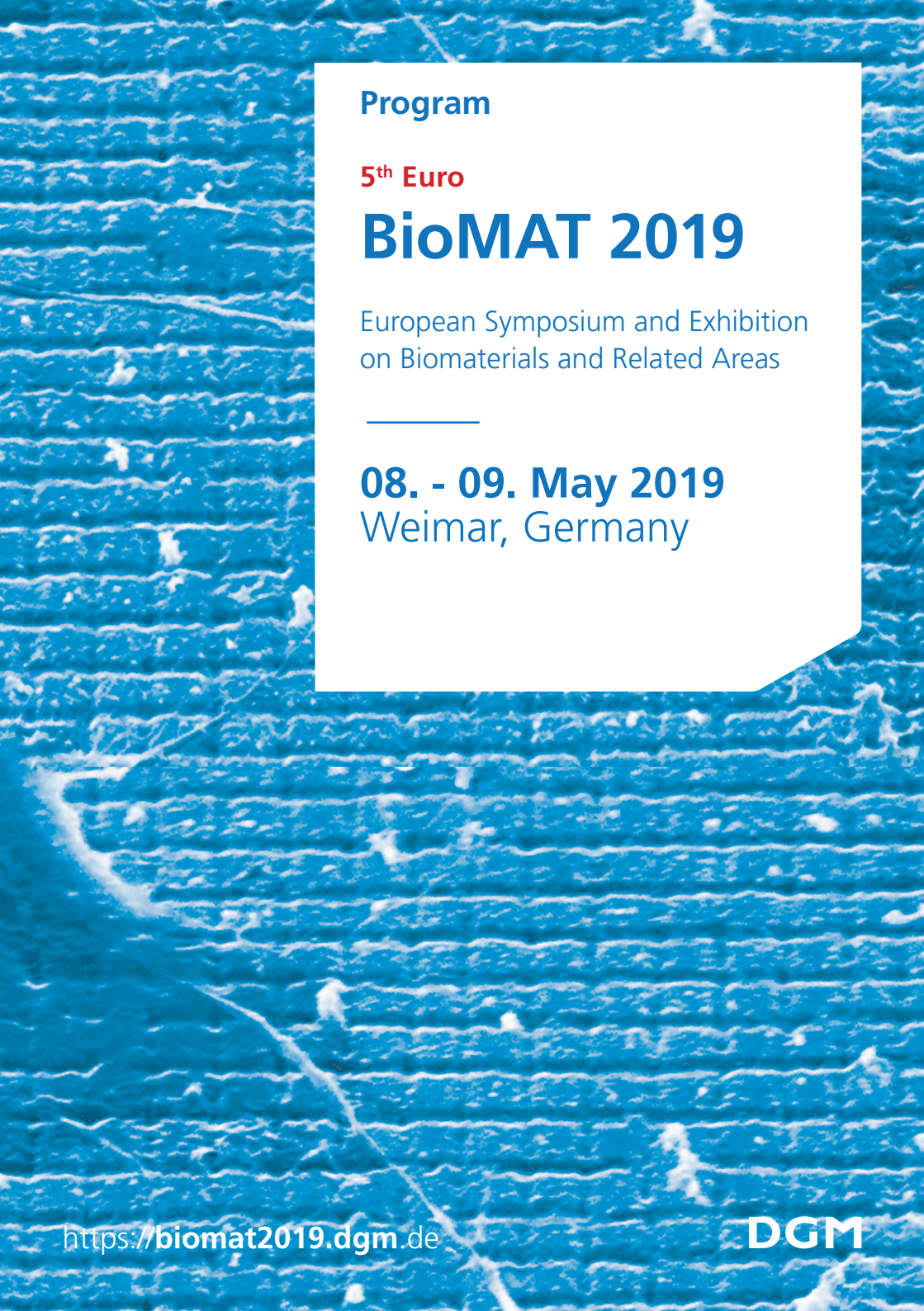


Program

5th Euro

BioMAT 2019

European Symposium and Exhibition
on Biomaterials and Related Areas

08. - 09. May 2019
Weimar, Germany

https://**biomat2019.dgm**.de

DGM

Table of Content

Welcome Note

Based on the huge success of the previous four Euro BioMAT Symposia 2011 in Jena and in 2013, 2015 and 2017 in Weimar this international conference will be held every two years in the Jena-Weimar region.

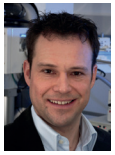
The symposium Euro BioMAT 2019, 08.-09. May 2019, addresses the growing interest of science and industry in the different aspects of the creation, characterization, testing and application of biomaterials and closely related areas. The motivation is not only the recent scientific progress and new challenges of this exciting, strongly interdisciplinary field of science and engineering. Materials scientists, physicists, chemists, biologists in industrial R&D as well as medical professionals are increasingly facing situations, where materials are confronted with high performance requirements and a challenging biological environment at the same time.

Much of the growth in the area of biomaterials emerged in the USA and Asia over the last years, but Europe is gaining ground with a fast and steady growth in this field. The German Materials Society (DGM) and its panel of experts in biomaterials address these developments with the Euro BioMAT 2019 in Weimar. Euro BioMAT 2019 will present and discuss the current state of progress and novel trends in the development, characterization, application, testing and modelling of biomaterials in basic science and industry. In addition, this symposium will bring together experts in closely related areas, such as biomimetics, biomineralization and biopolymers.

The organizers at the DGM feel a need to serve the European biomaterials community beyond other European and world biomaterials congresses with a compact two-day meeting which brings together fascinating science and inspiring people in a delightful setting in historic Weimar in the very heart of Europe. The program of the Euro BioMAT 2019 will comprise several invited plenary lectures as well as oal and poster presentations.

We look forward to see you in Weimar 2019!

Klaus D. Jandt
Chairman
Friedrich Schiller University Jena, Germany



Thomas F. Keller
Vice Chairman
DESY Hamburg, Germany

General Information

Date
08.-09. May 2019

Conference Chairs
Klaus D. Jandt
Chairman
Friedrich Schiller University Jena, Germany

Thomas F. Keller
Vice Chairman
DESY Hamburg, Germany

Congress Office
Deutsche Gesellschaft für Materialkunde e.V.
c/o INVENTUM GmbH
Alexia Ploetz
Marie-Curie-Straße 11-17
53757 Sankt Augustin, Germany
biomat@dgm.de

Conference Website
https://biomat2019.dgm.de

Conference Language
The official congress language will be English

Conference Venue
RAMADA BY WYNDHAM Weimar
Kastanienallee 1
99428 Weimar
Germany
T +49 (0) 30 610819461
F +49 (0) 351 21777499
reservation.dresden@gchhotelgroup.com
https://www.ramada-hotel-weimar.com/en

Internet Access
Internet vouchers for conference visitors can be purchased at the hotel reception There is free internet access for the hotel guests.

Conference Fees

Young Researchers up to 30 years	
DGM members	230 EUR
Non-members	300 EUR
Expert Researchers 31-45 years	
DGM members	300 EUR
Non-members	360 EUR
Professionals University	
DGM members	500 EUR
Non-members	600 EUR
Industry	
DGM members	650 EUR
Non-members	780 EUR

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

Coffee Breaks
Coffee and refreshments will be served during the official breaks.

Oral Poster Session
The oral poster session will be held on Wednesday 08. May 2019 starting at 18:40 in the lecture Room Goethe I.

Poster Discussion Evening
Poster authors will have the opportunity to discuss their subject with delegates and answer questions in front of their poster after the oral poster session. 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 Thursday 09. May 2019 at 09:00 a.m.

Poster Prize Sponsor:

Springer

Abstracts
All abstracts are on display on the conference website and will remain online after the conference.

List of Participants
An updated List of Participants is availble on the conference homepage:

The Venue

Location of the Ramada by Wyndham

The hotel is only a few kilometers from Weimar city center. You can reach Weimar City and its numerous sights in just 10 minutes by car and 20 minutes by public transport.
Bus number 6 stops just 20 meters from the hotel. The hotel's proximity to the A4 motorway is ideal for those arriving by car.

Directions to the Hotel

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 Legefeld, take the first exit. The 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 20.- Euro. There is also the option of taking the city bus number 6 towards Legefeld. The transfer takes around 20-25 minutes. Current bus timetables can be requested when making your reservation.

Distances from the RAMADA BY WYNDHAM Hotel Weimar

Goethe's Home:	06 km
Bauhaus Museum:	10 km
City Palace and Marstall (stables):	10 km
Buchenwald Monument:	16 km
Park at the River Ilm:	05 km
Deutsches Nationaltheater (German National Theater):	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

Program Committee

Aldo R. Boccaccini
University of Erlangen-Nürnberg, Germany

Kaiyong Cai
Chongqing University, China

Gabriela Ciapetti
Rizzoli Orthopaedic Institute, Bologna, Italy

David Eglin
AO Research Institute Davos, Switzerland

Matthias Epple
Ruhr-University Duisburg-Essen, Germany

Helder A. Santos
University of Helsinki, Finland

Thomas Scheibel
University of Bayreuth, Germany

Norman Stark
Straub Medical AG, Wangs,Switzerland

Bo Su
University of Bristol, UK

Wojciech Swieszkowski
Warsaw University of Technology, Poland

Jack Ferrcane
Oregon Health & Science University, Portland, USA

Ehud Gazit
Tel Aviv University, Israel

Maria-Pau Ginebra
Technical University of Catalonia, Spain

Dirk Grijpma
University of Twente, The Netherlands

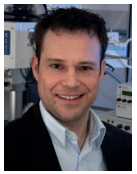
Klaus D. Jandt
Friedrich Schiller University Jena, Germany

Annelie-Martina Weinberg
Medizinische Universität Graz, Austria

Frank Witte
Charité Berlin, Germany

Fergal J. O'Brien
Royal College of Surgreons Ireland RCSI, Dublin, Ireland

Adrian Keller
Paderborn University, Germany



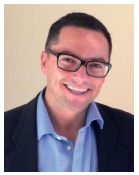
Thomas F. Keller
DESY Hamburg, Germany

Petra Kluger
Reutlingen University, Germany

Veikko Linko
Aalto University, Finland

João F. Mano
University of Minho, Braga, Portugal

Giovanni Marletta
University of Catania, Italy



Alvaro Mata
Queen Mary University of London, UK

Werner E.G. Müller
Johannes Gutenberg University Mainz, Germany

Bradley Nelson
ETH Zürich, Switzerland

Kurosch Rezwan,
University of Bremen, Germany

Topics

The following subjects will be discussed:

A Structure and properties of biomaterials

- A1 Bio-nano materials
- A2 Bioactive materials, bioglass and calciumphosphates
- A3 Biodegradable materials
- A4 Bioinspired materials / biomimetic materials
- A5 Biological materials and biomineralization
- A6 Computational biomaterials science
- A7 Hydrogels and biobased & synthethic polymers
- A8 Imaging of biomaterials

B Biological response to biomaterials

- B1 Biofilms & antimicrobial biomaterials
- B2 Biocompatibility
- B3 Biointerfaces and microenvironments
- B4 Clinical performance and microenvironments
- B5 Multi-functional biomaterials

C Biomaterials applications

- C1 Current and future challenges for the MedTech industry
- C2 Dental materials
- C3 Drug and gene delivery
- C4 Innovation in fabrication including 3D printing / additive manufacturing / biofabrication of biomaterials
- C5 Responsive and smart biomaterials
- C6 Tissue engineering / regenerative medicine
- C7 Materials for ophthalmology

D Biopolymer-based biomaterials

- **D1 Special Session „Biopolymer-based biomaterials"**

Program Overview Wednesday

Wednesday

08:00	**Poster Mounting and Registration**		
	Room Goethe I		
09:00	**Opening Address:** K.D. Jandt		
09:15	**Plenary Lecture:** L. Adler-Abramovich		
09:45	**Plenary Lecture:** C. Rieker		
10:15	**Coffee Break**		
	Room Goethe III	**Room Bach**	**Room Schiller**
11:00	**A7: Hydrogels and biobased & synthetic polymers**	**B3: Biointerfaces and microenvironments**	**C4: Innovation in fabrication including 3D printing / additive manufacturing / biofabrication of biomaterials**
13:00	**Lunch Break**		
14:10	**A7: Hydrogels and biobased & synthetic polymers**	**B3: Biointerfaces and microenvironments**	**D1: Special Session: Biopolymer-based biomaterials**
15:30	**C3: Drug and gene delivery**		
16:30	**Coffee Break**		
17:00	**C3: Drug and gene delivery**	**B1: Biofilms & antimicrobial biomaterials**	**C8: SFB 1278 Polytarget - Polymer Nanoparticles for Drug Delivery**
17:40	**A8: Imaging of biomaterials**		
	Room Goethe I		
18:40	**Oral Poster Session**		
	Foyer of the conference hotel		
20:00	**Poster Discussion Evening**		

Program Overview Thursday

Thursday

	Room Goethe I		
08:00	**Plenary Lecture:** J. Groll		
08:30	**Plenary Lecture:** L.E. Bertassoni		
09:00	**Announcement of the Poster Award Winner**		
09:10	**Coffee Break**		
	Room Goethe III	**Room Bach**	**Room Schiller**
09:40	**A5: Biological materials and biomineralization**	**A2: Bioactive materials, bioglass and calcium-phosphates**	**C2: Dental materials**
11:00	**Coffee Break**		
11:30	**A4: Bioinspired materials / biomimetic materials**	**A2: Bioactive materials, bioglass and calcium-phosphates**	**C6: Tissue engineering / regenerative medicine**
13:10	**Lunch Break**		
	Room Goethe I		
14:20	**Round Table Discussion**		
	Room Goethe III	**Room Bach**	**Room Schiller**
15:40	**A4: Bioinspired materials / biomimetic materials**	**A3: Biodegradable materials**	**C6: Tissue engineering / regenerative medicine**
	Room Goethe I		
16:40	**Closing Remarks**		

Program Wednesday 08:00 - 09:45

Wednesday

08:00 **Poster Mounting and Registration**

Room Goethe I

09:00 **Opening Address**

K.D. Jandt, Chairman of the conference, Friedrich Schiller University Jena (Germany)

Plenary Lecture

Chair K.D. Jandt, Chairman of the conference, Friedrich Schiller University Jena (Germany)

09:15 **Learning from Nature to Form New Organic Materials for Tissue Regeneration**

L. Adler-Abramovich, Tel Aviv University (Israel)

The high demand for scaffolds capable of inducing tissue regeneration using minimally invasive techniques prompts the need for the development of new biomaterials. Herein, we investigate the ability of different compositions of short self-assembling peptides and polysaccharides to form extracellular mimicking scaffolds for tissue regeneration. For this aim, we used various polysaccharides such as hyaluronic acid, a major component of the extracellular matrix and alginate, a natural anionic biopolymer derived from brown seaweeds.These polysaccharides were incorporated with short peptides and amino acids building blocks that can form ordered assemblies such as nanotubes, nanospheres, and 3D-hydrogels with unique biological and physical properties. However, the control over the physical properties of the structure, including mechanical strength, degradation profile and injectability has remained challenging. In molecular self-assembly, the physical properties of the formed assemblies are directed by the inherent characteristics of the composing building blocks. Moreover, molecular co-assembly at varied stoichiometry substantially increases the structural and functional diversity of the formed assemblies, allowing to tailor both their architecture as well as their physical properties.
In line with polymer chemistry paradigms, we applied a supramolecular polymer co-assembly methodology to modulate the physical properties of hydrogel scaffolds. Using this approach, we developed a new peptide-based hydrogel with extraordinary rigidity, derived from a synergism between two different short peptides that were co-assembled. Due to its high stiffness, this hydrogel may serve as a scaffold for bone regeneration. Also, its tuneable mechanical properties may affect stem cells differentiation to different lineages as well. The co-assembly approach together with the incorporation of bone ceramics further enabled us to design a composite organic-inorganic scaffold with high affinity to hydroxyapatite, allowing bone tissue regeneration.
This work provides a conceptual framework for the utilization of co-assembly strategies to push the limits of nanostructures physical properties obtained through self-assembly.

Program Wednesday 09:45 - 10:15

Plenary Lecture

09:45 **Metal-on-metal bearings, where is the scandal?**

C. Rieker, Zimmer Biomet EMEA (Switzerland)

Metal-on-metal bearings for total hip arthroplasties have an 80-year long clinical history with a first implantation done in England in 1938. With a few early exceptions, the alloy used for these metal-on-metal bearings was always a cobalt-chromium-molybdenum alloy, which is a very common alloy in modern orthopaedic technology.

Based on the good clinical results seen in the early 80's with some patients with a metal-on-metal bearing implanted in the 60's, a research development was conducted by Sulzer Medizinaltechnik in Switzerland to better understand the tribology of these bearings. Two major improvements were made: (1) development of a wrought high carbon cobalt-chromium-molybdenum alloy and (2) optimization of the bearing clearance. These two improvements allow Allo Pro and Protek to re-introduce small diameter metal-on-metal bearings in the early 90's under the tradename Metasul™. As the clinical results of these small diameter metal-on-metal bearings were excellent, they were used as a basis for the development of large diameter metal-on-metal bearings, especially for resurfacing prostheses. The research conducted in the late 90's demonstrated that large diameter metal-on-metal bearings have definitively an excellent in-vitro tribological behaviour based on partial or full film lubrication. These good in-vitro results lead to the market introduction of these large diameter metal-on-metal bearings, not only for resurfacing prostheses, but also for total hip arthroplasties. These bearings were rapidly "adopted" by orthopaedic surgeons for their multiple advantages (stability and range of motion). Their early clinical results were promising, but a small number of patients developed some adverse biological reactions with these bearings.

This plenary talk will analyse the reasons for these adverse biological reactions and investigate the patients' consequences, the media and legal implications of these large diameter metal-on-metal bearings.

10:15 **Coffee Break**

Program Wednesday 11:00 - 11:40

	Room Goethe III	Room Bach	Room Schiller
	A7: Hydrogels and biobased & synthetic polymers	**B3: Biointerfaces and microenvironments**	**C4: Innovation in fabrication including 3D printing / additive manufacturing / biofabrication of biomaterials**
Chair	K.D. Jandt Friedrich Schiller University Jena (Germany)	T.F. Keller Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)	A. Dorner-Reisel, Schmalkalden University of Applied Sciences (Germany)
11:00	**Functional materials for applications in the brain** C. Selhuber-Unkel (Sp)[1] [1]Kiel University (Germany)	**Bone marrow analogs for studying stem cell niches in health and disease** C. Lee-Thedieck (Sp)[1]; A. Raic[1]; D. Kratzer[1]; S. Zippel[1]; A. Ludwig-Husemann[1] [1]Leibniz University Hannover (Germany)	**3D Printing of Porous Scaffold Designed for Biomedical Implant Development** F. Shalchy (Sp)[1]; C. Lovell[2]; A. Bhaskar[1] [1]University of Southampton (United Kingdom); [2]Lucideon ltd., STOKE-ON-TRENT (United Kingdom)
11:20	**3D Environments for Cells – Adaptable Microchannels in Biofunctionalized Hydrogels** (Sp)[1]; S. Gutekunst[1]; S. Huth[1]; H.C. Trinh[1]; F. Rasch[1]; Y.K. Mishra[1]; R. Adelung[1]; C. Selhuber-Unkel[1] [1]Kiel University (Germany)	**Interfacing of human stem cell derived neurons with vertically aligned nanowires as function of nanowire length, diameter and array pitch** J. Harberts (Sp)[1]; R. Zierold[1]; C. Fendler[1]; J. Teuber[1]; W. Kim[2]; A. Fontcuberta i Morral[2]; R.H. Blick[1] [1]Universität Hamburg (Germany); [2]École Polytechnique Fedérale de Lausanne (Switzerland)	**Biomaterial properties to protect cells in 3D bioprinting** E. Courtial (Sp)[1]; C.A. Marquette[1]; E. Petiot[1] [1]Université Claude Bernard Lyon[1], Villeurbanne (France)

Program Wednesday 11:40 - 12:20

	Room Goethe III	Room Bach	Room Schiller
	A7: Hydrogels and biobased & synthetic polymers (cont.)	**B3: Biointerfaces and microenvironments** (cont.)	**C4: Innovation in fabrication including 3D printing / additive manufacturing / biofabrication of biomaterials** (cont.)
Chair	K.D. Jandt Friedrich Schiller University Jena (Germany)	T.F. Keller Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)	N.N.
11:40	**Hydrogel-based surfaces for stem cell process engineering** M. Gepp (Sp)[1]; A. Serr[2]; B. Fischer[1]; A. Vahtrik[2]; J.C. Neubauer[1]; H. Zimmermann[2] [1]Fraunhofer Project Center for Stem Cell Process Engineering, Würzburg (Germany); [2]Fraunhofer Institute for Biomedical Engineering, Sulzbach (Germany)	**In vitro short-time method for the determination of long-term stability of implant materials** N. Wegner (Sp)[1]; R. Scholz[1]; M. Klein[1]; M. Knyazeva[1]; F. Walther[1] [1]TU Dortmund University (Germany)	**3D printed PLA for multipurpose applications in chemistry and biology** M. Schneider (Sp)[1]; A. Taubert[1] [1]University of Potsdam (Germany)

Program Wednesday 12:00 - 14:10

	Room Goethe III	Room Bach	Room Schiller
	A7: Hydrogels and biobased & synthetic polymers (cont.)	**B3: Biointerfaces and microenvironments** (cont.)	**C4: Innovation in fabrication including 3D printing / additive manufacturing / biofabrication of biomaterials** (cont.)
12:00	**Microstructure, mechanical and tribological performance of PVA hydrogels for cartilage replacement** A. Oliveira (Sp)[1]; O. Seidi[2]; R. Colaço[1]; A. Serro[3] [1]Universidade de Lisboa (Portugal); [2]École supérieure d'ingénieurs de Paris-Est Créteil (France); [3]Instituto Universitário Egas Moniz, Lisboa (Portugal)	**Creating standardized wells on solid biomaterials for biocompatibility testing** C. Ißleib (Sp)[1]; E. Preuße[1]; S. Kurz[1]; J. Spohn[1] [1]Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Dresden (Germany)	**3D printing of bone substitute materials based on capillary suspensions** D. Menne (Sp)[1]; N. Willenbacher[1] [1]Karlsruhe Institute of Technology (KIT) (Germany)
12:20	**New approaches in designable 3D hydrogel scaffolds via Polyoxazoline** T. Wloka (Sp)[1]; M. Gottschaldt[1]; T. Wloka[1]; S. Czich[2]; K. Liefeith[3] [1]Friedrich Schiller University Jena (Germany); [2]University of Bayreuth, Heilbad Heiligenstadt (Germany); [3]Institute for Bioprocessing and Analytical Measurement Techniques (iba), Heilbad Heiligenstadt (Germany)	**Corrosion at modular taper junctions in anatomical shoulder prosthesis - a retrieval study** M. Crackau (Sp)[1]; N. Märtens[1]; T. Halle[1]; C.H. Lohmann[1]; J. Bertrand[1] [1]Otto von Guericke University Magdeburg (Germany)	**Properties of lightweight fibrous structures made by a foam forming technique** S. Burke (Sp)[1] [1]Trinity College Dublin (Ireland)
12:40	**Trends, challenges, and future advancements in ophthalmological materials and devices** I. Firkowska-Boden (Sp)[1] [1]Friedrich Schiller University Jena (Germany)	**Tribological behaviour of wet bovine bone with respect to a metallic implant: effects of load, sliding speed, material and sliding orientation** J. Nohava (Sp)[1]; C. Voutat[2]; O. Marzieh[2]; P. Zysset[2] [1]Anton Paar TriTec SA, Peseux (Switzerland); [2]University of Bern (Switzerland)	

Program Wednesday 14:10 - 15:10

13:00 **Lunch Break**

	Room Goethe III	Room Bach	Room Schiller
	A7: Hydrogels and biobased & synthetic polymers (cont.)	**B3: Biointerfaces and microenvironments** (cont.)	**D1: Special Session: Biopolymer-based biomaterials**
Chair	N.N.	N.N.	A. Keller Paderborn University (Germany)
14:10	**Hyaluronan-based hydrogels as ophthalmic drug carriers** T. Walter (Sp)[1]; M. Schnabelrauch[1]; R. Wyrwa[1]; C. Altmann[1] [1]INNOVENT e.V., Jena (Germany)	**Nanostructured Surface-Induced Changes in Protein Adsorption and Implications on Platelet Adhesion and Activation** I. Firkowska-Boden (Sp)[1]; C. Helbing[1]; X. Zhang[1]; K.D. Jandt[1] [1]Friedrich Schiller University Jena (Germany)	**Hierarchical Assembly of DNA Filaments with Designer Elastic Properties** W. Pfeifer (Sp)[1] [1]University of Duisburg-Essen (UDE) (Germany)
14:30	**A biocompatible reversible thermal actuator with tunable transition temperature** N. Wilharm (Sp)[1]; T. Fischer[2]; W. Knolle[1]; F. Ott[2]; A. Beck-Sickinger[2]; M. Zink[2]; S. Mayr[1] [1]Leibniz Institute of Surface Engineering (IOM), Leipzig (Germany); [2]Leipzig University (Germany)	**Tuning Protein Orientation for Bioactive Surfaces** G. Marletta (Sp)[1]; G.M.L. Messina[1]; N. Tuccitto[1]; G. Li Destri[1]; C. Mazzuca[2]; A. Palleschi[2] [1]University of Catania (Italy); [2]University of Roma Tor Vergata (Italy)	**DNA-functionalization of surfaces based on recombinant spider silk proteins** M. Humenik (Sp)[1]; T. Scheibel[1] [1]University of Bayreuth (Germany)
14:50	**Mechanically stable sulfobetainc Hydrogels - A candidate for biomedical application** R. Ihlenburg (Sp)[1]; A.F. Thünemann[2]; K. Brademann-Jock[2]; K. Saalwaechter[3]; A. Taubert[1] [1]University of Potsdam (Germany); [2]Bundesanstalt für Materialforschung und –prüfung (BAM), Berlin (Germany); [3]Martin-Luther-University Halle-Wittenberg, Halle(Saale) (Germany)	**Two-Photon-Lithography and Atomic Layer Deposition: A Tailor-Made Route for Artificial 3D Scaffold-Mediated Neuronal Network Studies** Fendler (Sp)[1]; R. Zierold[1]; C. Denker[2]; J. Harberts[1]; G. Loers[3]; M. Münzenberg[2]; R.H. Blick[1] [1]Universität Hamburg (Germany); [2]University of Greifswald (Germany); [3]University Medical Center Hamburg-Eppendorf (UKE) (Germany)	**Plant-Derived Scaffolds for Tissue Engineering Applications** B. Garipcan (Sp)[1]; M. Toker[1]; S. Rostami[1]; M. Kesici[2]; Ö. Gül[2]; Ö. Kocatürk[1] [1]Bogazici University, Istanbul (Turkey); [2]Bilgi University, Istanbul (Turkey)

Program Wednesday 15:10 - 15:50

	Room Goethe III	Room Bach	Room Schiller
	C3: Drug and gene delivery	**B3: Biointerfaces and microenvironments** (cont.)	**D1: Special Session: Biopolymer-based biomaterials** (cont.)
Chair	B. Garipcan, Bogazici University, Istanbul (Turkey)		
15:10	**Adhesive drug delivery systems for bone healing based on polyelectrolyte complex nanoparticles** M. Müller (Sp)[1] [1]Leibniz Institute of Polymer Research Dresden (Germany)		**Bioactive cellulose non-woven materials using natural ingredients** K. Römhild (Sp)[1]; B. Kosan[1]; F. Meister[1]; M. Gericke[2]; T. Heinze[2]; T. Müller[3]; J. Müller[3]; B. Giese[3] [1]Thuringian Institute of Textile and Plastics Research Rudolstadt e.V (Germany); [2]Friedrich Schiller University Jena (Germany); [3]SYNLAB Analytics & Services Germany GmbH, Jena (Germany)
15:30	**Inorganic nanoparticle mediated delivery of siRNA** K. Besecke (Sp)[1]; P. Behrens[1]; P. Dillschneider[2]; M. Stiesch[2]; A. Hoffmann[2]; H. Hartwig[2] [1]Leibniz University Hannover (Germany); [2]Hannover Medical School (MHH) (Germany)	**TiO2 Nanotube Arrays as platform for long-term organotypic culture and mechanical characterization of retina explants – from imaging to mechanical response** S. Friebe (Sp)[1]; S. Weigel[1]; M. Francke[1]; M. Zink[1]; S. Mayr[1] [1]Leipzig University (Germany)	**Programmable pH-responsive DNA nanocapsule for loading, encapsulation, and displaying of cargo** H. Ijäs (Sp)[1] [1]University of Jyväskylä, Espoo (Finland)

Program Wednesday 15:50 - 17:00

	Room Goethe III	Room Bach	Room Schiller
	C3: Drug and gene delivery (cont.)	**B3: Biointerfaces and microenvironments** (cont.)	**D1: Special Session: Biopolymer-based biomaterials** (cont.)
15:50	**Functionalization of Polymer Fibers for Neuronal Regeneration** I. Wille (Sp)[1]; N. Schmidt[1]; P. Behrens[1]; J. Schulze[2]; A. Warnecke[2] [1]Leibniz University Hannover (Germany); [2]Hannover Medical School (MHH) (Germany)	**Nanoconfinement and Santsetsukon-like Nanocrawling Govern Fibrinogen Dynamics and Self-Assembly on Nanostructured Polymeric Surfaces** I. Firkowska-Boden (Sp)[1]; X. Zhang[1]; M.M.L. Arras[2]; M.J. Kastantin[3]; C. Helbing[1]; A. Özogul[1]; E. Gnecco[1]; D.K. Schwartz[3]; K.D. Jandt[1] [1]Friedrich Schiller University Jena (Germany); [2]Oak Ridge National Laboratory, Oak Ridge, (United States); [3]University of Colorado Boulder, Boulder, Colorado (United States)	
16:10	**Mitotane Loaded Poly(2-oxazoline) Micelles: Physico-Chemical Characterization and Cytotoxicity Studies in 2D & 3D in Vitro Models.** M. Haider (Sp)[1]; J. Schreiner[2]; S. Kendl[2]; M. Kroiss[2]; R. Luxenhofer[1] [1]University of Würzburg (Germany); [2]University Hospital of Würzburg (Germany)	**Low-temperature-sterilization method for thermal sensitive biomaterials** D. Voigt (Sp)[1]; E. Klüver[1]; M. Meyer[1] [1]Forschungsinstitut für Leder und Kunststoffbahnen gGmbH (FILK), Freiberg (Germany)	
16:30	**Coffee Break**		

Program Wednesday 17:00 - 17:40

	Room Bach	Room Schiller
	B1: Biofilms & antimicrobial biomaterials	**C8: SFB 1278 Polytarget - Polymer Nanoparticles for Drug Delivery**
Chair	I. Firkowska-Boden, Friedrich Schiller University Jena (Germany)	C. Helbing Friedrich Schiller University Jena (Germany)
17:00	**Electro-chemical Inactivation of Bacteria on Titanium Implants by Boron-doped Diamond Coating** S. Rosiwal (Sp)[1]; H. Ghanem[1]; M. Stiesch[2]; A. Burkovski[1]; M. Schuman[1]; A. Labitzke[1] [1]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany); [2]Hannover Medical School (MHH) (Germany)	**Formulation and characterization of drug-loaded nanoparticles using conventional and new biodegradable polymers** B. Shkodra-Pula (Sp)[1]; A. Vollrath[1]; C. Kretzer[1]; I. Nischang[1]; O. Werz[1]; U. S. Schubert[1] [1]Friedrich Schiller University Jena (Germany)
17:20	**The Antimicrobial Actions of Supported Silver Nanoparticles** H. Cao (Sp)[1] [1]Shanghai Institute of Ceramics, Chinese Academy of Sciences (China)	**Eliminating the third variable: The effect of crystallinity of polyester based nanoparticles for drug delivery, isolated from the influence of the hydrophilic / hydrophobic balance** K. Scheuer (Sp)[1]; K.D. Jandt[1]; U.S. Schubert[1]; C. Weber[1]; D. Bandelli[1]; C. Helbing[1]; J. Alex[1] [1]Friedrich Schiller University Jena (Germany)

Program Wednesday 17:40 - 18:00

	Room Goethe III	Room Bach	Room Schiller
	A8: Imaging of biomaterials	**B1: Biofilms & antimicrobial biomaterials: Biofilms & antimicrobial biomaterials** (cont.)	**C8: SFB 1278 Polytarget - Polymer Nanoparticles for Drug Delivery based Biomaterials** (cont.)
17:40	**Angle-resolved light scattering as versatile characterization tool for surfaces and biological cells** N. Felde (Sp)[1]; A.-S. Munser, A. Gärtner; S. Schröder[1]; A. Tünnermann[1] [1]Fraunhofer Institute for Applied Optics and Precision Engineering IOF, Jena (Germany)	**Adhesion of E. coli on nano-rough titanium surfaces – image and genetic analyses** N. Stefani (Sp)[1]; M. Schürmann[2]; V. Schroeckh[3]; S. Dietrich[3]; T. Wolf[3]; K.D. Jandt[2]; M.T. Figge[3]; G. Panagiotou[3]; A.A. Brakhage[3] [1]Leibniz Institute for Natural Product Research and Infection Biology e. V., Jena (Germany); [2]Friedrich Schiller University Jena (Germany); [3]Leibniz Institute for Natural Product Research and Infection Biology, Jena (Germany)	**Synthesis and Formulation of Functional Polymeric Nanoparticles based on Poly(methacrylate)s** P. Klemm (Sp)[1]; T. Yildirim[1]; S. Schubert[1]; U.S. Schubert[1] [1]Friedrich Schiller University Jena (Germany)

Program Wednesday 18:20 - 18:40

	Room Goethe III	Room Bach	Room Schiller
	A8: Imaging of biomaterials (cont.)		
18:00	**3D characterization of scaffolds for culturing and tissue engineering** A. Cecilia (Sp)[1]; V. Weinhardt[2]; R. Hofmann[1]; M. Zuber[1]; F. Gruhl[1]; A. Bäcker[1]; R. Surmenev[3]; M. Surmeneva[3]; N. Aadepu[1]; S. Shkarina[3]; T. Baumbach[1] [1]Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen (Germany); [2]Heidelberg University (Germany); [3]Tomsk Polytechnic University (Russia)	**Nano-rough titanium surfaces created by wet alkaline etching and PVD** M. Schürmann (Sp)[1]; B. Zhao[1]; J. Bossert[1]; K.D. Jandt[1] [1]Friedrich Schiller University Jena (Germany)	**Polyesteramide Nanoparticles with "stealth polymer" shell** M. Dirauf (Sp)[1]; I. Muljajew[1]; C. Weber[1]; U.S. Schubert[1] [1]Friedrich Schiller University Jena (Germany)
			Room Schiller **C8: SFB 1278 Polytarget - Polymer Nanoparticles for Drug Delivery based Biomaterials**
18:20	**Perspectives for Imaging of Biomaterials utilizing highly brilliant X-ray sources** T.F. Keller (Sp)[1] [1]Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)		**Hydrodynamic and Light Scattering Study of Carboxymethyl Celluloses** M. Grube (Sp)[1]; U.S. Schubert[1]; I. Nischang[1] [1]Friedrich Schiller University Jena (Germany)

Oral Poster Session Wednesday 18:40 - 20:00

	Room Goethe I
18:40	**Oral poster session**
Chair	T.F. Keller Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)
C4-33	**Effect of surface processing on roughness, wettability and cytotoxicity of carbon fiber-reinforced polyetheretherketone (PEEK) composite fabricated by fused deposition modeling** X. Han (Sp)[1]; C. Yang[2]; S. Spintzyk[1]; L. Scheideler[1]; .D. Li [2]; J. Geis-Gerstorfer[1]; F. Rupp[1] [1]University Hospital Tübingen (Germany); [2]Xi'an Jiaotong University, Xi'an (China)
B1-23	**Characterisation of bactericidal titanium surfaces using electron microscopy** J. Jenkins (Sp)[1]; S. Kulkarni[2]; T.F. Keller[2]; A. Nobbs[1]; P. Verkade[1]; B. Su[1] [1]University of Bristol (United Kingdom); [2]Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)
C4-1	**Fabrication of Alginate/Honey Scaffolds by 3D bio-printing and studying their Mechanical, Morphological and Cell Viability Properties for in-situ Skin Tissue Engineering Applications** S. Datta (Sp)[1]; V. Vyas[1]; R. Barua[1]; R. Sarkar[1]; A. Barui[1]; A. RoyChowdhury[1]; P. Datta[1] [1]Indian Institute of Engineering Science and Technology (IIEST), West Bengal (India)
A1-6	**Parvovirus B19 virus-like particles as platform for the development of biomaterials** I. Bustos-Jaimes (Sp)[1]; M. Cayetano-Cruz[1]; C.E. Segovia-Trinidad[1] [1]National Autonomous University of Mexico (Mexico)
A1-18	**The Influence of Surface Nanopatterns with varying Periodicities on Protein adsorption** Y. Yang (Sp)[1]; M. Yu[1]; G. Grundmeier[1]; A. Keller[1] [1]Paderborn University (Germany)
A4-72	**Opaque, Translucent and Transparent Flower Petals** T. Arakawa (Sp)[1]; O. Karthaus[1] [1]Chitose Institute of Science and Technology (Japan)
B3-38	**Impact of Surface Morphology and Net Charge of Spider Silk based Materials on Interactions with Human Blood Components** S. Lentz (Sp)[1]; A.C.G. Weiss[2]; H. Herold[1]; M. Faria[2]; Q. Besford[2]; C. Borkner[1]; C.-S. Ang[2]; E.J. Crampin[2]; E. Müller[3]; M. Rottmar[3]; F. Caruso[2]; T. Scheibel[1] [1]University of Bayreuth (Germany); [2]The University of Melbourne (Australia); [3]EMPA Swiss Federal Laboratories for Materials Science and Technology, St. Gallen (Switzerland)
B1-75	**Modulation of Bacteria on Titanium Surfaces via Nanotopography and Antimicrobial Peptides** M. Eales (Sp)[1]; A. Nobbs[1]; W. Briscoe[1]; M. Ryadnov[2]; T.F. Keller[3]; B. Su[1] [1]University of Bristol (United Kingdom); [2]National Physical Laboratory (NPL), Teddington, London (United Kingdom); [3]Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)
A3-78	**Degradable hybrid polymers for tissue engineering** J. Schwaiger (Sp)[1]; S. Nique[1]; H. Wolter[1] [1]Fraunhofer Institute for Silicate Research ISC, Würzburg (Germany)

Oral poster session (cont.)

B1-141 **Antibacterial functionalization of plasma-chemical oxidized titanium surfaces**
S. Kranz (Sp)[1]; A. Guellmar[1]; J. Schmidt[2]; S. Tonndorf-Martini[1]; M. Diefenbeck[3]; B. Sigusch[1]
[1]University Hospital Jena (Germany); [2]INNOVENT e.V., Jena (Germany); [3]Schön Klinik Hamburg-Eilbek (Germany)

A7-93 **Thermal crosslinking of hydrophilic polymers using polyperoxides**
S. Borova (Sp)[1]; R. Luxenhofer[1]; V. Tokarev[2]
[1]University of Würzburg (Germany); [2]Lviv Polytechnic National University (Ukraine)

A4-81 **Poly(peptoid)s: Peptidomimetics as potential Biomaterials**
C. Schlutt (Sp)[1]; R. Luxenhofer[1]
[1]University of Würzburg (Germany)

A1-111 **A Nanoscaled Hybrid Coating for Neuronal Electrodes: Nanoporous Silica NPs Embodied into Nanoporous Platinum**
T. Pinkvos (Sp)[1]; J. Schulze[2]; V. Hagemann[1]; H.A. Schulze[1]; D.P. Warwas[1]; S. Zailskas[1]; A. Schierz[1]; A. Mohmeyer[1]; M. Jahns[1]; K.D. Kreisköther[1]; H.C. Schwarz[1]; A. Warnecke[2]; P. Behrens[1]
[1]Leibniz University Hannover (Germany); [2]Hannover Medical School (MHH) (Germany)

C2-116 **Drug Delivery from Nanoporous Titania Coatings for Dental Application**
S. Zailskas (Sp)[1]; P. Abendroth[1]; M. Stiesch[2]; P. Behrens[1]
[1]Leibniz University Hannover (Germany); [2]Hannover Medical School (MHH) (Germany)

A3-119 **Waste to resource: Biopolymer from industrial wastewater**
R. Nogueira (Sp)[1]; P. Tamang[1]
[1]Leibniz University Hannover (Germany)

A1-120 **Divide and Comprehend: Separating the Effects of Hydrophobicity / Hydrophilicity and Crystallinity on the Thermal Properties of Polyester Based Drug Delivery Systems**
K. Scheuer (Sp)[1]; K.D. Jandt[1]; U.S. Schubert[1]; C. Weber[1]; D. Bandelli[1]; J. Alex[1]; C. Helbing[1]
[1]Friedrich Schiller University Jena (Germany)

A2-122 **Elastic Polymer-Coated Nano- and Macroporous Bioactive Glass-Composites for Bone Regeneration**
M. Lietzow (Sp)[1]; K. Besecke[1]; R. Hinterding[1]; L. Burmeister[2]; A. Hoffmann[2]; A. Kampmann[2]; M. Stiesch[2]; N. Ehlert[1]
[1]Leibniz University Hannover (Germany); [2]Hannover Medical School (MHH) (Germany)

C6-130 **Keratinocytes HaCaT Proliferation on a 3D-Printed Chitosan-Collagen Scaffold**
E. Hermida (Sp)[1]; M. Pérez Recalde[1]; A. González Wusener[1]; J. Polenta[1]; A. Bolgiani[2]
[1]National University of San Martin - UNSAM (Argentina); [2]BIOMATTER S.A., Buenos Aires (Argentina)

A7-133 **Alginate/silk fibroin-based hydrogels for vascularized tissue constructs**
R. Singh (Sp)[1]; H. Genc[1]; T. Distler[2]; R. Detsch[2]; B. Dietel[1]; A.R. Boccaccini[2]; C. Alexiou[1]; I. Cicha[1]
[1]Universitätsklinikum Erlangen (Germany); [2]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany)

Oral Poster Session Wednesday 18:40 - 20:00

Oral poster session (cont.)

C7-153 **Diclofenac and moxifloxacin simultaneous delivery from intraocular lenses for endophthalmitis prophylaxis**
A. Serro (Sp)[1]; B. Saramago[2]; A. Topete[1]
[1]Instituto Universitário Egas Moniz, Lisbon (Portugal); [2]Instituto Superior Técnico, Lisbon (Portugal)

A2-161 **Optimization of a calcium phosphate based bone cement formulation**
R. Colaço (Sp)[1]; M. Reis[1]; N. Ribeiro[2]; L. Figueiredo[3]; A. Pimenta[3]; A. Serro[1]
[1]Instituto Superior Técnico, Lisbon (Portugal); [2]Hospital dos Lusiadas, Lisbon (Portugal); [3]Bioceramed, Lisbon (Portugal)

A2-60 **Nanostructured bone apatite-like thin films for bone prostheses**
G. Graziani (Sp)[1]; M. De Carolis[1]; M. Bianchi[1]; E. Sassoni[2]; M. Berni[1]; A. Gambardella[1]; N. Baldini[1]
[1]Rizzoli Orthopaedic Institute, Bologna (Italy); [2]Università di Bologna (Italy)

A2-177 **Low-dose BMP-2 enhances the bone-forming effects of an injectable, PLGA fiber-reinforced, brushite-forming cement in sheep lumbar osteopenia defects**
F. Gunnella (Sp)[1]; E. Kunisch[1]; S. Maenz[3]; B. Illerhaus[3]; M. Bungartz[5]; O. Brinkmann[5]; J. Bossert[6]; R.W. Kinne[1]
[1]University Hospital Jena, Eisenberg (Germany); [2]Universitätsklinikum Jena, Jena (Germany); [3]Aesculap AG, Tuttlingen (Germany); [4]Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin (Germany); [5]Waldkrankenhaus Rudolf Elle GmbH, Eisenberg (Germany); [6]Friedrich-Schiller-Universität Jena, Jena (Germany)

A2-178 **The PLGA fiber component of brushite-forming calcium phosphate cement induces the osteogenic differentiation of human adipose tissue-derived stem cells**
F. Gunnella (Sp)[1]; E. Kunisch[2]; S. Wagner[1]; F. Dees[3]; S. Maenz[4]; J. Bossert[5]; K.D. Jandt[5]; R.W. Kinne[1]
[1]University Hospital Jena, Eisenberg (Germany); [2]Universitätsklinikum Jena, Jena (Germany); [3]Alere Technologies GmbH, Jena (Germany); [4]Aesculap AG, Tuttlingen (Germany); [5]Friedrich-Schiller-Universität Jena, Jena (Germany)

C6-134 **Surface functionalization of nanofibers by plasma processing in Ar/CO2/C2H4 discharge**
E. Permyakova (Sp)[1]; A. Manakhov[1]; P. Kiruhancev-Korneev[1]; N. Gloushankova[2]; D. Shtansky[1]
[1]National University of Science and Technology MISiS, Moskau (Russia); [2]N.N. Blokhin Russian Cancer Research Centre of RAMS, Moscow (Russia)

Poster Presentations

20:00 **Poster discussion with snacks and drinks in the foyer of the lecture halls poster evening barbecue**

Foyer of the conference hotel

A1-99 **Synthesis, solubility and optical activity of chiral poly(2,4-disubstituted-2-oxazoline)s**
M. Yang (Sp)[1]
[1]University of Würzburg (Germany)

A1-156 **Cytotoxicity of gold nanorods and nanoribbons in context of biomedical applications**
M. Musielak (Sp)[1]; J. Patalas[2]; K. Rucinska[2]; J. Maksim[2]; A. Bos-Liedke[2]; A. Molinski[2]; M. Kozak[2]
[1]Adam Mickiewicz University, Poznan (Poland); [2]Adam Mickiewicz University in Poznan, Poznan (Poland)

A1-157 **Preliminary studies of synthesis of gold nanoribbons using selected dicationic surfactants**
J. Patalas (Sp)[1]; J. Maksim[1]; K. Maksim[1]; M. Musielak[1]; A. Bos-Liedke[1]; A. Molinski[1]; Z. Pietralik[1]; M. Kozak[1]
[1]Adam Mickiewicz University in Poznan, (Poland)

A1-160 **Ideas on improving the comparability of bio-nano data**
H. Cao (Sp)[1]; X. Liu[2]; K.D. Jandt[1]
[1]Friedrich Schiller University Jena (Germany); [2]Shanghai Institute of Ceramics, Chinese Academy of Sciences (China)

A1-179 **Investigating Dynamic Biological Processes with High-Speed, High-Resolution Correlative AFM-Light Microscopy**
O. Pabsch (Sp)[1]; T. Mueller[1]; H. Haschke[1]
[1]Bruker Nano GmbH, Berlin (Germany)

A2-59 **Dual-setting brushite-silica gel cements – Variations of the monomer precursors and tuning of the setting parameters**
I. Holzmeister (Sp)[1]; J. Groll[1]; U. Gbureck[1]
[1]University Hospital of Würzburg (Germany)

A2-165 **Influence of Cu2+-doping in β-TCP on the hydration kinetics of brushite cement investigated by Rietveld analysis and heat flow calorimetry**
K. Späth (Sp)[1]; K. Hurle[1]; F. Goetz-Neunhoeffer[1]
[1]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany)

A3-31 **Corrosion behaviour of potencially biodegradable ternary alloy Zn-Mg-Ca**
J. Pinc (Sp)[1]; J. Capek[1]; J. Kubasek[2]; E. Jablonská[2]
[1]Czech Academy of Sciences, Prague (Czech Republic); [2]University of Chemistry and Technology Prague (Czech Republic)

A3-32 **Biomineralization of Recombinant Spider Silk Films**
V. Neubauer (Sp)[1]; T. Scheibel[1]
[1]University of Bayreuth (Germany)

A3-126 **Improvements in PHB production by wild type Cupriavidus necator using different feeding strategies**
E. Hermida (Sp)[1]; O. Yashchuk[1]; D. Noseda[1]; D. Nygaard[1]
[1]National University of San Martin - UNSAM (Argentina)

Poster Presentations

A7-89 **Modification of bacterial cellulose to enhance anti-inflammatory wound dressing properties**
U. Beekmann (Sp)[1]; P. Zahel[1]; B. Karl[1]; L. Schmölz[1]; S. Lorkowski[1]; O. Werz[1]; D. Fischer[1]; D. Kralisch[1]
[1]Friedrich Schiller University Jena (Germany)

A7-147 **Absolute Characterization of Synthetic Macromolecules used in Biomaterials Science Applications**
M. Grube (Sp)[1]; U.S. Schubert[1]; I. Nischang[1]
[1]Friedrich Schiller University Jena (Germany)

A8-115 **Biodegradable thermoplastic materials for bimodal imaging containing the mineral present in the human body**
Z. Górecka (Sp)[1]; E. Choinska[1]; W. Swieszkowski[1]
[1]Warsaw University of Technology (Poland)

A8-175 **Three-dimensional nanoscale X-ray computed tomography for the visualisation of cells grown on fibrous scaffolds**
J. Martins de Souza e Silva (Sp)[1]; C. Santos de Oliveira[2]; A. Trompetero González[2]; T. Kürbitz[3]; T. Hedke[4]; C.E.H Schmelzer[4]; R. B. Wehrspohn[4]
[1]Martin-Luther-University Halle-Wittenberg (Germany); [2]Martin-Luther-Universität Halle-Wittenberg, Halle (Saale) (Germany); [3]Anhalt University of Applied Science, Köthen (Germany); [4]Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Halle (Saale) (Germany)

B1-90 **Nano-rough titanium surfaces created by wet alkaline etching and PVD and their influence on bacterial adhesion as well as protein adsorption**
M. Schürmann (Sp)[1]; N. Stefani[2]; V. Schroeckh[2]; A.A. Brakhage[2]; J. Bossert[1]; K.D. Jandt[1]
[1]Friedrich Schiller University Jena (Germany); [2]Leibniz Institute for Natural Product Research and Infection Biology, Jena (Germany)

B1-101 **Effective strategies for the controlling and dealing with transmission pathway of pathogens in air traffi**
C. Helbing (Sp)[1]; T. Dauben[1]; C. Dewald[1]; B. Zhao[1]; J. Bossert[1]; K.D. Jandt[1]
[1]Friedrich Schiller University Jena (Germany)

B1-104 **Nanostructured high-pressure laminate surfaces to reduce transmission pathways of pathogens in public transportation**
C. Helbing (Sp)[1]; T. Dauben[1]; K. Scheuer[1]; J. Bossert[1]; K.D. Jandt[1]
[1]Friedrich Schiller University Jena (Germany)

B2-36 **Cytotoxicity evaluation of biodegradable Zn-4Cu alloy using L929, Saos-2 and TAg cell lines**
P. Li (Sp)[1]; W. Zhang[2]; E. Schweizer[1]; J. Dai[1]; D. Alexander[1]; G. Wan[2]; J. Geis-Gerstorfer[1]; L. Scheideler[1]
[1]University Hospital Tübingen (Germany); [2]Southwest Jiaotong University, Chengdu (China)

B2-79 **Influence of pulsed bias voltage on the tribological and morphological properties of a-C coatings deposited by an anodic arc method**
I. Erdmann (Sp)[1]; F. Deuerler[1]; V. Buck[2]
[1]University of Wuppertal (Germany); [2]University of Duisburg-Essen (UDE) (Germany)

Poster Presentations

B2-183 **Multi scale topography in titanium alloys by electron beam technique: influence on the tissue adhesion and bacterial contamination**
F. Warchomicka (Sp)[1]; C. Ramskogler[1]; S. Ferraris [2]; A. Cochis[3]; L. Rimondini[3]; A. Weinberg[4]; S. Spriano[2]; C. Sommitsch[1]
[1]Graz University of Technology (Austria); [2]Politecnico di Torino (Italy); [3]Università del Piemonte Orientale, Novara (Italy); [4]Medical University Graz (Austria)

B3-35 **Chairside plasma activation of encapsulated implants: how fast is it?**
M. Garcia Chame (Sp)[1]; F. Rupp[1]; C. Diener[2]; J. Geis-Gerstorfer[1]
[1]University Hospital Tübingen (Germany); [2]Diener electronic GmbH + Co. KG, Ebhausen (Germany)

B3-50 **Novel QCM-D/microscopy set-up for real-time analysis of bacterial binding onto biomaterial-coated sensors**
Z. Xu (Sp)[1]; T. Reiner[2]; L. Scheideler[1]; S. Krajewski[1]; J. Geis-Gerstorfer[1]; F. Gehring[2]; F. Rupp[1]
[1]University Hospital Tübingen (Germany); [2]3T analytik, Tuttlingen (Germany)

B3-86 **Analytical investigation of the influence of micro- and nanoplastic particles in crop plants by electron microscopic imaging and spectroscopy**
J. Wissler (Sp)[1]; D. Dierksen[1]
[1]TESCAN GmbH, Dortmund (Germany)

C2-52 **Influence of fluoride corrosion attack on the metal-porcelain bond strength of TiCr20 compared to titanium**
C. Schille (Sp)[1]; J. Geis-Gerstorfer[1]; T. Sawada[2]; S. Takemoto[2]
[1]University Hospital Tübingen (Germany); [2]Iwate Medical University (Japan)

C3-84 **Bacterial nanocellulose loaded with frankincense extract as natural wound dressing to treat local dermal inflammations**
B. Karl (Sp)[1]; Y. Alkhatib[1]; U. Beekmann[1]; G. Blume[2]; D. Kralisch[1]; O. Werz[1]; S. Lorkowski[1]; D. Fischer[1]
[1]Friedrich Schiller University Jena (Germany); [2]Sopharcos, Steinau an der Straße (Germany)

C4-128 **Characterization of 3D printed bioesorbable scaffolds for bone regeneration**
E. Hermida (Sp)[1]; B. Aráoz[1]; T. Federico[1]; G. Gueron[2]; A. González Wusener[1]; E. Vazquez[2]; A.R. Boccaccini[3]
[1]National University of San Martin - UNSAM (Argentina); [2]University of Buenos Aires (Argentina); [3]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany)

C6-98 **Graded functionalization of polydopamine coated fiber mats as potential implant for tendon-bone-transition**
S. Oehmichen (Sp)[1]; S. Sydow[1]; A. Becker[2]; J. Sundermann[1]; H. Bunjes[1]; B. Glasmacher[1]; H. Menzel[1]
[1]TU Braunschweig (Germany); [2]Leibniz University Hannover (Germany)

C6-138 **Enhancing the functionalities of bioactive glass-based scaffolds by novel polymeric coatings**
L. Liverani (Sp)[1]; E. Christodoulou[2]; G.S. Theodorou[2]; S. Heid[1]; D. Patsiaoura[2]; D. Bikiaris[2]; E. Kontonasaki[2]; A.R. Boccaccini[1]
[1]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany); [2]Aristotle University of Thessaloniki (Greece)

Poster Presentations

C7-158 **Diclofenac release from a silicon based hydrogel for contact lenses controlled by a layer-by-layer coating**
A. Serro (Sp)[1]; D. Silva[2]; H. Sousa[3]; H. Gil[3]; C. Alvarez-Lorenzo[4]; B. Saramago[2]
[1]Instituto Universitário Egas Moniz, Lisbon (Portugal); [2]Instituto Superior Técnico, Lisbon (Portugal); [3]Universidade de Coimbra (Portugal); [4]Universidade de Santiago de Compostela (Portugal)

D1-16 **Durability analysis of the cryopreservation of DNA origami nanostructures**
Y. Xin (Sp)[1]; C. Kielar[1]; X. Xu[1]; S. Zhu[1]; N.G. Gorin[1]; G. Grundmeier[1]; A. Keller[1]
[1]Paderborn University (Germany)

D1-57 **Effects of staple age on DNA origami nanostructure assembly and stability**
C. Kielar (Sp)[1]; X. Xu[1]; S. Zhu[1]; N.G. Gorin[1]; G. Grundmeier[1]; A. Keller[1]
[1]Paderborn University (Germany)

Program Thursday 08:00 - 09:00

Room Goethe I

Plenary Lectures

Chair

08:00 **Biofabrication – Chances, Challenges and Limits**

J. Groll, University Hospital Wuerzburg (Germany)

Biofabrication is a young field of research that aims at the automated generation of hierarchical tissue-like structures from cells and materials through automated procedures in Bioprinting or Bioassembly. This approach has the potential to overcome a number of classical challenges in relating to organization, personalized shape and mechanical integrity of generated constructs.
Although this has allowed achieving some remarkable early successes, it has recently become evident that the lack of variety in materials that can be formulated together with cells for Bioprinting, so called Bioinks, is one major drawback for the complete field. Mainly, such materials are hydrogels or hydrogel precursor formulations; however, alternative approaches both regarding materials and printing techniques have recently been developed to extend this shortcoming. This contribution will give an introduction to the field, critically review the current status, including examples of our recent work, and also concern some of the current challenges.

08:30 **Digital Light Projection Stereolithography Bioprinting and Guided Mineralization of Microscale Tissue Models to Study Stem Cell Differentiation and Bone Tissue Engineering**

L.E. Bertassoni, Oregon Health and Science University (USA)

Fabrication of three-dimensional tissues with controlled microarchitectures has been shown to enhance tissue functionality. Our group has been interested in developing 3D bioprinting, biofabrication and materials chemistry-based technologies to enhance our ability to regenerate tissues with controlled microarchitectures, physical properties and overall function. In this seminar, we will present novel SLA/DLP-based 3D printing methods to fabricate high-throughput screening platforms to probe mechanotransduction and geometry-controlled mechanisms of stem cell differentiation. Further, we will discuss recent biomineralization methods that our lab has developed to engineer bone-like tissues with nanoscale precision. This novel method will be discussed in light of its ability to replicate the native bone vasculature, innervation, composition, and osteoinductive properties, as well as its ability of replicating the process of cancer invasion (metastasis) into bone.

Program Thursday 09:00 - 10:20

09:00 **Announcement of the poster award winner**

K.D. Jandt, Chairman of the conference, Friedrich Schiller University Jena (Germany)

Poster Award Sponsor Springer

09:10 **Coffee Break**

	Room Goethe III	Room Bach	Room Schiller
	A5: Biological materials and biomineralization	**A2: Bioactive materials, bioglass and calcium-phosphates**	**C2: Dental materials**
Chair	O. Karthaus Chitose Institute of Science and Technology (Japan)	R.W. Kinne University Hospital Jena, Eisenberg (Germany	N.N.
09:40	**Human Aorta under Tensile Stress** S. Friebe (Sp)[1]; J. Haunschild[1]; C. Etz[1]; S. Mayr[1] [1]Leipzig University (Germany)	**Bioactive Glass Aging and Its Impact on Sintering** L. Lefebvre (Sp)[1]; A. Mari[2]; P.F. Menci[2]; C. Charbonneau[1]; L. De Nardo[2] [1]National Research Council Canada, Boucherville (Canada); [2]Politecnico di Milano (Italy)	**First Steps in Oral Biofilm Formation – The Interplay of Biopolymers in Adsorption Processes on Dental Materials** S. Ehnert (Sp)[1] [1]TU Kaiserslautern (Germany)
10:00	**Honeycomb films prepared by the breath figure technique can be used as templates for inorganic compounds** O. Karthaus (Sp)[1] [1]Chitose Institute of Science and Technology (Japan)	**Beyond the shape control of hydroxyapatite nanoparticles: on the relevance of the relative amount of (01-10)_Ca-rich and HA(01-10)_P-rich surfaces and related impact on water and protein adsorption** P. Ivanchenko (Sp)[1]; F. Catalano[1]; P. Ugliengo[1]; M. Iafisco[2]; G. Martra[1]; A. Tampieri[2] [1]University of Turin, Torino (Italy); [2]National Research Council (CNR), Faenza (Italy)	**Subtractive vs additive manufacturing in the production of Zirconia pieces for dental applications** A. Branco (Sp)[1]; R. Silva[2]; M. Polido[1]; C. Figueiredo-Pina[3]; R. Colaço[2]; A. Serro[1] [1]Instituto Universitário Egas Moniz, Monte da Caparica (Portugal); [2]Instituto Superior Técnico, Lisbon (Portugal); [3]Instituto Politécnico de Setúbal (Portugal)

Program Thursday 10:20 - 11:30

	Room Goethe III	Room Bach
	A5: Biological materials and biomineralization (cont.)	**A2: Bioactive materials, bioglass and calcium-phosphates** (cont.)
10:20	**Structural Differences of Human and Yak Hair** A. Müllner (Sp)[1]; H. Peterlik[1]; D. Brandhuber[2] [1]University of Vienna (Austria); [2]Less Is More Cosmetics GmbH, Vienna (Austria)	**Multifunctional nano- and macroporous bioactive glass-composites for bone regeneration** N. Ehlert (Sp)[1]; M. Lietzow[1]; J. Schaeske[2]; N. Stumpp[2]; M. Stiesch[2]; L. Burmeister[2]; A. Hoffmann[2]; S. Gniesmer[2]; A. Kampmann[2] K. Besecke[1] [1]Leibniz University Hannover (Germany); [2]Hannover Medical School (MHH) (Germany)
10:40		**Effect of calcium phosphate reinforcement on Gelatin-Chitosan for developing a 3D porous composite scaffold for bone tissue engineering- a comparative study** K. Maji (Sp)[1] [1]National Institute of Technology (NIT), Rourkela (India)

Program Thursday 11:30 - 12:10

11:00 **Coffee Break**

	Room Goethe III	Room Bach	Room Schiller
	A4: Bioinspired materials / biomimetic materials	**A2: Bioactive materials, bioglass and calcium-phosphates** (cont.)	**C6: Tissue engineering / regenerative medicine**
Chair	W. E.G. Müller Johannes Gutenberg University Mainz, Germany	N.N.	C. Lee-Thedieck, Leibniz University Hannover (Germany)
11:30	**Understanding bacterial interactions awith nanostructured surfaces** M. Ishak (Sp)[1]; A. Nobbs[1]; W. Briscoe[1]; S. Kulkarni[1]; T.F. Keller[2] B. Su[1] [1]University of Bristol (United Kingdom); [2]Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)	**Hydration mechanism of an injectable apatite cement modified with sodium phytate** K. Hurle (Sp)[1]; J. Weichhold[2]; U. Gbureck[2]; F. Goetz-Neunhoeffer[1] [1]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany); [2]University of Würzburg, Wuerzburg (Germany)	**4D Printing Objects: A New Approach Toward Complex Tissue Engineering** C. Devillard (Sp)[1]; C. Mandon[1]; C.A. Marquette[1] [1]3D.FAB, Villeurbanne (France)
11:50	**Self-Assembled Plasma Protein Hybrid Nanofibers** C. Helbing (Sp)[1]; T. Deckert-Gaudig[2]; G. Wei[3]; K. Scheuer[1]; K.D. Jandt[1] [1]Friedrich Schiller University Jena (Germany); [2]Leibniz Institute of Photonic Technology, Jena (Germany); [3]University of Bremen (Germany)	**Improved mechanical properties of brushite-forming calcium phosphate cements by polymer fiber reinforcement** I. Firkowska-Boden (Sp)[1]; K.D. Jandt[1] [1]Friedrich Schiller University Jena (Germany)	**DLC coated CoCrMo femural parts for knee prostheses and biomimetic micro-pattering with femto-second laser technique** A. Dorner-Reisel (Sp)[1]; S. Weißmantel[2] [1]Schmalkalden University of Applied Sciences (Germany); [2]Laserinstitut Mittweida (Germany)

Program Thursday 12:10 - 12:30

	Room Goethe III **A4: Bioinspired materials / biomimetic materials** (cont.)	Room Bach **A2: Bioactive materials, bioglass and calcium-phosphates** (cont.)	Room Schiller **C6: Tissue engineering / regenerative medicine** (cont.)
12:10	**Fibrinogen + Salt = 3D-nanofibrous scaffolds: A new self assembly method** D. Brüggemann (Sp)[1]; K. Stapelfeldt[1]; P. Mednikova[1]; J. Markhoff[1] [1]University of Bremen (Germany)	**The GDF5 mutant BB-1 may be superior to GDF5 for the enhancement of bone formation induced by an injectable, PLGA-fiber reinforced, brushite-forming cement in a sheep defect model of lumbar osteopenia** F. Gunnella (Sp)[1]; E. Kunisch[2]; S. Maenz[3]; B. Illerhaus[3]; M. Bungartz[5]; O. Brinkmann[5]; J. Bossert[6]; R.W. Kinne[1] [1]University Hospital Jena, Eisenberg (Germany); [2]Heidelberg University Hospital (Germany); [3]Aesculap AG, Reutlingen (Germany); [4]Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin (Germany); [5]Waldkrankenhaus Rudolf Elle GmbH, Eisenberg (Germany); [6]Friedrich Schiller University Jena (Germany)	**Scaffolds with Multiscale Mechanical Properties for Endochondral Healing of Large Bone Defects** M. Tortorici (Sp)[1]; G.N. Duda[2]; H. Leemhuis[3]; C. Gayer[3]; S. Checa[2]; A. Petersen[2] [1]Charité - Universitätsmedizin Berlin (Germany); [2]Charité – Universitätsmedizin Berlin (Germany); [3]Matricel GmbH, Herzogenrath (Germany); [4]Fraunhofer Institute for Laser Technology ILT, Aachen (Germany)

Program Thursday 12:30 - 14:20

	Room Goethe III **A4: Bioinspired materials / biomimetic materials** (cont.)	Room Bach **A2: Bioactive materials, bioglass and calcium-phosphates** (cont.)	Room Schiller **C6: Tissue engineering / regenerative medicine** (cont.)
12:30	**Blood plasma like material for multiphoton polymerization** L. Zeußel (Sp)[1]; M. Gebinoga[1]; A. Schober[1] [1]Ilmenau University (Germany)	**Alkaline phosphatase (ALP) activity of the ATDC-5 cell line following exposure to GDF-5 as a basis for its therapeutic or diagnostic application in pre-clinical large animal models** M. Stoica (Sp)[1]; F. Gunnella[1]; J. Bossert[2]; A. Borowski[3]; R.W. Kinne[1] [1]University Hospital Jena, Eisenberg (Germany); [2]Friedrich Schiller University Jena (Germany); [3]ImmunoTools GmbH, Jena (Germany)	**Nanofibersflakes for 3D tissue engineering** A. Heilmann (Sp)[1]; K. Tobias[2]; N. Michler[2]; A. Friedmann[1]; CE.H. Schmelzer[1]; M. Götze[3]; O. Krimig[3]; G. Hillrichs[3] [1]Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Halle (Saale) (Germany); [2]Anhalt University for Applied Sciences, Köthen (Germany); [3]Merseburg University of Applied Sciences (Germany)
12:50	**Physicochemical Properties of Sharkskin Mimicked Polymeric Membranes** S. Rostami (Sp)[1]; B. Garipcan[1] [1]Bogazici University, Istanbul (Turkey		**Enrichment of a grafting material for bone regeneration and infection prophylaxis** B. Wildemann (Sp)[1]; N. Bormann[2]; E. Beuttel[2]; A.-M. Pobloth[2]; G.N. Duda[2] [1]University Hospital Jena (Germany); [2]Charité-Universitätmedizin Berlin (Germany)
13:10	**Lunch Break**		

Program Thursday 14:20 - 16:00

Room Goethe I

Round Table Discussion

Chair

14:20 **The Implant-Files - Friends or Foes?**

N. Stark, Straub Medical AG, Wangs (Switzerland)

Recent implant scandals discussed in the mass media had an impact on the public opinion about the implant industry. As a response, politics introduces a new register for implants aiming for more transparency and safety of implants. Increasing regulations are challenges for the implant industry and make implant development more risky. This lively open forum discussion session covers these aspects from different angles and brings together various expertise in this area.

	Room Goethe III	Room Bach	Room Schiller
	A4: Bioinspired materials / biomimetic materials (cont.)	**A3: Biodegradable materials**	**C6: Tissue engineering / regenerative medicine** (cont.)
Chair	N.N.	B. Garipcan, Bogazici University	N.N.
15:40	**Marine Biomaterials: development of new carbonized 3D sponge-based catalyst** S. Zóltowska-Aksamitowska (Sp)[1]; I. Petrenko[2]; M. Wysokowski[1]; Y. Joseph[2]; T. Jesionowski[1] [1]Poznan University of Technology (Poland); [2]TU Bergakademie Freiberg (Germany)	**ZnMg0.8Ca0.2 alloy as a biodegradable material** J. Capek (Sp)[1]; J. Pinc[1]; J. Kubasek[2]; L. Lacina[3] [1]Czech Academy of Sciences, Prague (Czech Republic); [2]University of Chemistry and Technology Prague, Prague 6 (Czech Republic); [3]First Faculty of Medicine of Charles University, Prague (Czech Republic)	**Natural high-energy polymer-based scaffolds suitable for encapsulating of mesenchymal stem cells to accelerate both hard tissue and soft tissue regeneration** W.E.G. Müller (Sp)[1]; X. Wang[2] [1]University Medical Center of the Johannes Gutenberg University Mainz (Germany); [2]University Medical Center of the Johannes Gutenberg University, Mainz (Germany)

Program Thursday 16:00 - 17:00

	Room Goethe III	Room Bach	Room Schiller
	A4: Bioinspired materials / biomimetic materials (cont.)	**A3: Biodegradable materials** (cont.)	**C6: Tissue engineering / regenerative medicine** (cont.)
16:00	**Tribological model system testing with biological and biomimetic materials** K.S. Pondicherry (Sp)[1]; F. Rummel[2] [1]Anton Paar Germany GmbH, Ostfildern (Germany); [2]Anton Paar GmbH, Graz (Austria)	**The main issues related to the development of biodegradable Zn-Mg-Ca/Sr alloys for medical applications** J. Kubasek (Sp)[1]; J. Capek[2]; J. Pinc[2] [1]University of Chemistry and Technology Prague (Czech Republic); [2]Czech Academy of Sciences, Prague (Czech Republic)	**Novel porous bioceramics composites for skin repair** J. Markhoff (Sp)[1]; N. Suter[1]; K. Stapelfeldt[1]; K. Rezwan[1]; D. Brüggemann[1] [1]University of Bremen (Germany)
16:20	**Development of bio-inspired protein-based materials as novel anti-corrosive coatings and transparent adhesives** G. van Keulen (Sp)[1] [1]Swansea University (United Kingdom)		**Using benign solvents in biopolymer electrospinning: Advantages and challenges** L. Liverani (Sp)[1]; A.R. Boccaccini[1] [1]Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) (Germany)

Room Goethe I

16:40 **Closing remarks**

T.F. Keller, Deutsches Elektronen-Synchrotron DESY (Germany)

List of Authors and Participants

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List of Exhibitors

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DGM Panel of Experts for Biomaterials

Goals and Objectives

- Addressing the industrial and scientific issues in the area of established 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 simulation, antimicrobial biomaterials, biomimetic biomaterials, certification, accreditation, standardization, legal issues.
- Initiating research and development activities: joint projects between universities, research institutes and industry.
- Exchange of experience between groups that are active in the field of biomaterials, and networking.

The Otto Schott Institute of Materials Research and its Chair of Materials Science

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 materials classes.

At the **Chair of Materials Science at the OSIM**, investigations focus on materials for life sciences, polymer nanostructures & thermodynamics and composite materials with a special emphasis on 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 pharmacology 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.

If you are interested to join the DGM Panel of Experts for Biomaterials and/or to cooperate with the Chair of Materials Science at OSIM please contact:
Prof. Klaus D. Jandt (k.jandt@uni-jena.de).

Tourist Information & Sightseeing-Tour Weimar:

Rich Cultural Heritage Unites with Charming Appearance:

Weimar has as many as three entries in UNESCO's World Heritage list: Classical Weimar comprising 13 buildings and architectural ensembles, the three Bauhaus buildings and the Memory of the World, containing handwritten manuscripts by Goethe. Palaces and parks, museums and monuments - the list of Weimar's sights is splendidly long. Here you find the top ten sights in Weimar with a short description. In addition, we show you how to discover Weimar best.

1. Guided Walking Tour

Can be arranged for groups up to 25 people. They have to be booked in advance - at any time and any place, in ten languages.

2. Goethe's Home and Goethe National Museum

Foto: Maik Schuck, © weimar GmbH

One of the most prominent figures of Classical Weimar, Johann Wolfgang von Goethe lived in this Baroque house for almost fifty years. The poet planned the arrangement and furnishing of the rooms as well as its rich collections. The furnishings and fittings from the last few years of Goethe's life have largely been preserved. Shortly after the death of Goethe's last grandson Walther, Goethe's historic house and his art and nature collections passed on to the trusteeship of the Goethe National Museum, founded in 1885. Two museum buildings were built in 1913 and 1935 to accommodate the steadily growing collection.

3. The Bauhaus-Museum

Foto: Maik Schuck, © weimar GmbH

The Bauhaus, opened in April 1919 in Weimar 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 timeliness today, more than 70 years after its closure. The pedagogical, artistic and design ideas of the Bauhaus continue to emanate into the entire world. Many of these innovative ideas were conceived in Weimar. The presentation at the Bauhaus Museum Weimar shows works of Walter Gropius, the founding director of the Bauhaus, as well as those of famous Bauhaus members such as Lyonel Feininger, Gerhard Marcks, Johannes Itten or Paul Klee.

4. City Palace

Foto: Guido Werner, © weimar GmbH

The luxurious rooms are just as impressive as the collection of first-class European art spanning the period from the Middle Ages and the Reformation to the beginning of the twentieth century. The building was once the seat of government and residence of dukes and grand dukes. The highlights of this collection are the Cranach Gallery with other examples of old German painting located on the ground floor and works by Caspar David Friedrich, Johann Heinrich Wilhelm Tischbein, Auguste Rodin and Max Beckmann. Sculptures and crafts date back to around 1800.

5. Buchenwald Memorial

Foto: © Stiftung Gedenkstätten Buchenwald

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 detention camp. Known as Special Camp No. 2, over 28,000 people were held there by the Soviets between 1945 and 1950, including 7,000 who died.

6. The „Deutsches Nationaltheater und Staatskapelle Weimar"

Foto: Guido Werner, © weimar GmbH

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

7. Park on the River Ilm

Foto: Guido Werner, © weimar GmbH

It is a place for relaxation and entertainment - both in the past and the present. Important characteristics of the park include the numerous lines of sight linking features such as Goethe's garden house and the Roman House within the park; which connect them to the surrounding countryside. The 48-hectare landscaped park on the edge of Weimar's old town is part of a kilometer-long green stripe along the Ilm. It was created between 1778 and 1828 and houses classical and romantic styles.

8. The Rokoko Hall

Foto: Maik Schuck, © weimar GmbH

The stunning Herzogin Anna Amalia Bibliothek (historical library) gleams in new splendour. There are one million volumes at the new and old libraries. The Historical Library "Duchess Anna Amalia Library" is one of the most famous libraries in Germany. Anna Amalia turned the 'Green Palace' into a library comprising a unique combination of books, art collection and architecture. The most famous place is the Rococo Hall. On the evening of September 2nd 2004, a devastating fire broke out in the original building of the Herzogin Anna Amalia Library and turned 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.

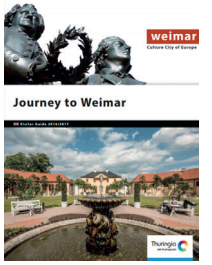
9. Thuringian Bratwurst

The Thuringian grilled sausage "Bratwurst" is a local specialty. According to EU regulations, the sausage is at least 15-20 cm long, consisting of medium-finely ground, seasoned sausage meat enclosed by a thin natural casing. For the Thuringian, his sausage – just like his "Rostbrätl" (grilled pork cutlet) – is not simply a food, it even 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 to be tried in one of Weimar´s cosy cafes - you can burn the calories during a walk in the surrounding parks!

Via this link you will find more tourist information about Weimar:
https://www.weimar.de/en/tourismus/service/tourist-information/



The admission to most museums, exhibitions and the use of iGuide – a multimedia guided tour and the city bus are free with the Weimar Card.

You also get discounts on performances at the Deutsches Nationaltheater Weimar.
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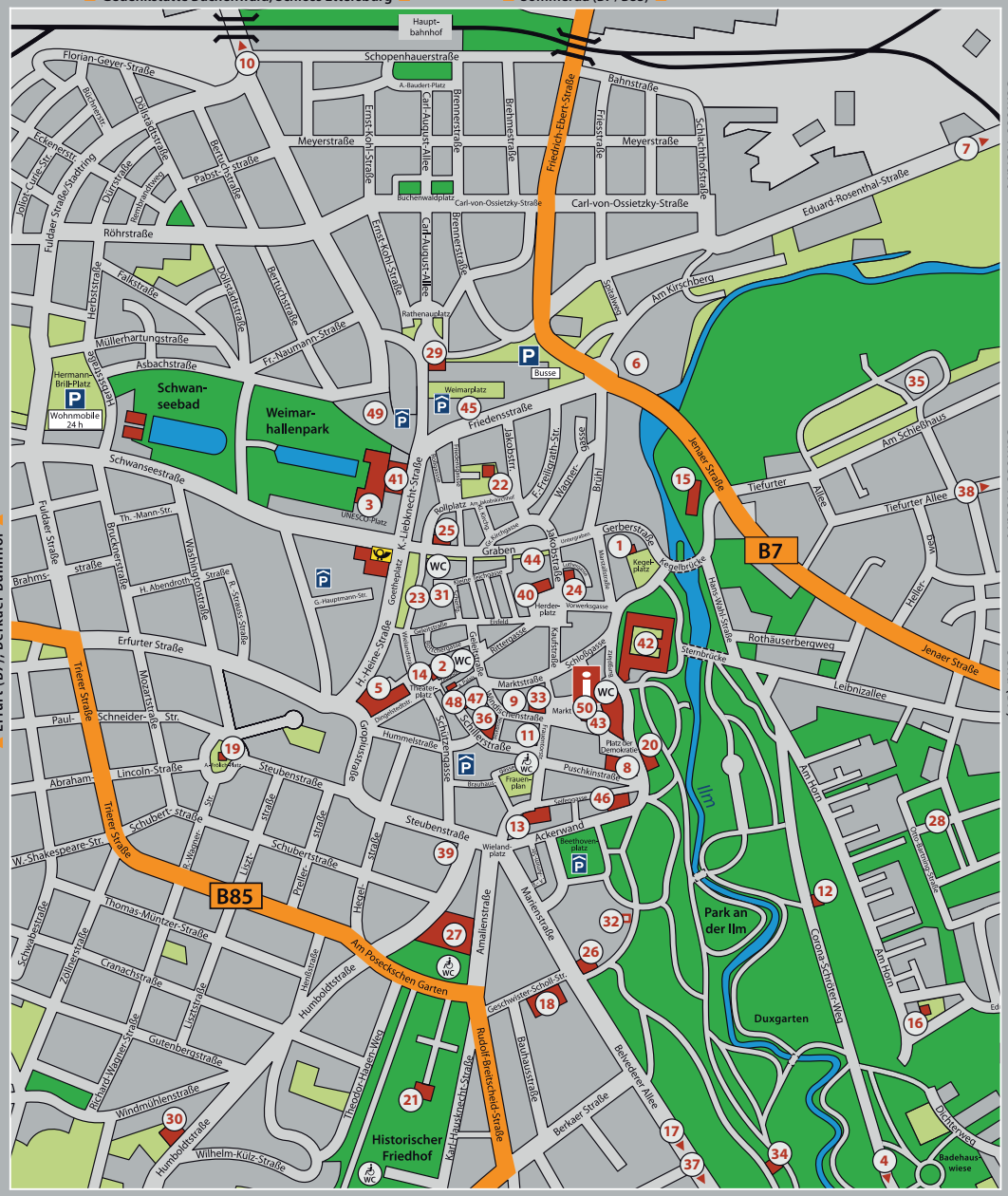

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2 Bauhaus-Museum Weimar
3 congress centrum neue weimarhalle
4 Deutsches Bienenmuseum
5 Deutsches Nationaltheater Weimar
6 Deutsches Nationaltheater Weimar, Spielstätte E-Werk
7 Eisenbahnmuseum
8 Fürstenhaus (Hochschule für Musik Franz Liszt Weimar)
9 Galli Theater
10 Gedenkstätte Buchenwald
11 Ginkgo-Museum
12 Goethes Gartenhaus
13 Goethe-Nationalmuseum, Goethes Wohnhaus und Ausstellung
14 Goethe- und Schiller-Denkmal
15 Goethe- und Schiller-Archiv
16 Haus „Am Horn“
17 Haus Hohe Pappeln
18 Henry-van-de-Velde-Bau (Bauhaus-Universität Weimar)
19 Herz Jesu Kirche
20 Herzogin Anna Amalia Bibliothek
21 Historischer Friedhof, Fürstengruft, Russisch-orthodoxe Kirche
22 Jakobskirchhof, Jakobskirche
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