra Kluger**  
Fraunhofer Institute for Interfacial Engineering and Biotechnology, Stuttgart



**João F. Mano**  
University of Minho, Braga (PT)



**Giovanni Marletta**  
University of Catania (IT)



**Werner E.G. Müller**  
University Medical Center of the Johannes Gutenberg University, Mainz



**Erhan Piskin**  
Hacettepe  
University, Ankara  
(TR)



**Kurosch Rezwan**  
University of  
Bremen



**Thomas Scheibel**  
University of  
Bayreuth



**Reinhard  
Schnettler**  
University Hospital  
Gießen and Marburg  
GmbH, Gießen



**Norman Stark**  
Biotronik AG,  
Bülach, CH



**David Watts**  
University of  
Manchester (UK)



**Frank Witte**  
Charité-Universitätsmedizin, Berlin

**8:00 Poster Mounting and Registration**

**Room Goethe**

**9:00 Welcome Address**

**Prof. Dr. Walter Rosenthal, President of Friedrich-Schiller University Jena**

**Plenary Lectures**

Chair: K.D. Jandt, Chairman of the conference, Friedrich-Schiller-University Jena

**9:15 - 9:45 From biological self-assembly to peptide nanostructures of unique chemical and physical properties**

E. Gazit, Tel Aviv University (Israel)



Organic nanotechnology is clearly a new front in the field of molecular self-assembly of new structures and composite families at the nano-scale. Our works on the mechanism of aromatic peptide self-assembly, lead to the discovery that the diphenylalanine recognition motif self-assembles into peptide nanotubes with a remarkable persistence length. Other aromatic homodipeptides (including those with non-coded amino acids as DOPA) could self-assemble in nano-spheres, nano-plates, nano-fibrils and hydrogels with nano-scale order. The modification of peptide building blocks with the Fmoc protecting group allows the formation of hydrogels with nano-scale order. We demonstrated that the peptide nanostructures have unique chemical, physical and mechanical properties including ultra-rigidity as aramides, semi-conductive, piezoelectric and non-linear optic properties. We also demonstrated the ability to use these peptide nanostructures as casting mould for the fabrication of metallic nano-wires and coaxial nano-cables. The application of the nanostructures was demonstrated in various fields including electrochemical biosensors, tissue engineering, and molecular imaging. We had developed ways for depositing of the peptide nanostructures and their organization. We had use inkjet technology as well as vapour deposition methods to coat surface and from the peptide "nano-forests". We recently demonstrated that even a single phenylalanine amino-acid can form well-ordered fibrillar assemblies of distinct electron diffraction pattern and toxic properties. The combination of DNA properties and peptide backbone in the form of Peptide Nucleic Acid (PNA) resulted in light emitting assemblies that exhibit both stacking and Watson-Crick base-pairing.

Room	Goethe
	<b>Plenary Lectures</b>
	Chair: K.D. Jandt, Chairman of the conference, Friedrich-Schiller-University Jena

**9:45 Cell-instructive Surfaces via Nanotopography**

-  
**10:15** B. Su, University of Bristol (UK)



Smart materials which can deter bacteria while enhance tissue integration are highly desirable for application in implants where there is often a competition between host tissue cell integration and bacterial colonisation at their surfaces. It has been known that both eukaryotic and prokaryotic cells are responsive to chemical and physical cues of material surfaces under complex physiological conditions. The question is whether we can utilise their different responses to rationally design medical implants or devices that possess cell-instructive characteristics. Here we show that a straightforward physical rationale - nanotopography, can be engineered into titanium substrates to elicit differential cell responses. The inspiration comes from cicada wings whose surfaces have been shown to display bactericidal nanopillar patterns. The engineered surfaces in this work are titania (TiO<sub>2</sub>) nanowire arrays that (i) are selectively bactericidal against motile bacteria, and (ii) can guide mammalian cell proliferation and differentiation according to their hierarchical structure of nanowire arrays. These cell-instructive properties, together with the ease of fabrication of these titania nanowires, hold great promise for fabrication of smart implants used in orthopaedics and dentistry.

**10:45**  
-  
**11:00** **Coffee Break**

Goethe	Bach	Schiller
<b>A: Antimic. biomat. &amp; biofilms</b>	<b>Q: Hydrogels &amp; biob. polymers</b>	<b>H: Biological materials</b>
Chair: E. Gazit, Tel Aviv University (Israel)	Chair: B. Su, University of Bristol (UK)	Chair: T. Scheibel, University of Bayreuth (Germany)

- |  |   |  |
|--|---|--|
| <p><b>11:00</b> <b>Bacteria on surfaces – engineering bio-inspired microstructures to control bacterial adhesion and bio-film growth</b><br/>D. Asker, N. Lavielle, B. Hatton (Sp), University of Toronto (Canada)</p>                                   | <p><b>Polyelectrolyte complex particles: A versatile tol for drug delivery and biomedical applications</b><br/>M. Müller (Sp), B. Torger, D. Vehlow, B. Urban, Leibniz Institute of Polymer Research Dresden (Germany); B. Woltmann, D. Wehrum, Technische Universität Dresden (Germany); C. Striegler, D. Appelhans, Leibniz Institute of Polymer Research Dresden (Germany)</p>   | <p><b>Fire as a trigger for plant seed release</b><br/>V. Schoeppler (Sp), J. Huss, Max Planck Institute of Colloids and Interfaces, Golm (Germany); D. Merritt, Botanic Gardens and Parks Authority, Perth (Australia); P. Fratzl, M. Eder, Max Planck Institute of Colloids and Interfaces, Golm (Germany)</p> |
| <p><b>11:20</b> <b>PLGA Nanoparticles against Staphylococcus aureus: Effect of Size, Adsorbed PEG and Loaded Ciprofloxacin</b><br/>C. Gheffar (Sp), C. Karakasyan-Dia, T. Jouenne, D. Le Cerf, Université de Rouen, Mont Saint Aignan Cedex (France)</p> | <p><b>Polyhydroxyalkanoates production with Ralstonia eutropha from low quality animal waste fats</b><br/>S.L. Riedel (Sp), Fraunhofer Institut für Produktionsanlagen und Konstruktionstechnik, Berlin (Germany); S. Jahns, Technische Universität Berlin (Germany); E. Uhlmann, Fraunhofer Institut für Produktionsanlagen und Konstruktionstechnik, Berlin (Germany); U. Stahl, Technische Universität Berlin (Germany) 11:20:00</p> | <p><b>Rheological characterisation of human blood in the oscillating shear field</b><br/>U. Windberger (Sp), C. Poeschl, Medical University Vienna (Austria)</p>   |
| <p><b>11:40</b> <b>Antimicrobial materials for food packaging application</b><br/>C. Hauser (Sp), J. Thielmann, T. Sentürk-Parreidt, Fraunhofer IVV, Freising (Germany)</p>  | <p><b>Injectable self-gelling composite scaffolds based on gellan gum hydrogel and ion-loaded zeolites</b> T.E.L. Douglas (Sp), Ghent University (Belgium); A.L. Skwarczynska, J. Warchol, Rzeszow University of Technology (Poland); B. Lucas, K. Braeckmans, A.G. Skirtach, Ghent University (Belgium)</p>  | <p><b>Ultrastructural and mechanical characterization of dental enamel</b><br/>E.D. Yilmaz (Sp), G.A. Schneider, Hamburg University of Technology (Germany)</p>  |

Goethe	Bach	Schiller
<b>A: Antimic. biomat. &amp; biofilms</b>	<b>Q: Hydrogels &amp; biob. polymers</b>	<b>H: Biological materials</b>
Chair: E. Gazit, Tel Aviv University (Israel)	Chair: B. Su, University of Bristol (UK)	Chair: T. Scheibel, University of Bayreuth (Germany)

**12:00**     **Evaluating results of ISO 22196 antimicrobial activity tests**  
J. Kuever (Sp), Bremen Institute for Materials Testing (Germany); J. Bosser, Friedrich Schiller University Jena (Germany)

**Controlling the Properties of Fluorescent Nanodiamonds: the View from Chemistry and Physics Sides**  
P. Cigler, Academy of Sciences of the Czech Republic, Prague (Czech Republic)

**Nanocrystalline hydroxyapatite coatings by conversion of calcium carbonate nanostructures**  
J. Holopainen (Sp), K. Kauppinen, K. Mizohata, E. Santala, J. Tuukkanen, M. Ritala, University of Helsinki (Finland)

**12:20**     **Metallic copper as an antimicrobial agent for infection prevention**  
M. Hans (Sp), F. Mücklich, Saarland University, Saarbrücken (Germany)

**Biologically inspired adhesive polymer suction cups by two-photon and imprint lithography**  
S.C.L. Fischer (Sp), Saarland University, Saarbrücken (Germany); R. Hensel, E. Arzt, INM-Leibniz Institute for New Materials, Saarbrücken

**Covalent Coating of Human Extracellular Matrix on Titanium Implant Surfaces using Click Chemistry**  
M. Ruff (Sp), University of Stuttgart (Germany); D. Wieland, University of Konstanz (Germany); M. Bach, G. Tovar, University of Stuttgart (Germany); V. Wittmann, University of Konstanz (Germany); P. Kluger, Fraunhofer Institute for Interfacial Engineering and Biotechnology, Stuttgart (Germany)

**12:40**  
-  
**14:00**

**Lunch Break**

Goethe	Bach	Schiller
<b>I: Biomaterials applications</b>	<b>C: Bioactive materials</b>	<b>F: Bioinspired Materials</b>
Chair: E. Piskin, Hacettepe University, Ankara (Turkey)	Chair: K. Salma-Ancane, Riga Technical University, (Latvia)	Chair: K. Rezwani, University of Bremen (Germany)

**14:00**     **Coatings Made of Recombinant Spider Silk Proteins for Biomedical Applications**  
C. Borkner (Sp), S. Wohlrab, G. Lang, D. Andreeva-Bäumler, University of Bayreuth (Germany); K. Skorb, Max Planck Institute of Colloids and Interfaces, Potsdam (Germany); H. Bargel, T. Scheibel, University of Bayreuth (Germany)

**Microstructured bioactive glass for triggered cell response in bone replacement applications**  
M. Hoener (Sp), B. Pföss, R. Conradt, RWTH Aachen University (Germany); H. Fischer, RWTH Aachen University Hospital (Germany)

**Synthesis and evaluation of plantlike inorganic structures for fluid transport**  
K. Nickel (Sp), M. Keuper, A. Roth-Nebelsick, Eberhard-Karls-University of Tübingen (Germany)

**14:20**     **Ultrathin Yttria-Stabilized Zirconia Sheets for Biomedical Applications**  
C. Le Coadou (Sp), N. Karst, F. Emieux, H. Fournier, G. Lorin, O. Sicardy, A. Montani, G. Bernard-Granger, J.-P. Simonato, CEA, Grenoble (France); J. Chevalier, INSA Lyon (France)

**Selenium Doped Hydroxyapatite Coating on Titanium Alloy**  
B. Yilmaz, Z. Evis (Sp), A. Tezcaner, S. Banerjee, Middle East Technical University, Ankara (Turkey)

**Switchable Bio-inspired Adhesives**  
E. Kroner, Leibniz-Institute for New Materials GmbH, Saarbrücken (Germany)

**14:40**     **Theranostic Aimed Nanoabsorbers in Antenna Modulus Radiofrequency Hyperthermia (A Comprehensive Study)**  
B. Nasseri, M. Yilmaz, Hacettepe University, Ankara (Turkey); M. Turk, Kirikkale University (Turkey); I.C. Kocum, Baskent University, Ankara (Turkey); E. Piskin (Sp), Hacettepe University, Ankara (Turkey)

**Modified poly(vinyl alcohol)-hydroxyapatite microspheres for bone tissue engineering**  
K. Salma-Ancane (Sp), L. Stipniece, V. Rjabovs, J. Locs, L. Berzina-Cimdina, Riga Technical University (Latvia)

**Wood derived bio-scaffolds for multifunctional materials tailored through chemical delignification**  
J. Segmehl (Sp), T. Keplinger, I. Burgert, ETH, Zurich (Switzerland)

Goethe	Bach	Schiller
<b>I: Biomaterials applications</b>	<b>C: Bioactive materials</b>	<b>F: Bioinspired materials</b>
Chair: E. Piskin, Hacettepe University, Ankara (Turkey)	Chair: K. Salma-Ancane, Riga Technical University, (Latvia)	Chair: K. Rezwan, University of Bremen (Germany)

- 15:00**     **Biobased polymers in multi-component injection moulding**  
R. Rinberg, L. Kroll, Chemnitz University of Technology (Germany); C. Staudigel (Sp), SKZ Würzburg (Germany); F. Tautenhain (Sp), Chemnitz University of Technology (Germany)
- 15:20**     **The innovative polyurethane utilization in novel Polish extracorporeal pulsatile heart support devices ReligaHeart**  
R. Kustosz (Sp), Foundation for Cardiac Surgery Development, Krakow (Poland); M. Gonsior, A. Kapis, Foundation for Cardiac Surgery Development, Zabrze (Poland); P. Jurkowski, Z. Narojek, WADIM PLAST Narojek, Michaowice (Poland)
- 15:40**  
-  
**16:10**     **Coffee Break**
- Mechanical Assessment and In-vitro Biocompatibility of Pure and Sr Doped Zirconium-calcium-silicate (Ca3ZrSi2O9) Bioceramics**  
T. Schumacher (Sp), A. Aminian, E. Volkmann, H. Lührs, A. Wolf, D. Pede, L. Treccani, K. Rezwan, University of Bremen (Germany)
- Coacervate-directed CaCO3 microcarriers for pH-responsive delivery of biomolecules**  
V. Lauth (Sp), M. Maas, R. Rezwan, University of Bremen (Germany)
- Increased new-bone formation induced by a macroporous, strontium-enriched xerogel-scaffold in a metaphyseal fracture defect in ovariectomized rats.**  
U. Thormann (Sp), Justus-Liebig University, Giessen (Germany); T. Hanke, Technische Universität Dresden (); T. El Khassawna, U. Sommer, M. Rohnke, Justus-Liebig University, Giessen (Germany); V. Alt, Justus-Liebig University, Gießen (Germany)
- Interface-controlled calcium phosphate mineralization: effect of oligo(aspartic acid)-rich interfaces**  
D. Hentrich (Sp), M. Junginger, A. Taubert, University of Potsdam (Germany); M. Bruns, Karlsruhe Institute of Technology (Germany); H.G. Börner, Humboldt Universität zu Berlin (Germany); J. Brandt, G. Brezesinski, Max Planck Institute of Colloids and Interfaces, Potsdam (Germany)

Goethe	Bach	Schiller
<b>I: Biomaterials applications</b>	<b>C: Bioactive materials</b>	<b>F: Bioinspired materials</b>
Chair: F. Veronesi, Rizzoli Orthopedic Institute, Bologna (Italy)	Chair: G. Marletta, University of Catania (Italy)	Chair: B. Garipcan, Bogazici University, Istanbul (Turkey)

- 16:10**     **Comparison of the Antiresorptive Properties of Strontium and Alendronate on an ovariectomized Rat Spinal Arthrodesis Model**  
F. Salamanna (Sp), A. Parilli, G. Giavaresi, E. Boanini, A. Bigi, M. Fini, Rizzoli Orthopaedic Institute, Bologna (Italy)
- 16:30**     **Crystalline calcium alendronate obtained by octacalcium phosphate digestion: structure and in vitro behavior**  
F. Veronesi (Sp), P. Torricelli, M. Fini, Rizzoli Orthopedic Institute, Bologna (Italy); E. Boanini, A. Bigi, University of Bologna, M. Gazzano, ISOF-CNR, Bologna (Italy)
- 16:50**     **Baltic Sea Network for Biomaterial Composites**  
J. Bossert, Friedrich Schiller University of Jena (Germany)
- 17:10**     **Oral Poster Presentations; SessionChair: C. Lüdecke-Beyer, Friedrich-Schiller-University Jena (3 minute Short Lecture of each Oral Poster)**
- 19:30**     **Posterdiscussion with Snacks and Drinks in the Foyer of the lecture halls Posterevening Barbeque**
- Poly(ethylene oxide)-b-poly block copolymers for calcium phosphate mineralization and biofilm inhibition**  
T. Mai (Sp), K. Bleek, C. Günter, A. Taubert, University of Potsdam, Golm (Germany); E. Rakhmatullina, Z. Cheaib, S. Eick, A. Lussi, Univ. of Bern (CH); S. Boye, A. Lederer, Leibniz Inst. of Poly. Research Dresden; J. Yuan, A. Völkel, M. Gräwert. MPI of Colloids and Interfaces, Potsdam
- Tuning the Nanoparticles Surface: Effect of Polyethylene Glycol on the In-situ Adsorption of Proteins**  
B. Pelaz (Sp), Philipps Universität Marburg (Germany); P. del Pino, CIC biomagune, San Sebastian (Spain); M. Gamal, R. Hartman, W.J. Parak, Philipps Universität Marburg (Germany)
- Improved Biocompatibility of Polyetheretherketone (PEEK) by Coating with Thin Titania Films**  
N. Wendt (Sp), H. Fullriede, G. Zahn, P. Behrens, Leibniz Universität Hannover (Germany); B. Rais, P.P. Müller, Helmholtz Centre for Infection Research, Braunschweig
- A new concept of composite inspired to the bone osteonal structure**  
F. Libonati (Sp), L. Vergani, Politecnico di Milano (Italy)
- Cartilage Mimicked Surfaces**  
M.Ö. Öztürk, Bogaziçi University, Istanbul (Turkey); D. Hür, Anadolu University, Eskisehir (Turkey); L. Uzun, B. Çelebi, E. Keç, D.U. Çetinkaya, Hacettepe University, Ankara (Turkey); B. Garipcan (Sp), Bogaziçi University, Istanbul (Turkey)
- Reduced platelet adhesion on microstructured PDMS surfaces under shear conditions**  
T.T. Pham, C. Lüdecke-Beyer (Sp), K.D. Jandt, J. Bossert, S. Maenz, Friedrich Schiller University Jena; S. Wiedemeier, G. Gastrock, Institute for Bioprocessing and Analytical Measurement Techniques, Heilbad Heiligenstadt, U. Settmacher, J. Zanow, Jena University Hospital

Room	Goethe
	<b>Plenary Lectures</b>
	Chair: T.F. Keller, Deutsches Elektronen-Synchrotron - DESY, Hamburg (Germany)

**8:00**      **Nano-Structurd Biomaterials for Regenerative Tissue Engineering**

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**8:30**      P. Lelkes, Temple University, Philadelphia , PA (USA)



Peter I. Lelkes is the Laura H. Carnell Professor and Founding Chair of the Department of Bioengineering in the College of Engineering at Temple University. Dr. Lelkes is also the Inaugural Director of the Institute for Regenerative Medicine and Engineering (TIME) at Temple University's School of Medicine and Professor for Cancer Biology at the Fox Chase Cancer Center. Prior to that he was from 2000-2011 the Calhoun Chair Professor in the School of Biomedical Engineering, Science and Health Systems at Drexel University in Philadelphia with adjunct appointments in the Departments of Mechanical Engineering and Mechanics (College of Engineering) and Pathology, Biochemistry and Surgery (College of Medicine). Currently Prof. Lelkes directs a broad interdisciplinary program in regenerative tissue engineering, focusing on nanotechnology-based biomaterials and soft tissue engineering, employing developmental biological principles to enhance the tissue-specific differentiation of embryonic and adult stem cells towards pulmonary, cardiac and neuronal lineages. Dr. Lelkes has organized several Keystone conferences, published more than 190 peer-reviewed papers, authored several books and more than 50 book chapters and made more than 400 presentations nationally and internationally.

Dr. Lelkes' basic and translational research has been support by federal (NIH, NSF, NASA, DOE) and state funding agencies (NTI and PA Dept. of Commerce, Tobacco Settlement Funds) and private Foundations, including the Craig H. Neilsen Foundation and the Coulter Foundation. Dr. Lelkes has been the team leader for tissue engineering at the Nanotechnology Institute of Southeastern Pennsylvania (NTI) and is the Co-Director of PATRIC, the Pennsylvania Advanced Textile Research and Innovation Center, focusing on BioNanoTextiles and Stem Cell Biology.

Dr. Lelkes has received numerous honors and awards, nationally and internationally. Amongst them a Forchheimer Visiting Fellowship at the Hebrew University, Jerusalem, Honorary Professorships at the University of Applied Sciences Aachen, Germany and the Changchun Institute of Polymer Chemistry and Physics, Chinese Academy of Sciences, and a Distinguished Visiting Fellowship of the Royal Academy of Engineering at Imperial College, London, UK. In 2011 he was inducted as a Fellow of the AIMBE (American Institute for Medical and Biological Engineering) and received the 2012 Ben Franklin Key Award from IEEE, the Institute of Electrical and Electronics Enginee

Room	Goethe
	<b>Plenary Lectures</b>
	Chair: T.F. Keller, Deutsches Elektronen-Synchrotron - DESY, Hamburg (Germany)

**8:30**      **Reduction of implant-associated infections – a clinical view**

-  
**9:00**      V. Alt, Justus-Liebig-University Giessen (Germany)



Implant-associated infections remain a huge challenge in orthopaedic and orthopaedic trauma surgery and there is a tremendous need for antimicrobial biomaterials. The intention of this work is to highlight the clinical perspective, underlying pathophysiological mechanisms and surgical treatment options for implant-associated infections with a focus on antimicrobial biomaterials. Biofilm-building and intracellular invasion strategies are among the most relevant virulence factors of bacteria involved in implant infections. Biomaterials are of high interest as they enable the local delivery of antibiotics to the wound without any significant systemic side effects. Ideal biomaterials for the use in implant-associated bone infections should be safe in its use without disturbance of wound healing and biodegradable without the need for removal of the material. Furthermore, it should enable the loading with different antibiotics according to the antibiogram of the infection causing germ and ensure reliable release kinetics above the minimal inhibitory concentration of the bacteria. Osteoconductive or even osteoinductive properties are desirable for the enhancement of new bone formation. Close cooperation between material researches, clinicians and the industry is needed for the improvement of antimicrobial biomaterials in the future.

**9:00 - 9:40    Coffee Break**



Room	Goethe	Bach	Schiller
	<b>N: Dental materials</b>	<b>B: Bio-nano materials</b>	<b>S: Tissue engineering &amp; regenerative medicine</b>
	Chair: C. Lüdecke-Beyer, Friedrich Schiller University of Jena	Chair: T.F. Keller, Deutsches Elektronen-Synchrotron, DESY, Hamburg	Chair: A.R. Boccaccini, University Erlangen-Nürnberg, (Germany)
<b>09:40</b>	<b>Establishment and characterization of oral tissue cell lines for biological investigations of dental materials</b> Chair: C. Lüdecke-Beyer, Friedrich Schiller University of Jena	<b>Using nature's genius for the functionalization of surfaces</b> J. Raff (Sp), T. Günther, U. Weinert, M. Vogel, M. Suhr, S. Matys, B. Drobot, K. Pollmann, Helmholtz-Zentrum Dresden-Rossendorf (Germany)	<b>Bioactive Glass Based Nanostructured Scaffolds for Vascularized Bone Tissue Engineering</b> A.R. Boccaccini, University of Erlangen-Nürnberg (Germany)
<b>10:00</b>	<b>Influence of changing ion composition on the protein film formation on titanium</b> F. Kratz (Sp), C. Müller-Renno, N. Davoudi, University of Kaiserslautern (Germany); N. Umanskaya, S. Grass, M. Hannig, University Hospital of the Saarland, Homburg (Germany); C. Ziegler, University of Kaiserslautern (Germany)	<b>Dynamic Interfaces for Responsive Surface Encapsulation Systems</b> S. Ulasevich, Y. Zhukova, O. Baidukova, E. Skorb (Sp), Max Planck Institute of Colloids and Interfaces, Potsdam (Germany)	<b>Decreased extrusion of calcium-phosphate versus high viscosity PMMA cement into spongy bone marrow may be suitable for the reduction of adverse effects</b> L. Xin (Sp), V. Kopsch, S. Bischoff, J. Adolph, H. Schubert, E. Kunisch, R.W. Kinne, Uni. Hospital Jena, Eisenberg (Germany); M. Bungartz, O. Brinkmann, Rudolf-Elle-Krankenhaus, Eisenberg; S. Maenz, J. Bossert, Univ. of Jena; B. Illerhaus, J. Günster, BAM Berlin
<b>10:20</b>	<b>Blue Light Emitting Diode (LED) Photopolymerization of Dental Materials – from History to State of the Art</b> K.D. Jandt, Friedrich Schiller University of Jena (Germany)	<b>Polymer Coated Nanodiamonds Modified with Transferrin as Highly Selective Fluorescent Probes</b> J. Slegerova (Sp), M. Hajek, F. Sedlak, I. Rehor, E. Kuzmova, P. Cigler, Institute of Organic Chemistry and Biochemistry AS CR, v.v.i., Prague (CZ); J. Stursa, Nuclear Physics Institute AS CR, Rez near Prague	<b>Structural and cellular changes of in a sheep model of osteoporosis</b> T. El Khassawna (Sp), W. Böcker, D. Weisweiler, D. Bürgener, L. Schröder, A. Schlagenhauf, S. Widmann, A. Stärk, M. Kampschulte, C. Heiss, Justus Liebig University of Giessen
<b>10:40</b>	<b>Failure Behaviour and Reliability of Dental Bio-ceramics</b> A. Märten (Sp), TU Berlin; R. Zehbe, C. Fleck, Berlin Institute of Technology; J. Forien, P. Zaslansky, C. Mochales, W.-D. Mueller, Charité Berlin; A. Rack, European Synchrotron Radiation Facility, Grenoble (France)	<b>Nanostructured surfaces and cell behavior: Human Fibronectin within nanowells</b> G.M.L. Messina (Sp), G. Marletta, University of Catania (Italy); A. Karaceli, Ankara University (Turkey); M.C. Yurtsever, M. Gümüt Dereliolu, Hacettepe University, Ankara	<b>Heparin mimetic dendritic Polyglycerolsulfate (dPGS) based Hydrogels for Cartilage Tissue Engineering</b> P. Dey (Sp), R. Haag, Freie Universität Berlin; T. Schneider, G. Schultze-Tanzil, Charité Berlin; L. Chiappisi, M. Gradzielski, TU Berlin

Room	Goethe	Bach	Schiller
	<b>D: Biodegradable materials</b>	<b>B: Bio-nano materials</b>	<b>S: Tissue engineering &amp; regenerative medicine</b>
	Chair: F. Witte, Charité-Universitätsmedizin Berlin, (Germany)	Chair: T.F. Keller, Deutsches Elektronen-Synchrotron, DESY, Hamburg	Chair: P. Kluger, FI Interfacial Engineering & Biotechn., Stuttgart
<b>11:00</b>	<b>Coffee Break</b>		
<b>11:30</b>	<b>Designed to Dissappear: New Bioresorbable Alloys for Implants</b> W.-A. HeiB (Sp), C. Legner, U.E. Klotz, Research Institute for Precious Metals and Metals Chemistry (fem), Schwaebisch Gmuend (Germany)	<b>Directed Assembly of Nanoparticles to Isolated Diatom Valves Using the Non-Wetting Characteristics after Pyrolysis</b> A. Jantschke (Sp), C. Fischer, Technische Universität Dresden (Germany); R. Hensel, INM - Leibniz Institute for New Materials, Saarbrücken (Germany); H.-G. Braun, Max Bergmann Center of Biomaterials, Dresden (Germany); E. Brunner, Technische Universität Dresden (Germany)	<b>EU ArtVasc: Optimized culture conditions for mature adipocytes in 3D Adipose Tissue Engineering</b> B. Huber (Sp), E. Hoch, G. Tovar, University of Stuttgart (Germany); K. Borchers, P. Kluger, Fraunhofer Institute for Interfacial Engineering and Biotechnology, Stuttgart (Germany)
<b>11:50</b>	<b>Development of resorbable magnesium implants for the treatment of individual bone defects in oral and maxillofacial surgery</b> O. Jung (Sp), P. Hartjen, H. Hanken, University Medical Center Hamburg-Eppendorf (Germany); A. Kopp, C. Ptack, Meotec GmbH & Co.KG, Aachen (Germany); M. Heiland, R. Smeets, University Medical Center Hamburg-Eppendorf	<b>Multiple Fluorophore Doped, Photostimulable, Fluorescent Silica Nanoparticles for Intracellular Biological Imaging</b> L. Treccani (Sp), S. Shahabi, K. Rezwani, University of Bremen (Germany)	<b>EU ArtVasc: New biodegradable polyurethane fleeces as tissue engineering scaffolds for adipose-derived stem cells</b> M. Schnabelrauch (Sp), T. Laube, R. Wyrwa, T. Walter, INNOVENT e.V., Jena (Germany); A. Gugereil, J. Kober, M. Keck, Medical University of Vienna (Austria); S. Nürnberg, Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna; E. Grönniger, S. Brönneke, Beiersdorf AG, Hamburg
<b>12:10</b>	<b>Effect of Ag and Ca on microstructure and phase formation of Mg-2Gd alloy</b> Y. Lu (Sp), Y. Huang, F. Feyerabend, R. Willumeit-Römer, K.U. Kainer, N. Hort, Helmholtz-Zentrum Geesthacht (Germany)	<b>Self-assembled protein nanofibers as basis for novel biomaterials</b> C. Helbing, S. Maenz (Sp), C. Lüdecke, Friedrich Schiller University of Jena (Germany); T. Deckert-Gaudig, Institute for Photonic Technology, Jena (Germany); K.D. Jandt, Friedrich Schiller University of Jena (Germany)	<b>EU ArtVasc: Electrospun biodegradable polymers as matrix in adipose tissue engineering</b> N. Nottrodt (Sp), FI for Laser Technology, Aachen; S. D'Aniello, L. Tammaro, Univ. of Salerno, Fisciano, (Italy); A. Gugereil, J. Kober, M. Keck, Medical Univ. of Vienna (Austria); M. Malin, J. Seppälä, Aalto University (Finland)

Goethe	Bach	Schiller
D: Biodegradable materials	B: Bio-nano materials	S: Tissue engineering & regenerative medicine
Chair: F. Witte, Charité-Universitätsmedizin Berlin, (Germany)	Chair: T.F. Keller, Deutsches Elektronen-Synchrotron, DESY, Hamburg	Chair: P. Kluger, FI Interfacial Engineering & Biotechn., Stuttgart

**12:30** **In-situ high resolution AFM studies of MgO-dissolution processes in aqueous electrolytes**  
I. Giner (Sp), A. Keller, G. Grundmeier, Paderborn University (Germany)

**Single-molecule investigations on DNA origami substrates**  
A. Keller (Sp), C. Kiehl, J. Rackwitz, University of Paderborn (Germany); A. Rotaru, "Petru Poni" Institute of Macromolecular Chemistry, Iasi (Romania); K.V. Gothelf, F. Besenbacher, Aarhus University (Denmark); G. Grundmeier, University of Paderborn (Germany); I. Bald, University of Potsdam (Germany)

**EU ArtiVasc:Optimizing the supply performance of vascularized artificial soft tissues**  
J. Courseau (Sp), R. Jaeger, Fraunhofer-Institute for the Mechanics of Materials, Freiburg (Germany)

**12:50** **Magnesium degradation in contact with blood**  
F. Feyerabend (Sp), Helmholtz-Zentrum Geesthacht (Germany); B. Mihailova, University of Hamburg (Germany); H.P. Wendel, University Childrens Hospital, Tübingen (Germany)

**Detection of pathogenic bacteria with Electrochemical Impedance Spectroscopy (EIS) using bacteriophages at a single-use graphite electrodes modified with gold nanorods**  
F. Moghtader (Sp), Hacettepe University, Ankara (Turkey); G. Congur, A. Erdem, Ege University, Izmir (Turkey); E. Piskin, Hacettepe University, Ankara (Turkey)

**Aerographite for tissue engineering**  
C. Lamprecht (Sp), C. Grabosch, A. Schuchardt, I. Paulowicz, Christian-Albrechts-University Kiel (Germany); M. Mecklenburg, K. Schulte, Technische Universität Hamburg-Harburg (Germany); R. Adlung, C. Selhuber-Unkel, Christian-Albrechts-University Kiel (Germany)

**13:10**  
-  
**14:15** **Lunch Break**

Goethe	Bach	Schiller
D: Biodegradable materials	M: 3D printing / additive manufacturing of biomaterials	G: Biointerfaces /microenviro. L: challenges for MedTech Ind.
Chair: F. Feyerabend, Helmholtz-Zentrum Geesthacht, (Germany)	Chair: M. Pfaffinger, Vienna University of Technology, (Austria)	Chair: N. Stark, Biotronik AG, Bülach, (Switzerland)

**14:15** **Effect of magnesium degradation products on mesenchymal stem cell fate and osteoblastogenesis**  
B.J.C. Luthringer (Sp), R. Willumeit-Römer, Helmholtz-Zentrum Geesthacht (Germany)

**Selective Laser Melting of magnesium alloys - A new route towards manufacturing individual and biodegradable implants**  
M. Gieseke (Sp), C. Nölke, S. Kaieler, Laser Zentrum Hannover e.V. (Germany); H.J. Maier, Leibniz Universität Hannover (Germany); H. Haferkamp, Laser Zentrum Hannover e.V. (Germany)

**EU AmbuLung:Improving blood-contacting polymeric surfaces by bio-functional modifications and endothelialization**  
A. Wenz (Sp), University of Stuttgart (Germany); K. Linke, M. Schandar, K. Borchers, Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB, Stuttgart (Germany); F. Metzger, E. Novosel, J. Schneider, Novalung, Heilbronn (Germany); P. Kluger, Reutlingen University (Germany)

**14:35** **Open porous Mg scaffolds allow angiogenesis and replacement by new bone formation**  
F. Witte (Sp), Charité - Universitätsmedizin Berlin (Germany); K. Bobe, Medizinische Hochschule Hannover (Germany); I. Morgenthal, O. Anderson, IFAM Dresden (Germany)

**EU ArtiVasc:Biobased Polyurethane Elastomer for Blood Vessel Model by Stereolithography**  
H.S. Le (Sp), M. Liikanen, M. Malin, H. Korhonen, J. Seppälä, Aalto University, Espoo (Finland); J. Weisser, T. Walter, M. Schnabelrauch, Innovent e.V., Jena (Germany)

**Osteoblastic cell behavior in titanium alloys with structured surface designed by electron beam technique**  
C. Ramskogler (Sp), Graz University of Technology (Austria); S. Mostofi, Medical University Graz (Austria); F. Warchomicka, Graz University of Technology (Austria); A. Weinberg, Medical University Graz (Austria); C. Sommitsch, Graz University of Technology (Austria)

**14:55** **Strong bioresorbable beta-TCP-(Fe-Mg) nanocomposites by attrition milling and high pressure consolidation**  
S.K. Swain (Sp), I. Gotman, E.Y. Gutmanas, Technion-Israel Institute of Technology, Haifa (Israel)

**Stereolithographic Additive Manufacturing of Tricalcium Phosphate**  
M. Pfaffinger (Sp), G. Mitterramskogler, Ö. Kaslioglu, J. Stampfl, Vienna University of Technology, Wien (Austria)

**EU AmbuLung:Clinical need for new biohybrid lung assist devices**  
G. Matheis (Sp), Novalung GmbH, Heilbronn (Germany); F. Bigazzi, G. Camiciottoli, University of Florence (Italy); J. Schneider, Novalung GmbH, Heilbronn (Germany); M. Pistolesi, University of Florence (Italy)

**-15:15**

Room	Goethe	Bach	Schiller
	D: Biodegradable materials	P: Imaging of biomaterials	L: Current and Future challenges for MedTech Industry
	Chair: F. Feyerabend, Helmholtz-Zentrum Geesthacht, (Germany)	Chair: S. Maenz, Friedrich-Schiller University Jena, (Germany)	Chair: N. Stark, Biotronik AG, Bülach, (Switzerland)

**15:20 Bioglass Foam Scaffolds for Bone Reconstruction**  
L.-P. Lefebvre (Sp), S. Grenier, National Research Council Canada, Boucherville (Canada); V. Melli, E. Boccardi, C. Catignoli, L. Altomare, L. De Nardo, Politecnico di Milano (Italy); M. Cerruti, McGill University, Montreal (Canada); E.A. Aguilar Reyes, B. Jacinto Diaz, University Michoacana de San Nicolás de Hidalgo, Morelia (Mexico)

**15:40 Fabrication of Starch-g-PLA Copolymers in Supercritical Carbon Dioxide Medium**  
F. Moghtader (Sp), E. Piskin, K. Salimi, M. Yilmaz, Z.M.O. Rzayev, Hacettepe University, Ankara (Turkey)

**16:00 Biodegradable microelectrodes to deposit a viable structured cell-protein layer**  
F. Schmidt (Sp), R. Zehbe, C. Fleck, TU Berlin (Germany); U. Gross, Freie Universität Berlin (Germany); O. Görke, TU Berlin (Germany)

**Nanoscale Mechanical Mapping at a Wide Range of Deformation Rates With Atomic Force Microscopy**  
A. Dulebo (Sp), Bruker, Karlsruhe (Germany); B. Pittenger, C. Su, S. Minne, Bruker, Santa Barbara, CA (USA)

**Characterization of three dimensional composite scaffolds - effect of vascular prefabrication on angiogenesis**  
K. Szlczak (Sp), J. Jaroszewicz, B. Ostrowska, J. Idaszek, W. Swieszkowski, Warsaw Univ. of Techn. (PO); T. Debski, Med.Centre of Postgraduate Education, Warsaw; J. Wysocki, Z. Pojda, Marie Skłodowska-Curie Cancer Memorial Centre, Warsaw

**Atomic Force Microscope-coupled Infrared Spectroscopy for sensing ultra-thin biomaterial**  
A. Deniset (Sp), A. Dazzi, Université Paris-Sud, Orsay (France); C. Marcott, Light Light Solutions, Athens, GA (USA); K. Kjoller, M. Lo, E. Dillon, R. Shetty, Anasys Instruments Corp, Santa Barbara, CA (USA); T. Gross, Phi Europe GMBH, Munich

**EU AmbuLung: Bioartificial Devices for Cardiac and Pulmonary Support- Past, Present and Future**  
P. Lelkes, Temple University, Philadelphia, PA (USA)

**Round Table Discussion - Current & future challenges for the MedTech industry**

With 5 percent average annual growth and operating margins above 20 percent the medical device industry has been stable and highly attractive for decades. As a consequence, established players were able to successfully compete without much need for differentiation. But disruptive change is underway. Companies will no longer get premium reimbursement by simply selling clinical features and new devices in established markets. Furthermore centralized purchasing based on comparative value and evidence of efficacy will change the commercial model. A.T. Kearney together with executives from leading medical device manufacturers identified their five major disruptors shaping current and future medical device industry.

1. Power shift to payers and providers
2. Heightened regulatory scrutiny
3. Unclear sources of innovation
4. New healthcare delivery models
5. Need to serve lower socioeconomic classes

....please follow page 21.....

**16:20 Announcement of the Posteraward and Closing address,**  
K.D. Jandt and T.F. Keller, Chairmen of the Conference

**16:40**

**Round-Table Discussion: Current and future challenges for MedTech Industry**  
**Introduction of the speakers:**

....continued from page 20....

Thus radical change is inevitable and companies that embrace it will shape the industry and benefit from their efforts. Since each sector and company faces a different set of headwinds, depending on the individual environment it is the goal of the discussion is to share challenges, insights and strategies across leaders in different industries. Furthermore we want to discuss with podium and audience how a healthy collaboration between industry and academia can ensure that both are well equipped for the future.

**Peter I. Lelkes, PhD**  
**Temple University, Philadelphia, USA**

is the Laura H. Carnell Professor and Founding Chair of the Department of Bioengineering in the College of Engineering at Temple University. Dr. Lelkes is also the Inaugural Director of the Institute for Regenerative Medicine and Engineering (TIME) at Temple University's School of Medicine and Professor for Cancer Biology at the Fox Chase Cancer Center. Prior to that he was from 2000-2011 the Calhoun Chair Professor in the School of Biomedical Engineering, Science and Health Systems at Drexel University in Philadelphia with adjunct appointments in the Departments of Mechanical Engineering and Mechanics (College of Engineering) and Pathology, Biochemistry and Surgery (College of Medicine). Currently Prof. Lelkes directs a broad interdisciplinary program in regenerative tissue engineering, focusing on nanotechnology-based biomaterials and soft tissue engineering, employing developmental

biological principles to enhance the tissue-specific differentiation of embryonic and adult stem cells towards pulmonary, cardiac and neuronal lineages. Dr. Lelkes has organized several Keystone conferences, published more than 190 peer-reviewed papers, authored several books and more than 50 book chapters and made more than 400 presentations nationally and internationally.

Dr. Lelkes' basic and translational research has been supported by federal (NIH, NSF, NASA, DOE) and state funding agencies (NTI and PA Dept. of Commerce, Tobacco Settlement Funds) and private Foundations, including the Craig H. Nielsen Foundation and the Coulter Foundation. Dr. Lelkes has been the team leader for tissue engineering at the Nanotechnology Institute of Southeastern Pennsylvania (NTI) and is the Co-Director of PATRIC, the Pennsylvania Advanced Textile Research and Innovation Center, focusing on BioNanoTextiles and Stem Cell Biology.

Dr. Lelkes has received numerous honors and awards, nationally and internationally. Amongst them a Forchheimer Visiting Fellowship at the Hebrew University, Jerusalem, Honorary Professorships at the University of Applied Sciences Aachen, Germany and the Changchun Institute of Polymer Chemistry and Physics, Chinese Academy of Sciences, and a Distinguished Visiting Fellowship of the Royal Academy of Engineering at Imperial College, London, UK. In 2011 he was inducted as a Fellow of the AIMBE (American Institute for Medical and Biological Engineering) and received the 2012 Ben Franklin Key Award from IEEE, the Institute of Electrical and Electronics Engineers.

**Georg Matheis, Priv. Doz. Dr. med. Novalung GmbH, Heilbronn, Germany**

Georg Matheis has served as the Managing Director for Novalung since the company's inception in 2003. He co-founded the company, and has more than 27 years of clinical, academic and entrepreneurial experience in the medical device and biotech sectors. Dr. Matheis founded, managed, and invested in several medical device and biotech companies, and served as medical director of Jostra AG prior to the founding of Novalung. He teaches at Goethe University in Frankfurt where he served in clinical and academic positions as a cardiac surgeon, and as a consultant for medical device companies and investors. Dr. Matheis holds Dr. med. (summa cum laude) and Associate Professor (Privatdozent) degrees from Goethe University at Frankfurt, and a Prof. h.c. from FAMEMA Marilia, Sao Paulo. His career includes positions at UCLA, Freiburg University and Goethe University in Frankfurt. He is a distinguished speaker, lecturer, and editor, and is the author of numerous peer-reviewed scientific articles.

**Dr. Claude Rieker**  
**Director Scientific Affairs - Zimmer GmbH, Winterthur, Switzerland**

After having studied material sciences at the Swiss Institute of Technology in Lausanne (EPFL), Claude Rieker studied the rapid solidification of stainless steels at the University of Neuchâtel

Round-Table Discussion: Current and future challenges for MedTech Industry

Introduction of the speakers:

and obtained his PhD in 1990 from this university. He started to work in orthopaedics immediately after his PhD, designing hip implants and working closely with key European surgeons like M.E. Müller, H. Wagner, E. Morscher, and L. Spotorno. From 1995 to 2006, Claude Rieker had the global responsibility of all research activities in tribology for Sulzer / Zimmer and developed / optimized all the bearings within the portfolio of Sulzer / Zimmer. During these 11 years of research, Claude Rieker gained extensive knowledge on hard-on-hard bearings, on highly cross-linked polyethylene technologies, and also on all tribologic aspects of total joint arthroplasties. The key results of these activities have been published in peer-reviewed journals. For the last 9 years, Claude Rieker has the responsibility of the European Scientific Affairs for Zimmer.

a Johnson & Johnson company. From 1997 to 2011 he served in R&D roles of increasing responsibility for Sulzer Medica, which in 2003 became acquired by Zimmer. During this time he initiated the project and secured fundings to develop the first implantable human knee joint with force sensors to measure joint loads of patients in vivo, a collaboration with the Charité Hospital. It was followed by a two-year international work assignment at Zimmer's headquarter in the US, where he was responsible for formulating and developing a product strategy for drug-device combination products across Zimmer's product portfolio.

Mr. Klabunde holds a MSc in Biomedical Engineering from the University of Rostock and an MBA in General Management from the University of St. Gallen.

**Dr. Simon Jegou,**  
**Divonne-les-Bains, France**

Dr. Simon Jegou is an expert in ceramics and ceramic processing technologies, specializing in ceramics for medical applications. He has more than 8 years international experience in the Medical Device Industry occupying management roles in both R&D and Sales and Marketing. He worked the past 6 years at Nobel Biocare managing and driving Research and Early Development projects within the field of ceramic-based prosthetic and implant treatment solutions, in collaboration with universities, industry, and leading clinicians and technicians. He has authored several scientific papers and patent applications, and a chapter on Dental Glasses

and Glass-ceramics (Chap. 12) in the book "Advanced Ceramics for Dentistry", Elsevier, edited by James Shen. He was educated in France and Sweden, and received his PhD in Materials Chemistry in 2005 from the University of Lund where he was conducting research in injectable calcium phosphate bone substitutes for orthopedic applications. He also holds an education and working experience in International Sales & Marketing.

**Norman Stark**  
**Manager Strategic Projects R&D -**  
**Biotronik AG, Bülach, Switzerland**

After starting his career in medical Industry with Zimmer in 2005 he served as Manager of the Polymer Research Group before taking over extended responsibility for the Metals, Processes and Retrieval analysis teams and laboratories. In his functions he supported and led various important new technology and process optimization projects and authored and coauthored numerous publications and patents. Since 2014 Norman is leading task forces and major projects as a Strategic R&D Project Manager for Biotronik AG in Switzerland. Besides his responsibilities within Biotronik he serves as an active member of the German Society for Biomaterials, the European Society for Biomaterials and the ESB Educational Committee. Norman holds a Master in Engineering with a major in biomaterials and a Master in Business Administration focusing on leadership and human capital management.

**A: Antimicrobial biomaterials & biofilms**

**A-44 Thermally sprayed calcium phosphate coatings with antibacterial properties**

P. Krieg (Sp), University of Stuttgart (Germany); A. Bernstein, University of Freiburg (Germany); A. Killinger, R. Gadow, University of Stuttgart (Germany)

**A-52 Nano and macro porous membranes à la carte**

M. Lelonek (Sp), M. Lelonek, SmartMembranes GmbH, Halle (Germany)

**A-82 Development of nanoporous titanium dioxide surfaces with antimicrobial activity for controlled drug delivery systems in dental applications**

P. Abendroth (Sp), Leibniz Universität Hannover (Germany); K. Doll, J. Schaeske, Hannover Medical School; H. Fullriede, Leibniz Universität Hannover; A. Winkel, M. Stiesch, Hannover Medical School; P. Behrens, Leibniz Universität Hannover

**A-117 Antimicrobial surfaces with release properties for dental implants J. Barz, Fraunhofer Institute for Interfacial Engineering and Biotechnology (Germany);**

M. Bach (Sp), University of Stuttgart (Germany); R. Bürgers, Universitätsmedizin Göttingen (Germany)

**A-176 Bacterial adhesion on nanorough titanium: Preliminary insight into the nanostructure of the microbe-material-interface and adhesion mechanisms**

C. Lüdecke-Beyer (Sp), Friedrich Schiller University Jena (Germany); M. Roth, Bio Pilot Plant, Leibniz Institute for Natural Product Research and Infection Biology, Jena (Germany); J. Bossert, K.D. Jandt, Friedrich Schiller University Jena (Germany)

**A-177 Microbial adhesion on physically nanostructured biomaterials surfaces**

C. Dewald (Sp), C. Lüdecke, Friedrich Schiller University Jena (Germany); M. Roth, Bio Pilot Plant, Leibniz Institute for Natural Product Research and Infection Biology, Jena (Germany); J. Bossert, K.D. Jandt, Friedrich Schiller University Jena (Germany)

**A-203 Preparation of Multivalent Surface Coatings of Phosphoryl Choline on PTFE Surfaces**

R. Hammer (Sp), PVA tePla AG, Prien (Germany); M. Barden, PVA tePla America, Corona (USA)

**B: Bio-nano materials**

- B-26** Oral Poster  
**Ionic liquid-assisted formation of cellulose/calcium phosphate hybrid materials with potential application as biomaterials**  
A. Salama, A. Taubert (Sp), University of Potsdam, Golm (Germany)
- B-58** **Round diamond nanoparticles**  
H. Raabova (Sp), IOCB AS CR, Prague (Czech Republic); I. Rehor, IOCB AS CR, Prague (Czech Republic); P. Cigler, IOCB AS CR, Prague (Czech Republic)
- B-65** **Fabrication and SERS Applications of Unidirectional Gold and Silver Nanorod Arrays Enhanced by Colloidal Nanoparticles**  
E. Piskin (Sp), G. Demirel, E. Piskin, Hacettepe University, Ankara (Turkey)
- B-69** Oral Poster  
**Gold Decorated Magnetite Nanoparticles as a Non-viral vector Applied in Cell Cultures on Tumor Cell Lines**  
D.D. Usta, Hacettepe University, Ankara (Turkey); M. Turk, Kirikkale University (Turkey); E. Piskin (Sp), Hacettepe University, Ankara (Turkey)
- B-89** Oral Poster  
**Nanoscale Imaging and Quantitative Nanomechanical Characterization of Biomaterials by Atomic Force Microscopy**  
T. Müller, D. Stamov, J. Barner, T. Henze, F. Kumpfe, C. Pettersson (Sp), T. Jahnke, JPK Instruments AG, Berlin (Germany)
- B-101** **Carbon Nanotube Coatings on Electrodes for Neural Interface Applications**  
N. Burblies (Sp), K. Kreiskoether, H.-C. Schwarz, P. Behrens, Leibniz Universität Hannover (Germany); J. Schulze, K. Kranz, K. Wissel, A. Warnecke, Hannover Medical School (Germany)
- B-103** **Nanoporous Platinum Coatings for Electrodes in Biomedical Applications**  
K.D. Kreisköther (Sp), K. Kranz, K. Wissel, J. Schulze, P. Behrens, Leibniz Universität Hannover (Germany)
- B-119** **Nanodiamonds surface design – particle jigsaw in solution**  
J. Havlik (Sp), Academy of Sciences of the Czech Republic, Prague (Czech Republic); P. Cigler, Academy of Sciences of the Czech Republic, Prague (Czech Republic)

- B-136** **Ultrathin biocompatible coatings of fluorescent diamonds**  
J. Vavra (Sp), I. Rehor, P. Cigler, Academy of Sciences of the Czech Republic, Prague (Czech Republic)
- B-155** Oral Poster  
**Development of Engineered Iron-Oxide Nanoparticles by Lentiviral Vectors for Target Cancer Therapy and Hyperthermia**  
E. Borroni (Sp), E. Catalano, A. Cochis, F. Oltolina, M. Prat, L. Rimondini, University of Piemonte Orientale, Novara (Italy); S. Ferraris, M. Miola, E. Vernè, Politecnico di Torino, Turin (Italy); S. Novek, Jožef Stefan Institute, Ljubljana (Slovenia); A. Follenzi,
- B-175** **PEG-based Hydrogels Surface Patterned with Gold Nanoparticles for Selective Immobilization of Biomolecules**  
C. Yesildag (Sp), Z. Zhang, M.C. Lensen, TU Berlin (Germany)

**C: Bioactive materials**

- C-5** **Spin-coated and dip-coated calcium hydroxyapatite thin films on titanium, silicon and quartz substrates: preparation and characterization**  
M. Malakauskaite-Petruleviciene (Sp), Z. Stankeviciute, A. Prichodko, A. Kareiva, Vilnius University (Lithuania)
- C-21** Oral Poster  
**Morphological patterns in the micrometer and nanometer range to influence biological response to titanium based substrates**  
M.M. Subhani (Sp), X. Wang, R. Hess, D. Langheinrich, R. Beutner, A.-F. Lasagni, D. Scharneweber, Technische Universität Dresden (Germany)
- C-66** **In vitro effects of Cu-doped 4555 bioactive glass and lipid peroxidation on the growth of human osteoblast-like cells**  
L. Milkovic, Rudjer Boskovic Institute, Zagreb (Croatia); A. Hoppe, T. Zehnder, J. Will, R. Detsch, University of Erlangen-Nürnberg (Germany); N. Zarkovic, Rudjer Boskovic Institute, Zagreb; A.R. Boccaccini (Sp), University of Erlangen-Nürnberg (Germany)
- C-86** **Biocomposites for tooth regeneration based on collagen matrix, nanoporous silica nanoparticles and bone morphogenetic proteins (BMPs)**  
A. Satalov (Sp), P. Behrens, Leibniz Universität Hannover (Germany); M. Steindorff, E. Gellermann, H. Hartwig, A. Winkler, M. Stiesch, Hannover Medical School (Germany)
- C-90** Oral Poster  
**Plasma spraying as a tool for the generation of bioactive surfaces**  
H. Testrich (Sp), A. Quade, A. Kruth, M. Fröhlich, K.-D. Weltmann, M. Polak, Leibniz Institute for Plasma Science and Technology, Greifswald (Germany)
- C-111** **Investigation of bio-glass-ceramics containing natural bones**  
A. Dobrádi (Sp), M. Enisz-Bódogh, K. Kovács, University of Pannonia, Veszprém (Hungary)
- C-118** Oral Poster  
**Chemical and Morphological Changes of hydroxyapatite Cold Gas Spray coatings during Immersion in Simulated Physiological Solutions**  
A. Martín Vilardell (Sp), N. Cinca, A. Concustell, S. Dosta, I.G. Cano, J.M. Guilemany, University of Barcelona (Spain)
- C-120** Oral Poster  
**Structuring surfaces of bioactive glasses at the micro scale by mould casting**  
B. Pföss (Sp), RWTH Aachen University (Germany); M. Höner, University Hospital RWTH Aachen (Germany); M. Wirth, T. Vossel, RWTH Aachen University (Germany); H. Fischer, University Hospital RWTH Aachen (Germany); A. Bührig-Polaczek, R. Conradt, RWTH Aachen University (Germany)
- C-140** **Design of functionalized beta-TCP spray-dried granules for HVOF thermal spray applications**  
I. Arhire (Sp), A. Killinger, R. Gadow, University of Stuttgart (Germany)

C: Bioactive materials		D: Biodegradable materials	
<b>C-143</b>	<p><b>Development and activity of human osteoclast cells on 45S5 bioactive glass</b> R. Detsch, A.R. Boccaccini (Sp), A. Hoppe, A. Grünwald, University of Erlangen-Nürnberg (Germany); E. Strasser, P. Steininger, University Hospital Erlangen (Germany)</p>	<b>D-25</b>	<p><b>Toughening of porous bioceramic scaffolds by bioresorbable polymeric coatings</b> S. Dorozhkin, Moscow (Russian Federation)</p>
<b>C-202</b>	<p><b>Development and evaluation of 45S5 bioactive glass based scaffolds coated with selenium nanoparticles or with poly(lactide-co-glycolide)/selenium nanoparticles</b> A.R. Boccaccini (Sp), University of Erlangen-Nürnberg (Germany); M. Stevanovic, N. Filipovic, Serbian Academy of Science and Arts, Belgrade (Serbia)</p>	<b>D-38</b>	<p><b>Hydration of partially amorphized Sr2+ - containing alpha- TCP powder samples</b> K. Hurlle (Sp), M. Goebbels, J. Neubauer, F. Goetz-Neunhoeffler, Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany)</p>
		<b>D-56</b>	<p><b>Polarization measurements with rotating disk electrode for characterization of the degradation of Mg-Gd and Mg-Ag binary alloys</b> I. Marco (Sp), KU Leuven (Belgium); F. Feyerabend, R. Willumeit-Römer, Helmholtz-Zentrum Geesthacht (Germany); O. Van der Briest, KU Leuven (Belgium)</p>
		<b>D-92</b>	<p><b>Biodegradable Mg-alloys implants in a short-term study</b> A. Myrissa (Sp), Medical University of Graz (Austria); G. Szakács, Helmholtz-Zentrum Geesthacht, Hamburg (Germany); E. Martinelli, J. Eichler, S. Srinivasaiah, U. Schäfer, A.M. Weinberg, Medical University of Graz (Austria)</p>
		<b>D-106</b>	<p><b>Effect of Morphology on Ageing Characteristics of Poly(Lactic Acid) in Different Media</b> K. Bruckmoser (Sp), K. Resch, University of Leoben (Austria)</p>
		<b>D-121</b>	<p><b>Establishment of a new method to quantify the immune cell response to subcutaneously or intramuscularly implanted materials</b> F. Witte (Sp), T. Schmidt, Z. Kronbach, M. Heinze, M. Geiling, S. Krummsdorf, Charité - Universitätsmedizin Berlin (Germany)</p>
		<b>D-124</b>	<p><b>Processing of Zn based alloy tubes for biodegradable stent applications</b> E. Mostaed (Sp), M. Hashempour, M. Sikora-Jasinska, M. Bestetti, Politecnico di Milano (Italy); A. Tuissi, National Research Council, Milan (Italy); M. Vedani, Politecnico di Milano (Italy)</p>
		<b>D-178</b>	<p><b>Controlling the interfacial strength in PLGA fiber reinforced brushite cements</b> S. Maenz (Sp), M. Henning, M. Mühlstädt, Friedrich Schiller University of Jena (Germany); E. Kunisch, R.W. Kinne, Waldkrankenhaus "Rudolf Elle", Eisenberg (Germany); J. Bossert, K.D. Jandt, Friedrich Schiller University of Jena (Germany)</p>

F: Bioinspired Materials		G: Biointerfaces / microenvironments		H: Biological materials	
<b>F-14</b>	<p><b>Assembly and Structure of Spider Silk Nanofibrils</b> M. Humenik (Sp), T. Scheibel, University of Bayreuth (Germany)</p>	<b>G-161</b>	<p><b>The micro-porous blood contact surface manufactured on titanium by glow-discharge assisted nitriding process for application in the rotary blood pump elements</b> M. Gonsior (Sp), R. Kustosz, M. Darak, I. Altyntsev, M. Kocielniak-Ziemniak, M. Gawlikowski, Foundation for Cardiac Surgery Development, Zabrze (Poland); T. Wierzcho, Warsaw University of Technology (Poland)</p>	<b>H-75</b>	<p><b>Biogenic Wood Plastic Composites from bio-based Polyamide 11 and chemically modified Beech Fibers</b> P. Zierdt (Sp), S. Wittchen, Fraunhofer Institute for Mechanics of Materials IWM, Halle (Germany); A. Weber, Institut für Holztechnologie Dresden (Germany); H. Costard, Flasin GmbH, Neu Wulmstorf (Germany)</p>
<b>F-78</b>	<p><b>New biomaterials based on self-folding films</b> L. Ionov, Leibniz Institute of Polymer Research Dresden (Germany)</p>	<b>G-204</b>	<p><b>EU AmbuLung: Biofunctionalization of PMP fibres for endothelialized gas exchanger membranes</b> K. Borchers, Fraunhofer Institute for Interfacial Engineering and Biotechnology, Stuttgart (Germany)</p>	<b>H-129</b>	<p><b>A combined nanoindentation and finite element study of the biomechanics of Passiflora discophora attachment pads</b> C. Bos (Sp), R. Kappel, O. Kraft, R. Schwaiger, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen (Germany)</p>
<b>F-107</b>	<p><b>Hydroxyapatite composite cryogels as potential scaffolds for tissue engineering</b> S. Oehmichen (Sp), A. Prager, R. Konieczny, N. Schönherr, I. Reinhardt, S. Reichelt, Leibniz Institute of Surface Modification, Leipzig (Germany)</p>			<b>H-169</b>	<p><b>Irradiated human dentin reveals structure-toughness relations in teeth</b> A. Märten (Sp), J. Seddig, C. Fleck, TU Berlin (Germany); P. Zaslansky, Charité-Universitätsmedizin Berlin (Germany)</p>
<b>F-127</b>	<p><b>3D-Printing of bio-inspired anti-reflective nanostructures</b> J. Purto (Sp), E. Kroner, Leibniz-Institute for New Materials, Saarbrücken (Germany)</p>			<b>H-185</b>	<p><b>Potentials of biological waste products for the reinforcement of polymer materials</b> J. Kaufhold (Sp), S. Geller, C. Läßig, M. Gude, TU Dresden (Germany)</p>

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<b>I-34</b>	<p><b>Processing and properties of nanocarbon reinforced iron nanoparticles for cancer therapy by self-catalytic propagation High-temperature Synthesis</b> B. Bendjemil (Sp), A. Lankar, J. Messadi, D. Vrel, University of Badji-Mokhtar, Annaba (Algeria)</p>
<b>I-41</b>	<p><b>Experimental Investigations for the Characterization of Cutting Processes on Biomaterials</b> A. Batos (Sp), A. Jahr, University of Applied Sciences, Düsseldorf (Germany); B. Corves, RWTH Aachen University (Germany)</p>
<b>I-42</b>	<p><b>The Effect of Graphene Oxide on Chemical and Physical Properties of Aligned Poly (Epsilon-Caprolactone) Graphene Oxide Nanofibers</b> H. Öztatli (Sp), O. Arslan, E. Dönmez, B. Garipcan, D. Ege, Bogaziçi University, Istanbul (Turkey)</p>
<b>I-48</b>	<p><b>Mechanical properties of alumina-fluoroapatite composite coatings deposited on 316 Stainless Steel by plasma spraying</b> H. Ghorbel (Sp), C. Coddet, Université de Technologie de Belfort-Montbéliard (France); J. Bouaziz, Ecole Nationale d'Ingénieurs de Sfax (Tunisia)</p>
<b>I-83</b>	<p><b>Modification of Silicone with Nanoporous Silica Nanoparticles for Adjustment of the Mechanical Properties and Potential Drug Delivery</b> T. Heemeier (Sp), K. Besecke, S. Noyun, N. Schmidt, L. Doniga-Crivat, S. Besdo, P. Behrens, Leibniz Universität Hannover (Germany)</p>
<b>I-102</b>	<p><b>Surface Characterization and Catalytic Applications of Diatom Biosilica</b> C. Fischer (Sp), A. Jantschke, M. Oschatz, W. Nickel, S. Kaskel, E. Brunner, Technische Universität Dresden (Germany)</p>
<b>I-116</b>	<p><b>Anti-adhesive plasma fluorocarbon polymer films - a surface for temporary implants</b> B. Finke (Sp), H. Testrich, Leibniz Institute for Plasma Science and Technology, Greifswald (Germany); H. Rebl, B. Nebe, R. Bader, Rostock University Medical Center (Germany); U. Waluschus, M. Schlosser, Ernst-Moritz-Arndt University Greifswald (Germany); K.D. Weltmann, Leibniz Institute for Plasma Science and Technology, Greifswald (Germany); J. Meichsner, Ernst-Moritz-Arndt University Greifswald (Germany)</p>
<b>I-131</b>	<p><b>Influence of the Notch Geometry and Microstructure of Thin 316L – Plates on the Mechanical Behavior: An In-Situ Study</b> B. Mitevski (Sp), S. Weiß, BTU Cottbus-Senftenberg (Germany)</p>
<b>I-135</b>	<p><b>Release Behaviour of Biopolymers with and without release Agents</b> M. Schwind (Sp), R. Rinberg, W. Nendel, L. Kroll, Chemnitz University of Technology (Germany)</p>
<b>I-139</b>	<p><b>Electrospun Fabric for Wound Dressing of Mucous Membranes</b> S. Voigt (Sp), Jena University Hospital (Germany); R. Wyrwa, M. Schnabelrauch, Innovent e.V. Technologieentwicklung, Jena (Germany); D. Linde, K. Otto, G. Schneider, Jena University Hospital (Germany)</p>
<b>I-149</b>	<p><b>Biopolymer processing and their textile applications</b> P.K. Manvi (Sp), G. Seide, T. Gries, RWTH Aachen University (Germany)</p>

I: Biomaterials applications	K: Computational biomaterials science	L: Current and future challenges for the MedTech Industry
<b>I-167</b>	<b>K-150</b>	<b>L-60</b>
<p><b>New segmented polyester copolymers for heart assist devices and its sterilization</b> B. Zawidlak (Sp), M. Koscielniak-Ziemniak, M. Gonsior, K. Kustos, Foundation for Cardiac Surgery Development, Zabrze (Poland); M. El Fray, A. Piegat, M. Pictet, West Pomerania University of Technology, Szczecin (Poland)</p>	<p><b>Force Concentration Renders Nanoscale Aragonite Flaw-Sensitive</b> E. Cruz-Chu (Sp), S. Pati, F. Gräter, Heidelberg Institute for Theoretical Studies (Germany)</p>	<p><b>EU AmbuLung: Preclinical in vivo long-term testing of extracorporeal membrane ventilators: comparative analysis of iLA activve® vs. the new miniaturized, wearable and transportable prototype AmbuLung</b> S. Bergt (Sp), S. Kischkel, B. Brock, J. Roesner, J. von Grönheim, A. Herbst, M. Eppling, Rostock University Medical Center (Germany); G. Matheis, E. Novosel, J. Schneider, Novalung GmbH, Heilbronn (Germany); B. Vollmar, Rostock University Medical Center (Germany)</p>
<b>I-207</b>		<b>L-126</b>
<p><b>The ball-on-three-balls test for mechanical characterization of high-strength ceramics coated with a 3D-macroporous layer</b> R. Adjiski (Sp), M. Mühlstadt, Friedrich Schiller University Jena (Germany); K. Hans, C. Ortman, T. Oberbach, Mathys Orthopädie GmbH, Mörsdorf (Germany); K.D. Jandt, J. Bosser, Friedrich-Schiller-University of Jena (Germany)</p>		<p><b>EU AmbuLung: – first of a kind bioartificial lung</b> G. Matheis (Sp), E. Novosel, J. Schneider, F. Metzger, Novalung GmbH, Heilbronn (Germany); P. Kluger, Fraunhofer IGB, Stuttgart (Germany); S. Manataris, Imperial College, London (UK); M. Pistolesi, University of Florence (Italy)</p>

**M: 3D printing / additive manufacturing of biomaterials**

**M-17** Oral Poster  
**Additive Manufacturing of High Strength Bioactive Glass Scaffolds for Load Bearing Applications**  
R. Gmeiner (Sp), J. Schönherr, B. Lechner, M.S. Hagenauer, J. Stampfl, Vienna University of Technology, Wien (Austria); A.R. Boccaccini, University of Erlangen-Nuremberg (Germany)

**M-85** **Lithography-based Additive Manufacturing of High Strength Bioactive Glass and Glass Ceramics for Medical Applications**  
J.A. Schönherr (Sp), R. Gmeiner, B. Lechner, M.S. Hagenauer, J. Stampfl, Vienna University of Technology, Wien (Austria); A.R. Boccaccini, University of Erlangen-Nürnberg (Germany)

**M-98** Oral Poster  
**EU ArtiVasc: 3D - Development of Artificial Vascularized Scaffolds by Additive Manufacturing**  
N. Nottrodt (Sp), S. Engelhardt, J. Janhsen, Fraunhofer Institute for Laser Technology, Aachen (Germany); O. Refle, J. Günthel, Fraunhofer Institute for Manufacturing Engineering and Automation, Stuttgart (Germany); R. Harris, R. Bibb, X. Han, Loughborough University (UK); A. Gillner, Fraunhofer Institute for Laser Technology, Aachen (Germany)

**N: Dental materials**

**N-18** **Bioactive glass containing dentin adhesive systems with potentially self-healing properties**  
J. Brandt (Sp), Friedrich-Schiller-University of Jena (Germany); R. Göbel, A. Rzanny, University Hospital Jena (Germany); D.S. Brauer, Friedrich-Schiller-University of Jena (Germany)

**N-114** **Comparison of cytotoxicity and antimicrobial potentials of a copper additive: conventional vs. copper-loaded zinc phosphate cement**  
T. Wassmann (Sp), Georg-August-University, Göttingen (Germany); M. Haupt, Fraunhofer Institute (Germany); M. Rosentritt, University Medical Center Regensburg (Germany); N. Miosge, R. Bueggers, University Medical Center Goettingen, Göttingen (Germany)

**N-151** **Pros and Cons in the use of Zirconia for medical applications**  
K. Nickel (Sp), M. Keuper, C. Berthold, Eberhard-Karls-University of Tübingen (Germany)

**N: Dental materials**

**N-173** **PDMS stamp assistant surface microstructuring of dental composites and the influence on the bacterial adhesion**  
K.D. Jandt, C. Lüdecke-Beyer (Sp), S. Maenz, Friedrich Schiller University Jena (Germany); N. Fränzel, A. Völpel, B.W. Sigusch, Jena University Hospital

**N-205** **Energy transmission of different light curing units depending on the tilt angle and distance of irradiance recorded with the MARC patient simulator**  
K. Konerding (Sp), M. Heyder, A. Völpel, University Hospital Jena (Germany); D. Watts, University of Manchester (UK); K.D. Jandt, Otto Schott Institute for Materials Research, Jena (Germany); B.W. Sigusch, University Hospital Jena (Germany)

**N-206** **Assessment of the most common subjective personal mistakes during light polymerization of dental restorative materials by using the MARC Patient Simulator**  
R. Ternes (Sp), A. Völpel, M. Heyder, University Hospital Jena (Germany); D. Watts, University of Manchester (UK); K.D. Jandt, Otto Schott Institute for Materials Research, Jena (Germany); B.W. Sigusch, University Hospital Jena (Germany)

**O: Drug and gene delivery**

**O-51** **Particles of the Recombinant Spider Silk Protein eADF4(C16) as drug delivery vehicles**  
H. Herold (Sp), M. Elsner, C. Blüm, S. Wohlrab, T. Scheibel, University of Bayreuth (Germany)

**O-55** **Polymer-pirarubicin conjugates modified with cell penetrating peptide does not show increased anticancer activity in vitro**  
O. Janouskova (Sp), R. Pola, M. Pechar, A. Hoecherl, K. Wisniewska, Institute of Macromolecular Chemistry AVCR v.v.i., Prague (Czech Republic)

**O-84** **Development of delivery systems for bioactive molecules applied for implants and tissue engineering scaffolds**  
N. Schmidt (Sp), T. Heemeier, Leibniz Universität Hannover (Germany); J. Schulze, A. Warnecke, Medical University of Hannover (Germany); P. Behrens, Leibniz Universität Hannover (Germany)

**O-157** **Periodic mesoporous organosilica (PMO) coatings for biomedical applications**  
N. Wendt (Sp), Leibniz Universität Hannover (Germany); S. Schlie-Wolter, B. Chichkov, Laser Zentrum Hannover e. V. (Germany); I. Rahim, P.P. Müller, Helmholtz Centre for Infection Research, Hannover (Germany); D. Gottschalk, P. Wriggers, P. Behrens, Leibniz Universität Hannover (Germany)



**P: Imaging of biomaterials**

**Q: Hydrogels and biobased polymers**

**R: Structure of biomaterials**

**S: Tissue engineering / regenerative medicine**

**P-181 Quantitative characterization of endothelial cell morphologies depending on shear stress in different blood vessels of domestic pigs**

T.T. Pham, S. Maenz (Sp), C. Lüdecke, Friedrich Schiller University of Jena (Germany); U. Settmacher, Jena University Hospital (Germany); K.D. Jandt, Friedrich Schiller University of Jena (Germany); J. Zanow, Jena University Hospital (Germany); J. Bossert, Friedrich Schiller University of Jena (Germany)

**P-184 Application of F-18-Sodium Fluoride (NaF) dynamic PET-CT (dPET-CT) for defect healing: comparison of biomaterials in an experimental osteoporotic rat model**

C. Cheng (Sp), German Cancer Research Center, Heidelberg; V. Alt, University Hospital Giessen-Marburg GmbH (Germany); L. Pan, German Cancer Research Center, Heidelberg; U. Thormann, R. Schnettler, University Hospital Giessen-Marburg GmbH; S. Heinemann, M. Schumacher, M. Gelinsky, TU Dresden (Germany); B. Nies, InnoTE-RE GmbH, Radebeul; A. Dimitrakopoulou-Strauss, Clinical Cooperation Unit Nuclear Medicine, (Germany)

**Q-160 Tobacco mosaic virus as multivalent building-block in hydrogels**

S. Eiben (Sp), A. Southan, University of Stuttgart (Germany)

**Q-170 EU AmbuLung: Three dimensional (3D) hESC Cultures in Hydrogels: Towards Optimized Endothelial Cell Differentiation through Process and Metabolomics analysis**

I. Fauzi (Sp), S.L. Vernardis, X. Lu, A. Mantalaris, Imperial College London (UK)

**R-180 Recycling and degradation of mechanical properties in low-crystallinity poly(3-hydroxybutyrate-co-3-hydroxyhexanoate).**

M. Zhu (Sp), M. Neal, Olin College of Engineering, Needham, MA (USA); C. Brigham, University of Massachusetts Dartmouth, MA (USA); S. Riedel, Technical University of Berlin (Germany)

**R-198 Multiscale modeling of bone ultrastructure**

A. Barkaoui (Sp), T. Brahim, H. Ridha, University of Tunis El Manar (Tunisia)

**S-16 Recombinant Spider Silk Scaffolds as Guidance for Neural Cells**

K. Pawar (Sp), T. Scheibel, University of Bayreuth (Germany)

**S-19 Non-invasive determination of cartilage thickness in the large animal model sheep by near-infrared spectroscopy**

V. Kopsch (Sp), Jena University Hospital, Eisenberg (Germany); M. Lange, T. Reuter, M. Hoffmann, fzm GmbH, Bad Langensalza (Germany); S. Bischoff, J. Adolph, H. Schubert, Jena University Hospital, Eisenberg (Germany); J. Mika, University Hospital Giessen and Marburg (Germany); C. Hurschler, Hannover Medical School (Germany); R.W. Kinne, Jena University Hospital, Eisenberg (Germany)

**S-31 Local application of blood mononuclear cells in the regeneration of the cornea's endothelial cell layer. Experimental study**

E. Filippova (Sp), National Research Tomsk Polytechnic University (Russian Federation); O. Krivosheina, Siberian State Medical University, Tomsk (Russian Federation)

**S-54 Evaluation of PTMC-based composite materials in reconstructing cranial bone defect**

N. Zeng (Sp), A.C. van Leeuwen, R.R.M. Bos, D.W. Grijpma, R. Kuijter, University of Groningen (Netherlands)

**S-79 Osteocytesalterations affect bone microstructure in a sheep model of osteoporosis**

D. Rosenbaum (Sp), T. El Khassawna, W. Böcker, D. Bürgener, L. Schäfer, M. Kampschulte, C. Heiss, Justus Liebig-University of Giessen (Germany)

**S-115 An in vitro test system for the biocompatibility and osteo-(in) conductivity of calcium phosphate cement (CPC) using human adipose-tissue-derived mesenchymal stem cells (hASC)**

A. Al-Balwa (Sp), Jena University Hospital, Eisenberg (Germany); S. Maenz, J. Bossert, K.D. Jandt, Friedrich Schiller University Jena (Germany); E. Kunisch, R.W. Kinne, Jena University Hospital, Eisenberg (Germany)

**S-146 EU ArtiVasc: Characterisation of human fatty tissue pericytes and evaluation of their angiogenic potential**

A.-C. Volz (Sp), Reutlingen University (Germany); B. Huber, University of Stuttgart, Stuttgart (Germany); P. Kluger, Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB, Stuttgart (Germany)

**S-148 Radiological characterization of osteoporotic sheep model for the development of novel biomaterials**

D. Weisweiler (Sp), T. El Khassawna, W. Böcker, L. Schroeter, R. Schnettler, C. Heiß, Justus-Liebig-University of Giessen, Gießen (Germany)



KONGRESS UND FACHMESSE FÜR  
INNOVATIVE WERKSTOFFE, VERFAHREN  
UND ANWENDUNGEN

# BESUCHEN SIE DIE WERKSTOFFWOCHEN UND TREFFEN SIE AUF INNOVATIONEN 14.-17.9.2015

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Ruff, M. Universität Stuttgart (Germany)

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Registrations considered until 31 March 2015

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## General Information

### Conference Location

Park Inn by Radisson Weimar Hotel  
Kastanienallee 1  
99428 Weimar  
<http://www.parkinn.de/hotel-weimar>

### Location of the hotel in Weimar

The Park Inn by Radisson Hotel Weimar is only a few kilometres from Weimar city centre. You can reach Weimar City and its numerous sights in just 10 minutes by car and 20 minutes by public transport. The number 6 bus stops just 20 metres from the hotel. The hotel's proximity to the A4 motorway is ideal for those arriving by car.

### Directions to the Park Inn by Radisson Hotel Weimar

- Arrival to the hotel by car:  
A4 motorway: Take the Weimar exit (junction 49); follow the B85 towards Rudolstadt. Then follow the Hotelroute Süd (South hotel route). At the roundabout in Legefild, take the first exit. The Park Inn by Radisson Hotel Weimar is situated on the left after approx. 200m.

- Arrival to the hotel by public Transport from the railway station: Plenty of taxis are available at the railway station. The journey from the station to the hotel costs around 15.- Euro. There is also the option of taking the number 6 city bus towards Legefild. Current bus timetables can be requested when making your reservation. The transfer takes around 20-25 minutes.

### Distances from the Park Inn by Radisson Hotel Weimar

Goethe's Home:	06 km
Bauhaus Museum:	10 km
City Palace and	
Marstall (stables):	10 km
Buchenwald Monument:	16 km
Park on the River Ilm:	05 km
Deutsches Nationaltheater (German National Theatre):	07 km
Anna Amalia Library:	07 km
Park caves:	06 km
Jakobskirche:	08 km
Herderkirche:	7.5 km
Belvedere Palace:	06 km
Tiefurt Mansion:	10 km
Erfurt and Jena:	30 km

### Travel by Train



Travel by train for 99 EUR conveniently to your events of Deutsche Gesellschaft für Materialkunde e.V. Detailed information: [http://www.dgm.de/download/conferences/DB-DGM\\_englisch.pdf](http://www.dgm.de/download/conferences/DB-DGM_englisch.pdf)

### Internet Access

Vouchers for Internet Access for conference visitors can be purchased at the hotel reception of the Park Inn by Radisson Weimar Hotel. There is a free internet access for the hotel guests.

### Organisation

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### Exhibition Organisation

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**Lunch**

Lunch is included in the conference fees and will be served on Tuesday and Wednesday in the hotel restaurant.

**Coffee Breaks**

Coffee and refreshments will be served during the official breaks.

The Coffee Breaks will be partly sponsored by:

**List of Participants**

An updated List of Participants is available on our homepage: <http://www.dgm.de/biomat>

**Abstracts**

All abstracts are on display on the conference website and will remain online after the conference for print or download.

**Young Researchers up to 30 years:**

200 Euro for DGM-members  
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**Industry:**

650 Euro for DGM-members  
715 Euro for DGM-basic members  
780 Euro for Non-members

The conference fees include the Technical Programme, refreshments during the official breaks, lunch, Posterevening.

**Postersession**

**Tuesday, 21. April 2015**  
**Room Goethe or Schiller**  
**17:10 Oral Poster Presentations**  
**19:30 Poster Discussion in the Foyer**

During the Oral Poster Presentations the poster authors are requested to introduce their poster orally within 3 minutes.

The Poster Discussion will give poster authors the opportunity to be available in front of their posters to discuss their subjects and respond to questions. Snacks and beverages will be offered.

**Poster Award**

A prize for the best poster will be awarded by a jury. The winner will be announced and awarded on **Wednesday, 22. April 2015** prior to the closing address.

**Poster Prize Sponsor:**

What can you, should you, and is worthwhile seeing, experiencing or tasting while you are here? We have ten suggestions that can be modified according to your preferences, of course.



Foto: © weimar GmbH

**1 - Guided Walking Tour**

In order to obtain an initial overview of the city, we recommend a guided walking tour.



Foto: Maik Schuck, © weimar GmbH

**2 - Goethe's Home and Goethe National Museum..**

...provide the most important evidence of the Weimar classics. One of the most important examples of Classical Weimar, Johann Wolfgang von Goethe lived in this Baroque house for almost fifty years. He lived there from 1782 to 1789 as a tenant, then from 1792 to 1832 as the owner. The poet planned the form and furnishing

of the rooms as well as its rich collections, e.g. in the Juno Room. The furnishings and fittings from the last few years of Goethe's life have largely been preserved. For reasons of conservation, the number of visitors is limited.



Foto: Maik Schuck, © weimar GmbH

**3 - The Bauhaus-Museum. The Bauhaus comes from Weimar**

The Bauhaus, opened in April 1919 in Weimar, located in Dessau beginning in 1925 and closed down by the National Socialists in Berlin in 1933, is Germany's most influential and successful cultural export item of the 20th century. The reputation of this interdisciplinary international school of art, architecture, design and stage enjoys worldwide timelessness today, more than 70 years after its closure.



Foto: © Klassik Stiftung Weimar

**4 - City Palace**

After several fires before, in 1774, the three-wing annex was again destroyed by fire, with only the enclosure walls left standing. Duke Carl August convened a palace construction commission under the direction of Goethe. These are memorial rooms in honour of Christoph Martin Wieland, Johann Gottfried Herder, Friedrich Schiller and Johann Wolfgang Goethe. The city palace has been used as a museum since 1923. It is also the administrative headquarters of the Klassik Stiftung Weimar.



© Gedenkstätte Buchenwald

**5 - Buchenwald memorial**

The infamous Nazi concentration camp known as Buchenwald existed between 1937 and 1945 on Ettersberg. More than 250,000 people from almost 50 nations were imprisoned there – and over 50,000 of them did not survive. In August 1945, the site was converted by the Soviet occupying forces into an internment camp. Known as Special Camp No. 2, over 28,000 people were held here by the Soviets between 1945 and 1950, including 7,000 who died??





Foto: © weimar GmbH

### 6. Park on the River Ilm

is a place for intellectual activity, relaxation and entertainment - both in the past and the present. Goethe sought the closeness to nature - and found it. The 48-hectare landscaped park on the edge of Weimar's old town is part of a kilometre-long stretch of green along the Ilm. It was laid between 1778 and 1828 and features both sentimental, classical and post-classical/romantic styles. Important characteristics of the park include the numerous lines of sight linking features such as Goethe's garden house, the Roman House and the bark house within the park; these also connect them with the surrounding countryside.



Foto: Guido Werner, © weimar GmbH

### 7. The "Deutsche Nationaltheater und Staatskapelle Weimar"

The successor of the Weimar Court Theatre, whose director was once Goethe. The neoclassical structure was completed in 1908. Over the decades, it has been rebuilt a number of times and also hosted several important political events, the best-known of which is the foundation of the Weimar Republic. Nowadays the German National Theatre is home to the most important theatrical company in Thuringia as well as the Staatskapelle Weimar orchestra.



Foto: Maik Schuck, © weimar GmbH

### 8. The Rokoko hall

at the Herzogin Anna Amalia Bibliothek (historical library) that once again gleams in new splendour. There are one million volumes at the new and old library.

The Historical Library (Duchess Anna Amalia Library) is one of the most famous libraries in Germany. Anna Amalia had the 'Green Palace' turned into a library comprising a unique combination of books, an art collection and architecture. The Rococo Hall is especially famous. On the evening of September 2nd 2004, a devastating fire broke out in the original building of the Herzogin Anna Amalia Library and developed into the largest library fire in Germany since WW II. The historical building, which belongs to the UNESCO World Heritage, was damaged by fire and water, and the third floor and the attic were completely destroyed.

### 9. Thuringian Bratwurst

is the tradition-minded choice among the normal selection of fast food. The Thuringian grilled sausage is a local specialty. According to EU regulations, the sausage is at least 15-20 cm long, consisting of medium-finely ground, heartily seasoned sausage meat encased in a thin natural casing, either raw or cooked. For the Thuringian, his sausage - just like his "Rostbrätl" (grilled pork cutlet) - is not simply a food, it symbolises a way of life that is expressed by the way it is prepared and eaten.

### 10. Coffee and cake

The cake from Thuringia is always worth a sin! So try out in one of the cosy cafés in Weimar - you can burn the calories during a walk in the parkgrounds.

### Goals and Objectives

- Addressing the industrial and scientific issues in the area of known and new materials with interfaces to biological systems, with focus on materials in medicine.
- Development of a scientifically based understanding of materials properties in interaction with biological systems, especially the area of "biological performance" and biocompatibility.
- Focussing the panel on scientific, technical and economic issues in the priority areas resorbable/degradable biomaterials, permanent implants, dental materials, interfaces, tissue engineering, modelling and simulations, antimicrobial biomaterials, biomimetic biomaterials, certification, accreditation, standardization, legal issues.
- Initiating research and development activities: joint projects between universities, research institutes and industry.
- Exchange of experiences between groups that are active in the field of biomaterials, and networking.

The research of the Otto Schott Institute of Materials Research (OSIM) at the Friedrich Schiller University Jena focuses on relationships between the structure, properties, processing and performance of a wide range of material classes.

At the Chair of Materials Science at OSIM, investigations focus on materials for life sciences, polymer nanostructures & thermodynamics and composite materials with a special emphasis on the materials interfaces. In the field of biomaterials, novel protein-based biomaterials, antimicrobial materials surfaces for inhibiting biofilm formation, dental materials and drug delivery systems just to name a few, are created, characterized, and biologically tested. Applications are ranging from the medical field to pharmacy and biotechnology. Molecular self-assembly mechanisms of protein nanofibers, nanostructured surfaces with antimicrobial effect and polymer-graphene-based nanocomposites for drug delivery purposes recently attracted the interest of the scientists at OSIM.

Materials characterization at OSIM comprises the application of state-of-the-art instrumental techniques such as in situ atomic force microscopy and quartz-crystal microbalance, X-ray photoelectron spectroscopy and field emission scanning electron microscopy with focused ion beam, ellipsometry and more. The Chair in Materials Science initiated the panel of experts in biomaterials of the Deutsche Gesellschaft für Materialkunde (DGM) and laid the foundation of this Euro BioMat symposium.

# Exhibitors of the Euro BioMAT 2015

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Having its seat near Jena in the heart of Thuringia, m&k gmbh is on one hand specialized in the sales of selected dental products and its own dental implant system with all components.

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The company Moje Ceramic Implants was founded as handicraft business in 1994.

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In the medical field, we currently have the following product areas in the range:

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As a manufacturer of medical products, we are certified by DIN EN ISO 13485 and in accordance with Directive 93/42 / EEC, Annex II, without Section 4.

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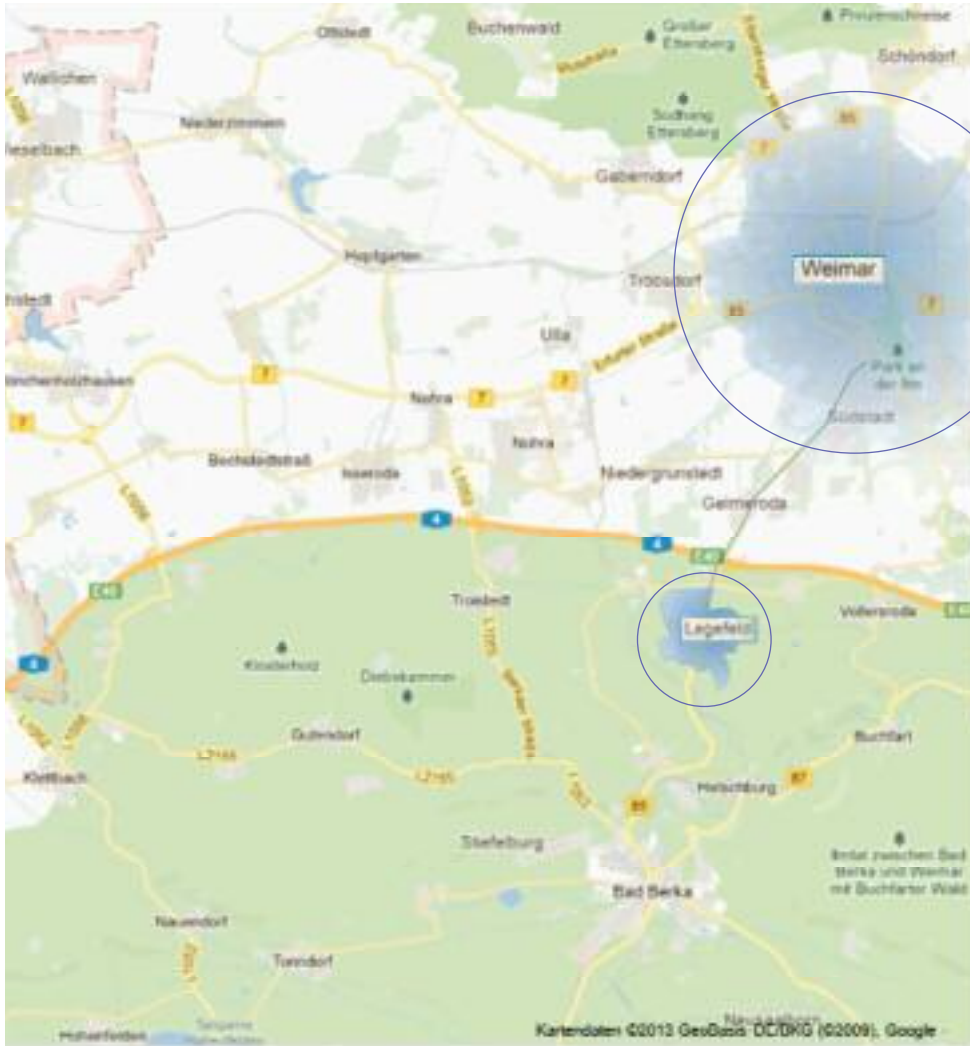
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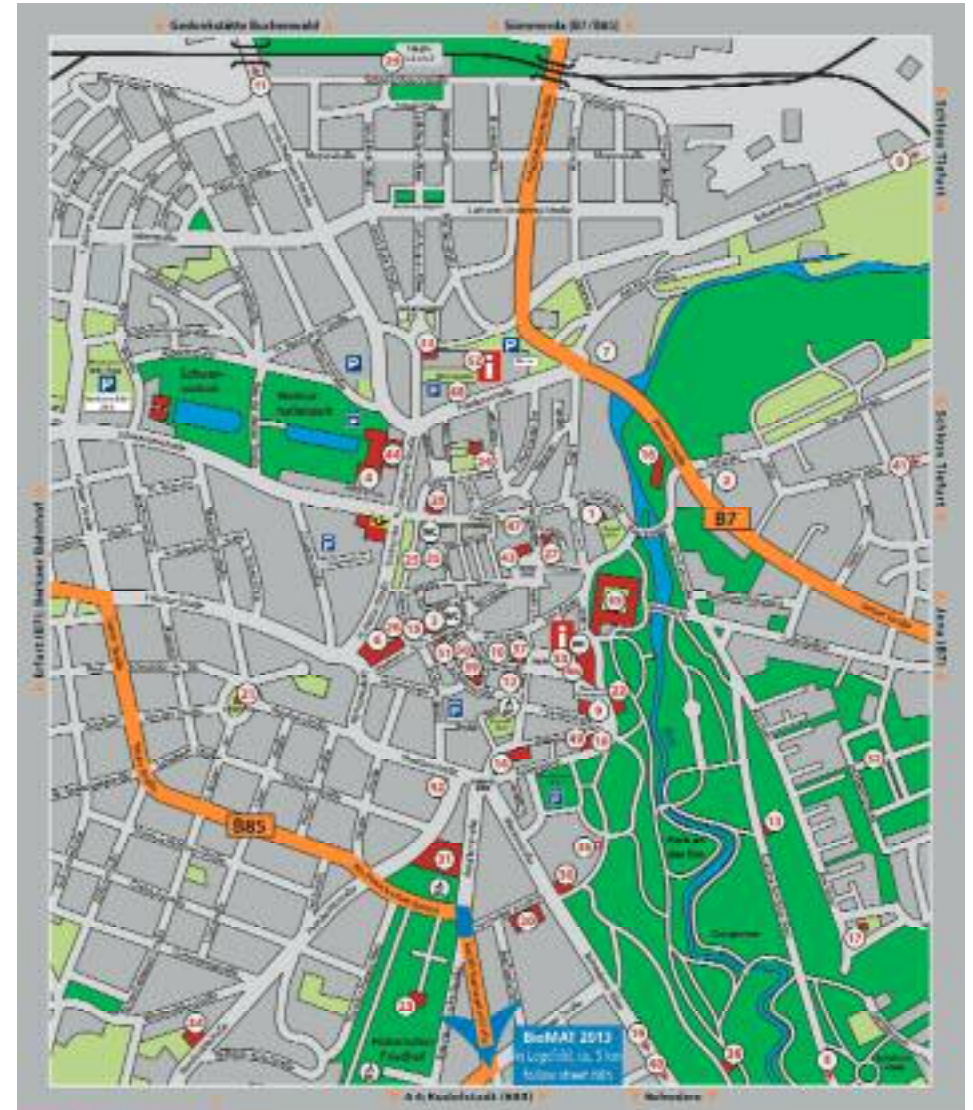


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Location venue



Map of Weimar



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